Test Report issued under the responsibility of:

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TEST REPORT

IEC 62368-1

Audio/video, information and communication technology equipment
Part 1: Safety requirements

Report Number..... :	CN2399ET 004
Date of issue ..... :	2024-12-30
Total number of pages..... :	19 (excluding attachments, refer to page 5)
Name of Testing Laboratory preparing the Report ..... :	TÜV Rheinland (Shanghai) Co., Ltd.
Applicant's name..... :	Hangzhou Hikvision Digital Technology Co., Ltd.
Address..... :	No. 555 Qianmo Road, Binjiang District, Hangzhou, 310052 Zhejiang, P.R. China
Test specification:	
Standard..... :	IEC 62368-1:2018
Test procedure..... :	CB Scheme
Non-standard test method..... :	N/A
TRF template used..... :	IECEE OD-2020-F1:2021, Ed.1.4
Test Report Form No. ..... :	IEC62368_1E
Test Report Form(s) Originator.... :	UL(US)
Master TRF..... :	Dated 2022-04-14

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The test results presented in this report relate only to the object tested.
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The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

Test item description..... :	Network Video Recorder
Trade Mark(s) .....:	HIKVISION
Manufacturer..... :	Same as applicant
Model/Type reference..... :	DS-7616NI-Q2/16P, DS-7616NI-Q2/16PUHK, DS-7616NI-Q2/16PCKV, DS-7616NI-Q2/16PUVS, DS-7616NI-Q2/16PKVO, DS-7616NI-Q2/16PHUN, NVR-216MH-C/16P, NVR-216MH-C/16PUHK, NVR-216MH-C/16PCKV, NVR-216MH-C/16PUVS, NVR-216MH-C/16PKVO, NVR-216MH-C/16PHUN, HWN-4216MH-16P, HWN-4216MH-16PUHK, HWN-4216MH-16PCKV, HWN-4216MH-16PUVS, HWN-4216MH-16PKVO, HWN-4216MH-16PHUN, ERI-K216-P16, DS-7616NI-K2/16P, DS-7616NI-K2/16PUHK, DS-7616NI-K2/16PCKV, DS-7616NI-K2/16PUVS, DS-7616NI-K2/16PKVO, DS-7616NI-K2/16PHUN, DS-7632NI-K2/16P, DS-7632NI-K2/16PUHK, DS-7632NI-K2/16PCKV, DS-7632NI-K2/16PUVS, DS-7632NI-K2/16PKVO, DS-7632NI-K2/16PHUN, DS-7616NI-M2/16P, DS-7616NI-M2/16PUHK, DS-7616NI-M2/16PCKV, DS-7616NI-M2/16PUVS, DS-7616NI-M2/16PKVO, DS-7616NI-M2/16PHUN, DS-7616NI-M2/16P/EDU, DS-7616NI-M2/16P/RTL, DS-7616NI-M2/16P/NRG, DS-7616NI-M2/16P/LGX, DS-7616NI-M2/16P/MFG, DS-7616NI-M2/16P/RMS, DS-7616NXI-K2/16P, DS-7616NXI-K2/16PUHK, DS-7616NXI-K2/16PCKV, DS-7616NXI-K2/16PUVS, DS-7616NXI-K2/16PKVO, DS-7616NXI-K2/16PHUN, DS-7632NXI-K2/16P, DS-7632NXI-K2/16PUHK, DS-7632NXI-K2/16PCKV, DS-7632NXI-K2/16PUVS, DS-7632NXI-K2/16PKVO, DS-7632NXI-K2/16PHUN, DS-7816NXI-K2/16P, DS-7816NXI-K2/16PUHK, DS-7816NXI-K2/16PCKV, DS-7816NXI-K2/16PUVS, DS-7816NXI-K2/16PKVO, DS-7816NXI-K2/16PHUN, DS-7832NXI-K2/16P, DS-7832NXI-K2/16PUHK, DS-7832NXI-K2/16PCKV, DS-7832NXI-K2/16PUVS, DS-7832NXI-K2/16PKVO, DS-7832NXI-K2/16PHUN, DS-7616NI-K2/16P/4G, DS-7616NI-K2/16P/4GUHK, DS-7616NI-K2/16P/4GCKV, DS-7616NI-K2/16P/4GUVS, DS-7616NI-K2/16P/4GHUN, DS-7616NI-K2/16P/4GKVO, iDS-7616NXI-M2/16P/X, iDS-7616NXI-M2/16P/XUHK, iDS-7616NXI-M2/16P/XCKV, iDS-7616NXI-M2/16P/XUVS, iDS-7616NXI-M2/16P/XKVO,

	iDS-7616NXI-M2/16P/XHUN, iDS-7616NXI-M2/16P/X/EDU, iDS-7616NXI-M2/16P/X/RTL, iDS-7616NXI-M2/16P/X/NRG, iDS-7616NXI-M2/16P/X/LGX, iDS-7616NXI-M2/16P/X/MFG, iDS-7616NXI-M2/16P/X/RMS, DS-7616NI-I2/16P, DS-7616NI-I2/16P(D), DS-7616NI-I2/16PUHK, DS-7616NI-I2/16PCKV, DS-7616NI-I2/16PUVS, DS-7616NI-I2/16PKVO, DS-7616NI-I2/16PHUN, DS-7632N-I2/16P, DS-7632N-I2/16PUHK, DS-7632N-I2/16PCKV, DS-7632N-I2/16PUVS, DS-7632N-I2/16PKVO, DS-7632N-I2/16PHUN, HWN-5216MH-16P, HWN-5232MH-16P DS-7632NI-I2/16PUHK, DS-7632NI-I2/16PCKV, DS-7632NI-I2/16PUVS, DS-7632NI-I2/16PKVO, DS-7632NI-I2/16PHUN, DS-7616NXI-I2/16P/S, DS-7616NXI-I2/16P/S(E), DS-7616NXI-I2/16P/SUHK, DS-7616NXI-I2/16P/SCKV, DS-7616NXI-I2/16P/SUVS, DS-7616NXI-I2/16P/SHUN, DS-7616NXI-I2/16P/SKVO, DS-7616NXI-I2/16P/S/EDU, DS-7616NXI-I2/16P/S/RTL, DS-7616NXI-I2/16P/S/NRG, DS-7616NXI-I2/16P/S/LGX, DS-7616NXI-I2/16P/S/MFG, DS-7616NXI-I2/16P/S/RMS, DS-7632NXI-I2/16P/S, DS-7632NXI-I2/16P/SUHK, DS-7632NXI-I2/16P/SCKV, DS-7632NXI-I2/16P/SUVS, DS-7632NXI-I2/16P/SHUN, DS-7632NXI-I2/16P/SKVO, DS-7632NXI-I2/16P/S/EDU, DS-7632NXI-I2/16P/S/RTL, DS-7632NXI-I2/16P/S/NRG, DS-7632NXI-I2/16P/S/LGX, DS-7632NXI-I2/16P/S/MFG, DS-7632NXI-I2/16P/S/RMS, DS-7616NXI-K2/16P(D), NVR-216MH-K/16P, DS-7632NXI-K2/16P(D), NVR-232MH-K/16P, DS-7916NXI-K2/16P, DS-XXXXXXXXXX, NVR-XXXXXXXXXX (“X”=“A-Z”, “a-z”, “0-9”, “-”, “/” or blank)
Ratings ..... :	Input: 100-240V~, 50/60Hz, 3.2A Max Output: 44-57V⎓ 0.6A Max. (Each PoE)

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):			
☐	**CB Testing Laboratory:**	TÜV Rheinland (Shanghai) Co., Ltd.	
Testing location/ address ..... :		No.177, 178, Lane 777 West Guangzhong Road, Jing'an District, Shanghai, China c/o TÜV Rheinland Suzhou Co., Ltd. Pingqian (Taicang) Modern Industrial Park, No.525, Yuewang Lingang South Road, Shaxi Town, Taicang City, Jiangsu Province, China	
Tested by (name, function, signature) ..... :			
Approved by (name, function, signature) .. :			
☐	**Testing procedure: CTF Stage 1:**	N/A	
Testing location/ address ..... :			
Tested by (name, function, signature) ..... :			
Approved by (name, function, signature) .. :			
☒	**Testing procedure: CTF Stage 2:**	Hangzhou Hikvision Digital Technology Co., Ltd. Test Center	
Testing location/ address ..... :		No.518 Wulianwang Street, Binjiang District Hangzhou 310052 Zhejiang China	
Tested by (name, function, signature) .....:		Meide Wang / Test engineer	Meide Wang
Witnessed by (name, function, signature) . :		Kevin Gao / Project engineer	Kevin Gao
Approved by (name, function, signature) .. :		Ben Cao / Technical Expert	Ben
☐	**Testing procedure: CTF Stage 3:**	N/A	
☐	**Testing procedure: CTF Stage 4:**	N/A	
Testing location/ address ..... :			
Tested by (name, function, signature) ..... :			
Witnessed by (name, function, signature) . :			
Approved by (name, function, signature) .. :			
Supervised by (name, function, signature) :			

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

- ATTACHMENT – National Differences (32 pages)
- ATTACHMENT – Photo Documentation (1 page)

Note: Total number of pages in each attachment is indicated in individual attachment.

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
All applicable tests were conducted on model DS-7616NI-Q2/16P to represent others, see test case and appended table for details. The test samples are pre-production sample without serial number. The manufacturer specified maximum operating temperature is 55 °C.	Hangzhou Hikvision Digital Technology Co., Ltd. Test Center No.518 Wulianwang Street, Binjiang District Hangzhou 310052 Zhejiang China

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

EU Group Differences, EU Special National Conditions, CA, US, SA, **AU, NZ.**

Explanation of used codes:

CA=Canada, US=United States of America, SA= Saudi Arabia, **AU= Australia, NZ= New Zealand.**

Other national requirements request by applicant:

Argentina**; Austria*; Bahrain**; Belarus**; Belgium*/**; Brazil**; Bulgaria*/**; China**; Colombia**;

Croatia**; Czech Republic*/**; Denmark*; Finland*/**; France*/**; Germany*/**; Greece*/**; Hungary*/**;

India**; Indonesia**; Ireland*/**; Israel; Italy*; Kenya**; Korea**; Libya**; Malaysia**; Mexico**;

Netherlands Antilles*/**; New Zealand**; Nigeria**; Norway*/**; Pakistan**; Poland*/**; Portugal*/**;

Russian Federation**; Romania*/**; Singapore, Serbia; Slovakia*/**; Slovenia*/**; South

Africa**; Spain*/**; Sweden*; Switzerland*/**; Thailand**; Turkey*/**; Ukraine**; United Arab Emirates**;

United Kingdom*; Vietnam**

Note(s): Countries outside the CB Scheme membership may also accept this report.

* Only applicable for Group Differences (if any). ** No National Differences Declared

☒ **The product fulfils the requirements of**

- IEC 62368-1:2018
- EN IEC 62368-1:2020+A11:2020

The corresponding national differences refer to previous report CN2399ET 001~003.

Use of uncertainty of measurement for decisions on conformity (decision rule) :

☒ No decision rule is specified by the IEC standard, when comparing the measurement result with the applicable limit according to the specification in that standard. The decisions on conformity are made without applying the measurement uncertainty (“simple acceptance” decision rule, previously known as “accuracy method”).

☐ Other:… (to be specified, for example when required by the standard or client, or if national accreditation requirements apply)

Information on uncertainty of measurement:

The uncertainties of measurement are calculated by the laboratory based on application of criteria given by OD-5014 for test equipment and application of test methods, decision sheets and operational procedures of IECEE.

IEC Guide 115 provides guidance on the application of measurement uncertainty principles and applying the decision rule when reporting test results within IECEE scheme, noting that the reporting of the measurement uncertainty for measurements is not necessary unless required by the test standard or customer.

Calculations leading to the reported values are on file with the NCB and testing laboratory that conducted the testing.

Copy of marking plate:

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

<Representative>

Note:

1. The Height of CE logo shall not be less than 5 mm; Height of WEEE logo shall not be less than 7 mm.
2. The marking plates for other models are of the same pattern except for model name.
3. As declared by the applicant, the importer's name, registered trade name or registered trade mark and the postal address will be marked on the products before being place on the market. The contact details shall be in a language easily understood by end-users and market surveillance authorities.

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	☒ 16A (20A for US/CA/FR); 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}	55 °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)	Approx. 2.78 kg

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 ..... :	2024-12-12
Date (s) of performance of tests..... :	2024-12-12 to 2024-12-16
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 IECEE 02:	
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) ..... :	1) Hangzhou Hikvision Electronics Co., Ltd. No.299, Qiushi Road, Tonglu Economic Development Zone, Tonglu County, Hangzhou, 311500 Zhejiang, P.R. China 2) Hangzhou Hikvision Technology Co., Ltd. No. 700 Dongliu Road Binjiang District, Hangzhou 310052 Zhejiang P.R. China 3) Chongqing Hikvision Technology Co., Ltd. No. 118, Haikang Road, Area C, Jianqiao Industrial Park, Dadukou District, 401325 Chongqing P.R. China 4) **Alfanar Electrical Systems - branch of Alfanar Company** **3rd Industrial Area, New Alkharj Road, 14338 Riyadh, Saudi Arabia**

General product information and other remarks:

Product Description

Refer to previous report CN2399ET 001~003 for details.

This report shall be used in conjunction with previous report CN2399ET 001~003.

Description of changes:

- Added alternative sources for front plastic cover and appliance couplers. Please refer to the details in the amended Table 4.1.2 (marked in bold font).
- Added an alternative front panel appearance. Details can be found in the Photo Documentation.
- Added an alternative new factory. Details are provided on page 8 (marked in bold font).
- Added Australia and New Zealand national differences.

For above-described changes, all applicable tests were conducted.

History of amendments and modifications:

Ref. No. CN2399ET 001, dated 2023-05-29 (original test report)

Ref. No. CN2399ET 002, dated 2023-11-09 (1st modification test report)

Ref. No. CN2399ET 003, dated 2024-12-19 (2nd modification test report)

Ref. No. CN2399ET 004, dated 2024-12-30 (3rd modification test report)

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

4	**GENERAL REQUIREMENTS**		P
4.1.1	Acceptance of materials, components and subassemblies		P
4.1.2	Use of components	Components which are certified to IEC and/or national standards are used correctly within their ratings. Components not covered by IEC standards are tested under the conditions present in the equipment	P

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

6.2.2	**TABLE: Power source circuit classifications**					P
Location	Operating and fault condition	Voltage (V)	Current (A)	Max. Power* (W)	Time (S)	PS class
EUT Input	Normal	--	--	--	--	PS3
	Abnormal Single fault	--	--	--	--	
JP8	Normal	5.00	1.47	5.12	5	PS1
	Abnormal Single fault (SC Pin 6-11)	5.03	0.4	1.68	5	
	Abnormal Single fault (SC Pin 8-11)	5.03	0.4	1.74	5	
	Abnormal Single fault (SC Pin 1,2,5,9,10-11)	2.97	0	0	3	
	Abnormal Single fault (SC Pin 3,4,7-11)	0	0	0	3	
Supplementary information:						
Abbreviation: SC= short circuit; OC= open circuit (*) Measured after 3 s for PS1 and measured after 5 s for PS2 and PS3. (**) Polymeric Thermistors are certified.						

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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) 2)]**
Switching power supply	Shenzhen Huntkey Electric Co., Ltd.	HDZ2802-3A S2	Input: 100-240 Vac, 5A, 50-60Hz, output: +52 Vdc/4.6 A, +12 Vdc/5 A max, Max. 280 W	IEC 62368-1	CB Certificate No.: (NO120868)
(alternative)	CHANNEL WELL TECHNOLOGY CO., LTD	KSA-300S2	Input: 100-240 Vac, 5A, 50-60Hz, output: +52 Vdc/4.6 A, +12 Vdc/3.33 A max, Max. 280 W	IEC 62368-1:2014	CB Certificate No.: (JPTUV-102846)
(alternative)	Delta Electronics, Inc.	DPS-280AB-4A	Input: 100-240 Vac, 47-63 Hz, 3-6 A; Output: +52 Vdc/4.6 A max, +12Vdc/3.4 A max, Max 280 W	IEC 62368-1:2014	CB Certificate No.: (JPTUV-099682)
(alternative)	ACBEL POLYTECH INC.	FLXA2281A	Input: 100-240 Vac, 50-60 Hz, 6 A; Output: +52 Vdc/4.6 A, +12Vdc/5.0 A max, Max 280 W, 5000m	IEC 62368-1:2018	Nemko CB Certificate No.: (NO122998)
(alternative)	DELTA ELECTRONICS INC	DPS-280AB-8 A	Input: 100-240 Vac, 50-60 Hz, 5 A; Output: +52 Vdc/4.6 A, +12Vdc/6.0 A max, Max 280 W, 5000m	IEC 62368-1:2018	CB Certificate No.: (JPTUV-135150)
PCB	HUIZHOU CHINA EAGLE ELECTRONIC TECHNOLOGY CO LTD	CA-F121	V-0, 130 °C	UL 796	UL E198681
(alternative)	SHENZHEN KINWONG ELECTRONIC CO LTD	8B	V-0, 130 °C	UL 796	UL E243951
(alternative)	GUANGZHOU FAST-PRINT CIRCUIT TECHNOLOGY CO LTD	M11	V-0, 130 °C	UL 796	UL E204460

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Clause	Requirement + Test	Result - Remark	Verdict

(alternative)	ZHEJIANG OULONG ELECTRIC CO LTD	OL-D	V-0, 130 °C	UL 796	UL E231017
(alternative)	Interchangeable	--	V-0, 130 °C	UL 796	UL
RTC Battery (Button Type)	POWER GLORY BATTERY TECH(SHENZHEN)CO.,LTD	CR1220	Non-rechargeable, Max Abnormal Charging Current 10mA Max Abnormal Charging Voltage 5.0V dc	UL 1642 IEC/EN/UL/CSA 62368-1	UL MH29853 Test with appliance
(alternative)	GUANGZHOU TIANQIU ENTERPRISE CO LTD	CR1220	Non-rechargeable, Max Abnormal Charging Current 2.5 mA Max Abnormal Charging Voltage 3.5 V dc	UL 1642 IEC/EN/UL/CSA 62368-1	UL MH48705 Test with appliance
Metal enclosure	--	--	Metal, thickness 1.5 mm min.	IEC 62368-1	Test with appliance
Front plastic cover	KINGFA SCI & TECH CO LTD	FRABS-518	V-0, 60 °C, thickness 1.4 mm min.	UL 94	UL E171666
(alternative)	NINGBO LG YONGXING CHEMICAL CO LTD	HI-121H	Thickness 1.4 mm, HB，60 °C	UL 94 IEC/EN/UL/CSA IEC 62368-1	UL E203955 Test with appliance
(alternative)	KINGFA SCI & TECH CO LTD	HP-126	HB, Thickness 1.2 mm, 60 °C	UL 94 IEC/EN/UL/CSA IEC 62368-1	UL E171666 Test with appliance
(alternative)	**KINGFA SCI & TECH CO LTD**	**HP-126, ABS-660, ABS-122, GAR-332, H12, G360, GAR- 322, GAR-220, GAR-011, CK- 55(M) (##), CK- 58(M) (##), GAR-011C, GAR-011(ww)**	**HB, Thickness 1.2 mm, 60 °C**	**UL 94**	**UL E171666 Test with appliance**
(alternative)	Interchangeable	--	V-0, 60 °C, thickness 1.2 mm min.	UL 94	UL
DC fan	Sunonwealth Electric Machine Industry Co.,Ltd	FD124010LB	12 Vdc, 55 mA, 5.7 CFM, 5000 RPM	EN 62368-1:2014+A11	TUV R 50019837

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Clause	Requirement + Test	Result - Remark	Verdict

(alternative)	Sunonwealth Electronics (Kunshan) Co.,Ltd.	HA40101V4-000C-999	12 Vdc, 65 mA, 5.3 CFM, 4500 RPM	EN 62368-1:2014	TUV R 50016065
(alternative)	Yen Sun Technology Corp.	FD124010, FD124010LB	12 Vdc, 55 mA, 4500 RPM, 4.5 CFM	EN 62368-1:2014	TUV R 50027591
(alternative)	Dongguan Protechnic Electric Co., Ltd.	MGA4012SB-O10	12 Vdc, 60 mA, 5.3 CFM, 4600 RPM	EN 62368-1:2014	TUV B 031023 0138
(alternative)	Asia Vital Components Co.,Ltd.	DAZA0410B2H-021	12 Vdc, 60 mA, 6.89 CFM, 5000 RPM	EN 62368-1:2014	TUV B 025730 0883
(alternative)	Sunonwealth Electric Machine Industry Co.,Ltd	KD1204PFB3	12 Vdc, 55 mA, 5000 RPM,5.7 CFM	EN 62368-1:2014	TUV R 50019837
(alternative)	Dongguan Protechnic Electric Co., Ltd.	MGA4012SR-O10	12 Vdc, 60 mA, 4600 RPM, 5.3 CFM	EN 62368-1:2014+A11:2017	TUV SUD Certif. No. B 031023 0138 Rev. 00
(alternative)	Asia Vital Components Co., Ltd.	DAZA0410R2H-016	12 Vdc, 60 mA, 4500 RPM, 5.72 CFM	EN 62368-1:2014+A11:2017	TUV SUD Certif. No. B 025730 0883 Rev. 13
(alternative)	Dongguan Protechnic Electric Co., Ltd.	MGA4012SB-O10	12 Vdc, 60 mA, 5200 RPM, 6.07 CFM	EN 62368-1:2014+A11:2017	TUV SUD Certif. No. B 031023 0138 Rev. 00
(alternative)	Asia Vital Components Co., Ltd.	DAZA0410B2H-022	12 Vdc, 60 mA, 5000 RPM, 6.89 CFM	EN 62368-1:2014+A11:2017	TUV SUD Certif. No. B 025730 0883 Rev. 13
(alternative)	Yen Sun Technology Corp.	FD124010LB(2N3)	12 Vdc, 90 mA, 4500RPM, 4.5 CFM	EN 62368-1:2014	TUV R 50027591
IC chip (UL3, UL4)	Joulwatt	JW7115S-2SOTA#TRPBF	Input: 2.7 - 5.5 Vd.c.; Max. 3.0 A; Output: -0.3 - 6.5 Vd.c.; Max. 3.2A; 85°C, Class III	IEC 62368-1:2014	UL certificate No. DK-90295-UL
(alternative)	Richtek	RT9742..G.	Input: 2.7 - 6Vd.c.; Max. 2.5 A; Output: -0.3 - 6.5 Vd.c.; Max. 4.5A; 85°C, Class III	IEC 62368-1:2014	Nemko certificate No. NO109777

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Clause	Requirement + Test	Result - Remark	Verdict

(alternative)	Joulwatt	JW7115S-1SOTA#TRPBF	Input: 2.7 - 5.5 Vd.c.; Max. 3.0 A; Output: -0.3 - 6.5 Vd.c.; Max. 3.2A; 85°C, Class III	IEC 62368-1:2014	UL certificate No. DK-92033-UL
IC Overcurrent Protector (For USB2.0/ USB3.0)	DIODES INC	AP2822CKBTR-G1	Input voltage: 2.7-5.5Vdc Rated output: 1A. 85°C, Class III	IEC 62368-1:2014	UL certificate No. US-34501-UL
(alternative)	DIODES INC	AP22816AKBWT-7	Input voltage: 2.7-5.5Vdc Rated output: 1A. 85°C, Class III	IEC 62368-1:2014	UL certificate No. US-38695-UL
(alternative)	DIODES INC	AP2822GKBTR-G1	Input voltage: 2.7-5.5Vdc Rated output: 2A. 85°C, Class III	IEC 62368-1:2014	UL certificate No. US-34501-UL
(alternative)	DIODES INC	AP22818AKBWT-7	Input voltage: 2.7-5.5Vdc Rated output: 2A. 85°C, Class III	IEC 62368-1:2014	UL certificate No. US-38695-UL
(alternative)	Richtek Technology Corp.	RT9742MGJ5	Input voltage: 2.7-6Vdc Rated output: 1.5A. 85°C, Class III	IEC 62368-1:2014	Nemko certificate No. NO109777
(alternative)	Richtek Technology Corp.	RT9742CGJ5F	Input voltage: 2.7-6Vdc Rated output: 2A. 85°C, Class III	IEC 62368-1:2014	Nemko certificate No. NO109777
(alternative)	Richtek Technology Corp.	RT9742GGJ5F	Input voltage: 2.7-6Vdc Rated output: 1A. 85°C, Class III	IEC 62368-1:2014	Nemko certificate No. NO109777

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(alternative)	Richtek Technology Corp.	RT9742VGJ5	Input voltage: 2.7-6Vdc Rated output: 2A. 85°C, Class III	IEC 62368-1:2014	Nemko certificate No. NO109777
(alternative)	JOULWATT TECHNOLOGY CO LIMITED	JW7115S-1SOTA#TRPBF	Input: 2.7 - 5.5 Vd.c.; Rated output: 1A. 85°C, Class III	IEC 62368-1:2014	UL certificate No. DK-92033-UL
(alternative)	JOULWATT TECHNOLOGY CO LIMITED	JW7115S-2SOTA#TRPBF	Input: 2.7 - 5.5 Vd.c.; Rated output: 2.05A. 85°C, Class III	IEC 62368-1:2014	UL certificate No. DK-90295-UL
(alternative)	Sg Micro Corp	SGM2580CYN5G/TR	Input: 2.5 - 5.5 Vd.c.; Output: 2.1A. Max. 85°C, Class III	IEC 62368-1:2014	SGS certificate No. BE-38642/M1
(alternative)	Sg Micro Corp	SGM2584AYN5G/TR	Input: 2.5 - 5.5 Vd.c.; Output: 1A. Max. 85°C, Class III	IEC 62368-1:2018	SGS certificate No. BE-39069
(alternative)	Sg Micro Corp	SGM2588AYN5G/TR	Input: 2.5 - 5.5 Vd.c.; Output: 1.1A. Max. 85°C, Class III	IEC 62368-1:2014	SGS certificate No. BE-38642/M1
(alternative)	Sg Micro Corp	SGM2588GYN5G/TR	Input: 2.5 - 5.5 Vd.c.; Output: 1.1A. Max. 85°C, Class III	IEC 62368-1:2014	SGS certificate No. BE-38642/M1
(alternative)	Shenzhen Lowpower Semiconductor CO., Ltd	LPW5202SDB5F11	Input: 2.4 - 6.0 Vd.c.; Output: 1.35A. Max. 85°C, Class III	IEC 62368-1:2018	TUV Rheinland certificate No. JPTUV-141625

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Polymeric Thermistors (For USB2.0/USB3.0/ HDMI)	CYG Wayon Circuit Protection Co., Ltd.	LP-ISML200	Max. Non-tripping Current 2.0A, Tripping Current 4.0A, Maximum Voltage: 8VDC 85°C, Class III	EN 62319-1:2005 EN 62319-1-1:2005 Comply with clauses 15, 17, J15 and J17 of IEC 60730-1:2013	TUV Rheinland certificate No. R50318402 0001
(alternative)	CYG Wayon Circuit Protection Co., Ltd.	LP-ISML110	Max. Non-tripping Current 1.1A, Tripping Current 2.2A, Maximum Voltage: 8VDC 85°C, Class III	EN 62319-1:2005 EN 62319-1-1:2005 Comply with clauses 15, 17, J15 and J17 of IEC 60730-1:2013	TUV Rheinland certificate No. R50318402 0001
Polymeric Thermistors (For HDMI and front panel control circuit)	CYG Wayon Circuit Protection Co., Ltd.	LP-TSM020	Max. Non-tripping Current 0.2A, Tripping Current 0.5A, Maximum Voltage: 9VDC 85°C, Class III	EN 62319-1:2005 EN 62319-1-1:2005 Comply with clauses 15, 17, J15 and J17 of IEC 60730-1:2013	TUV Rheinland certificate No. R50318402 0001
(alternative)	Polytronics Technology Corp.	SMD0603P020TF	Max. Non-tripping Current 0.2A, Tripping Current 0.5A, Maximum Voltage: 9VDC 85°C, Class III	EN 62319-1-1:2005 IEC 62319-1-1:2005 EN 62319-1:2005 IEC 62319-1:2005 Comply with clauses 15, 17, J15 and J17 of EN 60730-1:2010	TUV Rheinland certificate No. R50099121 0070
Flexible cables	LINOYA ELECTRONIC TECHNOLOGY CO LTD	H05VV-F	3 x 0,75 mm²	DIN EN 50525-2-11 (VDE 0285-525-2-11):2012-01; EN 50525-2-11:2011	VDE 40035072
(alternative)	Hangzhou Hongshi Electrical Ltd.	H05VV-F	3 x 0,75 mm²	DIN EN 50525-2-11 (VDE 0285-525-2-11):2012-01; EN 50525-2-11:2011	VDE 40010839
(alternative)	Phino Electric Co.,Ltd	H05VV-F	3 x 0,75 mm²	DIN EN 50525-2-11(VDE 0285-525-2-11):2012-01;EN 50525-2-11:2011	VDE 113841

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(alternative)	Interchangeable	--	3 x 0,75 mm², 6A 250V~	DIN EN 50525-2-11(VDE 0285-525-2-11):2012-01;EN 50525-2-11:2011	--
Appliance couplers (Connector, non-rewirable)	LINOYA ELECTRONIC TECHNOLOGY CO LTD	XYC-03	10A 250V	DIN EN 60320-1 (VDE 0625-1):2016-04; EN 60320-1:2015 + AC:2016 IEC 60320-1:2015	VDE 40016051
(alternative)	Phino Electric Co., Ltd	PHS 301	10A 250V	IEC 60320-1:2015 DIN EN 60320-1 (VDE 0625-1):2016-04; EN 60320-1:2015 + AC:2016	VDE 40038017
(alternative)	**Dongguan Linoya Intelligent Technology Co., Ltd.**	**XYC-03**	**10A 250V**	**IEC 60320-1:2015** **DIN EN 60320-1 (VDE 0625-1):2016-04; EN 60320-1:2015 + AC:2016**	**ENEC CA02.05749** **Report No.: MI24-0103348-01**
(alternative)	**Interchangeable**	**--**	**10A 250V**	**IEC 60320-1:2015** **DIN EN 60320-1 (VDE 0625-1):2016-04; EN 60320-1:2015 + AC:2016**	**--**
Plug	LINOYA ELECTRONIC TECHNOLOGY CO LTD	XYP-02L	16A 250V	DIN VDE 0620-2-1 (VDE 0620-2-1):2016-01 DIN VDE 0620-2-1/A1 (VDE 0620-2-1/A1):2017-09	VDE 40015292
(alternative)	Hangzhou Hongshi Electrical Ltd.	SW102	16A 250V	DIN VDE 0620-2-1/A1 (VDE 0620-2-1/A1):2017-09 DIN VDE 0620-2-1 (VDE 0620-2-1):2016-01	VDE 40004330
(alternative)	Phino Electric Co.,Ltd.	PHP-206	16A 250V	DIN VDE 0620-2-1/A1 (VDE 0620-2-1/A1):2017-09 DIN VDE 0620-2-1 (VDE 0620-2-1):2016-01	VDE 40013375

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Supplementary information:

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

[2)] License available upon request

List of test equipment used:

A completed list of used test equipment shall be provided in the Test Reports when a Customer's Testing Facility according to CTF stage 1 or CTF stage 2 procedure has been used.

Instr. Code	Instrument Name	Instrument Type	Instrument I.D.	Series No.	Calibration Date	
					Last	Due
1	Power meter	WT310	hkvs-yq1524	C2QB04042V	07/28/2024	07/29/2025
2	DC power	Chroma 62006P-300-8	hkvs-qt4267	62006PE00520	04/03/2025	04/04/2026
3	Electronic stopwatch	PC2810	8100-0203-230088A	--	12/26/2023	12/27/2024

-- End of main test report --

IEC62368_1D - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT

IEC 62368-1

(AUSTRALIA / NEW ZEALAND) NATIONAL DIFFERENCES

(**Audio/video, information and communication technology equipment**)

Differences according to .....: AS/NZS 62368.1:2018

TRF template used:.....: IECEE OD-2020-F3:2022, Ed. 1.2

Attachment Form No. .....: AU_NZ_ND_IEC62368_1D

Attachment Originator.....: JAS-ANZ

Master Attachment .....: 2023-11-14

	National Differences		P
Appendix ZZ	Variations to IEC 62368-1:2014 (ED. 2.0) for Australia and New Zealand		P
ZZ1 Scope	This Appendix lists the normative variations to IEC 62368-1:2014 (ED. 2.0)		P
ZZ2 Variations	The following modifications are required for Australian/New Zealand conditions:		P
2	*Add* the following to the list of normative references: The following normative documents are referenced in Appendix ZZ: -AS/NZS 3112, *Approval and test specification—Plugs and socket-outlets* -AS/NZS 3123, *Approval and test specification—Plugs, socket-outlets and couplers for general industrial application* -AS/NZS 3191, *Electric flexible cords* -AS/NZS 60065, *Audio, video and similar electronic apparatus—Safety requirements (IEC 60065:2015 (ED.8.0) MOD)* -AS/NZS 60320.1, *Appliance couplers for household and similar general purposes, Part 1: General requirements (IEC 60320-1, Ed.2.1 (2007) MOD)* -AS/NZS 60320.2.2, *Appliance couplers for household and similar general purposes Part 2.2: Interconnection couplers for household and similar equipment (IEC 60320-2-2, Ed.2.0 (1998) MOD)* -AS/NZS 60695.2.11, *Fire hazard testing, Part 2.11: Glowing/hot wire based test methods—Glow-wire flammability test method for end-products* -AS/NZS 60695.11.5, *Fire hazard testing, Part 11.5: Test flames—Needle-flame test method—Apparatus, confirmatory test arrangement and guidance* -AS/NZS 60695.11.10, *Fire hazard testing, Part 11.10: Test flames—50 W horizontal and vertical flame test methods* -AS/NZS 60884.1, *Plugs and socket-outlets for household and similar purposes,*		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Part 1: General requirements -AS/NZS 60950.1:2015, *Information technology equipment—Safety*, Part 1: *General requirements (IEC 60950-1, Ed.2.2 (2013), MOD)* IEC 61032:1997, *Protection of persons and equipment by enclosures—Probes for verification* -AS/NZS 61558.1:2008 (including Amendment 2:2015), *Safety of Power Transformers, Power Supplies, Reactors and Similar Products, Part 1: General requirements and tests (IEC 61558-1 Ed 2.1, MOD)* -AS/NZS 61558.2.16, *Safety of transformers, reactors, power supply units and similar products for voltages up to 1 100 V, Part 2.16: Particular requirements and tests for switch mode power supply units and transformers for switch mode power supply units.*		
4.1.1	**Application of requirements and acceptance of materials, components and subassemblies** 1 *Replace* the text 'IEC 60950-1' with 'AS/NZS 60950.1:2015'. 2 *Replace* the text 'IEC 60065' with 'AS/NZS 60065'.		P
4.7	**Equipment for direct insertion into mains socket-outlets**		N/A
4.7.2	**Requirements** *Delete* the text of the second paragraph and *replace* with the following: Equipment with a plug portion, suitable for insertion into a 10 A 3-pin flat-pin socket-outlet complying with AS/NZS 3112 shall comply with the requirements in AS/NZS 3112 for equipment with integral pins for insertion into socket-outlets.		N/A
4.7.3	**Compliance Criteria** *Delete* the first paragraph and Note 1 and Note 2 and *replace* with the following: *Compliance is checked by inspection and, if necessary, by the tests in AS/NZS 3112.*		N/A
4.8	*Delete* existing clause title and *replace* with the following: **4.8 Products containing coin/button cell batteries**		N/A
4.8.1	**General** 1 Second dashed point, *delete* the text and *replace* with the following: – include coin/button cell batteries with a diameter of 32 mm or less. 2 After the second dashed point, *insert* the following Note: NOTE 1: Batteries are specified in IEC 60086-2. 3 After the third dashed point, *renumber* the existing Note as 'NOTE 2'. 4 Fifth dashed point, *delete* the word 'lithium'.		N/A
4.8.2	**Instructional Safeguard** First line, *delete* the word 'lithium'.		N/A

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4.8.3	**Construction** First line, after the word 'Equipment' *insert* the words 'containing one or more coin/button batteries and'		N/A
4.8.5	**Compliance criteria** *Delete* the first paragraph and *replace* with the following: *Compliance is checked by applying a force of 30 N +/-1 N for 10 s to the battery compartment door/cover by a rigid test finger according to test probe 11 of IEC 61032:1997 at the most unfavourable place and in the most unfavourable direction. The force shall be applied in one direction at a time.*		N/A
5.4.10.2	**Test methods**		N/A
5.4.10.2.1	**General** *Delete* the first paragraph and *replace* with the following: In Australia only, the separation is checked by the test of both Clause 5.4.10.2.2 and Clause 5.4.10.2.3. In New Zealand, the separation is checked by the test of either Clause 5.4.10.2.2 or Clause 5.4.10.2.3.		N/A
Table 29	*Replace* the table with the following:		N/A

Parts	Impulse test		Steady state test	
	New Zealand	Australia	New Zealand	Australia
Parts indicated in Clause 5.4.10.1 a) [a]	2.5 kV 10/700 µs	7.0 kV for hand-held telephones and headsets, 2.5 kV for other equipment. 10/700 µs	1.5 kV	3 kV
Parts indicated in Clause 5.4.10.1 b) and c) [b]	1.5 kV 10/700 µs [c]		1.0 kV	1.5 kV

[a] Surge suppressors shall not be removed.
[b] Surge suppressors may be removed, provided that such devices pass the impulse test of Clause 5.4.10.2.2 when tested as components outside the equipment.
[c] During this test, it is allowed for a surge suppressor to operate and for a sparkover to occur in a GDT.

5.4.10.2.2	After the first paragraph, *insert* new Notes 201 and 202 as follows: NOTE 201 For Australia, the 7 kV impulse simulates lightning surges on typical rural and semi-rural network lines. NOTE 202 For Australia, the value of 2.5 kV for Clause 5.4.10.1 a) was chosen to ensure the adequacy of the insulation concerned and does not necessarily simulate likely overvoltages.		N/A
5.4.10.2.3	After the first paragraph, *insert* new Notes 201 and 202 as follows: NOTE 201 For Australia, where there are capacitors across the insulation under test, it is recommended that d.c. test voltages are used. NOTE 202 The 3 kV and 1.5 kV values for Australia have been determined considering the low frequency induced voltages from the power supply distribution system.		N/A

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6	**Electrically-caused fire**		N/A
6.1	**General** After the first paragraph, *insert* the following new paragraph: Alternatively, the requirements of Clauses 6.2 to 6.5.2 are considered to be fulfilled if the equipment complies with the requirements of Clause 6.202		N/A
6.6	After Clause 6.6, *add* the new Clauses 6.201 and 6.202 as follows: **6.201 External power supplies, docking stations and other similar devices** and **6.202 Resistance to fire—Alternative tests** (see special national conditions)		N/A
8.5.4	**Special categories of equipment comprising moving parts**		N/A
8.5.4.1	**Large data storage equipment** In the first dashed row and the second dashed rows *replace* 'IEC 60950-1:2005' with 'AS/NZS 60950.1:2015'.		N/A
8.6	**Stability of equipment**		N/A
8.6.1 and Table 36	**Requirements** 1. Table 36, *insert* Footnote c at the end of the 'Glass slide' heading, and *add* a new Footnote c after the text of Footnote b in the last row of Table 36 as follows: [c] The glass slide test is not applicable to floor standing equipment, even though the equipment may have controls or a display. 2. Table 36, fifth row, *insert* '201' at the end of 'No stability requirements' 3. Table 36, ninth row, *insert* '201' at the end of 'No stability requirements' 4. Table 36, *add* the following new footnote: 201 MS2 and MS3 television sets and display devices, designed only for fixing to a wall, ceiling or equipment rack, are not subjected to stability requirements only if the instructional safeguard of Clause 8.6.1.201 is provided. Otherwise, the glass slide requirements of Clause 8.6.4 and horizontal force requirements of Clause 8.6.5 apply. 5. Second paragraph beneath Table 36, *delete* the words 'MS2 and MS3 television sets' and *replace* with 'MS2 and MS3 television sets and display devices'		N/A
8.6.1	After Clause 8.6.1 *add* the following new clauses: **8.6.1.201 Instructional safeguard for fixed-mount television sets** (see special national conditions)		N/A
Annex F Paragraph F.3.5.1	**Mains appliance outlet and socket-outlet markings** *Replace* 'IEC 60320-2-2' with 'AS/NZS 60320.2.2'.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

Annex G **Paragraph G.4.2**	**Mains connectors** 1 In the second line *insert* 'or AS/NZS 3123' after 'IEC 60906-1'. 2 In the second line *insert* 'or AS/NZS 60320 series' after 'IEC 60320 series' 3 *Add* the following new paragraph: 10 A or 15 A 250 V flat pin plugs for the connection of equipment to mains-powered socket-outlets for household or similar general use shall comply with AS/NZS 3112 or AS/NZS 60884.1.		N/A
Paragraph G.5.3.1	**Transformers, General** 1 In the third dashed point *replace* 'IEC 61558-1 and the relevant parts of IEC 61558-2' with 'AS/NZS 61558-1 and the relevant parts of AS/NZS 61558.2' 2 In the fourth dashed point *replace* 'IEC 61558-2-16' with 'AS/NZS 61558.2.16'.		N/A
Paragraph G.7.1	**Mains supply cords, General** In the fourth dashed paragraph, *replace* 'IEC 60320-1' with 'AS/NZS 60320.1'		N/A
Table G.5	**Sizes of conductors** 1 In the second row, first column, *delete* '6' and *replace* with '7.5' 2 In the second row, second column, *delete* '0,75' and *replace* with '0.75[b] 3 *Delete* Note 1. 4 *Replace* 'NOTE 2' with 'NOTE:'. 5 *Delete* the text of 'Footnote b' and *replace* with the following: [b] This nominal cross-sectional area is only allowed for Class II appliances if the length of the power supply cord, measured between the point where the cord, or cord guard, enters the appliance, and the entry to the plug does not exceed 2 m (0.5 mm2 three-core supply flexible cords are not permitted; see AS/NZS 3191). 6 In Footnote c *replace* 'IEC 60320-1' with 'AS/NZS 60320.1' 7 In Footnote d *replace* 'IEC 60320-1' with 'AS/NZS 60320.1'		N/A
Annex M **Paragraph M.3.2**	**Protection circuits for batteries provided within the equipment, Test method** After the first dashed point *add* the following Note: NOTE 201: In cases where the voltage source is provided by power from an unassociated power source, consideration should be given to the effects of possible single fault conditions in the unassociated equipment. If the power source is unknown then it should be assumed that the maximum limit of SELV may be applied to the source input under assumed single fault conditions in the source when assessing the charging circuit in the equipment under test.		N/A
	Special national conditions (if any)		--

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Clause	Requirement + Test	Result - Remark	Verdict
6.201	**External power supplies, docking stations and other similar devices** For external power supplies, docking stations and other similar devices, during and after abnormal operating conditions and during single fault conditions the output voltage— – at all ES1 outlets or connectors shall not increase by more than 10% of its rated output voltage under normal operating condition; and – of a USB outlet or connector shall not increase by more than 3 V or 10% of its rated output voltage under normal operating conditions, whichever is higher. For equipment with multiple rated output voltages, the requirements apply with the equipment configured for each rated output voltage in turn. NOTE: This is intended to reduce the possibility of battery fire or explosion in attached equipment or accessories when charging secondary lithium batteries. *Compliance shall be checked by measurement, taking into account the abnormal operating conditions of Annex B.3 and the simulated single-fault conditions of Annex B.4*		N/A
6.202	**Resistance to fire—Alternative tests**		N/A
6.202.1	**General** Parts of non-metallic material shall be resistant to ignition and spread of fire. This requirement does not apply to decorative trims, knobs and other parts unlikely to be ignited or to propagate flames from inside the equipment, or the following: a) Components that are contained in an enclosure having a flammability category of V-0 according to AS/NZS 60695.11.10 and having openings only for the connecting wires filling the openings completely, and for ventilation not exceeding 1 mm in width regardless of length. b) The following parts which would contribute negligible fuel to a fire: – small mechanical parts, the mass of which does not exceed 4 g, such as mounting parts, gears, cams, belts and bearings; – small electrical components, such as capacitors with a volume not exceeding 1 750 mm3, integrated circuits, transistors and optocoupler packages, if these components are mounted on material of flammability category V-1, or better, according to AS/NZS 60695.11.10. NOTE: In considering how to minimize propagation of fire and what ‘small parts’ are, account should be taken of the cumulative effect of small parts adjacent to each other for the possible effect of propagating the fire from one part to another.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

	Compliance shall be checked by the tests of Clauses 6.202.2, 6.202.3 and 6.202.4. For the base material of printed boards, compliance shall be checked by the test of Clause 6.202.5. The tests shall be carried out on parts of non-metallic material which have been removed from the equipment. When the glow-wire test is carried out, the parts shall be placed in the same orientation as they would be in normal use. These tests are not carried out on internal wiring.		N/A
6.202.2	**Testing of non-metallic materials** Parts of non-metallic material shall be subject to the glow-wire test of AS/NZS 60695.2.11 which shall be carried out at 550°C. Parts for which the glow-wire test cannot be carried out, such as those made of soft or foamy material, shall meet the requirements specified in ISO 9772 for category FH-3 material. The glow-wire test shall be not carried out on parts of material classified at least FH-3 according to ISO 9772 provided that the relevant part is not thinner than the sample tested.		N/A
6.202.3	**Testing of insulating materials** Parts of insulating material supporting Potential Ignition Sources shall be subject to the glow-wire test of AS/NZS 60695.2.11 which shall be carried out at 750°C. The test shall be also carried out on other parts of insulating material which are within a distance of 3 mm of the connection. NOTE: Contacts in components such as switch contacts are considered to be connections		N/A
	For parts which withstand the glow-wire test but produce a flame, other parts above the connection within the envelope of a vertical cylinder having a diameter of 20 mm and a height of 50 mm shall be subjected to the needle-flame test. However, parts shielded by a barrier which meets the needle-flame test need not be tested		N/A
	The needle-flame test shall be made in accordance with AS/NZS 60695.11.5 with the following modifications:		N/A

Clause of AS/NZS 60695.11.5	Change
9 Test procedure	
9.2 Application of needle-flame	*Delete* the first and second paragraphs and *replace* with the following: The specimen shall be arranged so that the flame can be applied to a vertical or horizontal edge as

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Clause	Requirement + Test	Result - Remark	Verdict

		shown in the examples of Figure 1. If possible the flame shall be applied at least 10 mm from a corner. The duration of application of the test flame shall be 30 s □1 s.		
	9.3 Number of test specimens	*Replace* with the following: The test shall be made on one specimen. If the specimen does not withstand the test, the test may be repeated on two further specimens, both of which shall withstand the test.		
	11 Evaluation of test results	*Replace* with the following: The duration of burning (tb) shall not exceed 30 s. However, for printed circuit boards, it shall not exceed 15 s.		
	The needle-flame test shall not be carried out on parts of material classified as V-0 or V-1 according to AS/NZS 60695.11.10, provided that the relevant part is not thinner than the sample tested.			
6.202.4	**Testing in the event of non-extinguishing material** If parts, other than enclosures, do not withstand the glow wire tests of Clause 6.202.3, by failure to extinguish within 30 s after the removal of the glowwire tip, the needle-flame test detailed in Clause 6.202.3 shall be made on all parts of non-metallic material which are within a distance of 50 mm or which are likely to be impinged upon by flame during the tests of Clause 6.202.3. Parts shielded by a separate barrier which meets the needle-flame test need not be tested. NOTE 1: If the enclosure does not withstand the glow-wire test the equipment is considered to have failed to meet the requirements of Clause 6.202 without the need for consequential testing. NOTE 2: If other parts do not withstand the glow-wire test due to ignition of the tissue paper and if this indicates that burning or glowing particles can fall onto an external surface underneath the equipment, the equipment is considered to have			N/A

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Clause	Requirement + Test	Result - Remark	Verdict

	failed to meet the requirements of Clause 6.202 without the need for consequential testing. NOTE 3: Parts likely to be impinged upon by the flame are considered to be those within the envelope of a vertical cylinder having a radius of 10 mm and a height equal to the height of the flame, positioned above the point of the material supporting, in contact with, or in close proximity to, connections.		
6.202.5	**Testing of printed boards** The base material of printed boards shall be subjected to the needle-flame test of Clause 6.202.3. The flame shall be applied to the edge of the board where the heat sink effect is lowest when the board is positioned as in normal use. The flame shall not be applied to an edge, consisting of broken perforations, unless the edge is less than 3 mm from a potential ignition source. The test is not carried out if— – the printed board does not carry any potential ignition source; – the base material of printed boards, on which the available apparent power at a connection exceeds 15 VA operating at a voltage exceeding 50 V and equal or less than 400 V (peak) a.c. or d.c. under normal operating conditions, is of flammability category V-1 or better according to AS/NZS 60695.11.10, or the printed boards are protected by an enclosure meeting the flammability category V-0 according to AS/NZS 60695.11.10, or made of metal, having openings only for connecting wires which fill the openings completely; or – the base material of printed boards, on which the available equipment power at a connection exceeds 15 VA operating at a voltage exceeding 400 V (peak) a.c. or d.c. under normal operating conditions, and base material of printed boards supporting spark gaps which provides protection against overvoltages, is of flammability category V-0 according to AS/NZS 60695.11.10 or the printed boards are contained in a metal enclosure, having openings only for connecting wires which fill the openings completely. *Conformance shall be determined using the smallest thickness of the material.* NOTE: Available apparent power is the maximum apparent power which can be drawn from the supplying circuit through a resistive load whose value is chosen to maximize the apparent power for more than 2 min when the circuit supplied is disconnected.		N/A
6.202.6	**For open circuit voltages greater than 4 kV** Potential ignition sources with open circuit voltages exceeding 4 kV (peak) a.c. or d.c. under normal operating conditions shall be contained in a FIRE ENCLOSURE which shall comply with flammability category V-1 or better according to AS/NZS 60695.11.10.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8.6.1.201	**8.6.1.201 Instructional safeguard for fixed-mount television sets** MS2 and MS3 television sets and display devices designed only for fixed mounting to a wall of ceiling or equipment rack shall, where required in Table 36, footnote 201, have an instructional safeguard in accordance with Clause F.5 which may be on the equipment or included in the installation instructions or equivalent document accompanying the equipment. The elements of the instructional safeguard shall be as follows: – element 1a: not available; – element 2: 'Stability Hazard' or equivalent wording; – element 3: 'The television set may fall, causing serious personal injury or death' or equivalent text; – element 4: the following or equivalent text: To prevent injury, this television set must be securely attached to the floor/wall in accordance with the installation instructions		N/A
8.6.1.202	**Restraining device** MS2 and MS3 television sets and display devices that are not solely fixed-mounted should be provided with a restraining device such as a fixing point to facilitate restraining the equipment from toppling forward. The restraining device shall be capable of withstanding a pull of 100 N in all directions without damage. Where a restraining device is provided, instructions shall be provided in the instructions for installation or instructions for use to ensure correct and safe installation.		N/A

AS_NZS_3112:2017_Appendix J ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT

AS_NZS_3112:2017_+A1:2021 Appendix J
AUSTRALIAN / NEW ZEALAND NATIONAL DIFFERENCES
(Approval and test specification—Plugs and socket-outlets)

Differences according to..... : AS_NZS_3112:2017_Amendment 1:2021_Appendix J

TRF template used:..... : IECEE OD-2020-F3, Ed. 1.1

Attachment Form No..... : AS_NZS_3112:2017_Appendix J

Attachment Originator ..... : JAS-ANZ

Master Attachment..... : 2021-11

NOTE	**This TRF only relates to Appendix J requirements**	N/A
	National Differences	N/A
	APPENDIX J INTEGRAL OR DETACHABLE PLUG PORTIONS OF EQUIPMENT FOR INSERTION INTO SOCKET-OUTLETS	N/A
J1 SCOPE	General: This Appendix specifies additional dimensional and constructional requirements for detachable plug portions, or equipment incorporating integral supply pins or equipment incorporating detachable plug portions. This Appendix shall be read in conjunction with Section 2 of this Standard. For the purposes of this Appendix, where the term 'plug' is used in Section 2 it shall be taken to mean the plug portion of equipment or the detachable plug portion. The equipment shall comply with the relevant product Standard. The tests and requirements specified in this Appendix are in addition to any test and requirements of the relevant product Standard for the equipment. (AS/NZS 3112:2017/A1:2021)	N/A

J2	DEFINITION	N/A
J2.1	Detachable plug portion A plug portion that is detachable from the equipment and with connections including the following standardized outputs and other contacts (a) Type A (see Figure J1): A detachable plug portion with a connection intended for plugging directly into equipment. The connection being via the equipment group 1 appliance inlet within the scope of AS/NZS 60320.1. (b) Type B (see Figure J2): A detachable plug portion with a non-standardized connection intended for plugging directly into equipment	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	(c) Type C (see Figure J3): A detachable plug portion with a connection intended for use with an adaptor connected to a flexible cord so as to replicate a supply plug and flexible cord configuration. The connection being via a group 1 appliance outlet within scope of AS/NZS 60320.2.2, which is integral with the plug portion (AS/NZS 3112:2017)		
J2.2	Integral plug portion A plug portion that is integral to the equipment enclosure and is not detachable (AS/NZS 3112:2017)		N/A
J2.3	Plug portion A plug portion is that portion of equipment with pins for insertion into a socket-outlet, including the plug pins, terminals of the plug pins, external dimensions of the 'maximum projection' and any connections of a detachable plug portion. (AS/NZS 3112:2017/A1:2021)		N/A
J3	**REQUIREMENTS FOR THE PLUG PORTION**		N/A
J3.1	General The following provisions apply to the dimensional and constructional requirements of plug portions of equipment and any detachable connection between the plug portion and the equipment:		N/A
(a)	For detachable plug portions intended for connection to the equipment in multiple orientations, the relevant tests are performed in the most onerous orientation.		N/A
(b)	For Type A detachable plug portion, the relevant requirements of AS/NZS 3105:2014 are applicable, in addition to conformance with relevant clauses of this Appendix		N/A
(c)	For Type B detachable plug portions, the conformance is shown by the relevant clauses of this Appendix.		N/A
(d)	For Type C detachable plug portions, conformance is shown by assessment to Section 2 of this Standard (plugs) and relevant clauses of this Appendix (AS/NZS 3112:2017)		N/A
J3.2	**Plug pins of plug portions** The requirements of Clause 2.2 are applicable for plug pins.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
2.2	PLUG PINS		N/A
2.2.1	Current carrying parts of plug pins of metal having sufficient mechanical strength, electrical conductivity and resistance to corrosion adequate for the intended use		N/A
	Plug pin material?		
2.2.2	Pins that may become detached from plug yet remain attached to cord conductors; not possible for plug to be assembled with any pin located in a position other than that intended		N/A
	Plug made of resilient insulating material; pins and terminals held securely in position (AS/NZS 3112:2017)		N/A
2.2.3	Plug pins adequately proportioned throughout and portion adjacent to the connection designed to not introduce a stress concentration which may lead to a fracture of the pin, and suitably shaped to prevent abrasion or cutting of conductor strands due to flexure in normal use		N/A
	Exposed ends of plug pins have a lead-in, bevel or radius to facilitate entry into socket-outlets and to operate shutters		N/A
	Round pins have a semi-circular end profile		N/A
	Flat-pins with the following profile are deemed to comply:		--
(a)	Flat-pins with a radius on the end with side bevels may have a width and thickness profile as specified in Figure 2.1(h)		N/A
(b)	Flat-pins square on the end with corner and side bevels may have a width and thickness profile as specified in Figure 2.1(i)		N/A
(c)	Flat-pins square on the end with corner bevels and a radius on the sides may have a width and thickness profile as specified in Figure 2.1(j)		N/A
	Contact portion of the pins smooth and free from openings or indentations		N/A
	Flat pin plugs having a longitudinal seam or opening in the contact portion of one face; width not exceeding 0.3 mm and		N/A
	Thickness not exceeding 1.58 mm		N/A
	Exposed portion of earthing pins and pins other than insulated pins free from any non-metallic coverings or coatings (AS/NZS 3112:2017)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
2.2.4	Live parts of insulated pin plugs not exposed when plug is partially or fully engaged with associated socket		N/A
	Compliance by measurement to Figure 2.4	(see appended table)	N/A
	Lacquer, enamel or sprayed insulating coating not considered to be insulation material		N/A
	All live pins on low voltage plugs except for those shown in Figure 2.1 (a2), (b) and (g) of the insulated pin type		N/A
	Colour green or green / yellow not used for insulation of insulated pins (AS/NZS 3112:2017)		N/A
J3.3	**Ratings and dimensions for low-voltage plug portions** Requirements of clauses 2.8.1 and 2.8.4 apply for rating and dimensions		N/A
2.8	Ratings and Dimensions of Low Voltage Plugs		N/A
2.8.1	Low voltage flat-pin plugs and low voltage plugs having one round earth pin and two flat pins or two round live pins and one flat earth pin, having ratings up to and including 20A; compliance with Figure 2.1	(see appended results)	N/A
	Rating of plug	___A	--
	Nominal dimensions covering disposition of pins checked by gauge of Appendix A		N/A
	Distance between live pin and edge of moulding to not less than 9 mm		N/A
	Measured distance	___mm	--
	No point on plug face protrudes more than 0.5 mm		N/A
	Measured protrusion	___mm	--
	Dimensional requirements of Figure 2.1(e2) did not applied to plugs with greater than three pins (AS/NZS 3112:2017)		N/A
2.8.4	Low voltage plugs comply with dimensions of Figure 2.1	(see appended table 2.8.1)	N/A
	Disposition of pins checked by gauge complying with Appendix A, B or F as appropriate		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Low voltage plug having rating up to 15A and of the Figure 2.1 (a1), (c), (d), (f) or (g) type; comply with dimensional requirements of Figure 2.1 (e1 and e2)		N/A
	20A plug of Figure 2.1(a2) type complies with dimensional requirements of Figure 2.1 (e2)		N/A
	Plugs with insulated pins need not comply with dimension R20.0 ± 1 mm requirement of Figure 2.1 (e3) provided there is at least 9mm from the edge of the live pins to the edge of the plug face Figure 2.1(e3). (AS/NZS 3112:2017)		N/A
J3.4	**Internal connections for plug portions** Requirements of clause 2.9 apply for internal connections; unless requirements contained in the relevant product standard (AS/NZS 3112:2017)		N/A
2.9	INTERNAL CONNECTIONS		N/A
	Plug provided with earthing connections designed and constructed so that when plug is correctly wired and assembled:		N/A
(a)	Loose terminal screw or conductive material cannot bridge any live or earthed parts		N/A
(b)	Earthing parts effectively isolated from contact with live conductor which may become detached		N/A
(c)	Live parts effectively isolated from contact with any earthing conductor which may become detached		N/A
	Any connections for auxiliary devices comply with above requirements (AS/NZS 3112:2017)		N/A
J3.5	**Arrangement of earthing connections for plug portions** Requirements of clause 2.10 apply for arrangement of earthing connections		N/A
2.10	Arrangement of earthing connections		N/A
	Earthing pin radial to the circle embracing the pins (AS/NZS 3112:2017)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
J3.6	**Configuration of plug portions** Requirements of clause 2.12.6 apply for configuration of the plug portion (AS/NZS 3112:2017)		N/A
2.12	Marking		--
2.12.6	Configuration of plugs		N/A
	Pins disposed so that configuration, as viewed from the pins, is earth, neutral and active in a clockwise direction		N/A
	Where there is no earthing pin; live pins conform to this configuration (AS/NZS 3112:2017)		N/A
J4	**Tests**		N/A
J4.1	General Plug portions of equipment shall be subjected to the following tests and unless stated otherwise, shall comply with the requirements specified in Section 2 for each test. The number of test samples shall be in accordance with Table J1 For equipment with a detachable plug portion, the assessment(s) of Table J1 tests 2, 3, 5, 10 and 11 shall be conducted on the— (a) assembled equipment with the detachable plug portion connected; and (b) the detachable plug portion after it has been separated from the equipment (AS/NZS 3112:2017/A1:2021)		N/A
J4.2	**High voltage test** The requirements of Clause 2.13.3 are applicable unless requirements are contained in the relevant product standard (AS/NZS 3112:2017)		N/A
2.13.3	Test No.1 - High voltage test		N/A
	Plug withstands without failure electric strength test as specified (AS/NZS 3112:2017)	(see appended table)	N/A
J4.3	**Mechanical strength**		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

J4.3.1	**Tumbling barrel test** The tumbling barrel test is applied to determine the mechanical strength of the plug portions and equipment having integral or detachable plug portions. For equipment with a detachable plug portion, the detachable plug portion may become detached during the test. If this occurs the detachable plug portion shall be reassembled with the equipment when the pins are straightened as per (a) and (b) below. Three samples that have not been subjected to any previous test are tested to the requirements of Clause 2.13.7.1, however the test is modified as follows:	N/A
	A sample is dropped— (a) 500 times if the mass of the specimen does not exceed 250 g. The pins being straightened after each 100 drops and at the completion of the test to pass through the appropriate gauge of Figure A1, Figure B1 or Figure F1; and (b) 250 times if the mass of the specimen exceeds 250 g. The pins being straightened after each 25 drops and at the completion of the test to pass through the appropriate gauge of Figures A1, Figure B1 or Figure F1. (AS/NZS 3112:2017/A1:2021)	N/A

2.13.7.1	Test No.2 – Tumbling barrel test		N/A
	Three plugs tested as specified in tumbling barrel as specified		N/A
	Mass of sample	grams	--
	Number of drops	500 / 250	--
	After the test, samples show no damage and in particular:		N/A
(a)	Live parts not exposed to the standard test finger		N/A
(b)	Earth pin resistance complies with clause 3.14.7; resistance not exceeding 0.1 Ω		N/A
	Measured earth pin resistance	___Ω	--
(c)	Functions affecting safety not impaired		N/A
(d)	No live part detached or loosened		N/A
(e)	Pins not broken or showing signs of cracking (AS/NZS 3112:2017)		N/A

J4.3.2	Test No.3 **Impact test.** Plug portions and equipment having integral plug portions or detachable plug portions shall withstand lateral impact forces. All samples that were subjected to the tests in Paragraph J4.3.1 shall be tested as follows:	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	(a) The sample shall be positioned at the centre of a steel plate with a thickness of at least 6 mm. Apertures in the steel plate for the plug pins to pass through shall conform to the corresponding socket Standard. The sample shall be held against the steel plate by clamping all the pins.		N/A
	(b) Samples shall be subjected to blows, with an impact energy of 1.0 ± 0.05 J by any means having the same performance as the spring-operated impact-test apparatus of AS/NZS 3100.		N/A
	(c) Three blows shall be applied to every point that is most likely to directly or indirectly stress the enclosure joints of the sample		N/A
	Compliance shall be checked by Paragraph J4.3.3		N/A
J4.3.3	**Specific compliance criteria** This Paragraph provides the common compliance assessment criteria for tests specified in Paragraphs J4.3.1 and J4.3.2.		N/A
	For equipment with an integral plug portion, the assessment(s) shall be made on the complete equipment.		N/A
	For equipment with a detachable plug portion, the assessment(s) shall be conducted on the— (a) assembled equipment with the detachable plug portion connected; and (b) the detachable plug portion after it has been separated from the equipment		N/A
	Following each test the samples shall comply with Clause 2.13.7.1		N/A
	(a) assembled equipment with the detachable plug portion connected;		N/A
	(a) Live parts shall not have become exposed to the standard test finger.		N/A
	(b) For earth pins, the resistance of the plug/socket-outlet circuit shall be such that conformance with Clause 3.14.7 is maintained The resistance shall not exceed 0.1 Ω.	___ Ω.	N/A
	(c) Any other function affecting safety shall not be impaired		N/A
	(d) No live part shall have become detached or loosened, to the extent that a hazardous situation is created		N/A
	The sample shall conform to the 'Guarding of live parts' requirements of AS/NZS 3100:2015 cl 5.1.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Following each test, no internal conductive material or conductive part shall have become detached or loosened, to the extent that it creates a hazardous situation. The sample shall conform to the 'Separation of live parts from non-current-carrying conductive parts' requirements of AS/NZS 3100. *NOTE Specific attention is drawn to the separation of any live parts to exposed metal parts or low voltage to extra low voltage parts*.		N/A
	(e) The pins shall be inspected with normal, or corrected to normal, vision. Insulation may be removed if necessary. Pins shall not be broken or show cracking.		N/A
	(b) the detachable plug portion after it has been separated from the equipment.		N/A
	(a) Live parts shall not have become exposed to the standard test finger.		N/A
	(b) For earth pins, the resistance of the plug/socket-outlet circuit shall be such that conformance with Clause 3.14.7 is maintained The resistance shall not exceed 0.1 Ω.	___ Ω.	N/A
	(c) Any other function affecting safety shall not be impaired		N/A
	(d) No live part shall have become detached or loosened, to the extent that a hazardous situation is created		N/A
	(e) The pins shall be inspected with normal, or corrected to normal, vision. Insulation may be removed if necessary. Pins shall not be broken or show cracking.		N/A
	The sample shall conform to the 'Guarding of live parts' requirements of AS/NZS 3100:2015 cl 5.1.		N/A
	Following each test, no internal conductive material or conductive part shall have become detached or loosened, to the extent that it creates a hazardous situation. The sample shall conform to the 'Separation of live parts from non-current-carrying conductive parts' requirements of AS/NZS 3100. *NOTE Specific attention is drawn to the separation of any live parts to exposed metal parts or low voltage to extra low voltage parts*. (AS/NZS 3112:2017/A1:2021)		N/A

IEC62368_1D - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
J4.3.4	**Pin bending test** The pins of the plug portion of three samples not subjected to any previous tests shall be tested for compliance with the pin bending test of Clause 2.13.7.2 (AS/NZS 3112:2017/A1:2021)		N/A
2.13.7.2	Test No.4 – Pin bending test		N/A
	All flat–pin plugs rated up to and including 15 A shall be subjected to the pin bending test		N/A
	Three samples are subjected by clamping the plug in a rigid holding block and applying the bending force as specified		N/A
	After the test the pins shall not be broken off. (AS/NZS 3112:2017)		N/A
J4.8.3	Test No.5 **Plug portion detachment requirements**		N/A
	For all Type B or C devices and for Type A devices where the outlet of the detachable plug portion is parallel to the plug supply pins, disengagement of the detachable plug portion from the equipment shall require at least two simultaneous independent actions or the use of a tool.		N/A
	Disengagement of the detachable plug portion requires two simultaneous independent actions, or		N/A
	The plug portion and the equipment/adaptor shall be connected and disconnected 50 times (100 strokes).		N/A
	Compliance is verified by inspection and the plugging test.		N/A
	During the test plug portion was not separated		N/A
	The test of AS/NZS 3112 ‘temperature rise test’ for plugs shall be conducted immediately after the above test without disturbing the sample. (AS/NZS 3112:2017/A1:2021)		N/A
J4.4	**Temperature rise test** The relevant requirements of Clause 2.13.8 are applicable for the temperature rise test, except that the test current shall be that specified in the relevant product standard		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	The temperature rise of the pins shall not exceed 45 K irrespective of the temperature rise of parts specified in end-product standards.		N/A
	For detachable plug portions the temperature rise of terminals and contacts shall not exceed 45 K. (AS/NZS 3112:2017)		N/A
2.13.8	Test No.6 – Temperature rise test		N/A
(a)	Non-rewireable plugs tested as delivered with minimum cross-sectional area of conductor size for each respective current rating		N/A
(b)	Rewireable plugs fitted with PVC flexible cords having minimum cross-sectional area specified in manufacturer's instructions		N/A
	Terminal screws or nuts tightened with torque equal to two-thirds of value specified in Table 2.2.		N/A
	Conductors have length of at least 1 m		N/A
	Plug tested in draught free environment as specified using clamping units as specified in Figure 2.10		N/A
	Plug fitted with cord and inserted into socket-outlet as specified		N/A
	Test Current		N/A
	Temperature of terminals and contacts of detachable plug portion not exceeding 45 K (AS/NZS 3112:2017)	(see appended table)	N/A
J4.5	**Securement of pins of the plug portion** The requirements of Clause 2.13.9 are applicable for the securement of pins. (AS/NZS 3112:2017)		N/A
2.13.9	Test No.7. Securement of pins		N/A
2.13.9.1	Movement of pins		N/A
	Plug pins clamped 5 ± 0.5 mm from pin face; test equipment and sample pre-conditioning for 1 h at 40 ± 1°C		N/A
	Force of 18 ± 1 N applied to pin 14 ± 0.5 mm from plug face; applied gradually over 10 s and maintained for 10 s; applied in four directions		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Maximum deflection during test not exceeding 2.0 mm	(see appended results)	N/A
	Any distortion 5 minutes after test does not prevent insertion of plug into standard gauge(s) (AS/NZS 3112:2017 + A1:2021)		N/A
2.13.9.2	Fixing of pins		N/A
	Plug heated to 50 ± 2°C for 1h		N/A
	Force of 60 ± 0.6 N applied to each pin over 10 s and maintained for 10 minutes; applied in two directions along length of pin		N/A
	Maximum displacement during test not exceeding 2.4 mm		N/A
	Maximum measured displacement		--
	Pin returns to within 0.8 mm of nominal length within 5 minutes of removal of test force (AS/NZS 3112:2017)		N/A
J4.6	**Tests on the insulation material of insulated pin-plug portions** The requirements of Clause 2.13.13 are applicable for insulating material of insulated plug pins. (AS/NZS 3112:2017)		N/A
2.13.13	Test No.8 Tests for insulation material of insulated pin plugs		N/A
2.13.13.1	Material of pin-insulation resistant to stresses at temperature likely to occur		N/A
2.13.13.2	Pressure test at high temperature		N/A
	Specimen tested as per Figure 2.5 with force of 2.5 N applied as specified; maintained for 2 h at 160 ± 5°C; removed and cooled by immersion in water within 10 s		N/A
	Thickness of insulation at point of impression not reduced by more than 50%		N/A
	Initial thickness	mm	--
	Thickness after test	mm	--
	No visible cracks on insulation material		N/A
	Dimension of insulating material not below minimum size in Figure 2.4 (AS/NZS 3112:2017)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
2.13.13.3	Static damp heat test		N/A
	Specimen subjected to two damp heat cycles in accordance with AS 60068.2.30; Db (12 + 12h), 95% RH, 25 ± 3°C; 40°C		N/A
	After this treatment and recovery to room temperature; specimen subjected to:		N/A
(a)	Insulation resistance test in accordance with clause 2.13.2 (e)	(see appended table)	N/A
(b)	High voltage test in accordance with clause 2.13.3	(see appended table)	N/A
(c)	Abrasion test in accordance with clause 2.13.13.6		N/A
2.13.13.4	Low temperature test		N/A
	Plug maintained at –15 ± 2°C for minimum of 24 h and returned to room temperature; after which specimen subjected to:		N/A
(a)	Insulation resistance test in accordance with clause 2.13.2 (e)	(see appended table)	N/A
(b)	High voltage test in accordance with clause 2.13.3	(see appended table)	N/A
(c)	Abrasion test in accordance with clause 2.13.13.6		N/A
2.13.13.5	Impact test at low temperature		N/A
	Specimen maintained at –15 ± 2°C for 24 h		N/A
	Specimen placed in position and subjected to impact test as per Figure 2.6; mass of 100 ±1 g falling through 100 mm		N/A
	Four impacts applied; specimen rotated through 90° between impacts		N/A
	After return to room temperature; no visible cracks of insulating material		N/A
2.13.13.6	Abrasion test		N/A
	Plug held in clamp and tested as per Figure 2.7; pin loaded at 4 N; 20 000 movements		N/A
	After test; pins show no damage affecting safety or impairing further use of the plug		N/A
	Insulating sleeve not punctured or rucked up (AS/NZS 3112:2017)		N/A

J4.7	Test no.9 **Equipment with a plug portion intended to be supported by the contacts of a socket-outlet**		N/A
	Equipment with pins intended to be introduced into fixed socket-outlets not imposing undue strain on socket-outlet		N/A
	Applied torque not exceeding 0.25 Nm		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Measured torque (AS/NZS 3112:2017)	Nm	--
J4.8	**Additional requirements for detachable plug portions**		N/A
J4.8.1	Test no.10 **Access to live parts**		N/A
	Small test finger of Figure 13 of IEC 61032 was not possible to contact live parts with the force of 20N		N/A
	incorrectly assemble the plug portion was not possible (AS/NZS 3112:2017)		N/A
J4.8.2	Test No.11 **Construction of detachable contacts where the input current of the equipment exceeds 0.2 A**		N/A
	Contacts of the equipment shall be such that they make and maintain, under normal service conditions, satisfactory electrical and mechanical contact with the corresponding contact of the detachable plug portion.		N/A
	For connections intended to accommodate pins, contact shall be made on two surfaces diametrically opposite, except if a single spring-assisted contact is used.		N/A
	Contacts shall not rely exclusively on the resilience of the contact material and shall have an opposite face of material other than thermoplastic or resilient insulating material.		N/A
	The alignment and contact-making properties of contacts shall be independent of terminal screws		N/A
	The effectiveness of the contacts shall be independent of pressure from any thermoplastic or resilient moulding.		N/A
	Effectiveness of the contacts independent of pressure from thermoplastic or resilient moulding checked by J4.8.3		N/A
	Visual inspection to determine interference between metal contacts and thermoplastic or resilient moulding to provide supplementary contact pressure to metal contacts (AS/NZS 3112:2017)		N/A

IEC62368_1D - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

J4.8.4	**Resistance of insulating material to heat and fire**		N/A
J4.8.4.1	Test no.12 Resistance to heat For Type B detachable plug portions parts of non-metallic material, parts of insulating material supporting live parts including connections, and parts of thermoplastic material providing supplementary insulation or reinforced insulation, shall be sufficiently resistant to heat if their deterioration could cause the appliance to fail to comply with this Standard.		N/A
	Ball pressure test at		N/A
(a)	75°C ± 2°C, for external parts;		N/A
(b)	125°C ± 2°C, for parts supporting live parts.		N/A
J4.8.4.2	Test no.13 **Resistance to fire**		N/A
	Plug portions comply with resistance to fire requirements of AS/NZS 3100 as follows:		N/A
	The glow wire test temperature 'T' for 'retaining parts' of fixed socket outlets shall be 750 C (AS/NZS 3112:2017)		N/A

TABLES OF RESULTS

2.2.4	TABLE: Dimensions of insulation on insulated pin plugs		N/A
Dimension (Figure 2.1 designation)		Measured (mm)	Allowed (mm)
Phase pin			8.7 ± 0.5
Neutral pin			8.7 ± 0.5

2.8.1	TABLE: Dimensions of plugs- 10A (a1)		N/A
Dimension (Figure 2.1 designation)		Measured (mm)	Allowed (mm)
Phase and neutral pin width (A)			6.35 ± 0.15
Earth pin width (B)			6.35 ± 0.15
Pin thickness (C)			1.63 + 0.15, -0.05
Pin disposition (D)			checked by test gauge
Pin disposition (E)			checked by test gauge
Phase and neutral pin length (F)			17.06 ± 0.4
Earth pin length (G)			19.94 ± 0.8
Pin boss radius - maximum			21.0 max
Pin boss height			8.6 min

IEC62368_1D - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

2.8.1	TABLE: Dimensions of plugs- 15A (a1)		N/A
Dimension (Figure 2.1 designation)		Measured (mm)	Allowed (mm)
Phase and neutral pin width (A)			6.35 ± 0.15
Earth pin width (B)			9.08 ± 0.15
Pin thickness (C)			1.63 + 0.15, -0.05
Pin disposition (D)			checked by test gauge
Pin disposition (E)			checked by test gauge
Phase and neutral pin length (F)			17.06 ± 0.4
Earth pin length (G)			19.94 ± 0.8
Pin boss radius - maximum			21.0 max
Pin boss height			8.6 min

2.8.1	TABLE: Dimensions of plugs-20A (a2)		N/A
Dimension (Figure 2.1 designation)		Measured (mm)	Allowed (mm)
Phase and neutral pin width (A)			9.08 ± 0.15
Earth pin width (B)			9.08 ± 0.15
Pin thickness (C)			1.63 + 0.15, -0.05
Pin disposition (D)			checked by test gauge
Pin disposition (E)			checked by test gauge
Phase and neutral pin length (F)			17.06 ± 0.4
Earth pin length (G)			19.94 ± 0.8
Pin boss radius - maximum			21.0 max
Pin boss height			8.6 min

2.8.1	TABLE: Projection from plug face centroid		N/A
Direction of projection		Measured (mm)	Allowed (mm)
Left			≤ 21.9 or ≥ 27.0
Right			≤ 21.9 or ≥ 27.0
Up			≤ 21.9 or ≥ 27.0
Down			≤ 21.9 or ≥ 27.0

2.13.3	TABLE: Test No. 1 – High voltage test		N/A
Test voltage applied between:		Test voltage (V)	Breakdown
All poles of the plug; taken in pairs		1000	Yes / No
Live poles of the plug and any external metal		3500	Yes / No
Live poles of the plug and the earthing terminal		1000	Yes / No

IEC62368_1D - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

Live poles of the plug and a flexible electrode	3500	Yes / No
Live poles and metal foil applied around insulation on pins	1250	Yes / No

2.13.8	TABLE: Test No. 6 - Temperature rise test		N/A
	Ambient temperature	°C	
	Test current	A	

Measured part	dT measured (K)	dT allowed (K)
Active (phase) terminal		45
Neutral terminal		45
Earthing terminal		45

2.13.9.1	TABLE: Movement of pins	N/A
	Earth and neutral pins clamped – phase pin loaded	

Force direction	Measured deflection (mm)	Allowed deflection (mm)
Force towards neutral plane parallel to pin plane		2.0
Force from neutral plane parallel to pin plane		2.0
Force outwards at 90° to pin plane		2.0
Force inwards at 90° to pin plane		2.0

2.13.9.1	TABLE: Movement of pins	N/A
	Phase and neutral pins clamped – earth pin loaded	

Force direction	Measured deflection (mm)	Allowed deflection (mm)
Force inwards parallel to pin plane		2.0
Force outwards parallel to pin plane		2.0
Force towards neutral		2.0
Force towards phase		2.0

2.13.9.1	TABLE: Movement of pins	N/A
	Phase and earth pins clamped – neutral pin loaded	

Force direction	Measured deflection (mm)	Allowed deflection (mm)
Force towards phase plane parallel to pin plane		2.0
Force from phase plane parallel to pin plane		2.0
Force outwards at 90° to pin plane		2.0
Force inwards at 90° to pin plane		2.0

IEC62368_1D - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

2.13.13.3	TABLE: Test No.13(b) – Insulation resistance test after static damp heat test		N/A
Applied between:		Insulation resistance (MΩ)	Minimum required (MΩ)
Live poles and metal foil applied around insulation on pins			5

2.13.13.3	TABLE: Test No.1 – High voltage test after static damp heat test		N/A
Test voltage applied between:		Test voltage (V)	Breakdown
Live poles and metal foil applied around insulation on pins		1250	Yes / No

2.13.13.4	TABLE: Test No.1 – Insulation resistance test after low temperature test		N/A
Applied between:		Insulation resistance (MΩ)	Minimum required (MΩ)
Live poles and metal foil applied around insulation on pins			5

2.13.13.4	TABLE: Test No.1 – High voltage test after low temperature test		N/A
Test voltage applied between:		Test voltage (V)	Breakdown
Live poles and metal foil applied around insulation on pins		1250	Yes / No

J4.8.4.1	TABLE: Test no.12 Resistance to heat		N/A
Component tested		Temperature (°C)	Diameter of impression (mm)

Conformance is checked by subjecting the relevant part to the ball pressure test of IEC 60695-10-2.

J4.8.4.2	TABLE: Test no.13 Resistance to Fire	N/A
	Plug portions shall comply with the requirements for resistance to fire in accordance with AS/NZS 3100:2017 Annex A. The glow-wire test temperature 'T' shall be 750°C.	

Glow-wire testing was conducted in accordance with IEC 60695-2-10 and IEC 60695-2-11.

Test specimens arranged so that the surface in contact with the tip of the glow-wire was vertical and glow wire tip applied to surface of the specimen likely to be subjected to thermal stresses in normal use.

A layer of white pine board and wrapping tissue was placed beneath the sample at 200mm ± 5mm distance.

SPECIMEN NUMBER	1	2	3	4

IEC62368_1D - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

SPECIMEN DESCRIPTION				
Material				
Colour				
Test specimen				
Glow wire tip temperature (°C)	750	750	750	750
Duration of glow wire application (t_a) (s)	30	30	30	30
OBSERVATIONS				
Duration from beginning of glow-wire tip application to ignition of specimen or layer (t_i) (s)				
Duration from beginning of glow-wire tip application to when flames extinguish (t_e) (s)				
Maximum height of flames after initial 1s (to nearest 5 mm) (mm)				
Flame impingement on other parts				
Degree of tip penetration				
Degree of specimen distortion				
Scorching of pinewood board				
EVALUATION CRITERIA				
Visible flame or sustained glowing				
Visible Flame Duration in Seconds during test.				
Duration of flaming or glowing after tip removal (max. allowable 30 s) (s)				
Surrounding parts burned away completely (not permitted)				
Ignition of wrapping tissue layer (not permitted)				
RESULTS If parts tested withstand the glow-wire test, but during the test produce a flame that persists for longer than 2 s, then the consequential needle flame test of AS/NZS 3100:2017 Annex A 6.1.5 applies.				

IEC62368_1D - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

LEGEND: CE Complete Equipment SA Sub Assembly SE Self Extinguished

EBD Emitted Burning Droplets SBD Specimen Burned and Distorted SMD Specimen Melted and Distorted

ME Manually Extinguished SC Separate Component SS Specimen Scorched

NA Not Applicable SCC Specimen Completely Consumed WPNI Wall Penetrated but no Ignition

NI No Ignition X Flame Appeared for an Instant

Glow-wire testing was conducted in accordance with IEC 60695-2-10 and IEC 60695-2-11.

Test specimens arranged so that the surface in contact with the tip of the glow-wire was vertical and glow wire tip applied to surface of the specimen likely to be subjected to thermal stresses in normal use.A layer of white pine board and wrapping tissue was placed beneath the sample at 200mm ± 5mm distance.

SPECIMEN NUMBER	5	6	7	8
SPECIMEN DESCRIPTION				
Material				
Colour				
Test specimen				
Glow wire tip temperature (°C)				
Duration of glow wire application (t_a) (s)	30	30	30	30
OBSERVATIONS				
Duration from beginning of glow-wire tip application to ignition of specimen or layer (t_i) (s)				
Duration from beginning of glow-wire tip application to when flames extinguish (t_e) (s)				
Maximum height of flames after initial 1s (to nearest 5 mm) (mm)				
Flame impingement on other parts				
Degree of tip penetration				
Degree of specimen distortion				
Scorching of pinewood board				
EVALUATION CRITERIA				
Visible flame or sustained glowing				

IEC62368_1D - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

Visible Flame Duration in Seconds during test.				
Duration of flaming or glowing after tip removal (max. allowable 30 s) (s)				
Surrounding parts burned away completely (not permitted)				
Ignition of wrapping tissue layer (not permitted)				
RESULTS If parts tested withstand the glow-wire test, but during the test produce a flame that persists for longer than 2 s, then the consequential needle flame test of AS/NZS 3100:2017 Annex A 6.1.5 applies				

LEGEND: CE Complete Equipment SA Sub Assembly SE Self Extinguished

EBD Emitted Burning Droplets SBD Specimen Burned and Distorted SMD Specimen Melted and Distorted

ME Manually Extinguished SC Separate Component SS Specimen Scorched

NA Not Applicable SCC Specimen Completely Consumed WPNI Wall Penetrated but no Ignition NI No Ignition X Flame Appeared for an Inst

IEC62368_1D - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

	TABLE: Needle- flame test (NFT)				N/A
Object/ Part No./ Material	**Manufacturer/ trademark**	**Duration of application of test flame (ta); (s)**	**Ignition of specified layer Yes/No**	**Duration of burning (tb) (s)**	**Verdict**

Supplementary information:

- NFT not relevant (or applicable) for Parts of material classified as V-0 or V-1
- NFT not relevant (or applicable) for Base material of PCBs classified as V-0 or if relevant VTM-0

ANLAGE zum Prüfbericht-Nr.: CN2399ET 004
APPENDIX to Test Report No.:

FOTO-DOKUMENTATION
PHOTO-DOCUMENTATION

Bild / Picture 1:

Test Report issued under the responsibility of:

TÜVRheinland®

TEST REPORT

IEC 62368-1

Audio/video, information and communication technology equipment
Part 1: Safety requirements

Report Number..... :	CN2399ET 003
Date of issue ..... :	2024-12-19
Total number of pages..... :	8
Name of Testing Laboratory preparing the Report ..... :	TÜV Rheinland (Shanghai) Co., Ltd.
Applicant's name..... :	Hangzhou Hikvision Digital Technology Co., Ltd.
Address..... :	No. 555 Qianmo Road, Binjiang District, Hangzhou, 310052 Zhejiang, P.R. China
Test specification:	
Standard..... :	IEC 62368-1:2018
Test procedure..... :	CB Scheme
Non-standard test method..... :	N/A
TRF template used..... :	IECEE OD-2020-F1:2021, Ed.1.4
Test Report Form No. ..... :	IEC62368_1E
Test Report Form(s) Originator.... :	UL(US)
Master TRF..... :	Dated 2022-04-14

If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.

This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

General disclaimer:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing CB Testing Laboratory.
The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

Test item description..... :	Network Video Recorder
Trade Mark(s) .....:	HIKVISION
Manufacturer..... :	Same as applicant
Model/Type reference..... :	DS-7616NI-Q2/16P, DS-7616NI-Q2/16PUHK, DS-7616NI-Q2/16PCKV, DS-7616NI-Q2/16PUVS, DS-7616NI-Q2/16PKVO, DS-7616NI-Q2/16PHUN, NVR-216MH-C/16P, NVR-216MH-C/16PUHK, NVR-216MH-C/16PCKV, NVR-216MH-C/16PUVS, NVR-216MH-C/16PKVO, NVR-216MH-C/16PHUN, HWN-4216MH-16P, HWN-4216MH-16PUHK, HWN-4216MH-16PCKV, HWN-4216MH-16PUVS, HWN-4216MH-16PKVO, HWN-4216MH-16PHUN, ERI-K216-P16, DS-7616NI-K2/16P, DS-7616NI-K2/16PUHK, DS-7616NI-K2/16PCKV, DS-7616NI-K2/16PUVS, DS-7616NI-K2/16PKVO, DS-7616NI-K2/16PHUN, DS-7632NI-K2/16P, DS-7632NI-K2/16PUHK, DS-7632NI-K2/16PCKV, DS-7632NI-K2/16PUVS, DS-7632NI-K2/16PKVO, DS-7632NI-K2/16PHUN, DS-7616NI-M2/16P, DS-7616NI-M2/16PUHK, DS-7616NI-M2/16PCKV, DS-7616NI-M2/16PUVS, DS-7616NI-M2/16PKVO, DS-7616NI-M2/16PHUN, DS-7616NI-M2/16P/EDU, DS-7616NI-M2/16P/RTL, DS-7616NI-M2/16P/NRG, DS-7616NI-M2/16P/LGX, DS-7616NI-M2/16P/MFG, DS-7616NI-M2/16P/RMS, DS-7616NXI-K2/16P, DS-7616NXI-K2/16PUHK, DS-7616NXI-K2/16PCKV, DS-7616NXI-K2/16PUVS, DS-7616NXI-K2/16PKVO, DS-7616NXI-K2/16PHUN, DS-7632NXI-K2/16P, DS-7632NXI-K2/16PUHK, DS-7632NXI-K2/16PCKV, DS-7632NXI-K2/16PUVS, DS-7632NXI-K2/16PKVO, DS-7632NXI-K2/16PHUN, DS-7816NXI-K2/16P, DS-7816NXI-K2/16PUHK, DS-7816NXI-K2/16PCKV, DS-7816NXI-K2/16PUVS, DS-7816NXI-K2/16PKVO, DS-7816NXI-K2/16PHUN, DS-7832NXI-K2/16P, DS-7832NXI-K2/16PUHK, DS-7832NXI-K2/16PCKV, DS-7832NXI-K2/16PUVS, DS-7832NXI-K2/16PKVO, DS-7832NXI-K2/16PHUN, DS-7616NI-K2/16P/4G, DS-7616NI-K2/16P/4GUHK, DS-7616NI-K2/16P/4GCKV, DS-7616NI-K2/16P/4GUVS, DS-7616NI-K2/16P/4GHUN, DS-7616NI-K2/16P/4GKVO, iDS-7616NXI-M2/16P/X, iDS-7616NXI-M2/16P/XUHK, iDS-7616NXI-M2/16P/XCKV, iDS-7616NXI-M2/16P/XUVS, iDS-7616NXI-M2/16P/XKVO,

	iDS-7616NXI-M2/16P/XHUN, iDS-7616NXI-M2/16P/X/EDU, iDS-7616NXI-M2/16P/X/RTL, iDS-7616NXI-M2/16P/X/NRG, iDS-7616NXI-M2/16P/X/LGX, iDS-7616NXI-M2/16P/X/MFG, iDS-7616NXI-M2/16P/X/RMS, DS-7616NI-I2/16P, DS-7616NI-I2/16P(D), DS-7616NI-I2/16PUHK, DS-7616NI-I2/16PCKV, DS-7616NI-I2/16PUVS, DS-7616NI-I2/16PKVO, DS-7616NI-I2/16PHUN, DS-7632N-I2/16P, DS-7632N-I2/16PUHK, DS-7632N-I2/16PCKV, DS-7632N-I2/16PUVS, DS-7632N-I2/16PKVO, DS-7632N-I2/16PHUN, HWN-5216MH-16P, HWN-5232MH-16P DS-7632NI-I2/16PUHK, DS-7632NI-I2/16PCKV, DS-7632NI-I2/16PUVS, DS-7632NI-I2/16PKVO, DS-7632NI-I2/16PHUN, DS-7616NXI-I2/16P/S, DS-7616NXI-I2/16P/S(E), DS-7616NXI-I2/16P/SUHK, DS-7616NXI-I2/16P/SCKV, DS-7616NXI-I2/16P/SUVS, DS-7616NXI-I2/16P/SHUN, DS-7616NXI-I2/16P/SKVO, DS-7616NXI-I2/16P/S/EDU, DS-7616NXI-I2/16P/S/RTL, DS-7616NXI-I2/16P/S/NRG, DS-7616NXI-I2/16P/S/LGX, DS-7616NXI-I2/16P/S/MFG, DS-7616NXI-I2/16P/S/RMS, DS-7632NXI-I2/16P/S, DS-7632NXI-I2/16P/SUHK, DS-7632NXI-I2/16P/SCKV, DS-7632NXI-I2/16P/SUVS, DS-7632NXI-I2/16P/SHUN, DS-7632NXI-I2/16P/SKVO, DS-7632NXI-I2/16P/S/EDU, DS-7632NXI-I2/16P/S/RTL, DS-7632NXI-I2/16P/S/NRG, DS-7632NXI-I2/16P/S/LGX, DS-7632NXI-I2/16P/S/MFG, DS-7632NXI-I2/16P/S/RMS, **DS-7616NXI-K2/16P(D), NVR-216MH-K/16P,** **DS-7632NXI-K2/16P(D), NVR-232MH-K/16P,** **DS-7916NXI-K2/16P, DS-XXXXXXXXXX,** **NVR-XXXXXXXXXX (“X”=“A-Z”, “a-z”, “0-9”, “-”, “/” or blank)**
Ratings ..... :	Input: 100-240V~, 50/60Hz, 3.2A Max Output: 44-57V⎓ 0.6A Max. (Each PoE)

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):			
☐	**CB Testing Laboratory:**	TÜV Rheinland (Shanghai) Co., Ltd.	
Testing location/ address ..... :		No.177, 178, Lane 777 West Guangzhong Road, Jing'an District, Shanghai, China c/o TÜV Rheinland Suzhou Co., Ltd. Pingqian (Taicang) Modern Industrial Park, No.525, Yuewang Lingang South Road, Shaxi Town, Taicang City, Jiangsu Province, China	
Tested by (name, function, signature) ..... :			
Approved by (name, function, signature) .. :			
☐	**Testing procedure: CTF Stage 1:**	N/A	
Testing location/ address ..... :			
Tested by (name, function, signature) ..... :			
Approved by (name, function, signature) .. :			
☒	**Testing procedure: CTF Stage 2:**	Hangzhou Hikvision Digital Technology Co., Ltd. Test Center	
Testing location/ address ..... :		No.518 Wulianwang Street, Binjiang District Hangzhou 310052 Zhejiang China	
Tested by (name, function, signature) .....:		Han Wang / Test engineer	Han Wang
Witnessed by (name, function, signature) . :		Kevin Gao / Project engineer	Kevin Gao
Approved by (name, function, signature) .. :		Ben Cao / Technical Expert	Ben
☐	**Testing procedure: CTF Stage 3:**	N/A	
☐	**Testing procedure: CTF Stage 4:**	N/A	
Testing location/ address ..... :			
Tested by (name, function, signature) ..... :			
Witnessed by (name, function, signature) . :			
Approved by (name, function, signature) .. :			
Supervised by (name, function, signature) :			

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

None.

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
• No additional tests were considered necessary.	N/A

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

EU Group Differences, EU Special National Conditions, CA, US, SG, SA.

Explanation of used codes:

CA=Canada, US=United States of America, SG=Singapore, SA= Saudi Arabia.

Other national requirements request by applicant:

Argentina**; Austria*; Bahrain**; Belarus**; Belgium*/**; Brazil**; Bulgaria*/**; China**; Colombia**; Croatia**; Czech Republic*/**; Denmark*; Finland*/**; France*/**; Germany*/**; Greece*/**; Hungary*/**; India**; Indonesia**; Ireland*/**; Israel; Italy*; Kenya**; Korea**; Libya**; Malaysia**; Mexico**; Netherlands Antilles*/**; New Zealand**; Nigeria**; Norway*/**; Pakistan**; Poland*/**; Portugal*/**; Russian Federation**; Romania*/**; Serbia; Slovakia*/**; Slovenia*/**; South Africa**; Spain*/**; Sweden*; Switzerland*/**; Thailand**; Turkey*/**; Ukraine**; United Arab Emirates**; United Kingdom*; Vietnam**

Note(s): Countries outside the CB Scheme membership may also accept this report.

* Only applicable for Group Differences (if any). ** No National Differences Declared

☒ **The product fulfils the requirements of**

- IEC 62368-1:2018
- EN IEC 62368-1:2020+A11:2020
- CSA/UL 62368-1:2019

Refer to original report CN2399ET 001~002.

Use of uncertainty of measurement for decisions on conformity (decision rule) :

☒ No decision rule is specified by the IEC standard, when comparing the measurement result with the applicable limit according to the specification in that standard. The decisions on conformity are made without applying the measurement uncertainty (“simple acceptance” decision rule, previously known as “accuracy method”).

☐ Other:… (to be specified, for example when required by the standard or client, or if national accreditation requirements apply)

Information on uncertainty of measurement:

The uncertainties of measurement are calculated by the laboratory based on application of criteria given by OD-5014 for test equipment and application of test methods, decision sheets and operational procedures of IECEE.

IEC Guide 115 provides guidance on the application of measurement uncertainty principles and applying the decision rule when reporting test results within IECEE scheme, noting that the reporting of the measurement uncertainty for measurements is not necessary unless required by the test standard or customer.

Calculations leading to the reported values are on file with the NCB and testing laboratory that conducted the testing.

Copy of marking plate:

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

<Representative>

Note:

1. The Height of CE logo shall not be less than 5 mm; Height of WEEE logo shall not be less than 7 mm.
2. The marking plates for other models are of the same pattern except for model name.
3. As declared by the applicant, the importer's name, registered trade name or registered trade mark and the postal address will be marked on the products before being place on the market. The contact details shall be in a language easily understood by end-users and market surveillance authorities.

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	☒ 16A (20A for US/CA/FR) 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}	55 °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)	Approx. 2.78 kg

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 ..... :	N/A
Date (s) of performance of tests..... :	N/A
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 IECEE 02:	
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) ..... :	1) Hangzhou Hikvision Electronics Co., Ltd. No.299, Qiushi Road, Tonglu Economic Development Zone, Tonglu County, Hangzhou, 311500 Zhejiang, P.R. China 2) Hangzhou Hikvision Technology Co., Ltd. No. 700 Dongliu Road Binjiang District, Hangzhou 310052 Zhejiang P.R. China 3) Chongqing Hikvision Technology Co., Ltd. No. 118, Haikang Road, Area C, Jianqiao Industrial Park, Dadukou District, 401325 Chongqing P.R. China

General product information and other remarks:

Product Description

Refer to previous report CN2399ET 001~002 for details.

This report shall be used in conjunction with previous report CN2399ET 001~002.

Description of changes:

- Add additional models: DS-7616NXI-K2/16P(D), NVR-216MH-K/16P, DS-7632NXI-K2/16P(D), NVR-232MH-K/16P, DS-7916NXI-K2/16P, DS-XXXXXXXXXX, NVR-XXXXXXXXXX ("X"="A-Z", "a-z", "0-9", "-", "/" or blank) which are identical to original model DS-7616NI-Q2/16P except for model designation, no technical differences.

For above described changes, no test considered to be necessary.

History of amendments and modifications:

Ref. No. CN2399ET 001, dated on 2023-05-29 (Original test report)

Ref. No. CN2399ET 002, dated on 2023-11-09 (1st modification test report)

Ref. No. CN2399ET 003, dated on 2024-12-19 (2nd modification test report)

-- End of main test report --

Test Report issued under the responsibility of:

TÜVRheinland®

TEST REPORT

IEC 62368-1

Audio/video, information and communication technology equipment
Part 1: Safety requirements

Report Number ..... :	CN2399ET 002
Date of issue ..... :	2023-11-09
Total number of pages ..... :	20
Name of Testing Laboratory preparing the Report ..... :	TÜV Rheinland (Shanghai) Co., Ltd.
Applicant's name ..... :	Hangzhou Hikvision Digital Technology Co., Ltd.
Address ..... :	No. 555 Qianmo Road, Binjiang District, Hangzhou, 310052 Zhejiang, P.R. China
Test specification:	
Standard ..... :	IEC 62368-1:2018
Test procedure ..... :	CB Scheme
Non-standard test method ..... :	N/A
TRF template used ..... :	IECEE OD-2020-F1:2021, Ed.1.4
Test Report Form No. ..... :	IEC62368_1E
Test Report Form(s) Originator .... :	UL(US)
Master TRF ..... :	Dated 2022-04-14

This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

General disclaimer:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing CB Testing Laboratory.
The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

Test item description..... :	Network Video Recorder
Trade Mark(s) .....:	HIKVISION
Manufacturer..... :	Same as applicant
Model/Type reference..... :	DS-7616NI-Q2/16P, DS-7616NI-Q2/16PUHK, DS-7616NI-Q2/16PCKV, DS-7616NI-Q2/16PUVS, DS-7616NI-Q2/16PKVO, DS-7616NI-Q2/16PHUN, NVR-216MH-C/16P, NVR-216MH-C/16PUHK, NVR-216MH-C/16PCKV, NVR-216MH-C/16PUVS, NVR-216MH-C/16PKVO, NVR-216MH-C/16PHUN, HWN-4216MH-16P, HWN-4216MH-16PUHK, HWN-4216MH-16PCKV, HWN-4216MH-16PUVS, HWN-4216MH-16PKVO, HWN-4216MH-16PHUN, ERI-K216-P16, DS-7616NI-K2/16P, DS-7616NI-K2/16PUHK, DS-7616NI-K2/16PCKV, DS-7616NI-K2/16PUVS, DS-7616NI-K2/16PKVO, DS-7616NI-K2/16PHUN, DS-7632NI-K2/16P, DS-7632NI-K2/16PUHK, DS-7632NI-K2/16PCKV, DS-7632NI-K2/16PUVS, DS-7632NI-K2/16PKVO, DS-7632NI-K2/16PHUN, DS-7616NI-M2/16P, DS-7616NI-M2/16PUHK, DS-7616NI-M2/16PCKV, DS-7616NI-M2/16PUVS, DS-7616NI-M2/16PKVO, DS-7616NI-M2/16PHUN, DS-7616NI-M2/16P/EDU, DS-7616NI-M2/16P/RTL, DS-7616NI-M2/16P/NRG, DS-7616NI-M2/16P/LGX, DS-7616NI-M2/16P/MFG, DS-7616NI-M2/16P/RMS, DS-7616NXI-K2/16P, DS-7616NXI-K2/16PUHK, DS-7616NXI-K2/16PCKV, DS-7616NXI-K2/16PUVS, DS-7616NXI-K2/16PKVO, DS-7616NXI-K2/16PHUN, DS-7632NXI-K2/16P, DS-7632NXI-K2/16PUHK, DS-7632NXI-K2/16PCKV, DS-7632NXI-K2/16PUVS, DS-7632NXI-K2/16PKVO, DS-7632NXI-K2/16PHUN, DS-7816NXI-K2/16P, DS-7816NXI-K2/16PUHK, DS-7816NXI-K2/16PCKV, DS-7816NXI-K2/16PUVS, DS-7816NXI-K2/16PKVO, DS-7816NXI-K2/16PHUN, DS-7832NXI-K2/16P, DS-7832NXI-K2/16PUHK, DS-7832NXI-K2/16PCKV, DS-7832NXI-K2/16PUVS, DS-7832NXI-K2/16PKVO, DS-7832NXI-K2/16PHUN, DS-7616NI-K2/16P/4G, DS-7616NI-K2/16P/4GUHK, DS-7616NI-K2/16P/4GCKV, DS-7616NI-K2/16P/4GUVS, DS-7616NI-K2/16P/4GHUN, DS-7616NI-K2/16P/4GKVO, iDS-7616NXI-M2/16P/X, iDS-7616NXI-M2/16P/XUHK, iDS-7616NXI-M2/16P/XCKV, iDS-7616NXI-M2/16P/XUVS, iDS-7616NXI-M2/16P/XKVO,

	iDS-7616NXI-M2/16P/XHUN, iDS-7616NXI-M2/16P/X/EDU, iDS-7616NXI-M2/16P/X/RTL, iDS-7616NXI-M2/16P/X/NRG, iDS-7616NXI-M2/16P/X/LGX, iDS-7616NXI-M2/16P/X/MFG, iDS-7616NXI-M2/16P/X/RMS, DS-7616NI-I2/16P, DS-7616NI-I2/16P(D), DS-7616NI-I2/16PUHK, DS-7616NI-I2/16PCKV, DS-7616NI-I2/16PUVS, DS-7616NI-I2/16PKVO, DS-7616NI-I2/16PHUN, DS-7632N-I2/16P, DS-7632N-I2/16PUHK, DS-7632N-I2/16PCKV, DS-7632N-I2/16PUVS, DS-7632N-I2/16PKVO, DS-7632N-I2/16PHUN, HWN-5216MH-16P, HWN-5232MH-16P DS-7632NI-I2/16PUHK, DS-7632NI-I2/16PCKV, DS-7632NI-I2/16PUVS, DS-7632NI-I2/16PKVO, DS-7632NI-I2/16PHUN, DS-7616NXI-I2/16P/S, DS-7616NXI-I2/16P/S(E), DS-7616NXI-I2/16P/SUHK, DS-7616NXI-I2/16P/SCKV, DS-7616NXI-I2/16P/SUVS, DS-7616NXI-I2/16P/SHUN, DS-7616NXI-I2/16P/SKVO, DS-7616NXI-I2/16P/S/EDU, DS-7616NXI-I2/16P/S/RTL, DS-7616NXI-I2/16P/S/NRG, DS-7616NXI-I2/16P/S/LGX, DS-7616NXI-I2/16P/S/MFG, DS-7616NXI-I2/16P/S/RMS, DS-7632NXI-I2/16P/S, DS-7632NXI-I2/16P/SUHK, DS-7632NXI-I2/16P/SCKV, DS-7632NXI-I2/16P/SUVS, DS-7632NXI-I2/16P/SHUN, DS-7632NXI-I2/16P/SKVO, DS-7632NXI-I2/16P/S/EDU, DS-7632NXI-I2/16P/S/RTL, DS-7632NXI-I2/16P/S/NRG, DS-7632NXI-I2/16P/S/LGX, DS-7632NXI-I2/16P/S/MFG, DS-7632NXI-I2/16P/S/RMS
Ratings ..... :	Input: 100-240V~, 50/60Hz, 3.2A Max Output: 44-57V⎓ 0.6A Max. (Each PoE)

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):			
☐	**CB Testing Laboratory:**	TÜV Rheinland (Shanghai) Co., Ltd.	
Testing location/ address ..... :		No.177, 178, Lane 777 West Guangzhong Road, Jing'an District, Shanghai, China	
Tested by (name, function, signature) ..... :			
Approved by (name, function, signature) .. :			
☐	**Testing procedure: CTF Stage 1:**	N/A	
Testing location/ address ..... :			
Tested by (name, function, signature) ..... :			
Approved by (name, function, signature) .. :			
☒	**Testing procedure: CTF Stage 2:**	Hangzhou Hikvision Digital Technology Co., Ltd. Test Center	
Testing location/ address ..... :		No.518 Wulianwang Street, Binjiang District Hangzhou 310052 Zhejiang China	
Tested by (name, function, signature) .....:		Meide Wang / Test engineer	Meide Wang
Witnessed by (name, function, signature). :		Kevin Gao / Project engineer	Kevin Gao
Approved by (name, function, signature) .. :		Ben Cao / Technical Expert	Ben
☐	**Testing procedure: CTF Stage 3:**	N/A	
☐	**Testing procedure: CTF Stage 4:**	N/A	
Testing location/ address ..... :			
Tested by (name, function, signature) ..... :			
Witnessed by (name, function, signature). :			
Approved by (name, function, signature) .. :			
Supervised by (name, function, signature) :			

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

None.

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
All applicable tests were conducted on model DS-7632NXI-I2/16P/S to represent others, see test case and appended table for details. The test samples are pre-production sample without serial number. The manufacturer specified maximum operating temperature is 55 °C.	Hangzhou Hikvision Digital Technology Co., Ltd. Test Center No.518 Wulianwang Street, Binjiang District Hangzhou 310052 Zhejiang China

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

EU Group Differences, EU Special National Conditions, CA, US, SG, SA.

Explanation of used codes:

CA=Canada, US=United States of America, SG=Singapore, SA= Saudi Arabia.

Other national requirements request by applicant:

Argentina**; Austria*; Bahrain**; Belarus**; Belgium*/**; Brazil**; Bulgaria*/**; China**; Colombia**;

Croatia**; Czech Republic*/**; Denmark*; Finland*/**; France*/**; Germany*/**; Greece*/**; Hungary*/**;

India**; Indonesia**; Ireland*/**; Israel; Italy*; Kenya**; Korea**; Libya**; Malaysia**; Mexico**;

Netherlands Antilles*/**; New Zealand**; Nigeria**; Norway*/**; Pakistan**; Poland*/**; Portugal*/**;

Russian Federation**; Romania*/**; Serbia; Slovakia*/**; Slovenia*/**; South

Africa**; Spain*/**; Sweden*; Switzerland*/**; Thailand**; Turkey*/**; Ukraine**; United Arab Emirates**;

United Kingdom*; Vietnam**

Note(s): Countries outside the CB Scheme membership may also accept this report.

* Only applicable for Group Differences (if any). ** No National Differences Declared

☒ **The product fulfils the requirements of**

- IEC 62368-1:2018
- EN IEC 62368-1:2020+A11:2020
- CSA/UL 62368-1:2019

Refer to original report CN2399ET 001.

Use of uncertainty of measurement for decisions on conformity (decision rule) :

☒ No decision rule is specified by the IEC standard, when comparing the measurement result with the applicable limit according to the specification in that standard. The decisions on conformity are made without applying the measurement uncertainty (“simple acceptance” decision rule, previously known as “accuracy method”).

☐ Other:… (to be specified, for example when required by the standard or client, or if national accreditation requirements apply)

Information on uncertainty of measurement:

The uncertainties of measurement are calculated by the laboratory based on application of criteria given by OD-

5014 for test equipment and application of test methods, decision sheets and operational procedures of IECEE.

IEC Guide 115 provides guidance on the application of measurement uncertainty principles and applying the decision rule when reporting test results within IECEE scheme, noting that the reporting of the measurement uncertainty for measurements is not necessary unless required by the test standard or customer.

Calculations leading to the reported values are on file with the NCB and testing laboratory that conducted the testing.

Copy of marking plate:

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

<Representative>

Note:

1. The Height of CE logo shall not be less than 5 mm; Height of WEEE logo shall not be less than 7 mm.
2. The marking plates for other models are of the same pattern except for model name.
3. As declared by the applicant, the importer's name, registered trade name or registered trade mark and the postal address will be marked on the products before being place on the market. The contact details shall be in a language easily understood by end-users and market surveillance authorities.

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 ..... :	☒ 16A (20A for US/CA/FR) 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} ..... :	55 °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) ..... :	Approx. 2.78 kg
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 ..... :	2023-09-04
Date (s) of performance of tests..... :	2023-09-04
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 IECEE 02:	
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) ..... :	1) Hangzhou Hikvision Electronics Co., Ltd. No.299, Qiushi Road, Tonglu Economic Development Zone, Tonglu County, Hangzhou, 311500 Zhejiang, P.R. China 2) Hangzhou Hikvision Technology Co., Ltd. No. 700 Dongliu Road Binjiang District, Hangzhou 310052 Zhejiang P.R. China 3) Chongqing Hikvision Technology Co., Ltd. No. 118, Haikang Road, Area C, Jianqiao Industrial Park, Dadukou District, 401325 Chongqing P.R. China

General product information and other remarks:

Product Description

Refer to original report CN2399ET 001 for details.

This report shall be used in conjunction with original report CN2399ET 001.

Description of changes:

- Add alternative sources for critical components and plastic enclosure, see bold fonts in appended table 4.1.2 for details.

For above described changes, all applicable tests were conducted.

History of amendments and modifications:

Ref. No. CN2399ET 001, dated on 2023-05-29 (Original test report)

Ref. No. CN2399ET 002, dated on 2023-11-09 (1st modification test report)

Additional application considerations – (Considerations used to test a component or sub-assembly) –

All components or sub-assemblies suitability of use has been checked according to subclause 4.1.1 and 4.1.2.

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

4	**GENERAL REQUIREMENTS**		P
4.1.1	Acceptance of materials, components and subassemblies		P
4.1.2	Use of components	Components which are certified to IEC and/or national standards are used correctly within their ratings. Components not covered by IEC standards are tested under the conditions present in the equipment	P
4.4.3	Safeguard robustness		P
4.4.3.1	General		P
4.4.3.2	Steady force tests	(See appended table T.5)	P
4.4.3.3	Drop tests		N/A
4.4.3.4	Impact tests	(See appended table T.6)	P
4.4.3.10	Accessibility, glass, safeguard effectiveness		P

Q	**CIRCUITS INTENDED FOR INTERCONNECTION WITH BUILDING WIRING**		P
Q.1	**Limited power sources**		P
Q.1.1	Requirements		P
	a) Inherently limited output		P
	b) Impedance limited output		N/A
	c) Regulating network limited output		N/A
	d) Overcurrent protective device limited output		N/A
	e) IC current limiter complying with G.9	Certified PTC Chip	P
Q.1.2	Test method and compliance .....:	(See appended table Q.1)	P
	Current rating of overcurrent protective device (A) :		N/A
Q.2	**Test for external circuits – paired conductor cable**		N/A
	Maximum output current (A) .....:		N/A
	Current limiting method.....:		—

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

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	
JP3	Normal	5.00	60	1.47	8	5.12	100	
JP8 PIN6-11	Normal	5.03	60	0.40	8	1.68	100	
JP8 PIN8-11	Normal	5.03	60	0.40	8	1.74	100	
JP8 PIN1, 2, 5, 9, 10-11	Normal	2.97	60	0	8	0	100	
JP8 PIN 3, 4, 7-11	Normal	0	60	0	8	0	100	
Supplementary Information:								
Polymeric Thermistors are certified.								

T.2, T.3, T.4, T.5	TABLE: Steady force test						P
Location/Part	Material	Thickness (mm)	Probe	Force (N)	Test Duration (s)	Observation	
Enclosure	See appended table 4.1.2	See appended table 4.1.2	--	250	5	All safeguards remained effective.	
Supplementary information:							

T.6, T.9	TABLE: Impact test				P
Location/Part	Material	Thickness (mm)	Height (mm)	Observation	
Enclosure	See appended table 4.1.2	See appended table 4.1.2	1300	All safeguards remained effective.	
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) 2)]**
Switching power supply	Shenzhen Huntkey Electric Co., Ltd.	HDZ2802-3A S2	Input: 100-240 Vac, 5A, 50-60Hz, output: +52 Vdc/4.6 A, +12 Vdc/5 A max, Max. 280 W	IEC 62368-1	CB Certificate No.: (NO120868)
(alternative)	CHANNEL WELL TECHNOLOGY CO., LTD	KSA-300S2	Input: 100-240 Vac, 5A, 50-60Hz, output: +52 Vdc/4.6 A, +12 Vdc/3.33 A max, Max. 280 W	IEC 62368-1:2014	CB Certificate No.: (JPTUV-102846)
(alternative)	Delta Electronics, Inc.	DPS-280AB-4A	Input: 100-240 Vac, 47-63 Hz, 3-6 A; Output: +52 Vdc/4.6 A max, +12Vdc/3.4 A max, Max 280 W	IEC 62368-1:2014	CB Certificate No.: (JPTUV-099682)
(alternative)	ACBEL POLYTECH INC.	FLXA2281A	Input: 100-240 Vac, 50-60 Hz, 6 A; Output: +52 Vdc/4.6 A, +12Vdc/5.0 A max, Max 280 W, 5000m	IEC 62368-1:2018	Nemko CB Certificate No.: (NO122998)
(alternative)	DELTA ELECTRONICS INC	DPS-280AB-8 A	Input: 100-240 Vac, 50-60 Hz, 5 A; Output: +52 Vdc/4.6 A, +12Vdc/6.0 A max, Max 280 W, 5000m	IEC 62368-1:2018	CB Certificate No.: (JPTUV-135150)
PCB	HUIZHOU CHINA EAGLE ELECTRONIC TECHNOLOGY CO LTD	CA-F121	V-0, 130 °C	UL 796	UL E198681
(alternative)	SHENZHEN KINWONG ELECTRONIC CO LTD	8B	V-0, 130 °C	UL 796	UL E243951
(alternative)	GUANGZHOU FAST-PRINT CIRCUIT TECHNOLOGY CO LTD	M11	V-0, 130 °C	UL 796	UL E204460

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

(alternative)	ZHEJIANG OULONG ELECTRIC CO LTD	OL-D	V-0, 130 °C	UL 796	UL E231017
(alternative)	Interchangeable	--	V-0, 130 °C	UL 796	UL
RTC Battery (Button Type)	POWER GLORY BATTERY TECH(SHENZHEN)CO.,LTD	CR1220	Non-rechargeable, Max Abnormal Charging Current 10mA Max Abnormal Charging Voltage 5.0V dc	UL 1642 IEC/EN/UL/CSA 62368-1	UL MH29853 Test with appliance
(alternative)	GUANGZHOU TIANQIU ENTERPRISE CO LTD	CR1220	Non-rechargeable, Max Abnormal Charging Current 2.5 mA Max Abnormal Charging Voltage 3.5 V dc	UL 1642 IEC/EN/UL/CSA 62368-1	UL MH48705 Test with appliance
Metal enclosure	--	--	Metal, thickness 1.5 mm min.	IEC 62368-1	Test with appliance
Front plastic cover	KINGFA SCI & TECH CO LTD	FRABS-518	V-0, 60 °C, thickness 1.4 mm min.	UL 94	UL E171666
(alternative)	**NINGBO LG YONGXING CHEMICAL CO LTD**	**HI-121H**	**Thickness 1.4 mm, HB**	**UL 94 IEC/EN/UL/CSA IEC 62368-1**	**UL E203955 Test with appliance**
(alternative)	**KINGFA SCI & TECH CO LTD**	**HP-126**	**Thickness 1.2 mm, HB**	**UL 94 IEC/EN/UL/CSA IEC 62368-1**	**UL E171666 Test with appliance**
(alternative)	Interchangeable	--	V-0, 60 °C, thickness 1.2 mm min.	UL 94	UL
DC fan	Sunonwealth Electric Machine Industry Co.,Ltd	FD124010LB	12 Vdc, 55 mA, 5.7 CFM, 5000 RPM	EN 62368-1:2014+A11	TUV R 50019837
(alternative)	Sunonwealth Electronics (Kunshan) Co.,Ltd.	HA40101V4-000C-999	12 Vdc, 65 mA, 5.3 CFM, 4500 RPM	EN 62368-1:2014	TUV R 50016065
(alternative)	Yen Sun Technology Corp.	FD124010, FD124010LB	12 Vdc, 55 mA, 4500 RPM, 4.5 CFM	EN 62368-1:2014	TUV R 50027591
(alternative)	Dongguan Protechnic Electric Co., Ltd.	MGA4012SB-O10	12 Vdc, 60 mA, 5.3 CFM, 4600 RPM	EN 62368-1:2014	TUV B 031023 0138

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

(alternative)	Asia Vital Components Co.,Ltd.	DAZA0410B2H-021	12 Vdc, 60 mA, 6.89 CFM, 5000 RPM	EN 62368-1:2014	TUV B 025730 0883
(alternative)	Sunonwealth Electric Machine Industry Co.,Ltd	KD1204PFB3	12 Vdc, 55 mA, 5000 RPM,5.7 CFM	EN 62368-1:2014	TUV R 50019837
(alternative)	Dongguan Protechnic Electric Co., Ltd.	MGA4012SR-O10	12 Vdc, 60 mA, 4600 RPM, 5.3 CFM	EN 62368-1:2014+A11:2017	TUV SUD Certif. No. B 031023 0138 Rev. 00
(alternative)	Asia Vital Components Co., Ltd.	DAZA0410R2H-016	12 Vdc, 60 mA, 4500 RPM, 5.72 CFM	EN 62368-1:2014+A11:2017	TUV SUD Certif. No. B 025730 0883 Rev. 13
(alternative)	Dongguan Protechnic Electric Co., Ltd.	MGA4012SB-O10	12 Vdc, 60 mA, 5200 RPM, 6.07 CFM	EN 62368-1:2014+A11:2017	TUV SUD Certif. No. B 031023 0138 Rev. 00
(alternative)	Asia Vital Components Co., Ltd.	DAZA0410B2H-022	12 Vdc, 60 mA, 5000 RPM, 6.89 CFM	EN 62368-1:2014+A11:2017	TUV SUD Certif. No. B 025730 0883 Rev. 13
(alternative)	Yen Sun Technology Corp.	FD124010LB(2N3)	12 Vdc, 90 mA, 4500RPM, 4.5 CFM	EN 62368-1:2014	TUV R 50027591
IC chip (UL3, UL4)	Joulwatt	JW7115S-2SOTA#TRPBF	Input: 2.7 - 5.5 Vd.c.; Max. 3.0 A; Output: -0.3 - 6.5 Vd.c.; Max. 3.2A; 85°C, Class III	IEC 62368-1:2014	UL certificate No. DK-90295-UL
(alternative)	Richtek	RT9742..G.	Input: 2.7 - 6Vd.c.; Max. 2.5 A; Output: -0.3 - 6.5 Vd.c.; Max. 4.5A; 85°C, Class III	IEC 62368-1:2014	Nemko certificate No. NO109777
(alternative)	Joulwatt	JW7115S-1SOTA#TRPBF	Input: 2.7 - 5.5 Vd.c.; Max. 3.0 A; Output: -0.3 - 6.5 Vd.c.; Max. 3.2A; 85°C, Class III	IEC 62368-1:2014	UL certificate No. DK-92033-UL
IC Overcurrent Protector (For USB2.0/ USB3.0)	**DIODES INC**	**AP2822CKBTR-G1**	**Input voltage: 2.7-5.5Vdc Rated output: 1A. 85°C, Class III**	**IEC 62368-1:2014**	**UL certificate No. US-34501-UL**

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

(alternative)	**DIODES INC**	**AP22816AKBWT-7**	**Input voltage: 2.7-5.5Vdc** **Rated output:** **1A.** **85°C, Class III**	**IEC 62368-1:2014**	**UL certificate No. US-38695-UL**
(alternative)	**DIODES INC**	**AP2822GKBTR-G1**	**Input voltage: 2.7-5.5Vdc** **Rated output:** **2A.** **85°C, Class III**	**IEC 62368-1:2014**	**UL certificate No. US-34501-UL**
(alternative)	**DIODES INC**	**AP22818AKBWT-7**	**Input voltage: 2.7-5.5Vdc** **Rated output:** **2A.** **85°C, Class III**	**IEC 62368-1:2014**	**UL certificate No. US-38695-UL**
(alternative)	**Richtek Technology Corp.**	**RT9742MGJ5**	**Input voltage: 2.7-6Vdc** **Rated output:** **1.5A.** **85°C, Class III**	**IEC 62368-1:2014**	**Nemko certificate No. NO109777**
(alternative)	**Richtek Technology Corp.**	**RT9742CGJ5F**	**Input voltage: 2.7-6Vdc** **Rated output:** **2A.** **85°C, Class III**	**IEC 62368-1:2014**	**Nemko certificate No. NO109777**
(alternative)	**Richtek Technology Corp.**	**RT9742GGJ5F**	**Input voltage: 2.7-6Vdc** **Rated output:** **1A.** **85°C, Class III**	**IEC 62368-1:2014**	**Nemko certificate No. NO109777**
(alternative)	**Richtek Technology Corp.**	**RT9742VGJ5**	**Input voltage: 2.7-6Vdc** **Rated output:** **2A.** **85°C, Class III**	**IEC 62368-1:2014**	**Nemko certificate No. NO109777**
(alternative)	**JOULWATT TECHNOLOGY CO LIMITED**	**JW7115S-1SOTA#TRPBF**	**Input: 2.7 - 5.5 Vd.c.;** **Rated output:** **1A.** **85°C, Class III**	**IEC 62368-1:2014**	**UL certificate No. DK-92033-UL**

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

(alternative)	**JOULWATT TECHNOLOGY CO LIMITED**	**JW7115S-2SOTA#TRPBF**	**Input: 2.7 - 5.5 Vd.c.; Rated output: 2.05A. 85°C, Class III**	**IEC 62368-1:2014**	**UL certificate No. DK-90295-UL**
(alternative)	**Sg Micro Corp**	**SGM2580CYN5G/TR**	**Input: 2.5 - 5.5 Vd.c.; Output: 2.1A. Max. 85°C, Class III**	**IEC 62368-1:2014**	**SGS certificate No. BE-38642/M1**
(alternative)	**Sg Micro Corp**	**SGM2584AYN5G/TR**	**Input: 2.5 - 5.5 Vd.c.; Output: 1A. Max. 85°C, Class III**	**IEC 62368-1:2018**	**SGS certificate No. BE-39069**
(alternative)	**Sg Micro Corp**	**SGM2588AYN5G/TR**	**Input: 2.5 - 5.5 Vd.c.; Output: 1.1A. Max. 85°C, Class III**	**IEC 62368-1:2014**	**SGS certificate No. BE-38642/M1**
(alternative)	**Sg Micro Corp**	**SGM2588GYN5G/TR**	**Input: 2.5 - 5.5 Vd.c.; Output: 1.1A. Max. 85°C, Class III**	**IEC 62368-1:2014**	**SGS certificate No. BE-38642/M1**
(alternative)	**Shenzhen Lowpower Semiconductor CO., Ltd**	**LPW5202SDB5F11**	**Input: 2.4 - 6.0 Vd.c.; Output: 1.35A. Max. 85°C, Class III**	**IEC 62368-1:2018**	**TUV Rheinland certificate No. JPTUV-141625**
Polymeric Thermistors (For USB2.0/USB3.0/ HDMI)	**CYG Wayon Circuit Protection Co., Ltd.**	**LP-ISML200**	**Max. Non-tripping Current 2.0A, Tripping Current 4.0A, Maximum Voltage: 8VDC 85°C, Class III**	**EN 62319-1:2005 EN 62319-1-1:2005 Comply with clauses 15, 17, J15 and J17 of IEC 60730-1:2013**	**TUV Rheinland certificate No. R50318402 0001**

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

(alternative)	**CYG Wayon Circuit Protection Co., Ltd.**	**LP-ISML110**	**Max. Non-tripping Current 1.1A, Tripping Current 2.2A, Maximum Voltage: 8VDC 85°C, Class III**	**EN 62319-1:2005 EN 62319-1-1:2005 Comply with clauses 15, 17, J15 and J17 of IEC 60730-1:2013**	**TUV Rheinland certificate No. R50318402 0001**
Polymeric Thermistors (For HDMI and front panel control circuit)	**CYG Wayon Circuit Protection Co., Ltd.**	**LP-TSM020**	**Max. Non-tripping Current 0.2A, Tripping Current 0.5A, Maximum Voltage: 9VDC 85°C, Class III**	**EN 62319-1:2005 EN 62319-1-1:2005 Comply with clauses 15, 17, J15 and J17 of IEC 60730-1:2013**	**TUV Rheinland certificate No. R50318402 0001**
(alternative)	**Polytronics Technology Corp.**	**SMD0603P020TF**	**Max. Non-tripping Current 0.2A, Tripping Current 0.5A, Maximum Voltage: 9VDC 85°C, Class III**	**EN 62319-1-1:2005 IEC 62319-1-1:2005 EN 62319-1:2005 IEC 62319-1:2005 Comply with clauses 15, 17, J15 and J17 of EN 60730-1:2010**	**TUV Rheinland certificate No. R50099121 0070**
Flexible cables	LINOYA ELECTRONIC TECHNOLOGY CO LTD	H05VV-F	3 x 0,75 mm²	DIN EN 50525-2-11 (VDE 0285-525-2-11):2012-01; EN 50525-2-11:2011	VDE 40035072
(alternative)	Hangzhou Hongshi Electrical Ltd.	H05VV-F	3 x 0,75 mm²	DIN EN 50525-2-11 (VDE 0285-525-2-11):2012-01; EN 50525-2-11:2011	VDE 40010839
(alternative)	Phino Electric Co.,Ltd	H05VV-F	3 x 0,75 mm²	DIN EN 50525-2-11(VDE 0285-525-2-11):2012-01;EN 50525-2-11:2011	VDE 113841
(alternative)	Interchangeable	--	3 x 0,75 mm², 6A 250V~	DIN EN 50525-2-11(VDE 0285-525-2-11):2012-01;EN 50525-2-11:2011	--

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

Appliance couplers (Connector, non-rewirable)	LINOYA ELECTRONIC TECHNOLOGY CO LTD	XYC-03	10A 250V	DIN EN 60320-1 (VDE 0625-1):2016-04; EN 60320-1:2015 + AC:2016 IEC 60320-1:2015	VDE 40016051
(alternative)	Phino Electric Co., Ltd	PHS 301	10A 250V	IEC 60320-1:2015 DIN EN 60320-1 (VDE 0625-1):2016-04; EN 60320-1:2015 + AC:2016	VDE 40038017
Plug	LINOYA ELECTRONIC TECHNOLOGY CO LTD	XYP-02L	16A 250V	DIN VDE 0620-2-1 (VDE 0620-2-1):2016-01 DIN VDE 0620-2-1/A1 (VDE 0620-2-1/A1):2017-09	VDE 40015292
(alternative)	Hangzhou Hongshi Electrical Ltd.	SW102	16A 250V	DIN VDE 0620-2-1/A1 (VDE 0620-2-1/A1):2017-09 DIN VDE 0620-2-1 (VDE 0620-2-1):2016-01	VDE 40004330
(alternative)	Phino Electric Co.,Ltd.	PHP-206	16A 250V	DIN VDE 0620-2-1/A1 (VDE 0620-2-1/A1):2017-09 DIN VDE 0620-2-1 (VDE 0620-2-1):2016-01	VDE 40013375

Supplementary information:

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

[2)] License available upon request

List of test equipment used:

A completed list of used test equipment shall be provided in the Test Reports when a Customer's Testing Facility according to CTF stage 1 or CTF stage 2 procedure has been used.

Note: This page may be removed when CTF stage 1 or CTF stage 2 are not used. See also clause 4.8 in OD 2020 for more details.

Instr. Code	Instrument Name	Instrument Type	Instrument I.D.	Series No.	Calibration Date	
					Last	Due
1	Power meter	WT310	hkvs-yq1524	C2QB04042V	12/28/2022	12/27/2023
2	Electronic stopwatch	PC396	hkvs-sys1001	--	6/28/2023	6/27/2024

-- End of main test report --

Test Report issued under the responsibility of:

TÜVRheinland®

TEST REPORT

IEC 62368-1

Audio/video, information and communication technology equipment
Part 1: Safety requirements

Report Number ..... :	CN2399ET 001
Date of issue ..... :	2023-05-29
Total number of pages ..... :	68 (excluding attachments, refer to page 5)
Name of Testing Laboratory preparing the Report ..... :	TÜV Rheinland Shanghai Co., Ltd.
Applicant's name ..... :	Hangzhou Hikvision Digital Technology Co., Ltd.
Address ..... :	No. 555 Qianmo Road, Binjiang District, Hangzhou, 310052 Zhejiang, P.R. China
Test specification:	
Standard ..... :	IEC 62368-1:2018
Test procedure ..... :	CB Scheme
Non-standard test method ..... :	N/A
TRF template used ..... :	IECEE OD-2020-F1:2021, Ed.1.4
Test Report Form No. ..... :	IEC62368_1E
Test Report Form(s) Originator .... :	UL(US)
Master TRF ..... :	Dated 2022-04-14

If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.

This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

General disclaimer:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing CB Testing Laboratory.
The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

Test item description..... :	Network Video Recorder
Trade Mark(s) .....:	HIKVISION
Manufacturer..... :	Same as applicant
Model/Type reference ..... :	DS-7616NI-Q2/16P, DS-7616NI-Q2/16PUHK, DS-7616NI-Q2/16PCKV, DS-7616NI-Q2/16PUVS, DS-7616NI-Q2/16PKVO, DS-7616NI-Q2/16PHUN, NVR-216MH-C/16P, NVR-216MH-C/16PUHK, NVR-216MH-C/16PCKV, NVR-216MH-C/16PUVS, NVR-216MH-C/16PKVO, NVR-216MH-C/16PHUN, HWN-4216MH-16P, HWN-4216MH-16PUHK, HWN-4216MH-16PCKV, HWN-4216MH-16PUVS, HWN-4216MH-16PKVO, HWN-4216MH-16PHUN, ERI-K216-P16, DS-7616NI-K2/16P, DS-7616NI-K2/16PUHK, DS-7616NI-K2/16PCKV, DS-7616NI-K2/16PUVS, DS-7616NI-K2/16PKVO, DS-7616NI-K2/16PHUN, DS-7632NI-K2/16P, DS-7632NI-K2/16PUHK, DS-7632NI-K2/16PCKV, DS-7632NI-K2/16PUVS, DS-7632NI-K2/16PKVO, DS-7632NI-K2/16PHUN, DS-7616NI-M2/16P, DS-7616NI-M2/16PUHK, DS-7616NI-M2/16PCKV, DS-7616NI-M2/16PUVS, DS-7616NI-M2/16PKVO, DS-7616NI-M2/16PHUN, DS-7616NI-M2/16P/EDU, DS-7616NI-M2/16P/RTL, DS-7616NI-M2/16P/NRG, DS-7616NI-M2/16P/LGX, DS-7616NI-M2/16P/MFG, DS-7616NI-M2/16P/RMS, DS-7616NXI-K2/16P, DS-7616NXI-K2/16PUHK, DS-7616NXI-K2/16PCKV, DS-7616NXI-K2/16PUVS, DS-7616NXI-K2/16PKVO, DS-7616NXI-K2/16PHUN, DS-7632NXI-K2/16P, DS-7632NXI-K2/16PUHK, DS-7632NXI-K2/16PCKV, DS-7632NXI-K2/16PUVS, DS-7632NXI-K2/16PKVO, DS-7632NXI-K2/16PHUN, DS-7816NXI-K2/16P, DS-7816NXI-K2/16PUHK, DS-7816NXI-K2/16PCKV, DS-7816NXI-K2/16PUVS, DS-7816NXI-K2/16PKVO, DS-7816NXI-K2/16PHUN, DS-7832NXI-K2/16P, DS-7832NXI-K2/16PUHK, DS-7832NXI-K2/16PCKV, DS-7832NXI-K2/16PUVS, DS-7832NXI-K2/16PKVO, DS-7832NXI-K2/16PHUN, DS-7616NI-K2/16P/4G, DS-7616NI-K2/16P/4GUHK, DS-7616NI-K2/16P/4GCKV, DS-7616NI-K2/16P/4GUVS, DS-7616NI-K2/16P/4GHUN, DS-7616NI-K2/16P/4GKVO, iDS-7616NXI-M2/16P/X, iDS-7616NXI-M2/16P/XUHK, iDS-7616NXI-M2/16P/XCKV, iDS-7616NXI-M2/16P/XUVS, iDS-7616NXI-M2/16P/XKVO,

	iDS-7616NXI-M2/16P/XHUN, iDS-7616NXI-M2/16P/X/EDU, iDS-7616NXI-M2/16P/X/RTL, iDS-7616NXI-M2/16P/X/NRG, iDS-7616NXI-M2/16P/X/LGX, iDS-7616NXI-M2/16P/X/MFG, iDS-7616NXI-M2/16P/X/RMS, DS-7616NI-I2/16P, DS-7616NI-I2/16P(D), DS-7616NI-I2/16PUHK, DS-7616NI-I2/16PCKV, DS-7616NI-I2/16PUVS, DS-7616NI-I2/16PKVO, DS-7616NI-I2/16PHUN, DS-7632N-I2/16P, DS-7632N-I2/16PUHK, DS-7632N-I2/16PCKV, DS-7632N-I2/16PUVS, DS-7632N-I2/16PKVO, DS-7632N-I2/16PHUN, HWN-5216MH-16P, HWN-5232MH-16P DS-7632NI-I2/16PUHK, DS-7632NI-I2/16PCKV, DS-7632NI-I2/16PUVS, DS-7632NI-I2/16PKVO, DS-7632NI-I2/16PHUN, DS-7616NXI-I2/16P/S, DS-7616NXI-I2/16P/S(E), DS-7616NXI-I2/16P/SUHK, DS-7616NXI-I2/16P/SCKV, DS-7616NXI-I2/16P/SUVS, DS-7616NXI-I2/16P/SHUN, DS-7616NXI-I2/16P/SKVO, DS-7616NXI-I2/16P/S/EDU, DS-7616NXI-I2/16P/S/RTL, DS-7616NXI-I2/16P/S/NRG, DS-7616NXI-I2/16P/S/LGX, DS-7616NXI-I2/16P/S/MFG, DS-7616NXI-I2/16P/S/RMS, DS-7632NXI-I2/16P/S, DS-7632NXI-I2/16P/SUHK, DS-7632NXI-I2/16P/SCKV, DS-7632NXI-I2/16P/SUVS, DS-7632NXI-I2/16P/SHUN, DS-7632NXI-I2/16P/SKVO, DS-7632NXI-I2/16P/S/EDU, DS-7632NXI-I2/16P/S/RTL, DS-7632NXI-I2/16P/S/NRG, DS-7632NXI-I2/16P/S/LGX, DS-7632NXI-I2/16P/S/MFG, DS-7632NXI-I2/16P/S/RMS
Ratings ..... :	Input: 100-240V~, 50/60Hz, 3.2A Max Output: 44-57V⎓ 0.6A Max. (Each PoE)

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):			
☐	**CB Testing Laboratory:**	TÜV Rheinland Shanghai Co., Ltd.	
Testing location/ address ..... :		No.177, 178, Lane 777 West Guangzhong Road, Jing'an District, Shanghai, China	
Tested by (name, function, signature) ..... :			
Approved by (name, function, signature) .. :			
☐	**Testing procedure: CTF Stage 1:**	N/A	
Testing location/ address ..... :			
Tested by (name, function, signature) ..... :			
Approved by (name, function, signature) .. :			
☒	**Testing procedure: CTF Stage 2:**	Hangzhou Hikvision Digital Technology Co., Ltd. Test Center	
Testing location/ address ..... :		No.518 Wulianwang Street, Binjiang District Hangzhou 310052 Zhejiang China	
Tested by (name, function, signature) .....:		Meide Wang / Test engineer	Meide Wang
Witnessed by (name, function, signature). :		Kevin Gao / Project engineer	Kevin Gao
Approved by (name, function, signature) .. :		Ben Cao / Reviewer	Ben
☐	**Testing procedure: CTF Stage 3:**	N/A	
☐	**Testing procedure: CTF Stage 4:**	N/A	
Testing location/ address ..... :			
Tested by (name, function, signature) ..... :			
Witnessed by (name, function, signature). :			
Approved by (name, function, signature) .. :			
Supervised by (name, function, signature) :			

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

Attachment – National Differences (32 pages)

Attachment – Photo Documentation (43 pages)

Note: Total number of pages in each attachment is indicated in individual attachment.

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
This report is based on original CB test report CN23T376 001~002 with following differences: - Update test standard from IEC 62368-1:2014 to IEC 62368-1:2018 For the above described changes, no test considered to be necessary. Test results are derived from original CBTR CN23T376 001~002.	Hangzhou Hikvision Digital Technology Co., Ltd. Test Center No.518 Wulianwang Street, Binjiang District Hangzhou 310052 Zhejiang China

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

EU Group Differences, EU Special National Conditions, CA, US, SG, SA.

Explanation of used codes:

CA=Canada, US=United States of America, SG=Singapore, SA= Saudi Arabia.

Other national requirements request by applicant:

Argentina**; Austria*; Bahrain**; Belarus**; Belgium*/**; Brazil**; Bulgaria*/**; China**; Colombia**;
Croatia**; Czech Republic*/**; Denmark*; Finland*/**; France*/**; Germany*/**; Greece*/**; Hungary*/**;
India**; Indonesia**; Ireland*/**; Israel; Italy*; Kenya**; Korea**; Libya**; Malaysia**; Mexico**;
Netherlands Antilles*/**; New Zealand**; Nigeria**; Norway*/**; Pakistan**; Poland*/**; Portugal*/**;
Russian Federation**; Romania*/**; Serbia; Slovakia*/**; Slovenia*/**; South
Africa**; Spain*/**; Sweden*; Switzerland*/**; Thailand**; Turkey*/**; Ukraine**; United Arab Emirates**;
United Kingdom*; Vietnam**

Note(s): Countries outside the CB Scheme membership may also accept this report.

* Only applicable for Group Differences (if any). ** No National Differences Declared

☒ **The product fulfils the requirements of**

- IEC 62368-1:2018
- EN IEC 62368-1:2020+A11:2020
- CSA/UL 62368-1:2019

Use of uncertainty of measurement for decisions on conformity (decision rule) :

☒ No decision rule is specified by the IEC standard, when comparing the measurement result with the applicable limit according to the specification in that standard. The decisions on conformity are made without applying the measurement uncertainty ("simple acceptance" decision rule, previously known as "accuracy method").

☐ Other:… (to be specified, for example when required by the standard or client, or if national accreditation requirements apply)

Information on uncertainty of measurement:

The uncertainties of measurement are calculated by the laboratory based on application of criteria given by OD-

5014 for test equipment and application of test methods, decision sheets and operational procedures of IECEE.

IEC Guide 115 provides guidance on the application of measurement uncertainty principles and applying the decision rule when reporting test results within IECEE scheme, noting that the reporting of the measurement uncertainty for measurements is not necessary unless required by the test standard or customer.

Calculations leading to the reported values are on file with the NCB and testing laboratory that conducted the testing.

Copy of marking plate:

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

<Representative>

Note:

1. The Height of CE logo shall not be less than 5 mm; Height of WEEE logo shall not be less than 7 mm.
2. The marking plates for other models are of the same pattern except for model name.
3. As declared by the applicant, the importer's name, registered trade name or registered trade mark and the postal address will be marked on the products before being place on the market. The contact details shall be in a language easily understood by end-users and market surveillance authorities.

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 ..... :	☒ 16A (20A for US/CA/FR); 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} ..... :	55 °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) ..... :	Approx. 2.78 kg
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 ..... :	2023-01-10 (original report CN23T376 001) 2023-04-25 (1st modification report CN23T376 002) 2023-05-29 (this report)
Date (s) of performance of tests..... :	2023-01-10 to 2023-02-10 (original report CN23T376 001) 2023-04-25 to 2023-05-19 (1st modification report CN23T376 002) N/A (this report)
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 IECEE 02:	
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) ..... :	1) Hangzhou Hikvision Electronics Co., Ltd. No.299, Qiushi Road, Tonglu Economic Development Zone, Tonglu County, Hangzhou, 311500 Zhejiang, P.R. China 2) Hangzhou Hikvision Technology Co., Ltd. No. 700 Dongliu Road Binjiang District, Hangzhou 310052 Zhejiang P.R. China 3) Chongqing Hikvision Technology Co., Ltd. No. 118, Haikang Road, Area C, Jianqiao Industrial Park, Dadukou District, 401325 Chongqing P.R. China

General product information and other remarks:

Product Description

The sample submitted for evaluation is a network video recorder which is powered by AC mains supply and is intended to use in information technology applications.
All electronic components are mounted on the PCB and housed in a metal enclosure.
This equipment have four types of front panel, it doesn't impact on electrical construction, see photo documentation for details.

Model difference:

All models are identical except for model designation, appearance colour. For marketing purpose, no technical differences.

Additional application considerations – (Considerations used to test a component or sub-assembly)

All components or sub-assemblies suitability of use has been checked according to sub clause 4.1.1 and 4.1.2

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
ES3: Primary circuit	Ordinary person, Children likely present	Earthed metal enclosure	N/A	Y capacitor optocoupler Transformer
ES1: All output ports	Ordinary person, Children likely present	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	1st S	2nd S
PS3: All source(except output)	Enclosure, PCB and all internal Components(except output parts)	Ignition not occurred and temperature within the limits	Equipment safeguards (See 6.4.5)	N/A
7	Injury caused by hazardous substances			
Class and Energy Source (e.g. Ozone)	Body Part (e.g., Skilled)	Safeguards		
		B	S	R
Non-rechargeable Lithium battery (coin type)	Ordinary person, Children likely present	N/A	N/A	Comply with Annex M
8	Mechanically-caused injury			
Class and Energy Source (e.g. MS3: Plastic fan blades)	Body Part (e.g. Ordinary)	Safeguards		
		B	S	R
MS1: Rounded edges and corners	Ordinary person, Children likely present	N/A	N/A	N/A
MS1: Equipment mass ≤ 7 kg	Ordinary person, Children likely present	N/A	N/A	N/A
MS3: Plastic fan blades (DC fan)	Ordinary person, Children likely present	N/A	N/A	Enclosure
9	Thermal burn			
Class and Energy Source (e.g. TS1: Keyboard caps)	Body Part (e.g., Ordinary)	Safeguards		
		B	S	R
TS1: All accessible parts	Ordinary person, Children likely present	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
LED Indicating lights and classified as exempt group	Ordinary person, Children likely present	N/A	N/A	N/A
Supplementary Information: "B" – Basic Safeguard; "S" – Supplementary Safeguard; "R" – Reinforced Safeguard				

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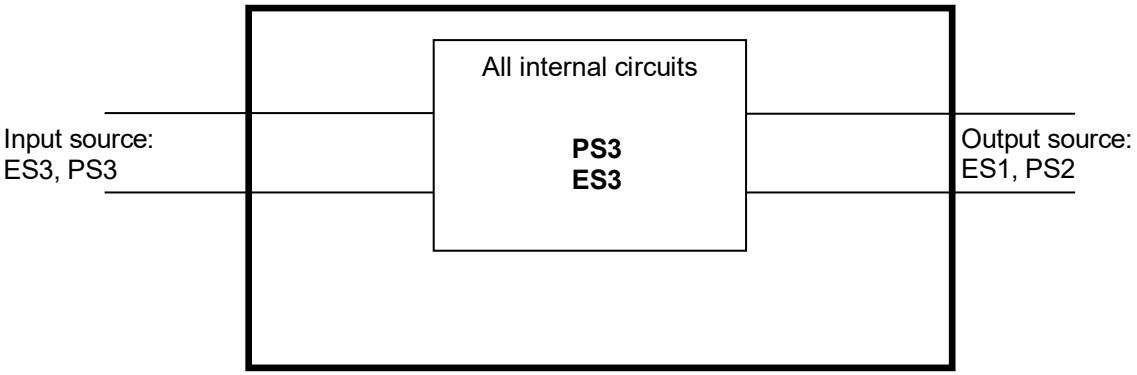
ENERGY SOURCE DIAGRAM

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



Enclosure: ES1, TS1
Mass: MS1

☒ **ES** ☒ **PS** ☒ **MS** ☒ **TS** ☐ **RS**

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Clause	Requirement + Test	Result - Remark	Verdict
4	**GENERAL REQUIREMENTS**		P
4.1.1	Acceptance of materials, components and subassemblies		P
4.1.2	Use of components	Components which are certified to IEC and/or national standards are used correctly within their ratings. Components not covered by IEC standards are tested under the conditions present in the equipment	P
4.1.3	Equipment design and construction		P
4.1.4	Specified ambient temperature for outdoor use (°C) :		N/A
4.1.5	Constructions and components not specifically covered		N/A
4.1.8	Liquids and liquid filled components (LFC)		N/A
4.1.15	Markings and instructions	(See Annex F)	P
4.4.3	Safeguard robustness		P
4.4.3.1	General		P
4.4.3.2	Steady force tests	(See Clause T.5)	P
4.4.3.3	Drop tests		N/A
4.4.3.4	Impact tests	(See Clause T.6)	P
4.4.3.5	Internal accessible safeguard tests		N/A
4.4.3.6	Glass impact tests		N/A
4.4.3.7	Glass fixation tests		N/A
	Glass impact test (1J)		N/A
	Push/pull test (10 N)		N/A
4.4.3.8	Thermoplastic material tests	(See Annex T.8)	P
4.4.3.9	Air comprising a safeguard		N/A
4.4.3.10	Accessibility, glass, safeguard effectiveness		P
4.4.4	Displacement of a safeguard by an insulating liquid		N/A
4.4.5	Safety interlocks		N/A
4.5	**Explosion**		P
4.5.1	General	No explosion occurs during normal/abnormal operation and single fault conditions	P
4.5.2	No explosion during normal/abnormal operating condition	(See Clause B.2, B.3)	P
	No harm by explosion during single fault conditions	(See Clause B.4)	P
4.6	**Fixing of conductors**		P
	Fix conductors not to defeat a safeguard		P
	Compliance is checked by test ..... :	(See Clause T.2)	P
4.7	**Equipment for direct insertion into mains socket–outlets**		N/A
4.7.2	Mains plug part complies with relevant standard.. :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
4.7.3	Torque (Nm)..... :		N/A
4.8	**Equipment containing coin/button cell batteries**		N/A
4.8.1	General		N/A
4.8.2	Instructional safeguard ..... :		N/A
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		N/A
4.8.4.5	Impact test		N/A
4.8.4.6	Crush test		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		P
4.10.2	Switches and relays		P
5	**ELECTRICALLY-CAUSED INJURY**		P
5.2	**Classification and limits of electrical energy sources**		P
5.2.2	ES1, ES2 and ES3 limits		P
5.2.2.2	Steady-state voltage and current limits..... :	(See appended table 5.2)	P
5.2.2.3	Capacitance limits..... :		N/A
5.2.2.4	Single pulse limits ..... :		N/A
5.2.2.5	Limits for repetitive pulses ..... :		N/A
5.2.2.6	Ringing signals		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	The equipment is powered by ES3 source	P
5.3.1 a)	Accessible ES1/ES2 derived from ES2/ES3 circuits		P
5.3.1 b)	Skilled persons not unintentional contact ES3 bare conductors		N/A
5.3.2.1	Accessibility to electrical energy sources and safeguards		P
	Accessibility to outdoor equipment bare parts		N/A
5.3.2.2	Contact requirements		P
	Test with test probe from Annex V		—
5.3.2.2 a)	Air gap – electric strength test potential (V) ..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.3.2.2 b)	Air gap – distance (mm) ..... :	The air gap is far larger than the specified distance 0.2 mm (closest internal conductive parts is located in secondary circuit, with peak voltage much less than 420Vpeak).	P
5.3.2.3	Compliance		P
5.3.2.4	Terminals for connecting stripped wire		N/A
5.4	**Insulation materials and requirements**		P
5.4.1.2	Properties of insulating material		P
5.4.1.3	Material is non-hygroscopic		P
5.4.1.4	Maximum operating temperature for insulating materials ..... :	(See appended table)	P
5.4.1.5	Pollution degrees ..... :		N/A
5.4.1.5.2	Test for pollution degree 1 environment and for an insulating compound		N/A
5.4.1.5.3	Thermal cycling test		N/A
5.4.1.6	Insulation in transformers with varying dimensions		N/A
5.4.1.7	Insulation in circuits generating starting pulses		N/A
5.4.1.8	Determination of working voltage..... :		P
5.4.1.9	Insulating surfaces		P
5.4.1.10	Thermoplastic parts on which conductive metallic parts are directly mounted		P
5.4.1.10.2	Vicat test ..... :		N/A
5.4.1.10.3	Ball pressure test ..... :	Evaluated in the approved power supply unit	P
5.4.2	Clearances	Evaluated in the approved power supply unit	P
5.4.2.1	General requirements		P
	Clearances in circuits connected to AC Mains, Alternative method		N/A
5.4.2.2	Procedure 1 for determining clearance		P
	Temporary overvoltage ..... :	2000 V peak	—
5.4.2.3	Procedure 2 for determining clearance		P
5.4.2.3.2.2	a.c. mains transient voltage ..... :	OVC II, 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 ..... :	Not used	N/A
5.4.2.5	Multiplication factors for clearances and test voltages :	Below 5000 m above sea level, multiplication factor is 1.48	P

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Clause	Requirement + Test	Result - Remark	Verdict
5.4.2.6	Clearance measurement ..... :	Evaluated in the approved power supply unit	P
5.4.3	Creepage distances	Evaluated in the approved power supply unit	P
5.4.3.1	General		P
5.4.3.3	Material group..... :	Material Group IIIb shall be assumed	—
5.4.3.4	Creepage distances measurement ..... :		P
5.4.4	Solid insulation	Evaluated in the approved power supply unit	P
5.4.4.1	General requirements		P
5.4.4.2	Minimum distance through insulation ..... :	Evaluated in the approved power supply unit	P
5.4.4.3	Insulating compound forming solid insulation		P
5.4.4.4	Solid insulation in semiconductor devices		P
5.4.4.5	Insulating compound forming cemented joints		N/A
5.4.4.6	Thin sheet material		N/A
5.4.4.6.1	General requirements		N/A
5.4.4.6.2	Separable thin sheet material		N/A
	Number of layers (pcs) ..... :		N/A
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	Considered in certified Power Supply.	P
5.4.4.9	Solid insulation at frequencies >30 kHz, E_P, K_R, d, V_{PW} (V)..... :	Considered in certified Power Supply.	P
	Alternative by electric strength test, tested voltage (V), K_R ..... :		N/A
5.4.5	Antenna terminal insulation		N/A
5.4.5.1	General		N/A
5.4.5.2	Voltage surge test		N/A
5.4.5.3	Insulation resistance (MΩ)..... :		N/A
	Electric strength test..... :		N/A
5.4.6	Insulation of internal wire as part of supplementary safeguard		N/A
5.4.7	Tests for semiconductor components and for cemented joints	Considered in certified Power Supply.	P
5.4.8	Humidity conditioning		P
	Relative humidity (%), temperature (°C), duration (h) :	93%, 40°C, 120h	—

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Clause	Requirement + Test	Result - Remark	Verdict
5.4.9	Electric strength test	(See appended table 5.4.9)	P
5.4.9.1	Test procedure for type test of solid insulation ..... :	(See appended table 5.4.9)	P
5.4.9.2	Test procedure for routine test	Conducted by manufacturer	N/A
5.4.10	Safeguards against transient voltages from 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		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		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
5.5	**Components as safeguards**		P
5.5.1	General	Considered in certified Power Supply.	P
5.5.2	Capacitors and RC units		P
5.5.2.1	General requirement		P
5.5.2.2	Safeguards against capacitor discharge after disconnection of a connector ..... :	Considered in certified Power Supply.	P
5.5.3	Transformers		P
5.5.4	Optocouplers		P
5.5.5	Relays		N/A
5.5.6	Resistors		N/A
5.5.7	SPDs		P
5.5.8	Insulation between the mains and an external circuit consisting of a coaxial cable ..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
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		P
5.6.2.1	General requirements		P
5.6.2.2	Colour of insulation		P
5.6.3	Requirement for protective earthing conductors		P
	Protective earthing conductor size (mm^2) ..... :		—
	Protective earthing conductor serving as a reinforced safeguard		P
	Protective earthing conductor serving as a double safeguard		P
5.6.4	Requirements for protective bonding conductors	Green-and-yellow wire provided.	P
5.6.4.1	Protective bonding conductors	Complied with table G.5 requirement.	P
	Protective bonding conductor size (mm^2). ..... :	Evaluated in the approved power supply unit	—
5.6.4.2	Protective current rating (A) ..... :	Evaluated in the approved power supply unit	P
5.6.5	Terminals for protective conductors		P
5.6.5.1	Terminal size for connecting protective earthing conductors (mm) ..... :		P
	Terminal size for connecting protective bonding conductors (mm)..... :		P
5.6.5.2	Corrosion		P
5.6.6	Resistance of the protective bonding system		P
5.6.6.1	Requirements		P
5.6.6.2	Test Method ..... :	(see appended table 5.6.6.2)	P
5.6.6.3	Resistance (Ω) or voltage drop ..... :	(see appended table 5.6.6.2)	P
5.6.7	Reliable connection of a protective earthing conductor		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		P
5.7.2.2	Measurement of voltage		P
5.7.3	Equipment set-up, supply connections and earth connections		P
5.7.4	Unearthed accessible parts ..... :	(See appended table 5.7.4)	P

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Clause	Requirement + Test	Result - Remark	Verdict
5.7.5	Earthed accessible conductive parts..... :	The protective conductor current does not exceed the ES2 limits.	P
5.7.6	Requirements when touch current exceeds ES2 limits		N/A
	Protective conductor current (mA) ..... :		N/A
	Instructional Safeguard..... :		N/A
5.7.7	Prospective touch voltage and touch current associated with 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		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		P
6.2.3.1	Arcing PIS ..... :		N/A
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 B.1.5 and B.3)	P
	Combustible materials outside fire enclosure..... :	See appended table 4.1.2	P
6.4	**Safeguards against fire under single fault conditions**		P
6.4.1	Safeguard method	Method “control fire spread” used	P
6.4.2	Reduction of the likelihood of ignition under single fault conditions in PS1 circuits		N/A
6.4.3	Reduction of the likelihood of ignition under single fault conditions in PS2 and PS3 circuits		N/A
6.4.3.1	Supplementary safeguards		N/A
6.4.3.2	Single Fault Conditions ..... :		N/A
	Special conditions for temperature limited by fuse		N/A
6.4.4	Control of fire spread in PS1 circuits		N/A
6.4.5	Control of fire spread in PS2 circuits		N/A
6.4.5.2	Supplementary safeguards	(See appended tables 4.1.2 and Annex G)	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
6.4.6	Control of fire spread in PS3 circuits	Compliance detailed as follows: − Printed board: rated min. V-0 − Power Supply: IEC 62368-1 certified enclosed Power Supply used. − All other components: at least V-2 except for parts mounted on min. V-1 material or small parts of combustible material (with mass less than 4g) or components complying to relevant IEC standard, and within fire enclosure. Fire enclosure: V-0 plastic enclosure or metal enclosure used as fire enclosure.	P
6.4.7	Separation of combustible materials from a PIS		N/A
6.4.7.2	Separation by distance		N/A
6.4.7.3	Separation by a fire barrier		N/A
6.4.8	Fire enclosures and fire barriers	See below.	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		N/A
6.4.8.2.2	Requirements for a fire enclosure	The metal enclosure and plastic enclosure (V-0) used for fire enclosure.	P
6.4.8.3	Constructional requirements for a fire enclosure and a fire barrier		P
6.4.8.3.1	Fire enclosure and fire barrier openings		P
6.4.8.3.2	Fire barrier dimensions		N/A
6.4.8.3.3	Top openings and properties		N/A
	Openings dimensions (mm)..... :		N/A
6.4.8.3.4	Bottom openings and properties		P
	Openings dimensions (mm)..... :	Bottom round openings <5mm	P
	Flammability tests for the bottom of a fire enclosure	Metal enclosure used as fire enclosure. Considered in certified Power Supply.	P
	Instructional Safeguard ..... :		N/A
6.4.8.3.5	Side openings and properties		P
	Openings dimensions (mm)..... :	Side round openings <5mm	P
6.4.8.3.6	Integrity of a fire enclosure, condition met: a), b) or c) ..... :		N/A
6.4.8.4	Separation of a PIS from a fire enclosure and a fire barrier distance (mm) or flammability rating ..... :	The metal enclosure and plastic enclosure (V-0) used for fire enclosure.	P

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Clause	Requirement + Test	Result - Remark	Verdict
6.4.9	Flammability of insulating liquid ..... :		N/A
6.5	**Internal and external wiring**		P
6.5.1	General requirements		P
6.5.2	Requirements for interconnection to building wiring :		N/A
6.5.3	Internal wiring size (mm^2) for socket-outlets..... :		N/A
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**		N/A
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**		P
8.4	**Safeguards against parts with sharp edges and corners**		P
8.4.1	Safeguards		N/A
	Instructional Safeguard ..... :		N/A
8.4.2	Sharp edges or corners	Rounded edges and corners	P
8.5	**Safeguards against moving parts**		P
8.5.1	Fingers, jewellery, clothing, hair, etc., contact with MS2 or MS3 parts	The rotating part of the build-in DC fans are protected by the enclosure, which considered no accessible to the user.	P
	MS2 or MS3 part required to be accessible for the function of the equipment		N/A
	Moving MS3 parts only accessible to skilled person		N/A
8.5.2	Instructional safeguard..... :		N/A
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

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Clause	Requirement + Test	Result - Remark	Verdict
	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		N/A
	Explosion test ..... :		N/A
8.5.5.3	Glass particles dimensions (mm)..... :		N/A
8.6	**Stability of equipment**		N/A
8.6.1	General	No stability requirements for MS1 equipment with mass ≤ 7 kg	N/A
	Instructional safeguard ..... :		N/A
8.6.2	Static stability		N/A
8.6.2.2	Static stability test ..... :		N/A
8.6.2.3	Downward force test		N/A
8.6.3	Relocation stability		N/A
	Wheels diameter (mm)..... :		—
	Tilt test		N/A
8.6.4	Glass slide test		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 ..... :		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		N/A
8.8.2	Handle strength test		N/A
	Number of handles..... :		—

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Clause	Requirement + Test	Result - Remark	Verdict
	Force applied (N) ..... :		—
8.9	**Wheels or casters attachment requirements**		N/A
8.9.2	Pull test		N/A
8.10	**Carts, stands and similar carriers**		N/A
8.10.1	General		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		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) ..... :		—
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..... :	All accessible surfaces are classified as TS1, see appended table 5.4.1.4, 9.3, B.1.5, B.2.6.	P
9.3.2	Test method and compliance		P
9.4	**Safeguards against thermal energy sources**		N/A
9.5	**Requirements for safeguards**		N/A
9.5.1	Equipment safeguard		N/A
9.5.2	Instructional safeguard..... :		N/A
9.6	**Requirements for wireless power transmitters**		N/A
9.6.1	General		N/A
9.6.2	Specification of the foreign objects		N/A
9.6.3	Test method and compliance..... :	(See appended table 9.6)	N/A
10	**RADIATION**		P

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Clause	Requirement + Test	Result - Remark	Verdict
10.2	**Radiation energy source classification**		P
10.2.1	General classification		P
	Lasers ..... :		—
	Lamps and lamp systems ..... :	Indicating LEDs (Indicating use only, considered as low power application and exempt group)	—
	Image projectors..... :		—
	X-Ray ..... :		—
	Personal music player ..... :		—
10.3	**Safeguards against laser radiation**		N/A
	The standard(s) equipment containing laser(s) comply :		N/A
10.4	**Safeguards against optical radiation from lamps and lamp systems (including LED types)**		P
10.4.1	General requirements	Indicating LEDs (Indicating use only, considered as low power application and exempt group)	P
	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		N/A
	UV radiation exposure..... :		N/A
10.4.3	Instructional safeguard ..... :		N/A
10.5	**Safeguards against X-radiation**		N/A
10.5.1	Requirements		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		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

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Clause	Requirement + Test	Result - Remark	Verdict
	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
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 B.1.5)	P
B.2	**Normal operating conditions**		P
B.2.1	General requirements ..... :	(See Test Item Particulars and appended test tables)	P
	Audio Amplifiers and equipment with audio amplifiers :		N/A
B.2.3	Supply voltage and tolerances	(See appended table B.2.5)	P
B.2.5	Input test..... :	(See appended table B.2.5)	P
B.3	**Simulated abnormal operating conditions**		P
B.3.1	General		P
B.3.2	Covering of ventilation openings	(See appended table B.3)	P
	Instructional safeguard..... :		N/A
B.3.3	DC mains polarity test		N/A
B.3.4	Setting of voltage selector		N/A
B.3.5	Maximum load at output terminals	(See appended table B.3)	P
B.3.6	Reverse battery polarity		N/A
B.3.7	Audio amplifier abnormal operating conditions		N/A
B.3.8	Safeguards functional during and after abnormal operating conditions..... :	(See appended table B.3)	P
B.4	**Simulated single fault conditions**		P
B.4.1	General	(See appended table B.3, B.4)	P
B.4.2	Temperature controlling device		N/A
B.4.3	Blocked motor test	(See appended table B.3, B.4)	P
B.4.4	Functional insulation	(See appended table B.3, B.4)	P
B.4.4.1	Short circuit of clearances for functional insulation		P
B.4.4.2	Short circuit of creepage distances for functional insulation		P
B.4.4.3	Short circuit of functional insulation on coated printed boards		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
B.4.5	Short-circuit and interruption of electrodes in tubes and semiconductors		P
B.4.6	Short circuit or disconnection of passive components		P
B.4.7	Continuous operation of components		N/A
B.4.8	Compliance during and after single fault conditions :	(See appended table B.4)	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		N/A
C.1.3	Test method		N/A
C.2	**UV light conditioning test**		N/A
C.2.1	Test apparatus..... :		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**		N/A
D.1	**Impulse test generators**		N/A
D.2	**Antenna interface test generator**		N/A
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
F.2.1	Letter symbols according to IEC60027-1		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
F.2.2	Graphic symbols according to IEC, ISO or manufacturer specific		P
F.3	**Equipment markings**		P
F.3.1	Equipment marking locations	The equipment marking is provided and is readily visible in operator access area	P
F.3.2	Equipment identification markings		P
F.3.2.1	Manufacturer identification ..... :	See copy of marking plate.	P
F.3.2.2	Model identification ..... :	See copy of marking plate.	P
F.3.3	Equipment rating markings		P
F.3.3.1	Equipment with direct connection to mains		P
F.3.3.2	Equipment without direct connection to mains		N/A
F.3.3.3	Nature of the supply voltage..... :	See copy of marking plate.	P
F.3.3.4	Rated voltage ..... :	See copy of marking plate.	P
F.3.3.5	Rated frequency ..... :	See copy of marking plate.	P
F.3.3.6	Rated current or rated power ..... :	See copy of marking plate.	P
F.3.3.7	Equipment with multiple supply connections		N/A
F.3.4	Voltage setting device		N/A
F.3.5	Terminals and operating devices		N/A
F.3.5.1	Mains appliance outlet and socket-outlet markings :		N/A
F.3.5.2	Switch position identification marking..... :		N/A
F.3.5.3	Replacement fuse identification and rating markings :		N/A
	Instructional safeguards for neutral fuse..... :		N/A
F.3.5.4	Replacement battery identification marking ..... :	Not intended to be replaced by ordinary person	N/A
F.3.5.5	Neutral conductor terminal		N/A
F.3.5.6	Terminal marking location		N/A
F.3.6	Equipment markings related to equipment classification		P
F.3.6.1	Class I equipment		P
F.3.6.1.1	Protective earthing conductor terminal ..... :		P
F.3.6.1.2	Protective bonding conductor terminals ..... :		N/A
F.3.6.2	Equipment class marking..... :		N/A
F.3.6.3	Functional earthing terminal marking..... :		N/A
F.3.7	Equipment IP rating marking..... :		N/A
F.3.8	External power supply output marking..... :		N/A
F.3.9	Durability, legibility and permanence of marking		P
F.3.10	Test for permanence of markings	The label was subjected to the permanence of marking test, 15 sec. for water and 15 sec. for petroleum spirit. After each test, the marking remained legible.	P

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Clause	Requirement + Test	Result - Remark	Verdict

F.4	**Instructions**		P
	a) Information prior to installation and initial use		P
	b) Equipment for use in locations where children not likely to be present		N/A
	c) Instructions for installation and interconnection		P
	d) Equipment intended for use only in restricted access area		N/A
	e) Equipment intended to be fastened in place		N/A
	f) Instructions for audio equipment terminals		N/A
	g) Protective earthing used as a safeguard		P
	h) Protective conductor current exceeding ES2 limits		N/A
	i) Graphic symbols used on equipment	Not used as instructional safeguard	N/A
	j) Permanently connected equipment not provided with all-pole mains switch		N/A
	k) Replaceable components or modules providing safeguard function		N/A
	l) Equipment containing insulating liquid		N/A
	m) Installation instructions for outdoor equipment		N/A
F.5	Instructional safeguards		P
G	**COMPONENTS**		P
G.1	**Switches**		P
G.1.1	General		P
G.1.2	Ratings, endurance, spacing, maximum load		P
G.1.3	Test method and compliance	See table 4.1.2	P
G.2	**Relays**		N/A
G.2.1	Requirements		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 such component provided	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 such component provided	N/A
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

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Clause	Requirement + Test	Result - Remark	Verdict
G.3.2.2	Test method and compliance		N/A
G.3.3	PTC thermistors		N/A
G.3.4	Overcurrent protection devices		P
G.3.5	Safeguards components not mentioned in G.3.1 to G.3.4		N/A
G.3.5.1	Non-resettable devices suitably rated and marking provided		N/A
G.3.5.2	Single faults conditions ..... :		N/A
G.4	**Connectors**		P
G.4.1	Spacings	Considered in Certified Power Supply.	P
G.4.2	Mains connector configuration ..... :		N/A
G.4.3	Plug is shaped that insertion into mains socket-outlets or appliance coupler is unlikely		N/A
G.5	**Wound components**		P
G.5.1	Wire insulation in wound components	Considered in Certified Power Supply.	P
G.5.1.2	Protection against mechanical stress		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
G.5.3	Transformers		P
G.5.3.1	Compliance method ..... :	Considered in Certified Power Supply.	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

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Clause	Requirement + Test	Result - Remark	Verdict
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		P
G.5.4.1	General requirements		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		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		P
G.5.4.6.2	Tested in the unit		P
	Maximum Temperature ..... :	(See appended table B.3, B.4)	P
G.5.4.6.3	Alternative method		N/A
G.5.4.7	Motors with capacitors		N/A
G.5.4.8	Three-phase motors		N/A
G.5.4.9	Series motors		N/A
	Operating voltage ..... :		—
G.6	**Wire Insulation**		N/A
G.6.1	General		N/A
G.6.2	Enamelled winding wire insulation		N/A
G.7	**Mains supply cords**		P
G.7.1	General requirements		P
	Type ..... :	H05VV-F	—
G.7.2	Cross sectional area (mm^2 or AWG)..... :	3 x 0.75 mm²	P
G.7.3	Cord anchorages and strain relief for non-detachable power supply cords		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

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Clause	Requirement + Test	Result - Remark	Verdict
G.7.5	Non-detachable cord bend protection		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, *D* (mm) :		—
	Radius of curvature after test (mm) ..... :		—
G.7.6	Supply wiring space		N/A
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	Considered in Certified Power Supply.	P
G.8.2	Safeguards against fire		N/A
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**		P
G.9.1	Requirements	Certified PTC Chip	P
	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 component provided	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	Considered in Certified Power Supply.	P
G.11.2	Conditioning of capacitors and RC units		P
G.11.3	Rules for selecting capacitors		P
G.12	**Optocouplers**		P
	Optocouplers comply with IEC 60747-5-5 with specifics	Considered in Certified Power Supply.	P
	Type test voltage $V_{ini,a}$ ..... :		—

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Clause	Requirement + Test	Result - Remark	Verdict
	Routine test voltage, $V_{ini, b}$ ..... :		—
G.13	**Printed boards**		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 ..... :		N/A
G.15	**Pressurized liquid filled components**		N/A
G.15.1	Requirements		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		N/A
	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

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Clause	Requirement + Test	Result - Remark	Verdict
H.3.1	Ringing signal		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**		P
J.1	**General**		P
	Winding wire insulation ..... :	Evaluated in the approved power supply unit	—
	Solid round winding wire, diameter (mm)..... :		N/A
	Solid square and rectangular (flatwise bending) winding wire, cross-sectional area (mm^2) ..... :		N/A
J.2/J.3	Tests and Manufacturing	(See separate test report)	—
K	**SAFETY INTERLOCKS**		N/A
K.1	**General requirements**		N/A
	Instructional safeguard..... :		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

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Clause	Requirement + Test	Result - Remark	Verdict
L	**DISCONNECT DEVICES**		P
L.1	**General requirements**	Approved appliance inlet is used as disconnect device and evaluated in certified PSU	P
L.2	**Permanently connected equipment**		N/A
L.3	**Parts that remain energized**		N/A
L.4	**Single-phase equipment**		P
L.5	**Three-phase equipment**		N/A
L.6	**Switches as disconnect devices**		N/A
L.7	**Plugs as disconnect devices**		N/A
L.8	**Multiple power sources**		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..... :	(See appended table 4.1.2)	P
M.3	**Protection circuits for batteries provided within the equipment**		P
M.3.1	Requirements		P
M.3.2	Test method		P
	Overcharging of a rechargeable battery		N/A
	Excessive discharging	(See appended Tables and Annex M)	P
	Unintentional charging of a non-rechargeable battery	Not unintentional charging occurred for construction design.	P
	Reverse charging of a rechargeable battery		N/A
M.3.3	Compliance	(See appended table M.3)	P
M.4	**Additional safeguards for equipment containing a portable secondary lithium battery**		N/A
M.4.1	General		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

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Clause	Requirement + Test	Result - Remark	Verdict
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**		P
M.6.1	External and internal faults	Certified battery.	P
M.6.2	Compliance		P
M.7	**Risk of explosion from lead acid and NiCd batteries**		N/A
M.7.1	Ventilation preventing explosive gas concentration		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
	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		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		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..... :	Electrochemical potential is below about 0.6 V	—
O	**MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES**		P
	Value of X (mm)..... :	Considered.	—

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Clause	Requirement + Test	Result - Remark	Verdict

P	**SAFEGUARDS AGAINST CONDUCTIVE OBJECTS**		P
P.1	**General**		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		P
	Location and Dimensions (mm) ..... :	All openings <5mm, in any dimension	—
P.2.3	Safeguards against the consequences of entry of a foreign object		N/A
P.2.3.1	Safeguard requirements		N/A
	The ES3 and PS3 keep-out volume in Figure P.3 not applicable to transportable equipment		N/A
	Transportable equipment with metalized plastic parts :		N/A
P.2.3.2	Consequence of entry test ..... :		N/A
P.3	**Safeguards against spillage of internal liquids**		N/A
P.3.1	General		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		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		P
	a) Inherently limited output		P
	b) Impedance limited output		N/A
	c) Regulating network limited output		N/A
	d) Overcurrent protective device limited output		N/A
	e) IC current limiter complying with G.9	Certified PTC Chip	P
Q.1.2	Test method and compliance ..... :	(See appended table Q.1)	P
	Current rating of overcurrent protective device (A) :		N/A
Q.2	**Test for external circuits – 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

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Clause	Requirement + Test	Result - Remark	Verdict
	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..... :		—
	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)..... :		—
	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 enclosure materials of equipment with a 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 ..... :**	(See appended table T.2)	P
T.3	**Steady force test, 30 N ..... :**		N/A
T.4	**Steady force test, 100 N ..... :**		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		P
	Swing test		P

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Clause	Requirement + Test	Result - Remark	Verdict
T.7	**Drop test ..... :**		N/A
T.8	**Stress relief test..... :**	(See appended table T.8)	P
T.9	**Glass Impact Test..... :**		N/A
T.10	**Glass fragmentation test**		N/A
	Number of particles counted ..... :		N/A
T.11	**Test for telescoping or rod antennas**		N/A
	Torque value (Nm) ..... :		N/A
U	**MECHANICAL STRENGTH OF CATHODE RAY TUBES (CRT) AND PROTECTION AGAINST THE EFFECTS OF IMPLOSION**		N/A
U.1	**General**		N/A
	Instructional safeguard **:**		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		P
V.1.2	Surfaces and openings tested with jointed test probes		P
V.1.3	Openings tested with straight unjointed test probes		P
V.1.4	Plugs, jacks, connectors tested with blunt probe		N/A
V.1.5	Slot openings tested with wedge probe		N/A
V.1.6	Terminals tested with rigid test wire		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 ..... :	Not used	N/A
Y	**CONSTRUCTION REQUIREMENTS FOR OUTDOOR ENCLOSURES**		N/A
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
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

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Clause	Requirement + Test	Result - Remark	Verdict
	Alternative test methods..... :		N/A
Y.4.4	Compression test		N/A
Y.4.5	Oil resistance		N/A
Y.4.6	Securing means	(See Annex P.4)	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..... :	(See Table T.6)	N/A

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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)]	
100-240V~ (Powered by Switching power supply)	EUT Input	Normal	240Vrms	--	SS	--	ES3
		Abnormal	240Vrms	--	SS	--	
		Single fault – SC See appended table B.4	240Vrms	--	SS	--	
100-240V~ (Powered by Switching power supply)	USB port	Normal	5 Vdc	--	SS	--	ES1
		Abnormal	5 Vdc	--	SS	--	
		Single fault – SC See appended table B.4	5 Vdc	--	SS	--	
100-240V~ (Powered by Switching power supply)	PoE port	Normal	52 Vdc	--	SS	--	ES1
		Abnormal	52 Vdc	--	SS	--	
		Single fault – SC See appended table B.4	52 Vdc	--	SS	--	
Supplementary information:							
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.							

5.4.1.8	TABLE: Working voltage measurement				P
Location	RMS voltage (V)	Peak voltage (V)	Frequency (Hz)	Comments	
--	--	--	--	--	
--	--	--	--	--	
Supplementary information:					
Evaluated with approved PSU.					

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:				

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Clause	Requirement + Test	Result - Remark	Verdict

5.4.1.10.3	TABLE: Ball pressure test of thermoplastics				P
Allowed impression diameter (mm) ..... :		≤ 2 mm			—
Object/Part No./Material	Manufacturer/trademark	Thickness (mm)	Test temperature (°C)	Impression diameter (mm)	
--	--	--	--	--	
--	--	--	--	--	
Supplementary information:					
Bobbin's material (phenolic) is considered to meet the requirement of this test					

5.4.2, 5.4.3	TABLE: Minimum Clearances/Creepage distance							P
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:								
1) Only for frequency above 30 kHz								
2) Complete Electric Strength voltage (E.S. (V) when 5.4.2.4 applied)								
Evaluated with approved PSU.								

5.4.4.2	TABLE: Minimum distance through insulation			
Distance through insulation (DTI) at/of	Peak voltage (V)	Insulation	Required DTI (mm)	Measured DTI (mm)
--	--	--	--	--
Supplementary information:				
Evaluated with approved PSU.				

5.4.4.9	TABLE: Solid insulation at frequencies >30 kHz					
Insulation material	E_P	Frequency (kHz)	K_R	Thickness d (mm)	Insulation	V_{PW} (Vpk)
--	--	--	--	--	--	--
Supplementary information:						
Evaluated with approved PSU.						

5.4.9	TABLE: Electric strength tests		
Test voltage applied between:	Voltage shape (Surge, Impulse, AC, DC, etc.)	Test voltage (V)	Breakdown Yes / No
LN-metal enclosure	DC	2500	No
LN-terminal	DC	4000	No
Supplementary information:			

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Clause	Requirement + Test	Result - Remark	Verdict

5.5.2.2	TABLE: Stored discharge on capacitors				P
Location	Supply voltage (V)	Operating and fault condition [1)]	Switch position	Measured voltage (Vpk)	ES Class
--	--	--	--	--	--
Supplementary information:					
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 Evaluated with approved PSU.					

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	0.48	0.012
Metal enclosure to inlet protective earthing conductor	40	2	0.29	0.009
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)	
Plastic enclosure	loss of PE	264	--	0.005 Max.	60	ES1
	Normal	264	--		60	ES1
Supplementary information:						
Abbreviation: SC= short circuit; OC= open circuit						

5.7.5	TABLE: Earthed accessible conductive part			P
Supply voltage (V) .....:	264V			—
Phase(s) .....:	[x] Single Phase; [ ] Three Phase: [ ] Delta [ ] Wye			
Power Distribution System .....:	[x] TN [ ]TT [ ] IT			
Location	Fault Condition No in IEC 60990 clause 6.2.2	Touch current (mA)	Comment	
Metal enclosure	--	0.76 Max	--	
Supplementary Information:				

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Clause	Requirement + Test	Result - Remark	Verdict

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 source(except output)	--	--	--	>100W	5	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.						

6.2.3.1	TABLE: Determination of Arcing PIS			N/A
Location	Open circuit voltage after 3 s (Vpk)	Measured r.m.s current (A)	Calculated value	Arcing PIS? Yes / No
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 components	--	--	Yes
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:				

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Clause	Requirement + Test	Result - Remark	Verdict

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 (ºC)	Ambient (ºC)	Object (ºC)	Ambient (ºC)	Object (ºC)	Ambient (ºC)	Object (ºC)	Ambient (ºC)

Supplementary information:							
5.4.1.4, 9.3, B.1.5, B.2.6	**TABLE: Temperature measurements**						P
Supply voltage (V)	90V/60Hz		264V/50Hz		--		—
Ambient temperature during test T_{amb} (°C).	--		--		--		—
Maximum measured temperature *T* of part/at:	*T* (°C)						Allowed T_{max} (°C)
PCB near UM2	41.3	72.9	44.4	74.8	--	--	130
PCB near L3	41.1	72.7	43.3	73.7	--	--	130
Plastic enclosure(internal)	29.5	61.1	32.6	63.0	--	--	Ref.
PCB near CV108	42.1	73.7	46.1	76.5	--	--	130
BAT	29.3	60.9	32.2	62.6	--	--	100
PCB near UN1M1	46.4	78.0	46.0	76.4	--	--	130
PCB near CL2	48.4	80.0	45.6	76.0	--	--	130
C802	41.6	73.2	44.2	74.6	--	--	105
T1 coil	56.6	88.2	56.8	87.2	--	--	90[1)]
T1 core	51.8	83.4	52.1	82.5	--	--	90[1)]
C917	39.8	71.4	43.4	73.8	--	--	105
GT1	39.9	71.5	43.4	73.8	--	--	80
AC Inlet	36.7	68.3	39.5	69.9	--	--	80
T2 core	44.3	75.9	47.7	78.1	--	--	90[1)]
T2 coil	45.0	76.6	48.5	78.9	--	--	90[1)]
CX1	41.9	73.5	44.9	75.3	--	--	105
Ambient	23.4	→55.0	24.6	→55.0	--	--	--
Following for accessible touch temperature:							
Plastic enclosure	28.0	29.6	30.8	31.2	--	--	77[2)]
Metal enclosure	32.5	34.1	34.7	35.1	--	--	60[2)]
Ambient	23.4	→25.0	24.6	→25.0	--	--	--

Temperature T of winding:	t_1 (°C)	R_1 (Ω)	t_2 (°C)	R_2 (Ω)	T (°C)	Allowed T_{max} (°C)	Insulation class
--	--	--	--	--	--	--	--

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Clause	Requirement + Test	Result - Remark	Verdict

Supplementary information:
1) Thermocouple method was used to measure the winding, the limit value is reduced by 10 K
2) touch temperature limit under normal operating conditions for TS1 (> 1s～< 10s)
Test with power supply KSA-300S2.

5.4.1.4, 9.3, B.1.5, B.2.6	**TABLE: Temperature measurements**						P
Supply voltage (V)	90V/60Hz		264V/50Hz		--		—
Ambient temperature during test T_{amb} (°C).	--		--		--		—
Maximum measured temperature T of part/at:	T (°C)						Allowed T_{max} (°C)
PCB near BD1	60.7	93.1	45.5	79.4	--	--	130
PCB near L801	27.2	59.6	25.3	59.3	--	--	130
PCB near CPU(80420-P)	48.6	81.0	47.3	81.2	--	--	130
BAT	42.0	74.3	40.8	74.8	--	--	100
PCB near pow1(81081)	30.3	62.6	28.9	62.9	--	--	130
C801	40.2	72.6	35.8	69.7	--	--	85
T501 coil	49.8	82.2	48.3	82.3	--	--	90[1)]
T501 core	56.5	88.9	54.7	88.6	--	--	90[1)]
T901 coil	35.8	65.0	34.2	68.2	--	--	90[1)]
T901 core	32.7	68.2	30.9	64.9	--	--	90[1)]
AC Inlet	31.7	64.1	28.8	62.7	--	--	70
FL1 coil	60.1	92.4	50.6	84.5	--	--	105[1)]
CX1	53.2	85.6	49.3	83.3	--	--	100
Ambient	22.6	→55.0	21.0	→55.0	--	--	--
Following for accessible touch temperature:							
Plastic enclosure	24.3	26.7	22.7	26.7	--	--	77[2)]
Metal enclosure	32.6	35.0	31.1	35.1	--	--	60[2)]
Ambient	22.6	→25.0	21.0	→25.0	--	--	--

Temperature T of winding:	t_1 (°C)	R_1 (Ω)	t_2 (°C)	R_2 (Ω)	T (°C)	Allowed T_{max} (°C)	Insulation class
--	--	--	--	--	--	--	--

Supplementary information:
1) Thermocouple method was used to measure the winding, the limit value is reduced by 10 K
2) touch temperature limit under normal operating conditions for TS1 (> 1s～< 10s)
Test with power supply DPS-280AB-4A.

5.4.1.4, 9.3, B.1.5, B.2.6	**TABLE: Temperature measurements**			P
Supply voltage (V)	90V/60Hz	264V/50Hz	--	—

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Clause	Requirement + Test	Result - Remark	Verdict

Ambient temperature during test T_{amb} (°C).	--		--		--		—
Maximum measured temperature *T* of part/at:	*T* (°C)						Allowed T_{max} (°C)
PCB near BD1	63.8	95.5	48.2	79.9	--	--	130
PCB near L801	37.7	69.4	37.3	69.0	--	--	130
C801	34.6	66.3	33.9	65.6	--	--	85
T501 core	54.1	85.8	53.6	85.3	--	--	90
T501 coil	56.8	88.5	56.1	87.8	--	--	90
T901 coil	39.0	70.7	39.6	71.3	--	--	90
T901 core	36.1	67.8	36.8	68.5	--	--	90
FL1 coil	57.5	89.2	48.0	79.7	--	--	90
CX1	45.5	77.2	44.7	76.4	--	--	100
PCB near CPU(80420)	51.4	83.1	52.4	84.1	--	--	130
BAT	42.6	74.3	42.7	74.4	--	--	Ref.
PCB near POW(81081)	28.9	60.6	29.0	60.7	--	--	130
PCB near U1(8459)	32.5	64.2	33.4	65.1	--	--	130
Plastic enclosure inside	26.5	58.2	26.6	58.3	--	--	60
HDD	33.5	65.2	34.0	65.7	--	--	Ref.
Ambient	23.3	→55	23.3	→55	--	--	--
Following for accessible touch temperature:							
Plastic enclosure	25.2	26.9	25.1	26.8	--	--	77[2)]
Metal enclosure	30.0	31.7	30.2	31.9	--	--	60[2)]
AC Inlet	32.9	34.6	32.6	34.3	--	--	77[2)]
Ambient	23.3	→25.0	23.3	→25.0	--	--	--

Temperature T of winding:	t_1 (°C)	R_1 (Ω)	t_2 (°C)	R_2 (Ω)	T (°C)	Allowed T_{max} (°C)	Insulation class
--	--	--	--	--	--	--	--

Supplementary information:

[1)] Thermocouple method was used to measure the winding, the limit value is reduced by 10 K

[2)] touch temperature limit under normal operating conditions for TS1 (> 1s～< 10s)

Test with power supply HDZ2802-3A S2.

Note 1: Tma should be considered as directed by appliable requirement

Note 2: Tma is not included in assessment of Touch Temperatures (Clause 9)

Note 3: Test on model: DS-7616NI-M2/16P

5.4.1.4, 9.3, B.1.5, B.2.6	**TABLE: Temperature measurements**			P
Supply voltage (V)	90V/60Hz	264V/50Hz	--	—

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Clause	Requirement + Test	Result - Remark	Verdict

Ambient temperature during test T_{amb} (°C).	--		--		--		—
Maximum measured temperature *T* of part/at:	*T* (°C)						Allowed T_{max} (°C)
PCB near BD1	77.9	110.7	54.4	87.1	--	--	130
PCB near L801	45.3	78.2	41.2	73.9	--	--	130
C801	37.0	69.9	34.5	67.2	--	--	85
T501 core	49.6	82.5	48.6	81.3	--	--	110
T501 coil	55.1	88.0	54.1	86.8	--	--	110
T901 coil	43.7	76.6	42.0	74.7	--	--	110
T901 core	39.0	71.9	37.4	70.1	--	--	110
FL1 coil	60.0	92.9	47.5	80.2	--	--	110
CX1	49.1	81.9	46.9	79.6	--	--	100
PCB near U1(80531)	53.0	85.9	51.8	84.5	--	--	130
BAT	39.9	72.8	38.6	71.3	--	--	Ref.
PCB near LED(82101_P)	32.1	65.0	31.6	64.3	--	--	130
SSD	31.8	64.7	31.3	64.0	--	--	130
PCB near HDD	37.1	70.0	36.6	69.3	--	--	130
PCB near U2(81239)	31.6	64.5	31.6	64.3	--	--	130
Plastic enclosure inside	28.1	61.0	28.0	60.7	--	--	Ref.
Ambient	22.1	→55	22.3	→55	--	--	--
Following for accessible touch temperature:							
Plastic enclosure	26.4	29.3	26.9	29.6	--	--	77[1)]
Metal enclosure	31.3	34.2	30.7	33.4	--	--	60[1)]
AC inlet	32.7	35.6	30.1	32.8	--	--	77[1)]
Ambient	22.1	→25.0	22.3	→25.0	--	--	--

Temperature T of winding:	t_1 (°C)	R_1 (Ω)	t_2 (°C)	R_2 (Ω)	T (°C)	Allowed T_{max} (°C)	Insulation class
--	--	--	--	--	--	--	--

Supplementary information:

[1)] Touch temperature limit under normal operating conditions for TS1 (> 1s～< 10s)

Note 1: Tma should be considered as directed by appliable requirement

Note 2: Tma is not included in assessment of Touch Temperatures (Clause 9)

Note 3: Test on mainboard model: DS-80531(model:DS-7616NI-K2/16P/4G)

Note 4: Thermocouple method was used to measure the winding, the limit value is reduced by 10 K

5.4.1.4, 9.3, B.1.5, B.2.6	**TABLE: Temperature measurements**			P
Supply voltage (V)	90V/60Hz	264V/50Hz	--	—

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

Ambient temperature during test T_{amb} (°C).	--		--		--		—
Maximum measured temperature *T* of part/at:	*T* (°C)						Allowed T_{max} (°C)
Primary wire	26.9	58.4	25.2	55.9	--	--	80
TVS1 body	50.0	81.5	47.9	78.7	--	--	85
CX1	46.0	77.5	43.9	74.7	--	--	100
LF2 coil	64.4	95.9	49.2	80.0	--	--	110
PCB near Q1(Power board)	64.3	95.8	51.7	82.5	--	--	130
T1 coil	65.1	96.6	64.3	95.0	--	--	110
T2 coil	57.0	88.5	56.2	86.9	--	--	110
T2 core	43.7	75.2	44.7	75.5	--	--	110
T3 coil	52.7	84.2	49.9	80.7	--	--	110
T3 core	64.5	96.0	59.4	90.1	--	--	110
IC1 body	62.8	94.3	62.1	92.8	--	--	100
CY3 body	62.1	93.7	62.5	93.2	--	--	125
Mylar body	39.5	71.0	38.2	68.9	--	--	105
PCB near (DS-8459)	39.6	71.1	37.7	68.4	--	--	130
PCB near UM3(DS-80500_P)	52.5	84.1	50.7	81.4	--	--	130
Battery1	50.6	82.1	48.9	79.7	--	--	Ref.
PCB near (DS-8281)	47.1	78.6	46.0	76.7	--	--	130
PCB near JP3(DS-81183)	37.2	68.7	33.7	64.5	--	--	130
PCB near U1(DS-81201)	45.4	76.9	45.5	76.3	--	--	130
Plastic enclosure inside	34.8	66.3	35.4	66.1	--	--	Ref.
Ambient	23.5	→55	24.3	→55	--	--	--
Following for accessible touch temperature:							
AC Inlet	38.4	39.9	37.3	38.1	--	--	77[1)]
Plastic enclosure outside	29.6	31.1	31.1	31.9	--	--	77[1)]
Metal enclosure	33.9	35.5	34.4	35.1	--	--	60[1)]
Ambient	23.5	→25.0	24.3	→25.0	--	--	--

Temperature T of winding:	t_1 (°C)	R_1 (Ω)	t_2 (°C)	R_2 (Ω)	T (°C)	Allowed T_{max} (°C)	Insulation class
--	--	--	--	--	--	--	--

Supplementary information:

[1)] Touch temperature limit under normal operating conditions for TS1 (> 1s～< 10s)

Note 1: Tma should be considered as directed by appliable requirement

Note 2: Tma is not included in assessment of Touch Temperatures (Clause 9)

Note 3: Test on mainboard model: DS-80500(model: iDS-7616NXI-M2/16P/X)

Note 4: Thermocouple method was used to measure the winding, the limit value is reduced by 10 K

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Clause	Requirement + Test	Result - Remark	Verdict

5.4.1.4, 9.3, B.1.5, B.2.6	**TABLE: Temperature measurements**						P
Supply voltage (V)	90V/60Hz		264V/50Hz		--		—
Ambient temperature during test T_{amb} (°C).	--		--		--		—
Maximum measured temperature *T* of part/at:	*T* (°C)						Allowed T_{max} (°C)
AC inlet(inside)	33.3	65.7	30.5	63.1	--	--	80
PCB near MOV1	44.1	76.5	40.9	73.5	--	--	130
CX2 body	50.0	82.4	42.2	74.8	--	--	105
LF2 body	61.6	94.0	43.9	76.5	--	--	110
PCB under BD1	69.3	101.7	49.6	82.2	--	--	130
L1 coil	69.3	101.7	51.0	83.6	--	--	110
C2 body	39.7	72.1	36.6	69.2	--	--	105
PCB under Q3	46.0	78.4	44.9	77.5	--	--	130
T1 coil	63.6	96.0	63.1	95.7	--	--	110
T1 core	60.3	92.7	51.9	84.5	--	--	110
PCB near IC302	46.1	78.5	46.3	78.9	--	--	130
Mylar sheet near T1	41.4	73.8	37.6	70.2	--	--	Ref.
CY5	40.0	72.4	38.3	70.9	--	--	105
CX3	43.8	76.2	38.2	70.8	--	--	105
PCB near CN1	41.0	73.4	37.1	69.7	--	--	130
PCB near IC305	33.1	65.5	41.2	73.8	--	--	130
L401 coil	39.1	71.5	38.9	71.5	--	--	110
C426 body	33.9	66.3	33.3	65.9	--	--	105
PCB near UR1(DS-8459)	34.3	66.7	33.1	65.7	--	--	130
PCB near U1(DS-80545)	41.5	73.9	41.5	74.1	--	--	130
Battery body	40.5	72.9	40.1	72.7	--	--	Ref.
PCB near D1(DS-81081)	31.0	63.4	32.4	65.0	--	--	130
HDD	39.2	71.6	36.2	68.8	--	--	Ref.
Plastic enclosure(internal)	28.2	60.6	29.0	61.6	--	--	Ref.
Ambient	22.6	→55	24.3	→55	--	--	--
Following for accessible touch temperature:							
Input wire	37.4	39.8	34.3	36.9	--	--	77[1)]
AC inlet(outside)	30.0	32.4	28	30.6	--	--	77[1)]
Plastic enclosure outside	26.1	28.5	26.7	29.3	--	--	77[1)]
Metal enclosure	34.6	37.0	36.1	38.7	--	--	60[1)]
Ambient	22.6	→25.0	24.3	→25.0	--	--	--

Temperature T of winding:	t_1 (°C)	R_1 (Ω)	t_2 (°C)	R_2 (Ω)	T (°C)	Allowed T_{max} (°C)	Insulation class

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

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Supplementary information:							
[1)] Touch temperature limit under normal operating conditions for TS1 (> 1s～< 10s)							
Note 1: Tma should be considered as directed by appliable requirement							
Note 2: Tma is not included in assessment of Touch Temperatures (Clause 9)							
Note 3: Test on mainboard model: DS-80545 (model: DS-7632NI-K2/16P)							
Note 4: Thermocouple method was used to measure the winding, the limit value is reduced by 10 K							

5.4.1.4, 9.3, B.1.5, B.2.6	**TABLE: Temperature measurements**						P
Supply voltage (V)	90V/60Hz		264V/50Hz		--		—
Ambient temperature during test T_{amb} (°C).	--		--		--		—
Maximum measured temperature *T* of part/at:	*T* (°C)						Allowed T_{max} (°C)
PCB(8459 V3.0) near UR1	36.4	66.5	34.8	64.8	--	--	130
RTC Body	41.5	71.6	39.8	69.8	--	--	Ref.
PCB(80572 V1.0) near U1	53.0	83.1	51.0	81.0	--	--	130
PCB(81183 V3.0) near JP3	29.0	59.1	27.3	57.3	--	--	130
PCB(81201 V2.1) near U1	39.1	69.2	37.6	67.6	--	--	130
plastic enclosure inside	28.8	58.9	29.0	59.0	--	--	Ref.
Ambient	24.9	→55	25.0	→55	--	--	--
Following for accessible touch temperature:							
plastic enclosure outside	26.9	27.3	27.7	--	--	--	77[1)]
metal enclosure	39.2	39.6	36.5	--	--	--	60[1)]
Ambient	24.6	→25.0	25.0	--	--	--	--

Temperature T of winding:	t_1 (°C)	R_1 (Ω)	t_2 (°C)	R_2 (Ω)	T (°C)	Allowed T_{max} (°C)	Insulation class
--	--	--	--	--	--	--	--
Supplementary information:							
[1)] touch temperature limit under normal operating conditions for TS1 (> 1s～< 10s)							
Tested on mainboard: DS-80572.							

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	2.21	--	196.8	--	F1	2.21	Max normal work
90	60	2.20	--	196.8	--	F1	2.20	Max normal work
100	50	1.97	3.2	194.6	--	F1	1.97	Max normal work
100	60	1.96	3.2	194.6	--	F1	1.96	Max normal work
240	50	0.82	3.2	187.1	--	F1	0.82	Max normal work
240	60	0.83	3.2	187.2	--	F1	0.83	Max normal work
264	50	0.77	--	187.2	--	F1	0.77	Max normal work
264	60	0.78	--	188.1	--	F1	0.78	Max normal work
Supplementary information:								
Equipment may be have rated current or rated power or both. Both should be measured Test with power supply KSA-300S2.								

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	3.02	--	270.39	--	F1	3.02	Normal work, POE load 200W
90	60	2.69	--	268.41	--	F1	2.69	
100	50	1.09	3.2	252.42	--	F1	1.09	
100	60	1.00	3.2	252.03	--	F1	1.00	
240	50	2.97	3.2	267.62	--	F1	2.97	
240	60	2.69	3.2	267.91	--	F1	2.69	
264	50	1.10	--	254.01	--	F1	1.10	
264	60	1.01	--	253.45	--	F1	1.01	
Supplementary information:								
Equipment may be have rated current or rated power or both. Both should be measured Test with power supply DPS-280AB-4A.								

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	2.25	--	202.29	--	F1	2.25	USB load 0.5A, HDD loaded 8T
100	50	2.04	3.2	201.16	--	F1	2.04	
240	50	0.84	3.2	192.69	--	F1	0.84	
264	50	0.78	--	192.57	--	F1	0.78	
90	60	2.26	--	202.05	--	F1	2.26	
100	60	2.03	3.2	201.00	--	F1	2.03	
240	60	0.85	3.2	193.64	--	F1	0.85	
264	60	0.79	--	192.45	--	F1	0.79	
Supplementary information:								
Equipment may be have rated current or rated power or both. Both should be measured Test on mainboard model: DS-80531.								

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	3.00	--	267.36	--	F1	3.00	8T HDD*2 USB 2.0 load 0.5A USB 3.0 load 0.9A PoE terminal Total load 200W
100	50	2.68	3.2	265.01	--	F1	2.68	
240	50	1.10	3.2	255.02	--	F1	1.10	
264	50	1.01	--	254.95	--	F1	1.01	
90	60	3.01	--	267.69	--	F1	3.01	
100	60	2.68	3.2	265.03	--	F1	2.68	
240	60	1.10	3.2	255.65	--	F1	1.10	
264	60	1.01	--	255.18	--	F1	1.01	
Supplementary information:								
Equipment may be have rated current or rated power or both. Both should be measured Test on mainboard model: DS-80500.								

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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	2.72	--	244.34	--	F1	2.72	8T HDD*2 USB 2.0 load 0.5A USB 3.0 load 0.9A PoE terminal Total load 200W
100	50	2.43	3.2	242.37	--	F1	2.43	
240	50	1.01	3.2	234.18	--	F1	1.01	
264	50	0.92	--	234.39	--	F1	0.92	
90	60	2.75	--	246.69	--	F1	2.75	
100	60	2.43	3.2	242.43	--	F1	2.43	
240	60	1.01	3.2	235.87	--	F1	1.01	
264	60	0.92	--	234.78	--	F1	0.92	
Supplementary information:								
Equipment may be have rated current or rated power or both. Both should be measured Test on mainboard model: DS-80545.								

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	2.67	--	237.56	--	F1	2.67	8T HDD*2 USB 2.0 load 0.5A USB 3.0 load 0.9A PoE terminal Total load 200W
100	50	2.39	3.2	235.86	--	F1	2.39	
240	50	1.02	3.2	228.93	--	F1	1.02	
264	50	0.95	--	230.39	--	F1	0.95	
90	60	2.71	--	240.91	--	F1	2.71	
100	60	2.41	3.2	238.78	--	F1	2.41	
240	60	1.03	3.2	229.77	--	F1	1.03	
264	60	0.96	--	229.49	--	F1	0.96	
Supplementary information:								
Equipment may be have rated current or rated power or both. Both should be measured Test on mainboard model: DS-80517(with Switching power supply DPS-280AB-8 A).								

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	2.80	--	248.28	--	F1	2.80	8T HDD*2 USB 2.0 load 0.5A USB 3.0 load 0.9A PoE terminal Total load 200W
100	50	2.46	3.2	245.89	--	F1	2.46	
240	50	1.13	3.2	240.60	--	F1	1.13	
264	50	0.91	--	235.13	--	F1	0.91	
90	60	2.80	--	249.64	--	F1	2.80	
100	60	2.46	3.2	245.16	--	F1	2.46	
240	60	1.13	3.2	236.54	--	F1	1.13	
264	60	0.91	--	236.53	--	F1	0.91	
Supplementary information:								
Equipment may be have rated current or rated power or both. Both should be measured Test on mainboard model: DS-80517(with Switching power supply FLXA2281A).								

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	2.73	--	244.96	--	F1	2.73	Max normal work
90	60	2.76	--	245.90	--	F1	2.76	
100	50	2.43	3.2	242.44	--	F1	2.43	
100	60	2.41	3.2	241.04	--	F1	2.41	
240	50	1.11	3.2	236.97	--	F1	1.11	
240	60	1.11	3.2	232.91	--	F1	1.11	
264	50	0.90	--	231.71	--	F1	0.90	
264	60	0.90	--	232.81	--	F1	0.90	
Supplementary information:								
Equipment may be have rated current or rated power or both. Both should be measured Tested on mainboard: DS-80572.								

B.3, B.4	TABLE: Abnormal operating and fault condition tests						P
Ambient temperature T_{amb} (°C)..... :				25			—
Power source for EUT: Manufacturer, model/type, outputrating.. :				--			—
Component No.	Condition	Supply voltage (V)	Test time	Fuse no.	Fuse current (A)	Observation	
Openings	Blocked	264	120 mins	F1	--	No fire, no explosion, no emit molten metal, no hazardous, Max temperature at T501 coil: 68.9 °C, T901 coil: 66.3 °C, metal enclosure: 42.9°C	

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Clause	Requirement + Test	Result - Remark	Verdict

Fan	Locked	264	120 mins	F1	--	No fire, no explosion, no emit molten metal, no hazardous Max temperature at T501 coil: 73.1, °C, T901 coil: 55.9 °C, metal enclosure: 41.1 °C
USB port	SC	264	10 mins	F1	--	Unit shutdown, no fire, no explosion, no emit molten metal, no hazardous
USB port	SC	264	10 mins	F1	--	Unit shutdown, no fire, no explosion, no emit molten metal, no hazardous
CL2	SC	264	10 mins	F1	0.10	Unit shutdown, no fire, no explosion, no emit molten metal, no hazardous
TVS40	SC	264	10 mins	F1	0.41	Unit shutdown, no fire, no explosion, no emit molten metal, no hazardous

Supplementary information:

The most unfavouriable test condition was performed
In fault column, where SC = short-circuited.

NH = No hazard; NB = No indication of dielectric breakdown; NC = Cheesecloth remained intact;
NT = Tissue paper remained intact; NCD = No components damage.

Tested on model DS-7616NI-Q2

B.3, B.4	TABLE: Abnormal operating and fault condition tests	P
Ambient temperature T_{amb} (°C)..... :	25	—
Power source for EUT: Manufacturer, model/type, outputrating.. :	--	—

Component No.	Condition	Supply voltage (V)	Test time	Fuse no.	Fuse current (A)	Observation
Openings	Blocked	90V	2h	F1	3.01	All safeguards remain effective,no damage,no hazards, temperature: T3 core 68.7°C, PCB near UM3(DS-80500_P) 56.9°C, PCB near JP3(DS-81183) 43.0°C.
USB2.0	OL	90V	2h	F1	3.01-> 3.05-> 3.08-> 2.97	USB2.0 loaded 0.50A->0.90A->1.32A, until loaded 1.33A USB2.0 shutdown immediately, All safeguards remain effective, no damage, no hazards, temperature: T3 core 65.6°C, PCB near UM3(DS-80500_P) 57.3°C, PCB near JP3(DS-81183) 34.5°C.

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Clause	Requirement + Test	Result - Remark	Verdict

USB3.0	OL	90V	2h	F1	3.01->3.07->3.15->2.94	USB3.0 loaded 0.90A->1.60A->2.60A,until loaded 2.61A USB3.0 shutdown immediately, All safeguards remain effective, no damage, no hazards, temperature: T1 coil 68.2°C, PCB near UM3(DS-80500_P) 89.0°C, PCB near UM3(DS-80500_P) 57.3°C.
USB2.0	SC	90V	10 mins	F1	--	USB shutdown immediately, No damage,no hazard.
USB3.0	SC	90V	10 mins	F1	0.10	USB shutdown immediately, No damage,no hazard.
LED (HDD1)	SC	90V	10 mins	F1	--	LED shutdown immediately, No damage,no hazard.
TVS84	SC	90V	10 mins	F1	0.10	Normal work, No damage,no hazard.
UV12 PIN1-4	SC	90V	10 mins	F1	0.41	EUT shutdown immediately, No damage,no hazard.

Supplementary information:

The most unfavourable test condition was performed
In fault column, where SC = short-circuited.
NH = No hazard; NB = No indication of dielectric breakdown; NC = Cheesecloth remained intact;
NT = Tissue paper remained intact; NCD = No components damage.

Test on main board model: DS-80500 (DS-7616NXI-M2/16P/X)

B.3, B.4	TABLE: Abnormal operating and fault condition tests	P
Ambient temperature T_{amb} (°C)..... :	25	—
Power source for EUT: Manufacturer, model/type, outputrating.. :	--	—

Component No.	Condition	Supply voltage (V)	Test time	Fuse no.	Fuse current (A)	Observation
Openings	Cover	90V	180 mins	F1	2.75	All safeguards remain effective,no damage,no hazards, temperature: T1 core 65.8°C, PCB near U1(DS-80545) 48.1°C, PCB near D1(DS-81081) 36.3°C.
USB2.0(front)	Over load	90V	180 mins	F1	2.75→2.78	All safeguards remain effective, no damage, no hazards, temperature: T1 coil 64.2°C, PCB near IC302 48.9°C.
USB2.0(back)	Over load	90V	180 mins	F1	2.75→2.78	All safeguards remain effective, no damage, no hazards, temperature: T1 coil 64.2°C, PCB near IC302 49.2°C. LF2 body 45.6°C
Fans	Block	90V	2h	F1	3.01	All safeguards remain effective,no damage,no hazards

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Clause	Requirement + Test	Result - Remark	Verdict

Fans	Block	90V	180 mins	F1	--	All safeguards remain effective,no damage,no hazards
CV30	SC	264V	10 mins	F1	--	EUT shutdown, no damage,no hazard.
CA47	SC	264V	10 mins	F1	--	EUT shutdown, no damage,no hazard.
C6	SC	264V	10 mins	F1	--	EUT shutdown, no damage,no hazard.
Q31 Pin1-3	SC	264V	10 mins	F1	--	EUT shutdown, no damage,no hazard.
USB2.0 port(Front)	SC	264V	10 mins	F1	--	USB Output shutdown, no damage,no hazard.
USB2.0 port(Back)	SC	264V	10 mins	F1	--	USB Output shutdown, no damage,no hazard.

Supplementary information:

1. Test table is provided to record abnormal and fault conditions for all applicable energy sources including Thermal burn injury. Column “Abnormal/Fault.” Specify if test condition by indicating “Abnormal” then the condition for a Clause B.3 test or “Single Fault” then the condition for Clause B.4.
2. NH = No hazard; NB = No indication of dielectric breakdown; NC = Cheesecloth remained intact; NT = Tissue paper remained intact; NCD = No components damage.

Test on main board model: DS-80545 (DS-7632NI-K2/16P)

B.3, B.4	TABLE: Abnormal operating and fault condition tests					P
Ambient temperature T_{amb} (°C)..... :			25			—
Power source for EUT: Manufacturer, model/type, outputrating.. :			--			—
Component No.	Condition	Supply voltage (V)	Test time	Fuse no.	Fuse current (A)	Observation
Openings	Cover	90V	180 mins	F1	2.71	All safeguards remain effective,no damage,no hazards, temperature: T501 coil 53°C, L801 coil 46.4°C, L152 coil 44.7°C, PCB near U1(DS-80517_P V1.0) 53.2°C
Fan	Block	90V	180 mins	F1	2.71	Normal work, No damage,no hazard. temperature: T501 coil 51.6°C, L801 coil 36.2°C, L152 coil 43.8°C, PCB near U1(DS-80517_P V1.0) 49.6°C
USB2.0(front)	Over load	90V	180 mins	F1	2.73-> 2.75-> 2.77-> 2.70	USB load 0.6A->1.2A->1.8A->0A. Normal work, No damage,no hazard, temperature: T501 coil 51.4°C, L801 coil 36.4°C, L152 coil 43.8°C, PCB near U1(DS-80517_P V1.0) 51.7°C

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Clause	Requirement + Test	Result - Remark	Verdict

LED	SC	90V	10 mins	F1	0.96	LED shutdown immediately, No damage, no hazard.
C167	SC	264V	10 mins	F1	0.1	EUT shutdown immediately, No damage, no hazard.
UV4 PIN1-5	SC	264V	10 mins	F1	0.1	EUT shutdown immediately, No damage, no hazard.

Supplementary information:

The most unfavourable test condition was performed
In fault column, where SC = short-circuited.

Test on mainboard model: DS-80517(with Switching power supply DPS-280AB-8 A).

B.3, B.4	TABLE: Abnormal operating and fault condition tests					P
Ambient temperature T_{amb} (°C)..... :			25			—
Power source for EUT: Manufacturer, model/type, outputrating.. :			--			—
Component No.	Condition	Supply voltage (V)	Test time	Fuse no.	Fuse current (A)	Observation
Openings	Cover	90V	180 mins	F1	2.80	All safeguards remain effective,no damage,no hazards, temperature: T1 coil 50.6°C, CY2 41.2°C, PCB near CPU(80517) 50.5°C, L3 coil 49.2°C
Fan	Block	90V	180 mins	F1	2.80	Normal work, No damage,no hazard. temperature: T1 coil 46.6°C, CY2 40.8°C, PCB near CPU(80517) 58.5°C, L3 coil 45.7°C
USB2.0	Over load	90V	180 mins	F1	2.83-> 2.85-> 2.87-> 2.79	USB load 0.6A->1.2A->1.8A-0A. Normal work, No damage,no hazard, temperature: T1 coil 50.2°C, CY2 40.1°C, PCB near CPU(80517) 55.4°C, L3 coil 48.7°C
LED	SC	90V	10 mins	F1	0.91	LED shutdown immediately, No damage, no hazard.
C167	SC	264V	10 mins	F1	0.1	EUT shutdown immediately, No damage, no hazard.
UV4 PIN1-5	SC	264V	10 mins	F1	0.1	EUT shutdown immediately, No damage, no hazard.

Supplementary information:

Supplementary information:
The most unfavourable test condition was performed
In fault column, where SC = short-circuited.

Test on mainboard model: DS-80517(with Switching power supply FLXA2281A).

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Clause	Requirement + Test	Result - Remark	Verdict

B.3, B.4	TABLE: Abnormal operating and fault condition tests						P
Ambient temperature T_{amb} (°C)..... :					25		—
Power source for EUT: Manufacturer, model/type, outputrating.. :					--		—
Component No.	Condition	Supply voltage (V)	Test time	Fuse no.	Fuse current (A)	Observation	
Openings	Blocked	90V	3h	--	2.73	EUT work normally. PCB(80572 V1.0) near U1: 69.8 °C, Battery: 46.2 °C Metal enclosure: 66.1 °C, Plastic enclosure: 32.2 °C, NH, NCD, NT, NC.	
Front USB	Overload	90V	3h	--	2.74-> 2.76-> 2.77-> 2.70	EUT work normally. Output load to 2.2A. PCB(80572 V1.0) near U1: 50.0 °C, Metal enclosure: 39.7 °C, Plastic enclosure: 27.8 °C, NH, NCD, NT, NC.	
Rear USB	Overload	90V	3h	--	2.74-> 2.76-> 2.77-> 2.70	EUT work normally. Output load to 2.2A Key location temperature at Tamb 24.2 °C: PCB(80572 V1.0) near U1: 53.0 °C, Battery: 48.1 °C Metal enclosure: 38.7 °C, Plastic enclosure: 31.3 °C, NH, NCD, NT, NC.	
Fan	Blocked	90V	3h	--	2.73	EUT work normally. PCB(80572 V1.0) near U1: 81.7 °C, Battery: 49.1 °C Metal enclosure: 37.2 °C, Plastic enclosure: 33.8 °C, NH, NCD, NT, NC.	
LED	SC	90V	10mins	--	0.90	LED shutdown immediately, No damage,no hazard.	
C274	SC	90V	10mins	--	0.1	EUT shutdown immediately, No damage,no hazard.	
UV12 PIN1-5	SC	90V	10mins	--	0.1	EUT shutdown immediately, No damage,no hazard.	
Supplementary information:							
Supplementary information: The most unfavourable test condition was performed In fault column, where SC = short-circuited. Test on mainboard model: DS-80572.							

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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)			
	100~240V~			3.2			
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)			
GUANGDONG TIANQIU ELECTRONICS TECHNOLOGY CO LTD. / CR1220	--	2.5 mA	--	--	--	--	
POWER GLORY BATTERY TECH (SHENZHEN) CO.,LTD / CR1220	--	2.5 mA					
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 (mA)	Voltage (V)	Observation
GUANGDONG TIANQIU ELECTRONICS TECHNOLOGY CO LTD. / CR1220							
--	Normal	discharge	2h	25	0.005	--	Normal work, NL, NS, NE, NF.
D2	short circuit	discharge	2h	25	1.8	--	NL, NS, NE, NF.
POWER GLORY BATTERY TECH (SHENZHEN) CO.,LTD / CR1220							
--	Normal	discharge	2h	25	0.002	--	Normal work, NL, NS, NE, NF.
D2	short circuit	discharge	2h	25	1.3	--	NL, NS, NE, NF.
Supplementary information:							
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.							

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)	

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Clause	Requirement + Test	Result - Remark	Verdict

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 port	Normal	4.98	60	1.51	8	6.99	100
POE port	Normal	52.2	60	0.57	≤ 19.15 (1000/52.2)	30.0	≤ 250
POE port (QL1M1 pin1-4 SC)	Single fault	52.2	60	1.35	≤ 19.15 (1000/52.2)	67.8	≤ 250
HDMI	Normal	4.88	60	0	8	0	100
Supplementary Information:							
SC=Short circuit Tested on model: DS-80517.							

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
PoE port	Normal	52.13	60	0.56	≤2.88 (150/52.13)	27.64	100
PoE port	QV6 Pin1-4 SC	52.13	60	1.36	≤2.88 (150/52.13)	68.13	100
USB 2.0 port(Front)	Normal	5.08	60	1.41	8	7.12	100
USB 2.0 port(Back)	Normal	5.08	60	1.37	8	6.95	100
HDMI	Normal	4.95	60	0	8	0	100
AUDIO OUT	Normal	0	60	0	8	0	100
ALARM OUT	Normal	0	60	0	8	0	100
VGA	Normal	0	60	0	8	0	100
LAN	Normal	0	60	0	8	0	100
Supplementary Information:							
SC=Short circuit Tested on model DS-80500.							

Q.1	**TABLE: Circuits intended for interconnection with building wiring (LPS)**					P
Output	Condition	U_{oc} (V)	Time (s)	I_{sc} (A)	S (VA)	

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

Circuit				Meas.	Limit	Meas.	Limit
front USB 2.0 ports	Normal	5.00	60	2.05	8	9.19	100
front USB 2.0 ports	UL4 PIN1-3 SC	4.98	60	4.10	8	16.44	100
rear USB 2.0 port	Normal	4.98	60	2.10	8	8.84	100
rear USB 2.0 port	UL5 PIN1-3 SC	4.98	60	4.10	8	15.54	100
HDMI	Normal	5.02	60	0	8	0	100
AUDIO OUT	Normal	0	60	0	8	0	100
VGA	Normal	0	60	0	8	0	100
LAN	Normal	0	60	0	8	0	100
ARALM	Normal	0	60	0	8	0	100
Supplementary Information:							
SC=Short circuit Tested on model DS-80530							

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 port	Normal	5.04	60	2.24	8	9.10	100
USB 3.0 port	Normal	5.04	60	2.26	8	10.22	100
PoE	Normal comdition	51.65	60	0.56	2.90	26.83	100
PoE	QL1M1 Pin1-4 SC	51.65	60	1.34	2.90	67.71	100
HDMI	Normal	5.02	60	0	8	0	100
VGA	Normal	0	60	0	8	0	100
LAN	Normal	0	60	0	8	0	100
ARALM	Normal	0	60	0	8	0	100
AUDIO	Normal	0	60	0	8	0	100
Supplementary Information:							
SC=Short circuit Tested on model DS-80572.							

T.2, T.3, T.4, T.5	**TABLE: Steady force test**					P
Location/Part	Material	Thickness (mm)	Probe	Force (N)	Test Duration (s)	Observation

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Clause	Requirement + Test	Result - Remark	Verdict

Components	--	--	--	10	5	All safeguards remained effective.
Enclosure	See appended table 4.1.2	See appended table 4.1.2	--	250	5	All safeguards remained effective.
Supplementary information:						

T.6, T.9	TABLE: Impact test				P
Location/Part	Material	Thickness (mm)	Height (mm)	Observation	
Enclosure	See appended table 4.1.2	See appended table 4.1.2	1300	All safeguards remained effective.	
Supplementary information:					

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

T.8	TABLE: Stress relief test				P
Location/Part	Material	Thickness (mm)	Oven Temperature (°C)	Duration (h)	Observation
External plastic enclosure	See appended table 4.1.2	See appended table 4.1.2	77	7	All safeguards remained effective.
Supplementary information:					

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:				

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Clause	Requirement + Test	Result - Remark	Verdict

4.1.2	TABLE: List of critical components				P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity[1) 2)]
Switching power supply	Shenzhen Huntkey Electric Co., Ltd.	HDZ2802-3A S2	Input: 100-240 Vac, 5A, 50-60Hz, output: +52 Vdc/4.6 A, +12 Vdc/5 A max, Max. 280 W	IEC 62368-1	CB Certificate No.: (NO120868)
(alternative)	CHANNEL WELL TECHNOLOGY CO., LTD	KSA-300S2	Input: 100-240 Vac, 5A, 50-60Hz, output: +52 Vdc/4.6 A, +12 Vdc/3.33 A max, Max. 280 W	IEC 62368-1:2014	CB Certificate No.: (JPTUV-102846)
(alternative)	Delta Electronics, Inc.	DPS-280AB-4A	Input: 100-240 Vac, 47-63 Hz, 3-6 A; Output: +52 Vdc/4.6 A max, +12Vdc/3.4 A max, Max 280 W	IEC 62368-1:2014	CB Certificate No.: (JPTUV-099682)
(alternative)	ACBEL POLYTECH INC.	FLXA2281A	Input: 100-240 Vac, 50-60 Hz, 6 A; Output: +52 Vdc/4.6 A, +12Vdc/5.0 A max, Max 280 W, 5000m	IEC 62368-1:2018	Nemko CB Certificate No.: (NO122998)
(alternative)	DELTA ELECTRONICS INC	DPS-280AB-8 A	Input: 100-240 Vac, 50-60 Hz, 5 A; Output: +52 Vdc/4.6 A, +12Vdc/6.0 A max, Max 280 W, 5000m	IEC 62368-1:2018	CB Certificate No.: (JPTUV-135150)
PCB	HUIZHOU CHINA EAGLE ELECTRONIC TECHNOLOGY CO LTD	CA-F121	V-0, 130 °C	UL 796	UL E198681
(alternative)	SHENZHEN KINWONG ELECTRONIC CO LTD	8B	V-0, 130 °C	UL 796	UL E243951
(alternative)	GUANGZHOU FAST-PRINT CIRCUIT TECHNOLOGY CO LTD	M11	V-0, 130 °C	UL 796	UL E204460

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Clause	Requirement + Test	Result - Remark	Verdict

(alternative)	ZHEJIANG OULONG ELECTRIC CO LTD	OL-D	V-0, 130 °C	UL 796	UL E231017
(alternative)	Interchangeable	--	V-0, 130 °C	UL 796	UL
RTC Battery (Button Type)	POWER GLORY BATTERY TECH(SHENZHEN)CO.,LTD	CR1220	Non-rechargeable, Max Abnormal Charging Current 10mA Max Abnormal Charging Voltage 5.0V dc	UL 1642 IEC/EN/UL/CSA 62368-1	UL MH29853 Test with appliance
(alternative)	GUANGZHOU TIANQIU ENTERPRISE CO LTD	CR1220	Non-rechargeable, Max Abnormal Charging Current 2.5 mA Max Abnormal Charging Voltage 3.5 V dc	UL 1642 IEC/EN/UL/CSA 62368-1	UL MH48705 Test with appliance
Metal enclosure	--	--	Metal, thickness 1.5 mm min.	IEC 62368-1	Test with appliance
Front plastic cover	KINGFA SCI & TECH CO LTD	FRABS-518	V-0, 60 °C, thickness 1.4 mm min.	UL 94	UL E171666
(alternative)	Interchangeable	--	V-0, 60 °C, thickness 1.4 mm min.	UL 94	UL
DC fan	Sunonwealth Electric Machine Industry Co.,Ltd	FD124010LB	12 Vdc, 55 mA,, 5.7 CFM, 5000 RPM	EN 62368-1:2014+A11	TUV R 50019837
(alternative)	Sunonwealth Electronics (Kunshan) Co.,Ltd.	HA40101V4-000C-999	12 Vdc, 65 mA, 5.3 CFM, 4500 RPM	EN 62368-1:2014	TUV R 50016065
(alternative)	Yen Sun Technology Corp.	FD124010, FD124010LB	12 Vdc, 55 mA, 4500 RPM, 4.5 CFM	EN 62368-1:2014	TUV R 50027591
(alternative)	Dongguan Protechnic Electric Co., Ltd.	MGA4012SB-O10	12 Vdc, 60 mA, 5.3 CFM, 4600 RPM	EN 62368-1:2014	TUV B 031023 0138
(alternative)	Asia Vital Components Co.,Ltd.	DAZA0410B2H-021	12 Vdc, 60 mA, 6.89 CFM, 5000 RPM	EN 62368-1:2014	TUV B 025730 0883
(alternative)	Sunonwealth Electric Machine Industry Co.,Ltd	KD1204PFB3	12 Vdc, 55 mA, 5000 RPM,5.7 CFM	EN 62368-1:2014	TUV R 50019837
(alternative)	Dongguan Protechnic Electric Co., Ltd.	MGA4012SR-O10	12 Vdc, 60 mA, 4600 RPM, 5.3 CFM	EN 62368-1:2014+A11:2017	TUV SUD Certif. No. B 031023 0138 Rev. 00

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Clause	Requirement + Test	Result - Remark	Verdict

(alternative)	Asia Vital Components Co., Ltd.	DAZA0410R2H-016	12 Vdc, 60 mA, 4500 RPM, 5.72 CFM	EN 62368-1:2014+A11:2017	TUV SUD Certif. No. B 025730 0883 Rev. 13
(alternative)	Dongguan Protechnic Electric Co., Ltd.	MGA4012SB-O10	12 Vdc, 60 mA, 5200 RPM, 6.07 CFM	EN 62368-1:2014+A11:2017	TUV SUD Certif. No. B 031023 0138 Rev. 00
(alternative)	Asia Vital Components Co., Ltd.	DAZA0410B2H-022	12 Vdc, 60 mA, 5000 RPM, 6.89 CFM	EN 62368-1:2014+A11:2017	TUV SUD Certif. No. B 025730 0883 Rev. 13
(alternative)	Yen Sun Technology Corp.	FD124010LB(2N3)	12 Vdc, 90 mA, 4500RPM, 4.5 CFM	EN 62368-1:2014	TUV R 50027591
IC chip (UL3, UL4)	Joulwatt	JW7115S-2SOTA#TRPBF	Input: 2.7 - 5.5 Vd.c.; Max. 3.0 A; Output: -0.3 - 6.5 Vd.c.; Max. 3.2A; 85°C, Class III	IEC 62368-1:2014	UL certificate No. DK-90295-UL
(alternative)	Richtek	RT9742..G.	Input: 2.7 - 6Vd.c.; Max. 2.5 A; Output: -0.3 - 6.5 Vd.c.; Max. 4.5A; 85°C, Class III	IEC 62368-1:2014	Nemko certificate No. NO109777
(alternative)	Joulwatt	JW7115S-1SOTA#TRPBF	Input: 2.7 - 5.5 Vd.c.; Max. 3.0 A; Output: -0.3 - 6.5 Vd.c.; Max. 3.2A; 85°C, Class III	IEC 62368-1:2014	UL certificate No. DK-92033-UL
Flexible cables	LINOYA ELECTRONIC TECHNOLOGY CO LTD	H05VV-F	3 x 0.75 mm²	DIN EN 50525-2-11 (VDE 0285-525-2-11):2012-01; EN 50525-2-11:2011	VDE 40035072
(alternative)	Hangzhou Hongshi Electrical Ltd.	H05VV-F	3 x 0.75 mm²	DIN EN 50525-2-11 (VDE 0285-525-2-11):2012-01; EN 50525-2-11:2011	VDE 40010839
(alternative)	Phino Electric Co.,Ltd	H05VV-F	3 x 0.75 mm²	DIN EN 50525-2-11(VDE 0285-525-2-11):2012-01;EN 50525-2-11:2011	VDE 113841

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Clause	Requirement + Test	Result - Remark	Verdict

(alternative)	Interchangeable	--	3 x 0.75 mm², 6A 250V~	DIN EN 50525-2-11(VDE 0285-525-2-11):2012-01;EN 50525-2-11:2011	--
Appliance couplers (Connector, non-rewirable)	LINOYA ELECTRONIC TECHNOLOGY CO LTD	XYC-03	10A 250V	DIN EN 60320-1 (VDE 0625-1):2016-04; EN 60320-1:2015 + AC:2016 IEC 60320-1:2015	VDE 40016051
(alternative)	Phino Electric Co., Ltd	PHS 301	10A 250V	IEC 60320-1:2015 DIN EN 60320-1 (VDE 0625-1):2016-04; EN 60320-1:2015 + AC:2016	VDE 40038017
Plug	LINOYA ELECTRONIC TECHNOLOGY CO LTD	XYP-02L	16A 250V	DIN VDE 0620-2-1 (VDE 0620-2-1):2016-01 DIN VDE 0620-2-1/A1 (VDE 0620-2-1/A1):2017-09	VDE 40015292
(alternative)	Hangzhou Hongshi Electrical Ltd.	SW102	16A 250V	DIN VDE 0620-2-1/A1 (VDE 0620-2-1/A1):2017-09 DIN VDE 0620-2-1 (VDE 0620-2-1):2016-01	VDE 40004330
(alternative)	Phino Electric Co.,Ltd.	PHP-206	16A 250V	DIN VDE 0620-2-1/A1 (VDE 0620-2-1/A1):2017-09 DIN VDE 0620-2-1 (VDE 0620-2-1):2016-01	VDE 40013375

Supplementary information:

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

[2)] License available upon request

List of test equipment used:

A completed list of used test equipment shall be provided in the Test Reports when a Customer's Testing Facility according to CTF stage 1 or CTF stage 2 procedure has been used.

Note: This page may be removed when CTF stage 1 or CTF stage 2 are not used. See also clause 4.8 in OD 2020 for more details.

Instr. Code	Instrument Name	Instrument Type	Instrument I.D.	Series No.	Calibration Date	
					Last	Due
1	Power meter	WT310	hkvs-yq1524	C2QB04042V	12/28/2022	12/27/2023
2	Data Acquisition	Agilent 34972A	hkvs-yq1192	MY49012334	7/6/2022	7/5/2023
3	DC power	Chroma 62006P-300-8	hkvs-qt4267	62006PE00520	6/24/2022	6/23/2023
4	Electronic stopwatch	PC396	hkvs-sys1001	--	6/29/2022	6/28/2023
5	steel ruler	1m	JE-11-03	--	--	--
6	steel ruler	1m	JE-11-04	--	--	--
7	Steel Ball impact test rig	YJ-8625	hkvs-qt3939	--	7/28/2022	7/27/2024
8	test probe	AG-022	hkvs-sys1020	AG-2014042810	6/28/2022	6/27/2024
9	Straight fingers	AG-003	hkvs-sys1014	AG-201404284	6/28/2022	6/27/2024
10	test pin	AG-001	hkvs-sys1015	AG-201404285	6/28/2022	6/27/2024
11	Drop tests wood	--	JP-11-38	--	--	--
12	Test surfaces 100mm×250mm	--	JP-11-39	--	--	--
13	30mm round test surface	--	JP-11-40	--	--	--

-- End of main test report --

IEC62368_1E - 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_1E

Attachment Originator..... : UL(Demko)

Master Attachment..... : 2021-02-04

	CENELEC COMMON MODIFICATIONS (EN)		
	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**		--
3.3.19	**Sound exposure** *Replace 3.3.19 of IEC 62368-1 with the following definitions:*		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.		N/A
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 Pa^2 s. $E = \int_0^T p(t)^2 \, dt$		N/A

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
3.3.19.4	**sound exposure level, *SEL*** logarithmic measure of sound exposure relative to a reference value, *E0*, typically the 1 kHz threshold of hearing in humans. Note 1 to entry: *SEL* is measured as A-weighted levels in dB. $SEL = 10 \lg\left(\frac{E}{E_0}\right)$ dB Note 2 to entry: See B.4 of EN 50332-3:2017 for additional information.		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.		N/A
2	**Modification to Clause 10**		--
10.6	**Safeguards against acoustic energy sources** Replace 10.6 of IEC 62368-1 with the following:		N/A
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		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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; 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		

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Clause	Requirement + Test	Result - Remark	Verdict
	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.		N/A
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		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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.		
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 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.		N/A
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.		N/A
10.6.2.4	**RS3 limits** RS3 is a class 3 acoustic energy source that exceeds RS2 limits.		N/A
10.6.3	**Classification of devices (new)**		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
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.		N/A
10.6.3.2	**RS1 limits (new)** 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 ≤ 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.		N/A
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.		N/A
10.6.4	**Requirements for maximum sound exposure**		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
10.6.4.1	**Measurement methods** All volume controls shall be turned to maximum during tests. Measurements shall be made in accordance with EN 50332-1 or EN 50332-2 as applicable.		N/A
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 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		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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.		N/A
10.6.5.2	**Dose-based warning and requirements** 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.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
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.		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 *L*Aeq acoustic pressure output of the listening device, 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 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.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
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.		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.		N/A
10.6.6.4	**Measurement method** *Measurements shall be made in accordance with EN 50332-2 as applicable.*		N/A
3	**Modification to the whole document**		--
	Delete all the "country" notes in the reference document according to the following list:		P

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

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
~~10.6.1~~	Note 3	F.3.3.6	Note 3	Y.4.1	Note
Y.4.5	Note				

4	**Modification to Clause 1**		--
1	***Add** the following note:* *NOTE Z1 The use of certain substances in electrical and electronic equipment is restricted within the EU: see Directive 2011/65/EU.*		P
5	**Modification to 4.Z1**		--
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 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		P

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Clause	Requirement + Test	Result - Remark	Verdict
	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**		--
5.4.2.3.2.4	***Add*** *the following to the end of this subclause:* The requirement for interconnection with **external circuit** is in addition given in EN 50491-3:2009.		N/A
7	**Modification to 10.2.1**		--
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**		--

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
10.5.1	***Add*** *the following after the first paragraph:* 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 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.		N/A
9	**Modification to G.7.1**		--
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**		--
	Add the following notes for the standards indicated:		P

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Clause	Requirement + Test	Result - Remark	Verdict

	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**		--
ZB	**ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)**		P
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 stikproppens 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
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

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
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 • 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:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	• 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).		N/A
5.5.6	**Finland, Norway** and **Sweden** To the end of the subclause the following is added: 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.		N/A
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. *Justification:* In Denmark an existing 13 A socket outlet can be protected by a 20 A fuse.		P
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.		P

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
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.		P
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 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.		N/A
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		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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 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

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Clause	Requirement + Test	Result - Remark	Verdict
B.3.1 and B.4	**Ireland and United Kingdom** The following is applicable: 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		N/A
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 Standard Sheet DK 1-3a, DK 1-1c, DK1-1d, DK 1-5a or DK 1-7a *Justification:* Heavy Current Regulations, Section 6c		N/A

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
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.		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.	Provided	P
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 which is equivalent to the relevant Irish Standard		P
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.		P
ZC	**ANNEX ZC, NATIONAL DEVIATIONS (EN)**		N/A
10.5.2	**Germany** The following requirement applies:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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. *Justification*: 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		
ZD	**IEC and CENELEC CODE DESIGNATIONS FOR FLEXIBLE CORDS (EN)**		P
			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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Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT
IEC 62368-1
U.S.A. AND CANADA NATIONAL DIFFERENCES
(Audio/video, information and communication technology equipment – Part 1: Safety requirements)

Differences according to..... : CSA/UL 62368-1:2019

TRF template used:..... : IECEE OD-2020-F3, Ed. 1.1

Attachment Form No. ..... : US_CA_ND_IEC62368_1E

Attachment Originator..... : UL(US)

Master Attachment..... : Dated 2022-03-04

IEC 62368-1 - US and Canadian National Differences
Special National Conditions based on Regulations and Other National Differences

1 (1DV.1) (1.3)	All equipment is to be designed to allow installation in accordance with the National Electrical Code (NEC), ANSI/NFPA 70, the Canadian Electrical Code (CEC), Part 1, CAN/CSA C22.1, and when applicable, the National Electrical Safety Code, IEEE C2. Also, for such equipment marked or otherwise identified, installation is allowed per the Standard for the Protection of Information Technology Equipment, ANSI/NFPA 75.		P
1 (1DV.2.1)	This standard includes additional requirements for equipment used for entertainment purposes intended for installation in general patient care areas of health care facilities. See Annex DVB.		N/A
1 (1DV.2.2)	This standard includes additional requirements for equipment intended for mounting under cabinets. See Annex DVC.		N/A
1 (1DV.2.3)	IEC 62368-3 clause 5 for DC power transfer at ES1 or ES2 voltage levels is considered informative. IEC 62368-3 clause 6 for remote power feeding telecommunication (RFT) circuits is considered normative (see ITU K.50). Alternatively, equipment with RFT circuits are given in either UL 2391 or CSA/UL 60950-21. RFT-C circuits are not permitted unless the RFT-C circuit complies with RFT-V limits (≤ 200V per conductor to earth).		N/A
1 (1DV.3)	For protection against direct lightning strikes, reference is made to NFPA 780 and CAN/CSA-B72 for additional requirements.		N/A
1 (DV.5)	Additional requirements apply to some forms of power distribution equipment, including sub-assemblies.		N/A
4.1 (4.1.17)	For lengths exceeding 3.05 m, external interconnecting cable assemblies are required to be a suitable cable type (e.g., DP, CL2) specified in the NEC.		N/A

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	For lengths 3.05 m or less, external interconnecting cable assemblies that are not types specified in the NEC generally are required to have special construction features and identification markings.		N/A
4.6 (4.6.2)	Wire-wrap terminals have special construction and performance requirements.		N/A
4.8 (4.8.3, 4.8.4.5, 4.8.5)	Coin / button cell batteries have modified special construction and performance requirements.		N/A
5.4.2.3.2 (5.4.2.3.2.1)	Surge Arrestors and Transient Voltage Surge Suppressors installed external to the equipment are required to comply with the appropriate NEC and CEC requirements.		N/A
5.5.9	Receptacles, rated 125-V, single phase, 15- or 20-A accessible to either ordinary, instructed, or skilled persons are required to be provided with GFCI Protection for Personnel if the equipment containing the receptacles is installed outdoors. The protection devices are required to comply with UL 943, and CAN/CSA C22.2 No.144.		N/A
5.6.3	Protective earthing conductors comply with the minimum conductor sizes in Table G.7, except as required by Table G.7ADV.1 for cord connected equipment, or Annex DVH for permanently connected equipment.		N/A
5.7.8 (5.7.8.1)	Equipment intended to receive telecommunication ringing signals is required to comply with a special touch current measurement tests.		N/A
6.5.1	PS3 wiring outside a fire enclosure is required to comply with single fault testing in B.4, or be current limited per one of the permitted methods.		N/A
Annex F (F.3.3.9)	Output terminals provided for supply of other equipment, except mains supply, are required to be marked with a maximum rating or reference to equipment permitted to be connected.		P
Annex F (F.3.7)	Outdoor Enclosures are required to be classified and marked in accordance with UL 50 or 50E, or CAN/CSA C22.2 No. 94.1 or 94.2.		N/A
Annex G (G.7)	Permanent connection of equipment to the mains supply by a power supply cord is not permitted, except for certain equipment, such as ATMs.		N/A
	Power supply cords are required to have attachment plugs rated not less than 125 percent of the rated current of the equipment.		N/A
	Flexible power supply cords are required to be compatible with Article 400 of the NEC, and Tables 11 and 12 of the CEC.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Minimum cord length is required to be 1.5 m, with certain constructions such as external power supplies allowed to consider both input and output cord lengths into the requirement. Power supply cords are required to be no longer than 4.5 m in length if used in ITE Rooms.		N/A
	Power supply cords for outdoor equipment are required to be suitable outdoor use type as required by Section 400.4 of the NEC and Rule 4-012 of the CEC, i.e., marked “W.”		N/A
Annex H.2	Continuous ringing signals under normal operating conditions up to 16 mA only are permitted if the equipment is subjected to special installation and performance restrictions.		N/A
Annex H.4	For circuits with other than ringing signals and with voltages exceeding 42.4 Vpeak or 60 Vd.c., the maximum acceptable current through a 2000 ohm resistor (or greater) connected across the voltage source with other loads disconnected is 7.1 mA peak or 30 mA d.c. under normal operating conditions.		N/A
Annex Q (Q.3)	Equipment with paired conductor and/or coax communications cables/wiring connected to building wiring are required to have special voltage, current, power and marking requirements.		N/A
Annex DVA (1)	Equipment that is designed such that it may be powered from a separate electrical service, is required to meet applicable requirements for service equipment for control and protection of services and their installation and complies with Article 230 of the National Electrical Code (NEC), NFPA 70 and Section 6 of the Canadian Electrical Code, Part I, CSA C22.1.		N/A
	Equipment intended for use in spaces used for environmental air (plenums) are subjected to special flammability requirements for heat and visible smoke release.		N/A
	For ITE room applications, automated information storage systems with combustible media greater than 0.76 m^3 (27 cu ft) are required to have a provision for connection of either automatic sprinklers or a gaseous agent extinguishing system with an extended discharge.		N/A
	Consumer products designed or intended primarily for children 12 years of age or younger are subject to additional requirements in accordance with U.S. and Canadian Regulations.	The equipment is not for children used.	N/A
	Baby monitors are required to additionally comply with ASTM F2951, Consumer Safety Specification for Baby Monitors.		N/A

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	Storage batteries and battery management equipment, other than associated with lead-acid batteries, and including battery backup systems that are not an integral part of stationary AV and ICT equipment, such as provided in separate cabinets, are required to be certified (listed) to the appropriate standard(s) for such storage batteries and equipment.		N/A
Annex DVA (5.6)	For Pluggable Equipment Type A, the protection in the installation is assumed to be 20A.		P
Annex DVA (6.3)	The maximum quantity of flammable liquid stored in equipment is required to comply with NFPA 30.	No flammable liquids within the equipment	N/A
Annex DVA (6.4.8)	For ITE room applications, enclosures with combustible material measuring greater than 0.9 m^2 (10 sq ft) or a single dimension greater than 1.8 m (6 ft) are required to have a flame spread rating of 50 or less. For equipment with the same dimensions for other applications, an external surface that is not a fire enclosure requires a minimum flammability classification of V-1.	No such application	N/A
Annex DVA (10.3)	Equipment with lasers is required to meet the U.S. Code of Federal Regulations 21 CFR 1040 (and the Canadian Radiation Emitting Devices Act, REDR C1370).	No such parts	N/A
Annex DVA (10.5)	Equipment that produces ionizing radiation is required to comply with the U.S. Code of Federal Regulations, 21 CFR 1020 (and the Canadian Radiation Emitting Devices Act, REDR C1370).	No such parts	N/A
Annex DVA (F.3.3.4)	Equipment for use on a.c. mains supply systems with a neutral and more than one phase conductor (e.g. 120/240 V, 3-wire) require a special marking format for electrical ratings. Additional considerations apply for voltage ratings that exceed the attachment cap rating or that are lower than the “Normal Operating Condition” in Table 2 of CAN/CSA C22.2 No. 235.”		N/A
Annex DVA (F.3.3.6)	Equipment identified for ITE (computer) room installation is required to be marked with the rated current.	Not such application	N/A
Annex DVA (G.1)	Vertically-mounted disconnect switches and circuit breakers are required to have the "on" position indicated by the handle in the up position, where mounted in an enclosure, vertically mounted **disconnect switches** and **circuit breakers** with vertical operating means extending outside the enclosure are required to indicate in a location visible when accessing the external operating means whether the switch or circuit breaker is in the open (off) or closed (on) position.	No such parts	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
Annex DVA (G.3.4)	Suitable NEC/CEC branch circuit protection rated at the maximum circuit rating is required for all standard supply outlets and receptacles (such as supplied in power distribution units) if the supply branch circuit protection is not suitable.	No standard supply outlets, receptacles	N/A
	Where a fuse is used to provide Class 2 or Class 3 current limiting, it is not operator-accessible unless it is non- interchangeable.		N/A
Annex DVA (G.4.2)	Equipment with isolated ground (earthing) receptacles is required to comply with NEC 250.146(D) and CEC 10-400 and 10-612.	No such parts	N/A
Annex DVA (G.4.3)	Interconnection of units by conductors supplied by a limited power source, or a Class 2 circuit defined in the NEC/CEC may have field wiring connections other than specified in DVH.3, such as wire-wrap and crimp-on types, if the limited power source and Class 2 circuits are separated from all other circuits by barriers, routing or fixing.	No such parts	N/A
Annex DVA (G.5.3)	Power distribution transformers distributing power at 100 volts or more, and rated 10 kVA or more, require special transformer overcurrent protection.	No such parts	N/A
Annex DVA (G.5.4)	Motor control devices are required for cord-connected equipment with a mains-connected motor if the equipment is rated more than 12 A, or if the equipment has a nominal voltage rating greater than 120 V, or if the motor is rated more than 1/3 hp (locked rotor current over 43 A).	No such parts	N/A
Annex DVA (G.7)	Flexible cords used outdoors are required to have the suffix “W” marked on the flexible cord.		N/A
Annex DVA (M)	For ITE room applications, equipment with battery systems capable of supplying 750 VA for five minutes are required to have a battery disconnect means that may be connected to the ITE room remote power-off circuit.	Not such application	N/A
Annex DVA (Q)	If applicable per NEC 725.121(C), some limited power sources supplied from AV/ICT equipment are required to have a label indicating the maximum voltage and rated current output for per conductor for each connection point. Where multiple connection points have the same rating, a single label is permitted to be used.		N/A
	Wiring terminals intended to supply Class 2 outputs in accordance with the NEC or CEC Part 1are required to be marked with the voltage rating and “Class 2” or equivalent. The marking is located adjacent to the terminals and visible during wiring.	Not applicable for the equipment	N/A
	Applicable parts of Chapter 8 of the NEC, and Rules 54 and 60 of the CEC, may be applicable to ITE installed outdoors with connections to communication systems.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
Annex DVB (1)	Additional requirements apply for equipment used for entertainment purposes intended for installation in general patient care areas of health care facilities.	Not such application	N/A
Annex DVC (1)	Additional requirements apply for equipment intended for mounting under kitchen cabinets.	Not such application	N/A
Annex DVE (4.1.1)	Some equipment, components, sub-assemblies and materials associated with the risk of fire, electric shock, or personal injury are required to have component or material ratings in accordance with the applicable national (U.S. and Canadian) component or material requirements. These equipment and components include: appliance couplers, attachment plugs, battery backup systems, circuit breakers, communication circuit accessories, connectors (used for current interruption of non-LPS circuits), direct plug-in equipment, electrochemical capacitor modules (energy storage modules with ultracapacitors), enclosures (outdoor), flexible cords and cables, fuses (branch circuit), ground-fault current interrupters, interconnecting cables, modular data centres, power supply cords, some power distribution equipment, printed wiring, protectors for communications circuits, receptacles, surge protective devices, vehicle battery adapters, wire connectors, and wire and cables.	UL approved components used Refer to table 4.1.2 of main IEC 62368-1 test report for details	P
Annex DVH	Equipment for permanent connection to the mains supply is subjected to additional requirements.	The equipment is not permanently connected equipment	N/A
Annex DVH (DVH.1)	Wiring methods (terminals, leads, etc.) used for the connection of the equipment to the mains are required to be in accordance with the NEC/CEC.		N/A
Annex DVH (DVH.2.1)	For safe and reliable connection to a mains, permanently connected equipment is to be provided.		N/A
Annex DVH (DVH.2.2)	Additional considerations for D.C. mains.		N/A
Annex DVH (DVH.3.2.1)	Terminals for permanent wiring, including protective earthing terminals, are required to be suitable for U.S./Canadian wire gauge sizes, rated 125 percent of the equipment rating, and be specially marked when specified.		N/A
Annex DVH (DVH.3.2.3)	Wire binding screws are not permitted to attach conductors larger than 10 AWG (5.3 mm^2).		N/A
Annex DVH (DVH.3.2.4)	All associated mains supply terminals are located in proximity to each other and to the main protective earthing terminal, if any.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
Annex DVH (DVH.3.2.5)	Terminals are located, guarded or insulated so that, should a strand of a conductor escape when the conductor is fitted, there is no likelihood of accidental contact between such a strand and accessible conductive parts or unearthed conductive parts separated from accessible conductive parts by supplementary insulation only.		N/A
Annex DVH (DVH.3.3)	When field connection to an external circuit is via wires (example, free conductors), the wires are not smaller than 18 AWG (0.82 mm^2) and the free length of the wire inside an outlet box or wiring compartment is 150 mm or more.		N/A
Annex DVH (DVH.3.4)	Size of protective earthing conductors and terminals		N/A
Annex DVH (DVH.4)	Permanently connected equipment is required to have a suitable wiring compartment and wire bending space.		N/A
Annex DVH (DVH.4.1)	Wire bending space		N/A
Annex DVH (DVH.4.2)	Volume of wiring compartment		N/A
Annex DVH (DVH.4.3)	Separation of circuits		N/A
Annex DVH (DVH.5)	Equipment markings and instructional safeguards		N/A
Annex DVH (DVH.5.1)	Identification of protective earthing terminal		N/A
Annex DVH (DVH.5.2)	Identification of terminal for earthed conductor (neutral)		N/A
Annex DVH (DVH.5.3)	Identification of terminals for aluminium conductors		N/A
Annex DVH (DVH.5.4)	Wire temperature ratings		N/A
Annex DVH (DVH 5.5)	Equipment connected to a centralized d.c. power system, and having one pole of the DC mains input terminal connected to the main protective earthing terminal in the equipment, is required to comply with special earthing, wiring, marking and installation instruction requirements.		N/A
Annex DVI (6.7)	Equipment intended for connection to telecommunication network outside plant cable is required to be protected against overvoltage from power line crosses.		N/A
Annex DVJ (10.6.1)	Equipment connected to a telecommunication and cable distribution networks and supplied with an earphone intended to be held against, or in the ear is required to comply with special acoustic pressure requirements.		N/A

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT
IEC 62368-1
SINGAPORE NATIONAL DIFFERENCES
Audio/video, information and communication technology equipment - Part 1: Safety requirements

Differences according to.....:	Special National Conditions
TRF template used:.....:	IECEE OD-2020-F3, Ed. 1.1
Attachment Form No.....:	SG_ND_IEC62368_1E
Attachment Originator .....:	Intertek Testing Services (Singapore) Pte Ltd
Master Attachment.....:	2022-07-08

	National Differences		--
	Not Applicable		--
Chapter 4.2	**Special national conditions (if any)** Controlled goods under the Consumer Protection (Safety Requirements) Registration Scheme (CPS) are required to be tested to additional requirements stipulated by the Consumer Product Safety Office (CPSO) of Enterprise Singapore in Chapter 7 of the CPS information booklet. The CPS information booklet is updated on an ongoing basis. At the point of testing, refer to the latest copy of the CPS information booklet for the minimum edition of standard to apply for testing of products under the CPS scheme and any new requirements. Link to CPS information booklet: https://www.consumerproductsafety.gov.sg/files/cps-info-booklet.pdf		P
Clause 1	All appliances must be tested to 230 VAC, 50 Hz.		P
4	Appliance fitted with voltage selector shall be tested as follows: Connect appliance to 230 VAC mains with voltage selector switch to settings not suitable for operation at 230 VAC.		N/A
5	All appliances (with tropical test requirements in applicable Standards) shall comply with the tropical condition test as stated in the relevant IEC Standards.		P
7	All Class I appliances must be fitted with 3-pin mains plugs that are registered with the CPSO.	appliance coupler	P

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
8	a) All Class II appliances must be fitted with 2-pin mains plug complying with EN 50075. b) Class II appliances that are fitted with 3-pin mains plugs must use plugs that are registered with the CPSO.		N/A
9	Detachable power cord set must be listed in the test report critical component list.		P
14	AC Adaptor incorporated with 13A socket-outlet to be tested to additional tests clauses 13, 17 and 18 of SS 145 Part 3: 2020.		N/A
15	Supplier who is supplying AC adaptors with detachable interchangeable plug pins must include with its products, written instructions to inform customer on the type of detachable interchangeable plug pins that are approved and suitable to use in Singapore. These instructions are to be submitted to the Conformity Assessment Body for verification when applying for Certificate of Conformity.		N/A
16	For AC Adaptors supplied together with Personal Mobility Devices: 1. Registered Supplier to declare the model of the AC adaptor that is to be used with/ bundled together with the PMDs; 2. Registered Supplier to provide valid IEC 60950-1 or IEC 62368-1 test reports for certification and registration of the declared AC adaptor under the CPS scheme; and 3. Registered Supplier to provide the UL 2272 test report as supporting document, showing that the listed AC adaptor in the UL 2272 test report is the model declared to be used with/ bundled together with the PMDs.		N/A
18	CD/ DVD ROMs (used in personal computers) to have test certificate showing that CD/DVD ROM drive has complied with IEC 60825- 1.		N/A
19	Modem card incorporated in the personal computer must be tested at set level (sub-clauses 5.1 & 6 of IEC 60950) or at component level.		N/A
20	Powerline Ethernet Adaptor incorporated with 13A socket-outlet, to be tested to additional test clauses 13, 17 & 18 of SS 145 Part 3: 2020.		N/A

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	Other additional requirements which may be included in Chapter 7 of the information booklet in ongoing basis at the time of testing.		N/A

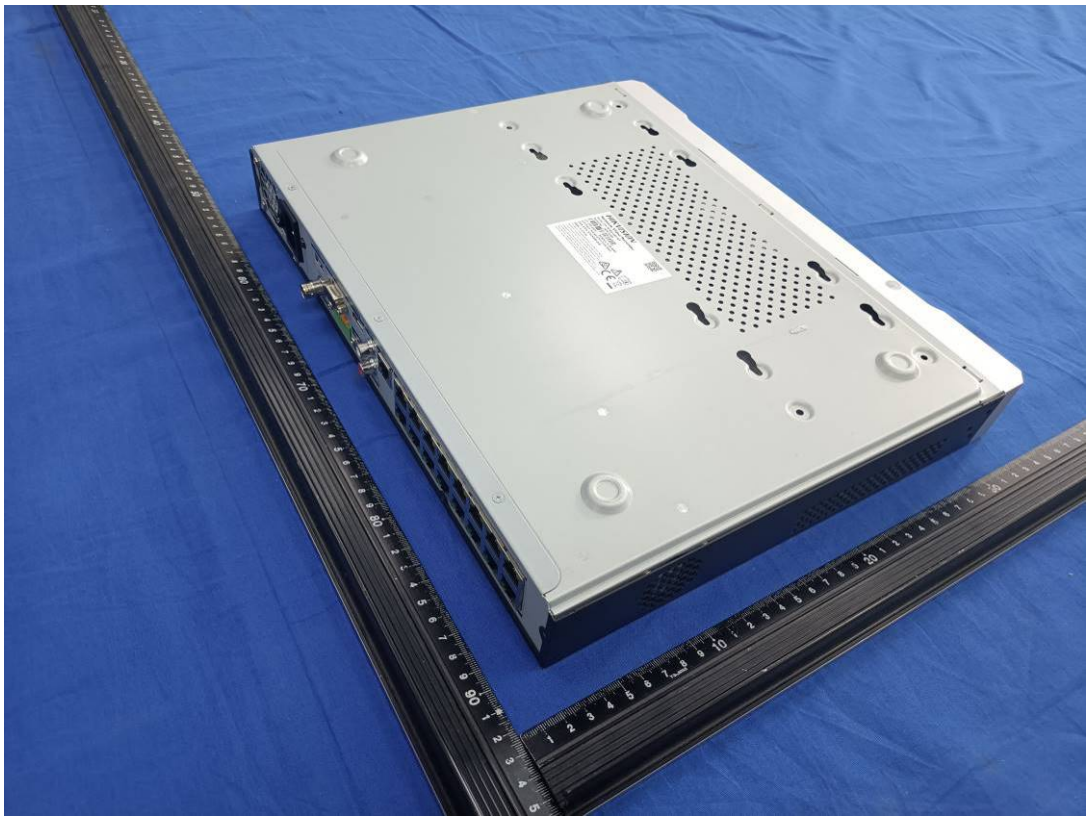
IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT
IEC 62368-1:2018
SAUDI ARABIA NATIONAL DIFFERENCES
(Audio/video, information and communication technology equipment Part 1: Safety requirements)

Differences according to.....:	National standard SASO-IEC 62368-1:2020
TRF template used:.....:	IECEE OD-2020-F3, Ed. 1.1
Attachment Form No.....:	SA_ND_IEC62368_1E
Attachment Originator .....:	SASO
Master Attachment.....:	2022-12-22

	National Differences		--
	Plugs used for pluggable equipment comply with standard SASO-2203.		P
--	**Frequency (Hz)**		P
	60 Hz		P
--	**Rated voltage (V)**		P
	Single phase 230 V Three phase 400 V		P

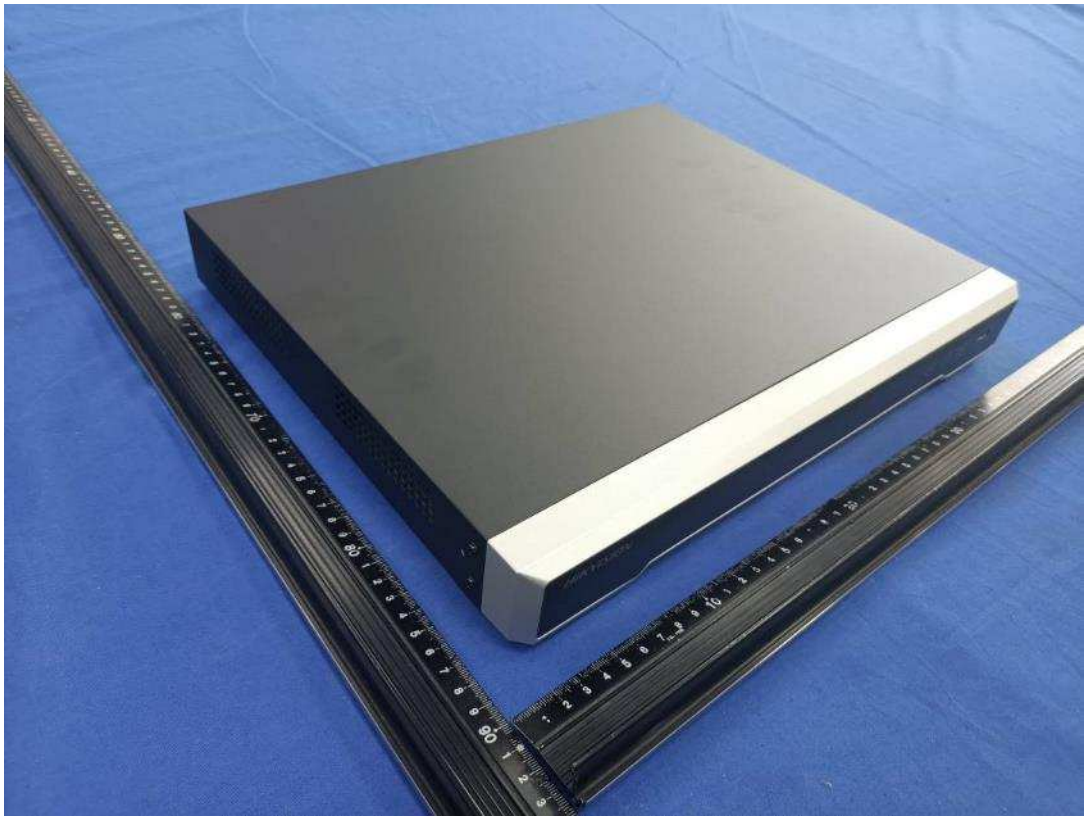
Picture 1 – Overall view



Picture 2 – Overall view

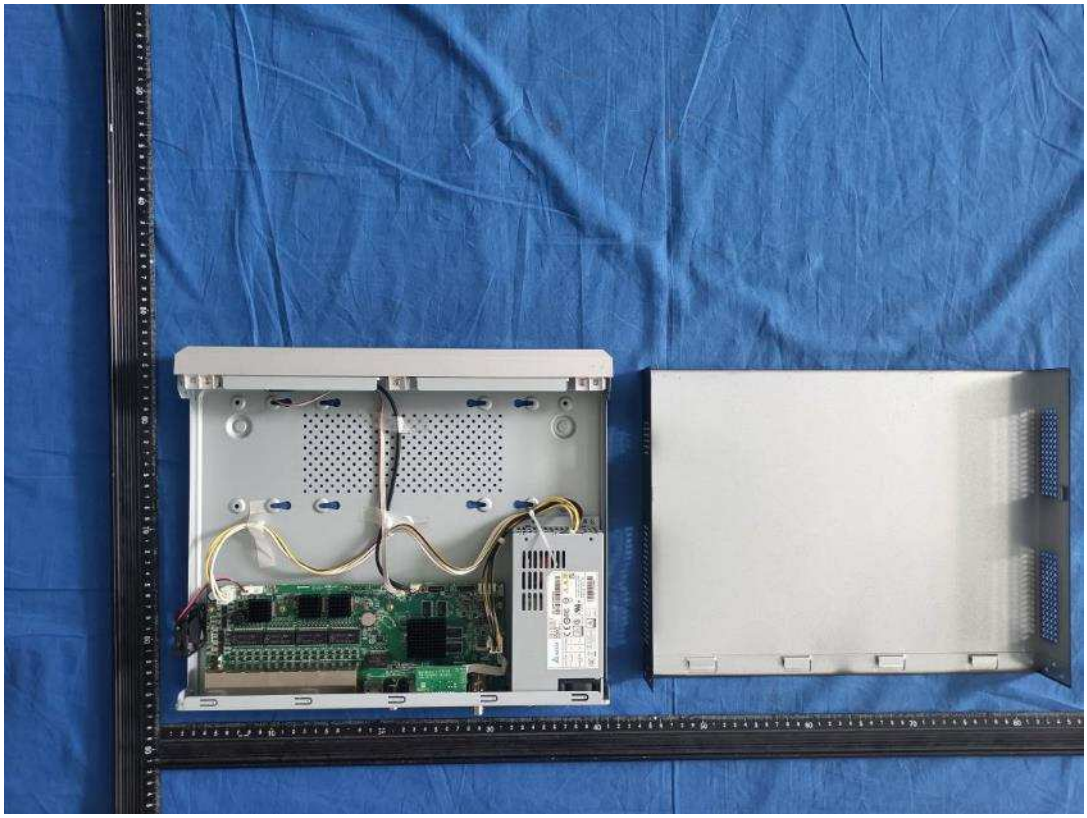
Picture 3 – Overall view

Picture 4 – Overall view (Front view for another type of panel)

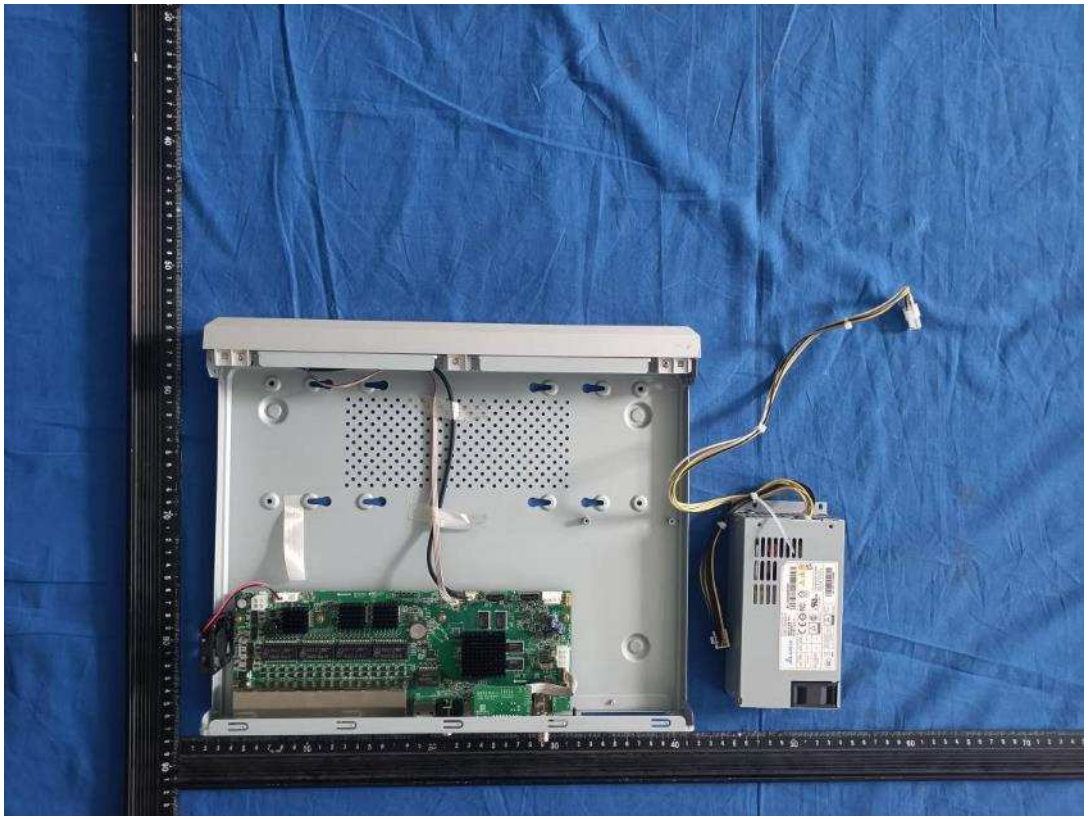


Picture 5 – Overall view (Front plastic cover appearance 1)

Picture 6 – Overall view (Front plastic cover appearance 2)



Picture 7 – Internal view



Picture 8 – Internal view

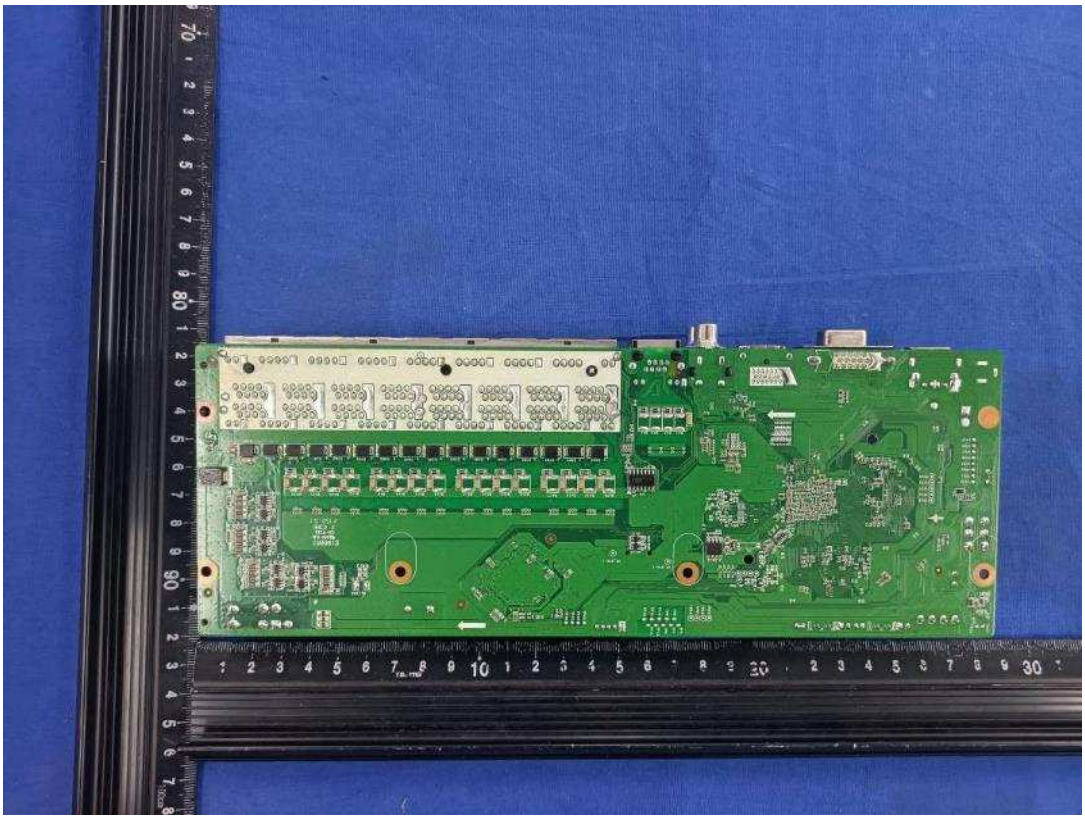
Picture 9 – Internal view

Picture 10 – Internal view

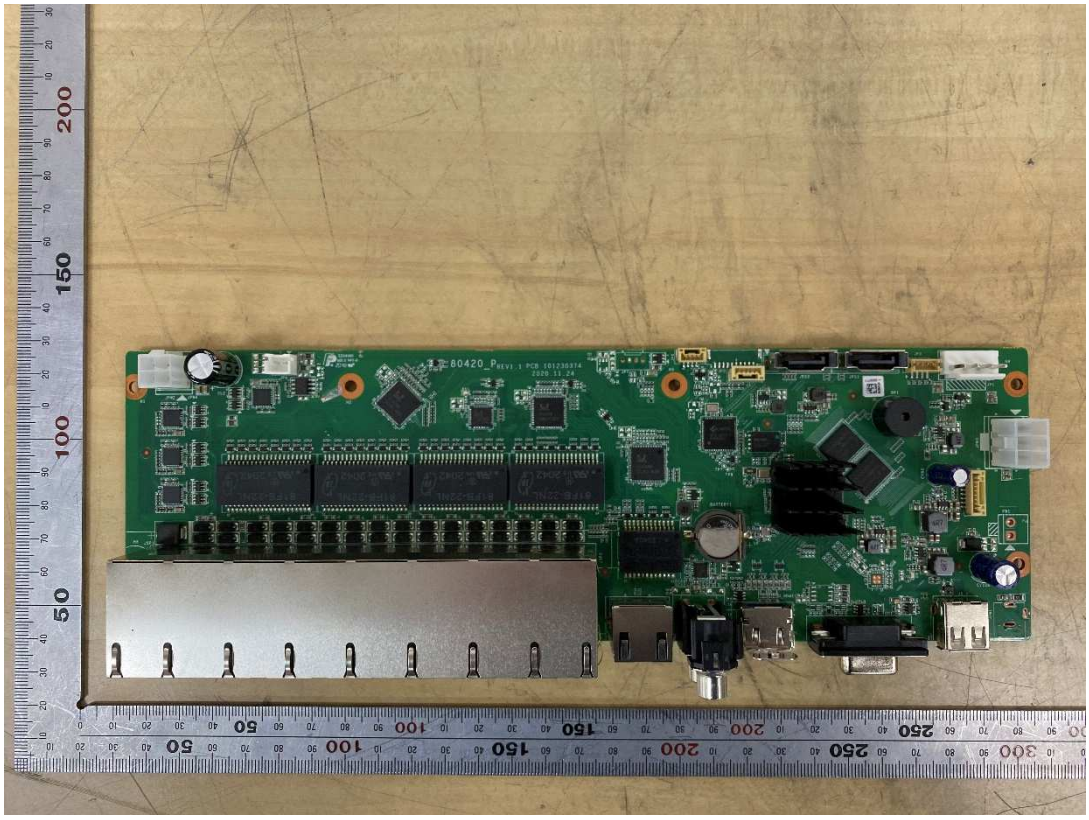
Picture 11 – Main board view (Model: DS-80500)

Picture 12 – Main board view (Model: DS-80500)

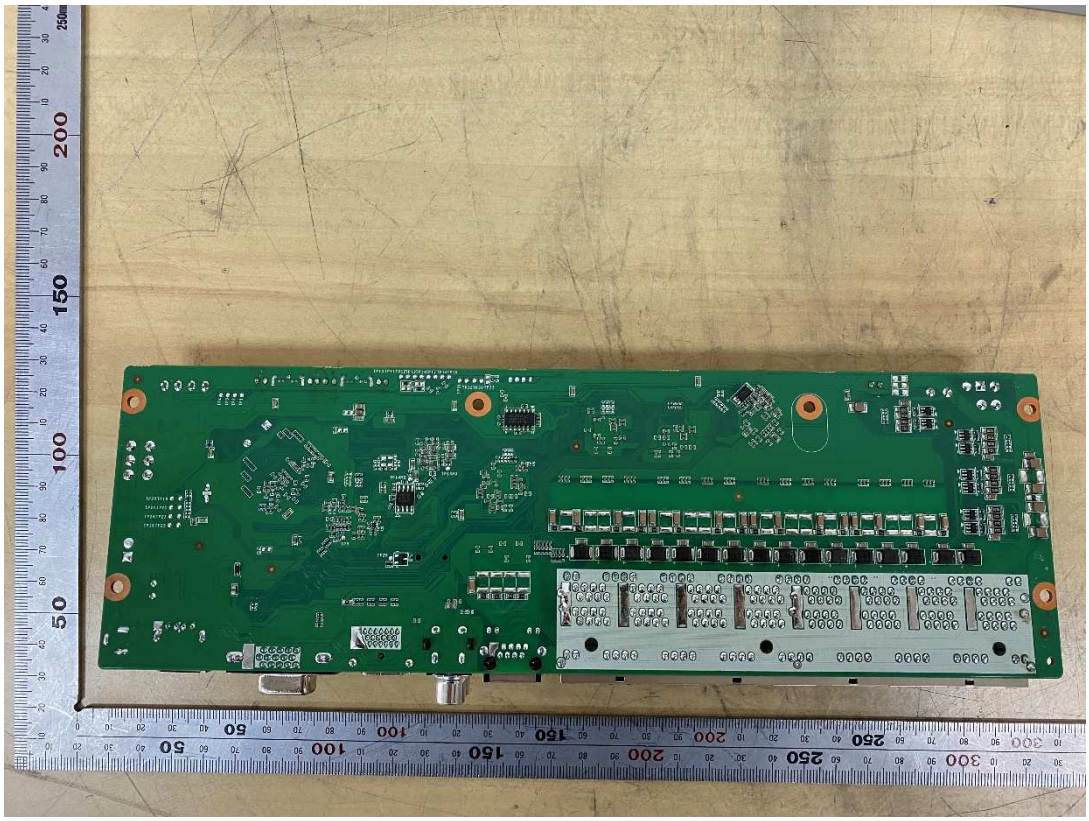
Picture 13 – Main board view (Model: DS-80517)



Picture 14 – Main board view (Model: DS-80517)

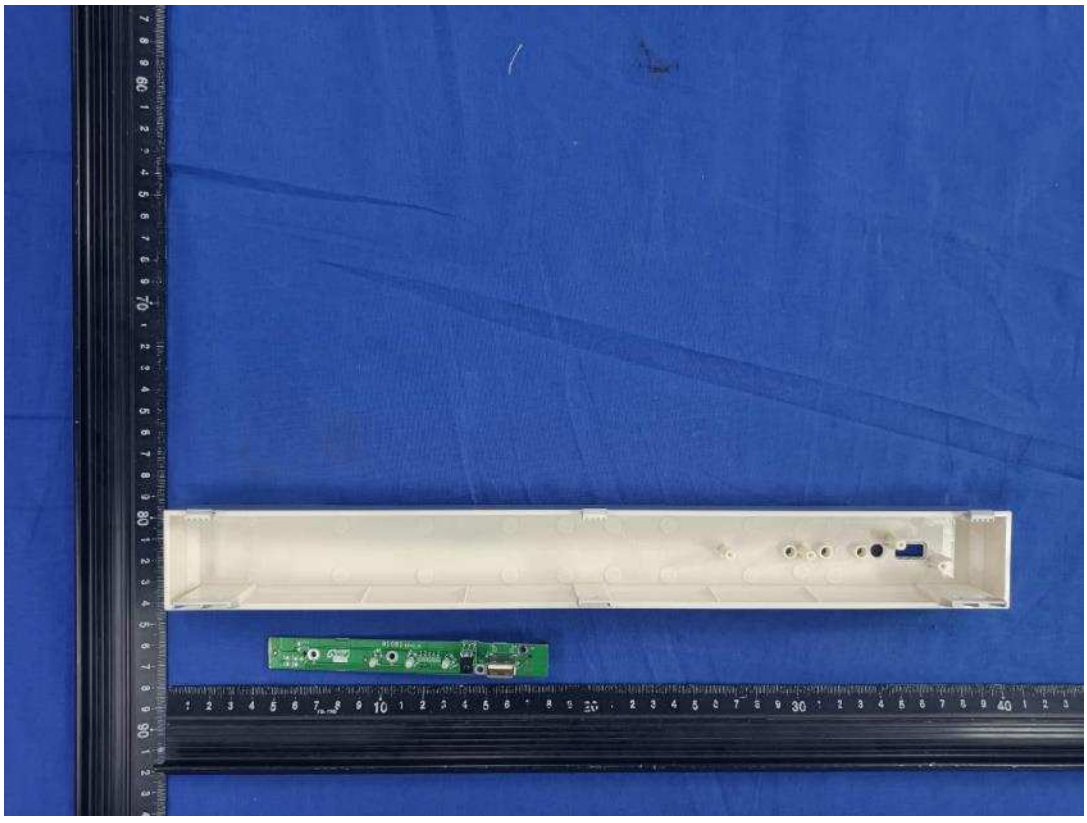


Picture 15 – Main board view (Model: DS-80420)

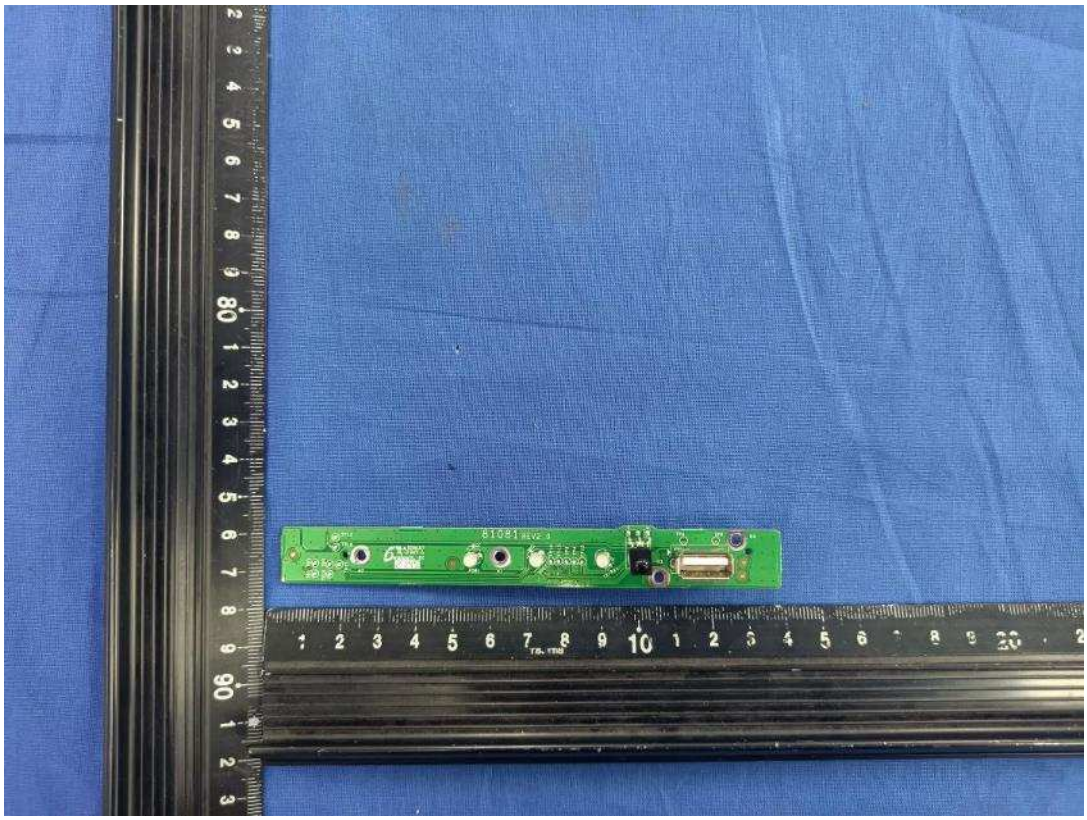


Picture 16 – Main board view (Model: DS-80420)

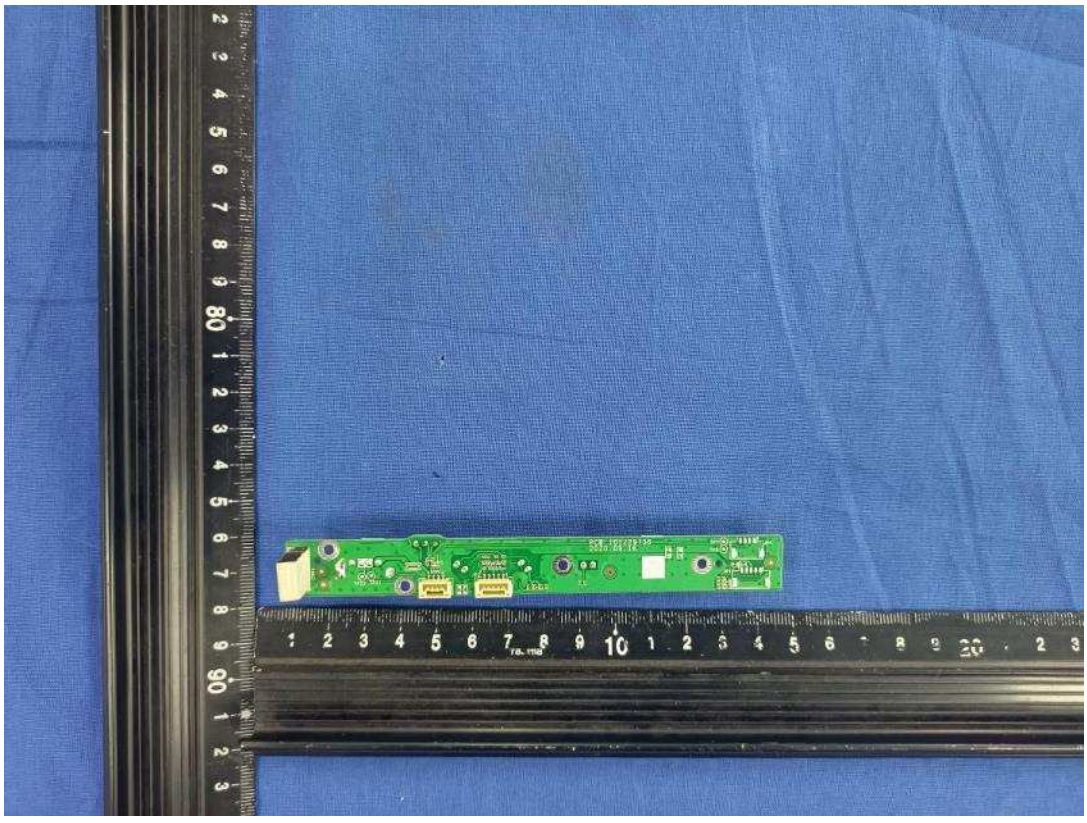
Picture 17 – Internal view



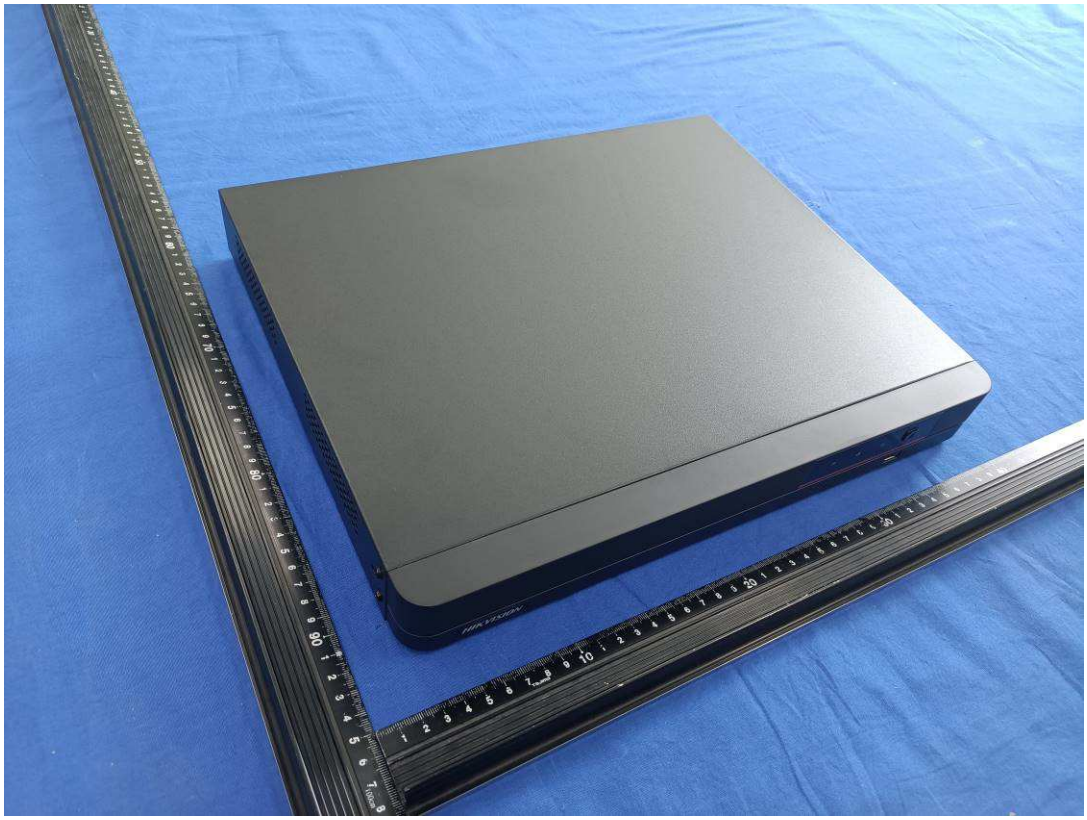
Picture 18 – Internal view



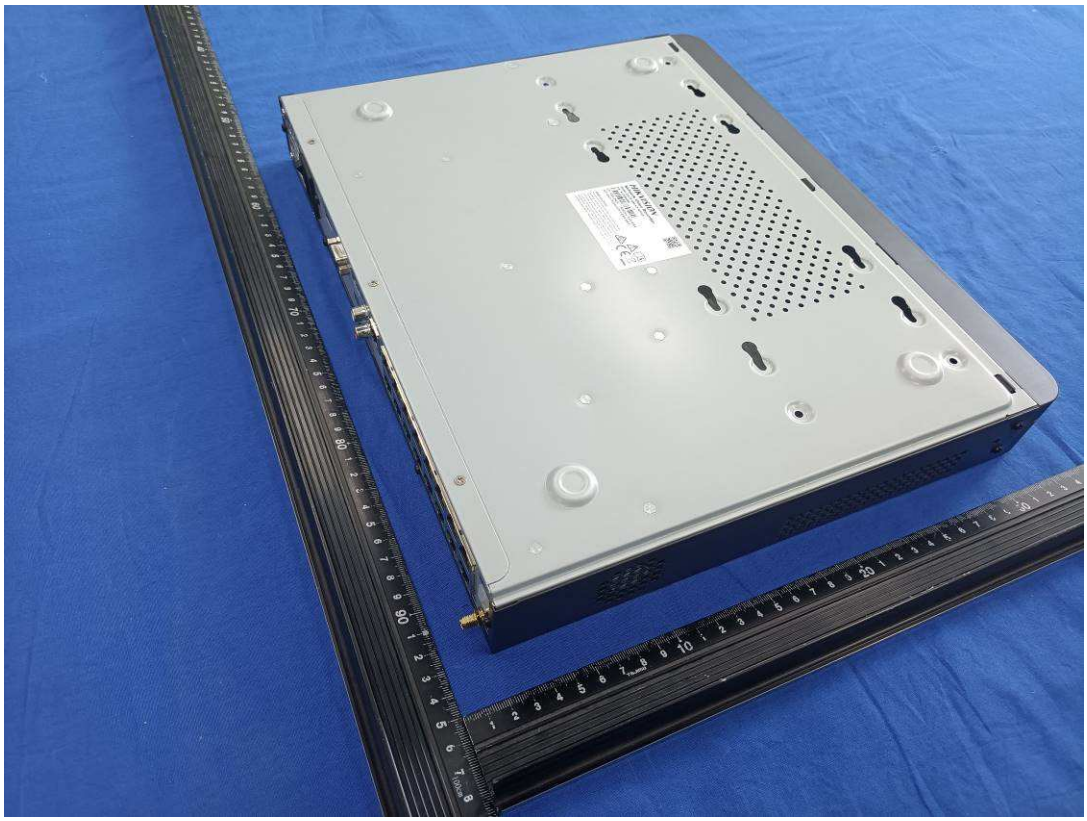
Picture 19 – PCB for front panel



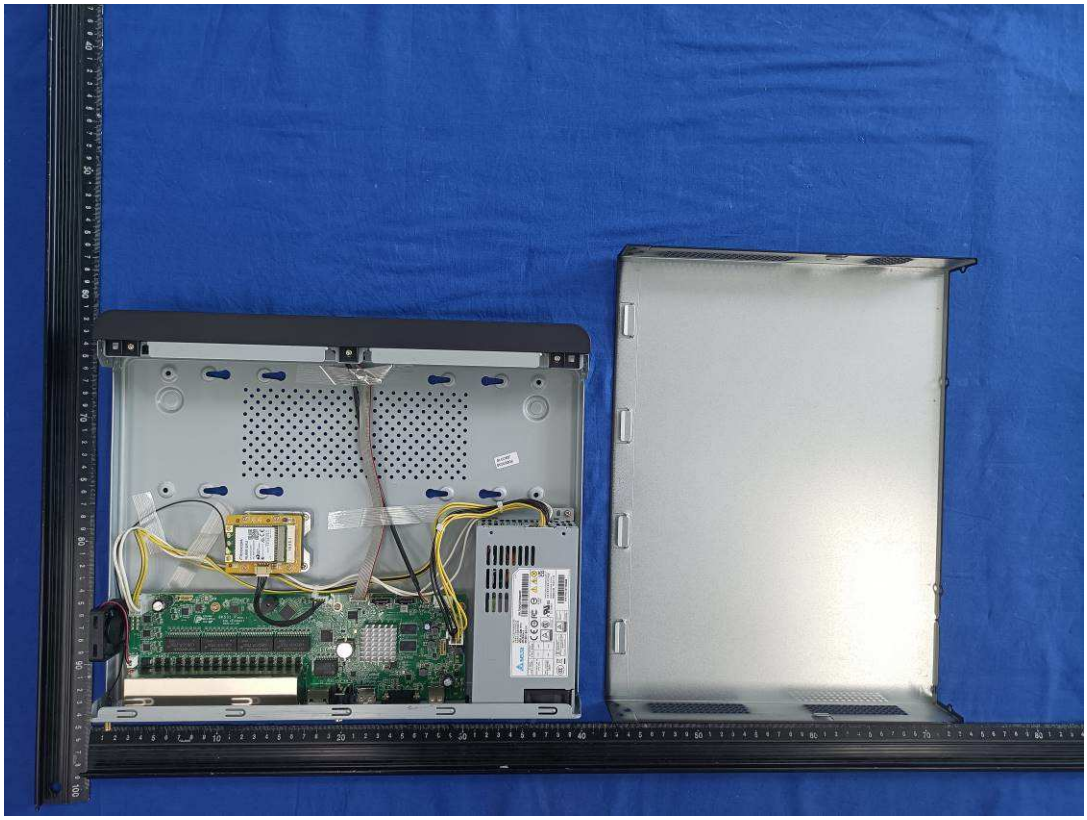
Picture 20 – PCB for front panel



Picture 21 – Overall view (Front plastic cover appearance 3)

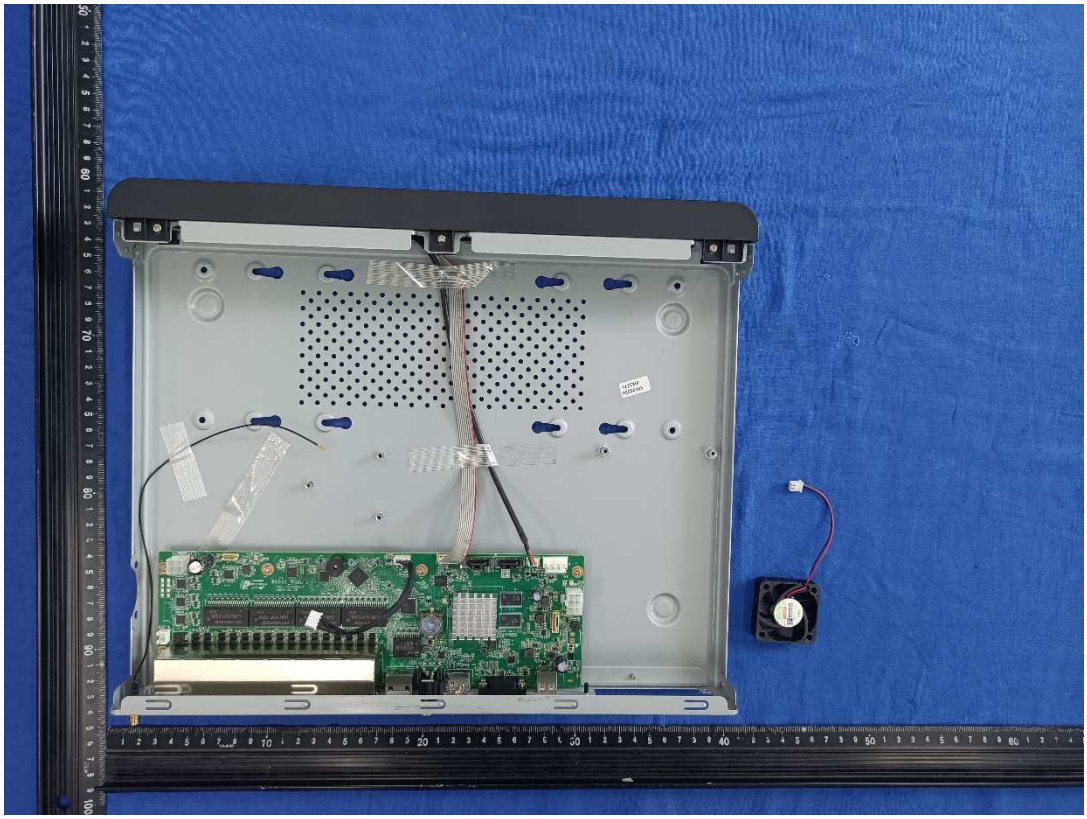


Picture 22 – Overall view

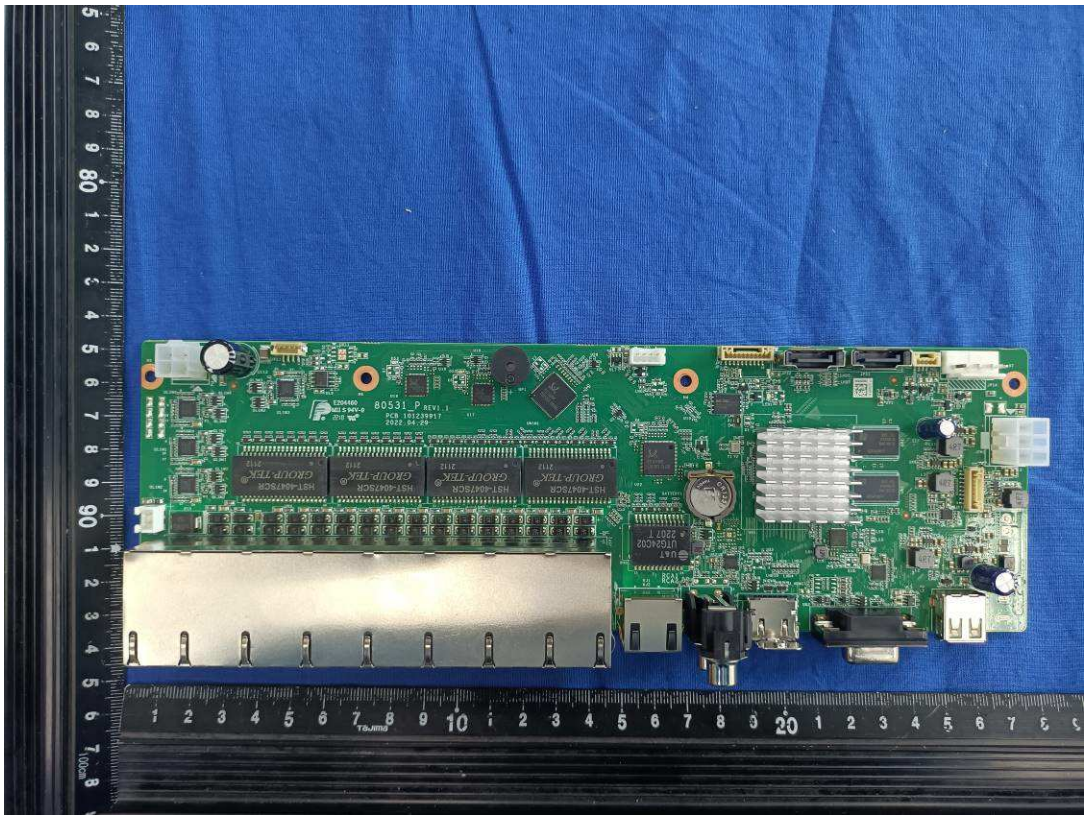


Picture 23 – internal view

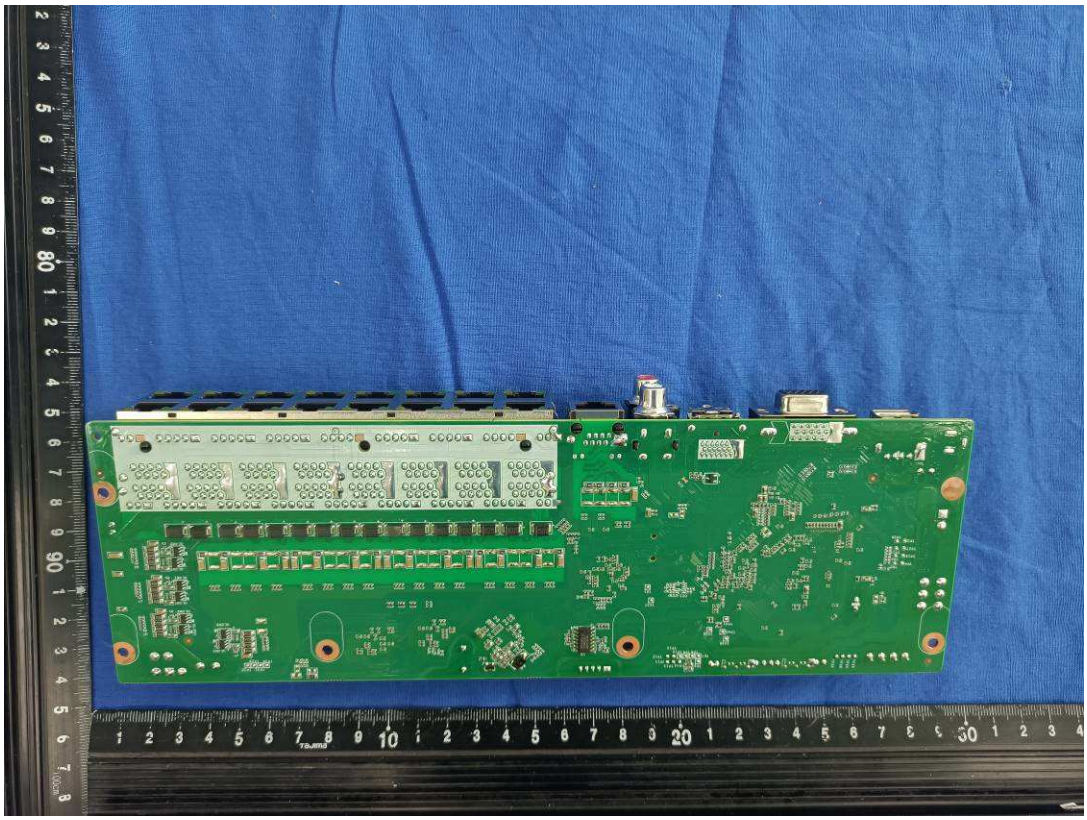
Picture 24 – internal view (include mainboard model: DS-80531)



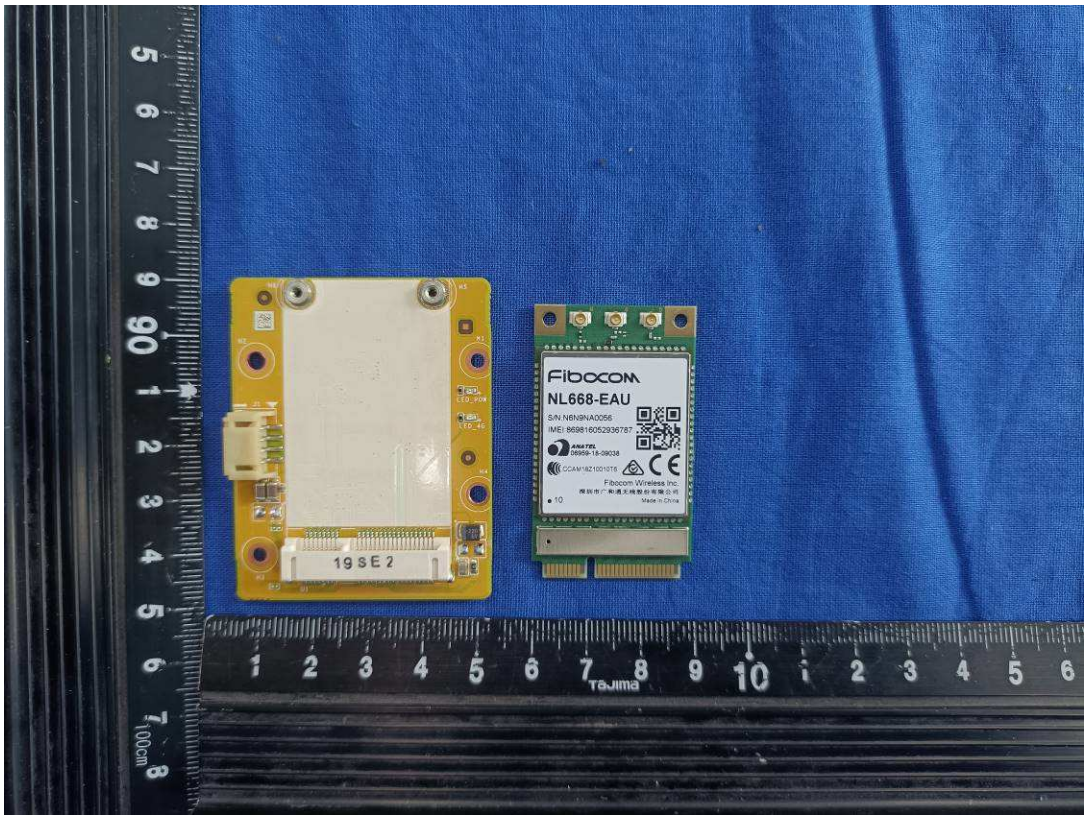
Picture 25 – PCB for front panel



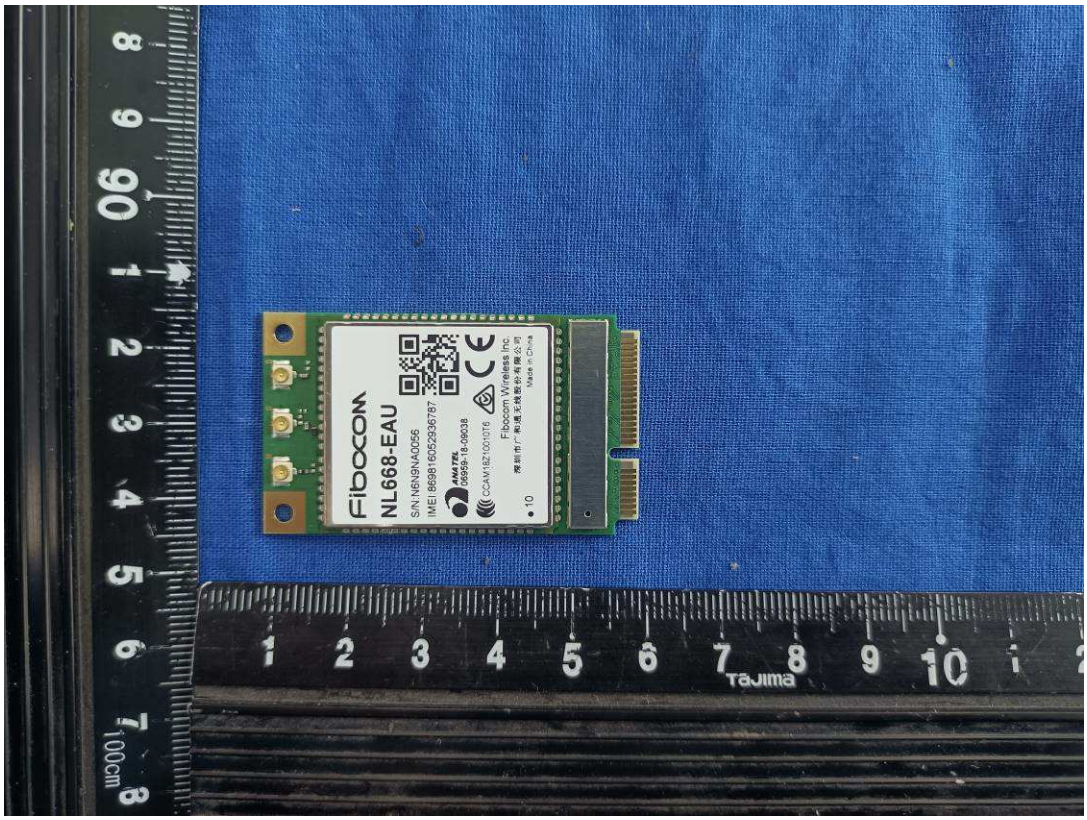
Picture 26 – PCB view (mainboard model: DS-80531)



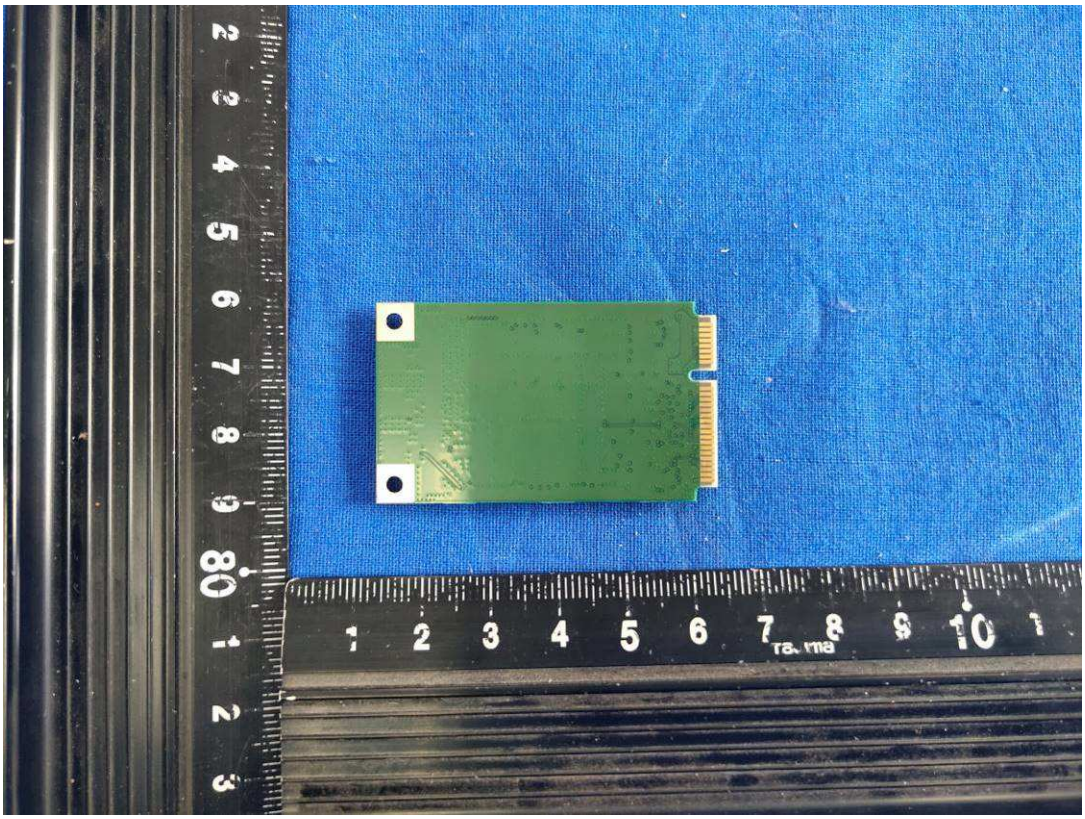
Picture 27 – PCB view (mainboard model: DS-80531)



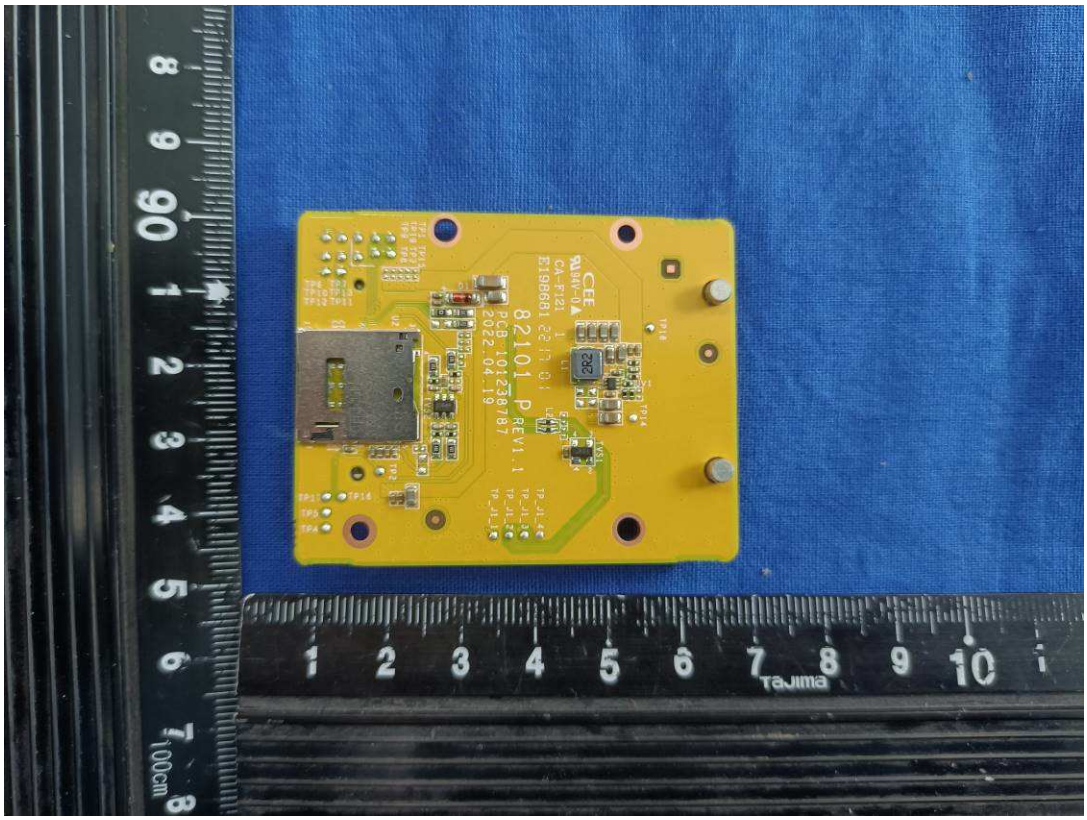
Picture 28 – Wireless module PCB view



Picture 29 – Wireless module PCB view

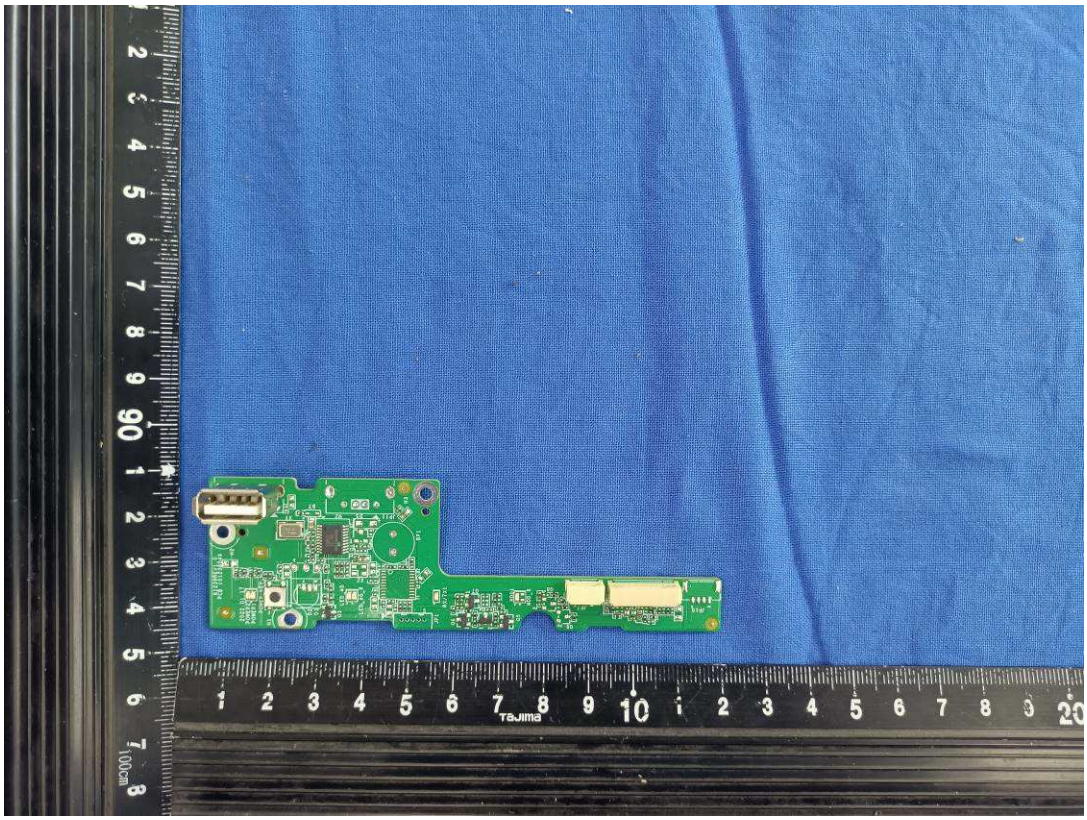


Picture 30 – Wireless module PCB view

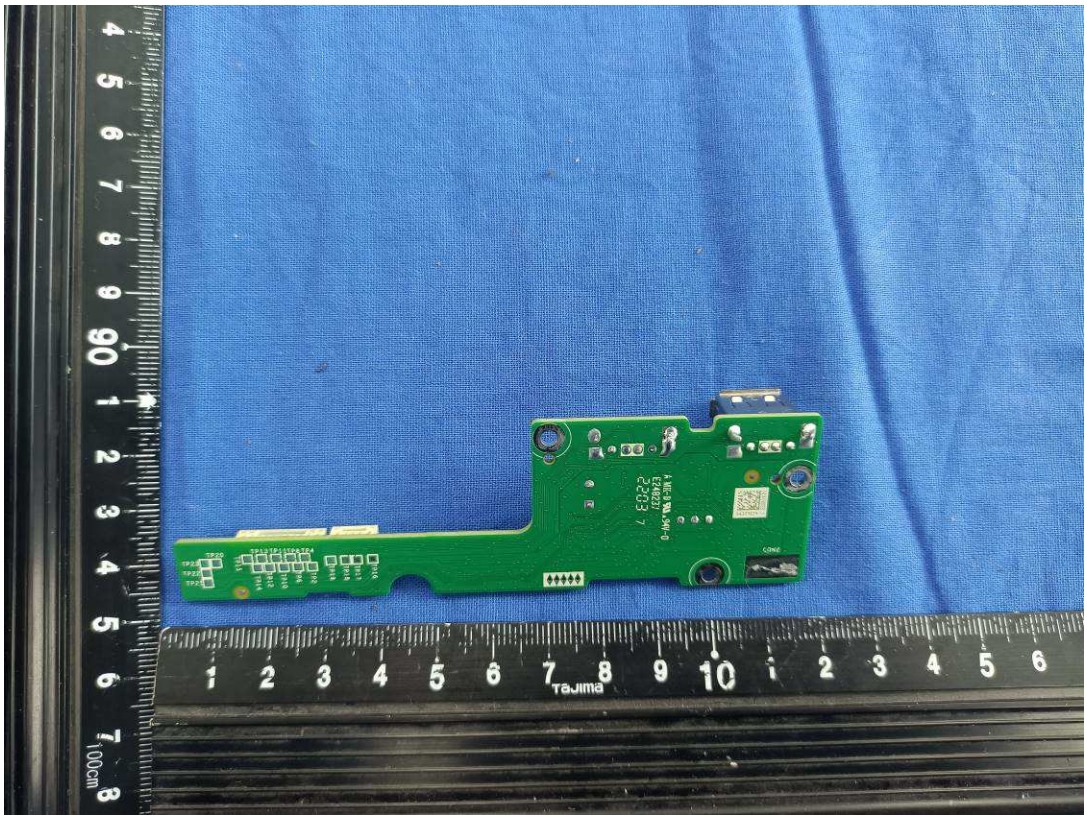


Picture 31 – Wireless module PCB view

Picture 32 – Front plastic cover internal view

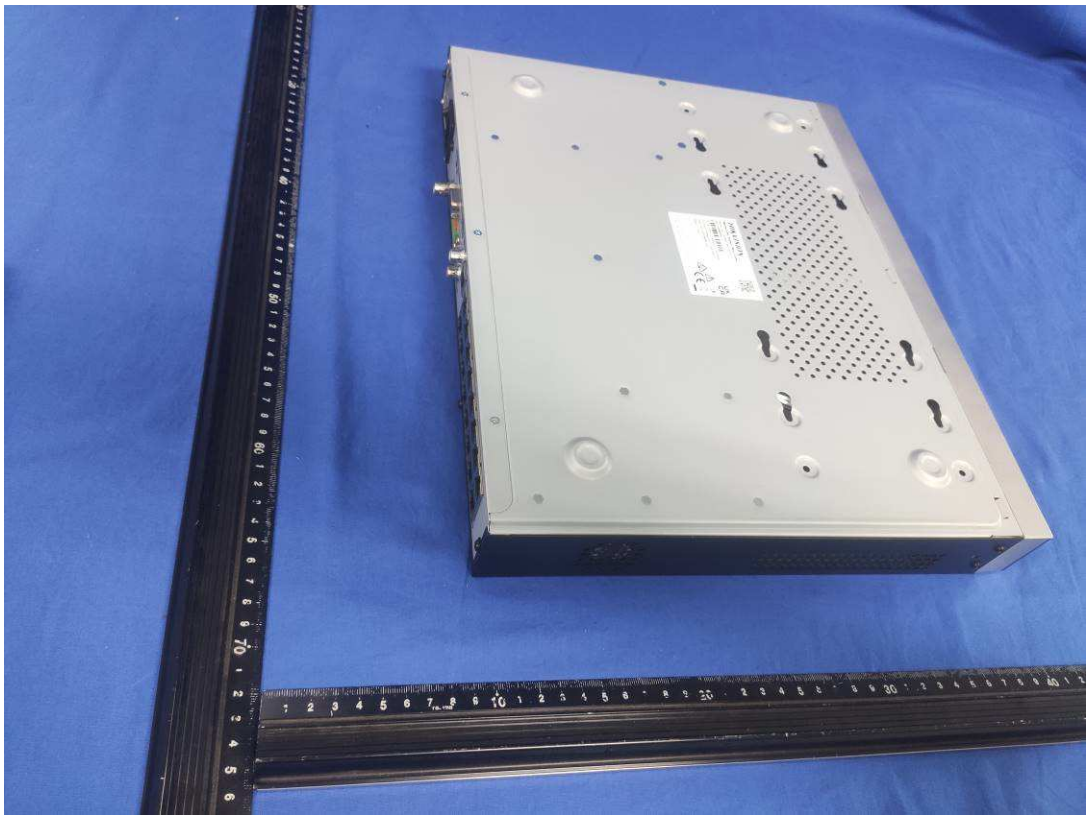


Picture 33 – PCB view (Front plastic cover)



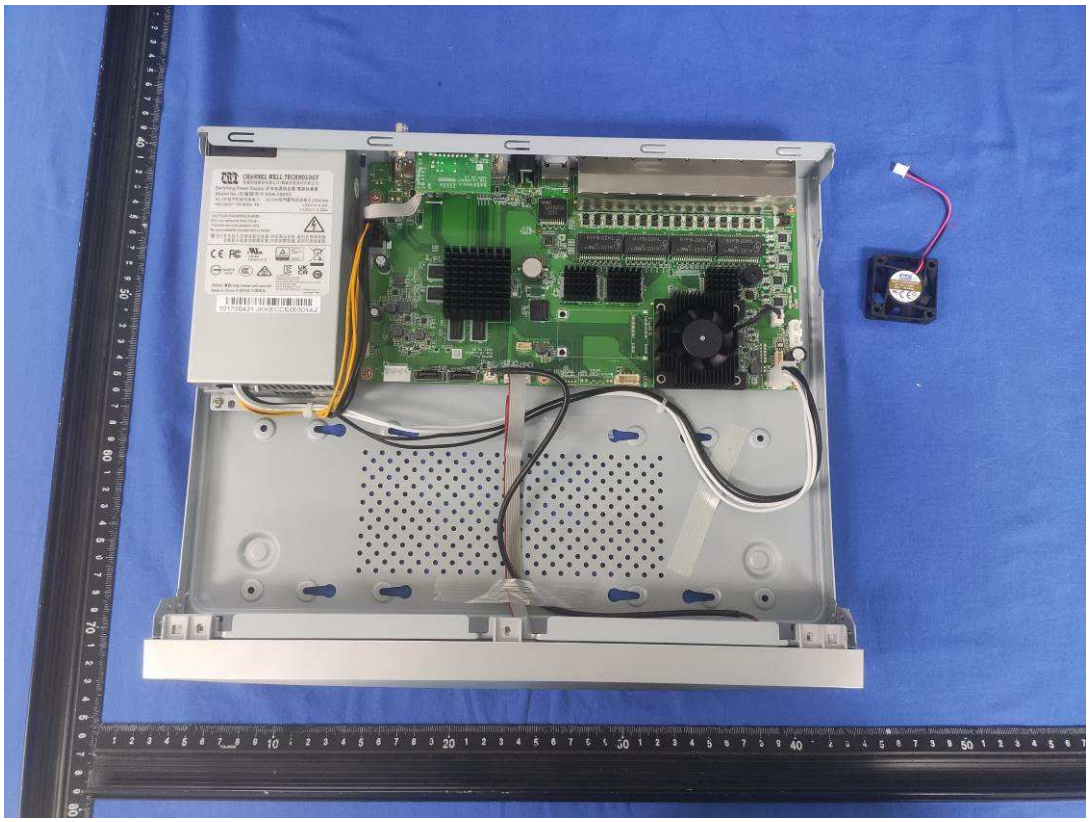
Picture 34 – PCB view (Front plastic cover)

Picture 35 – Overall view (Front plastic cover appearance 4)



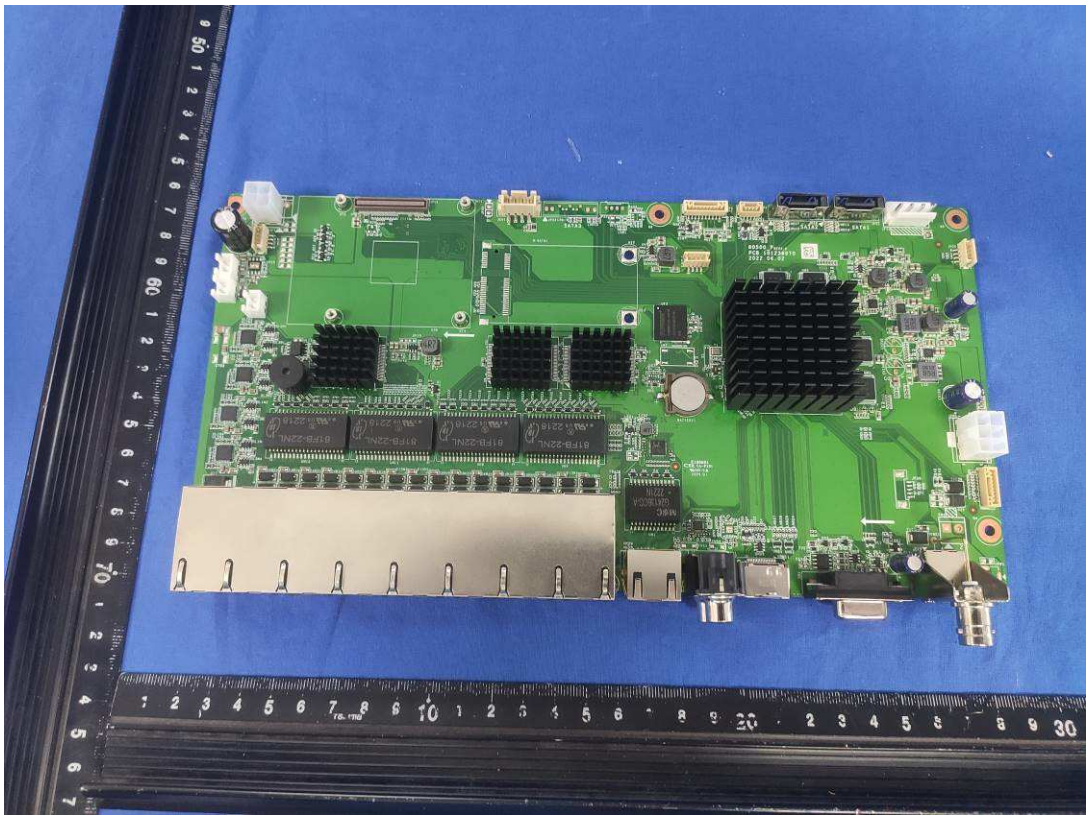
Picture 36 – Overall view

Picture 37 – internal view

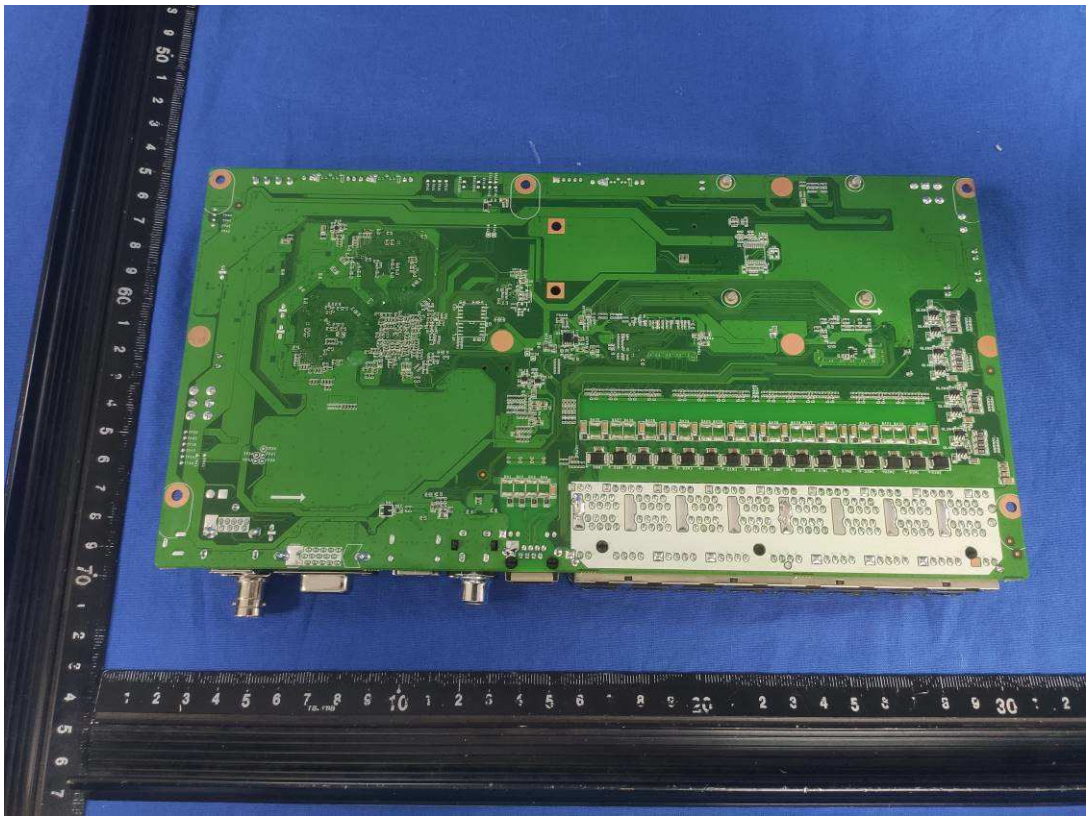


Picture 38 – internal view (include mainboard model: DS-80500)

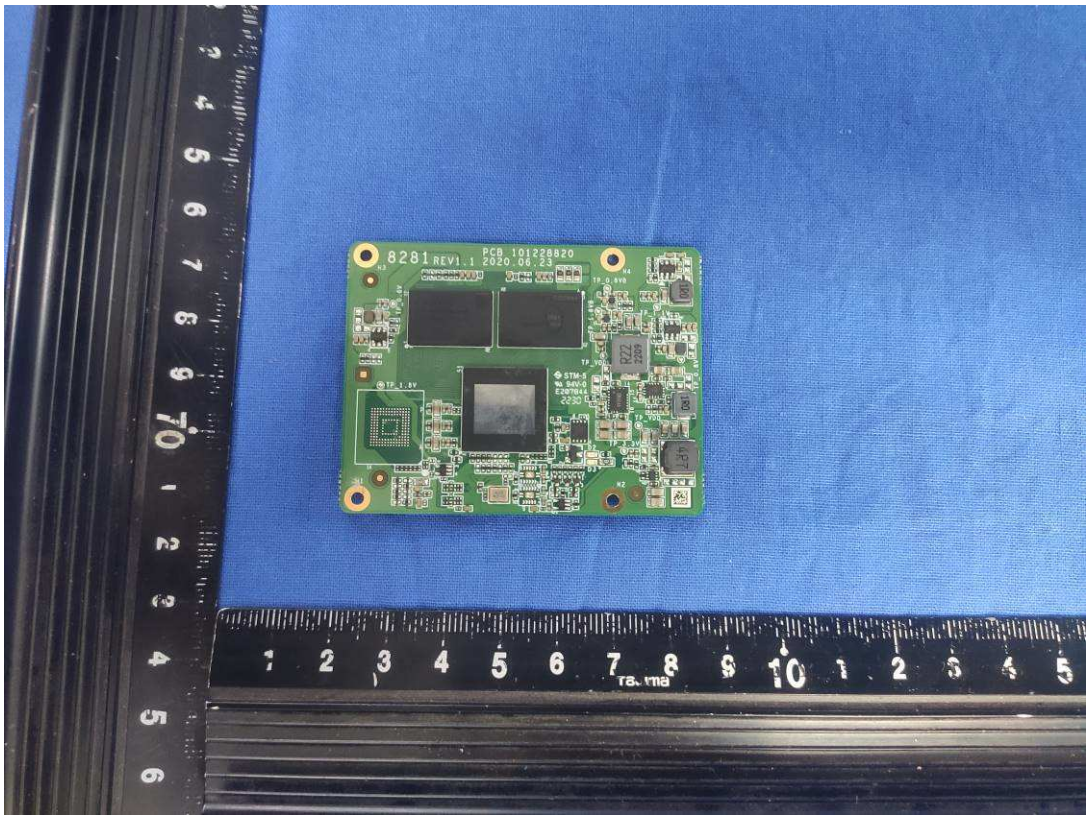
Picture 39 – internal view



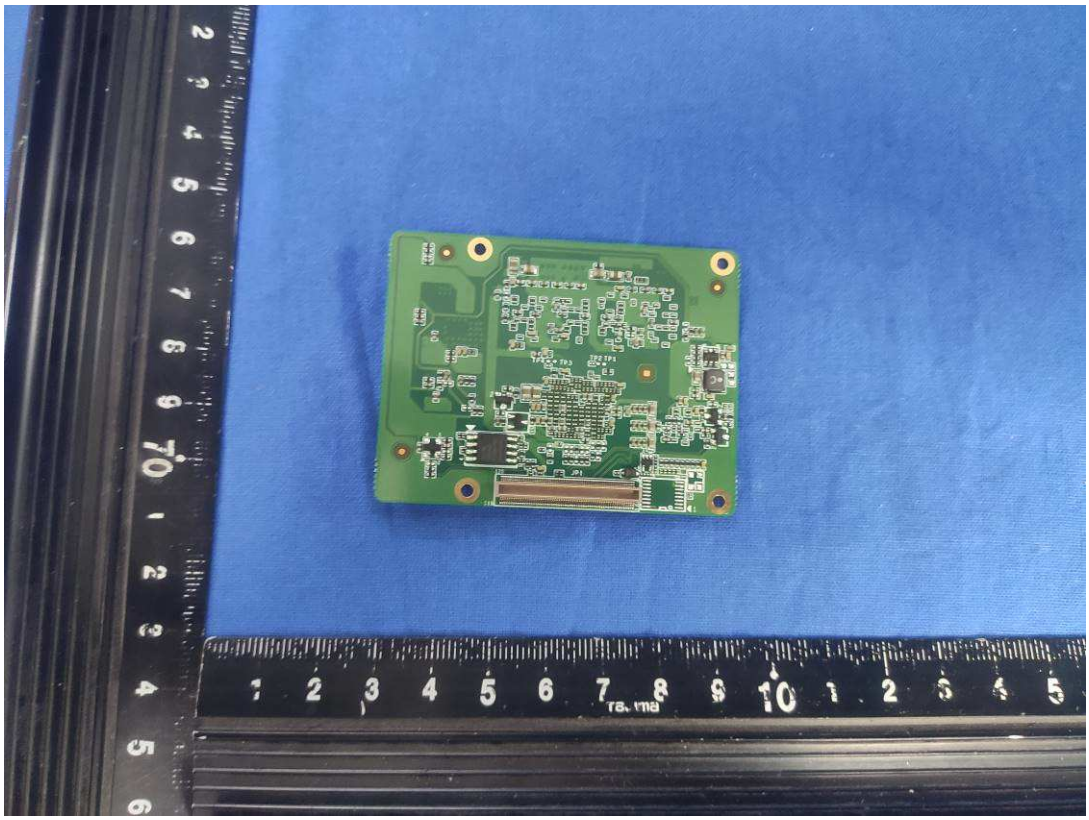
Picture 40 – PCB view (mainboard model: DS-80500)



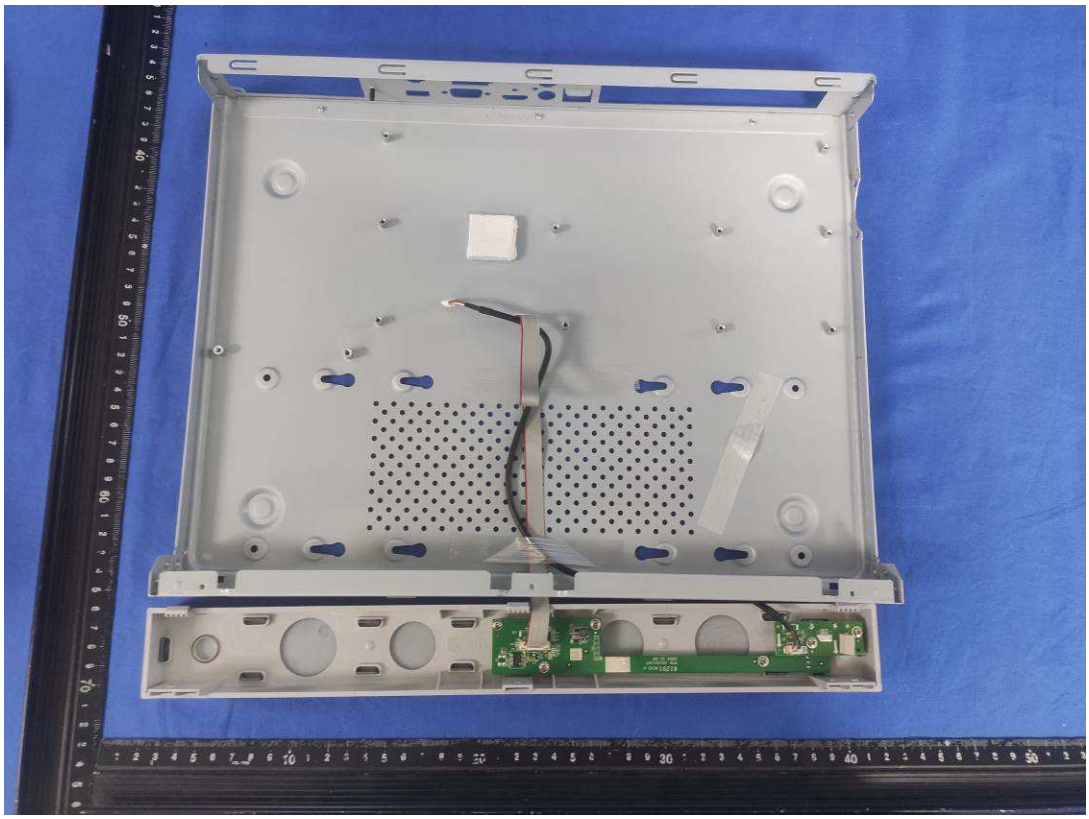
Picture 41 – PCB view (mainboard model: DS-80500)



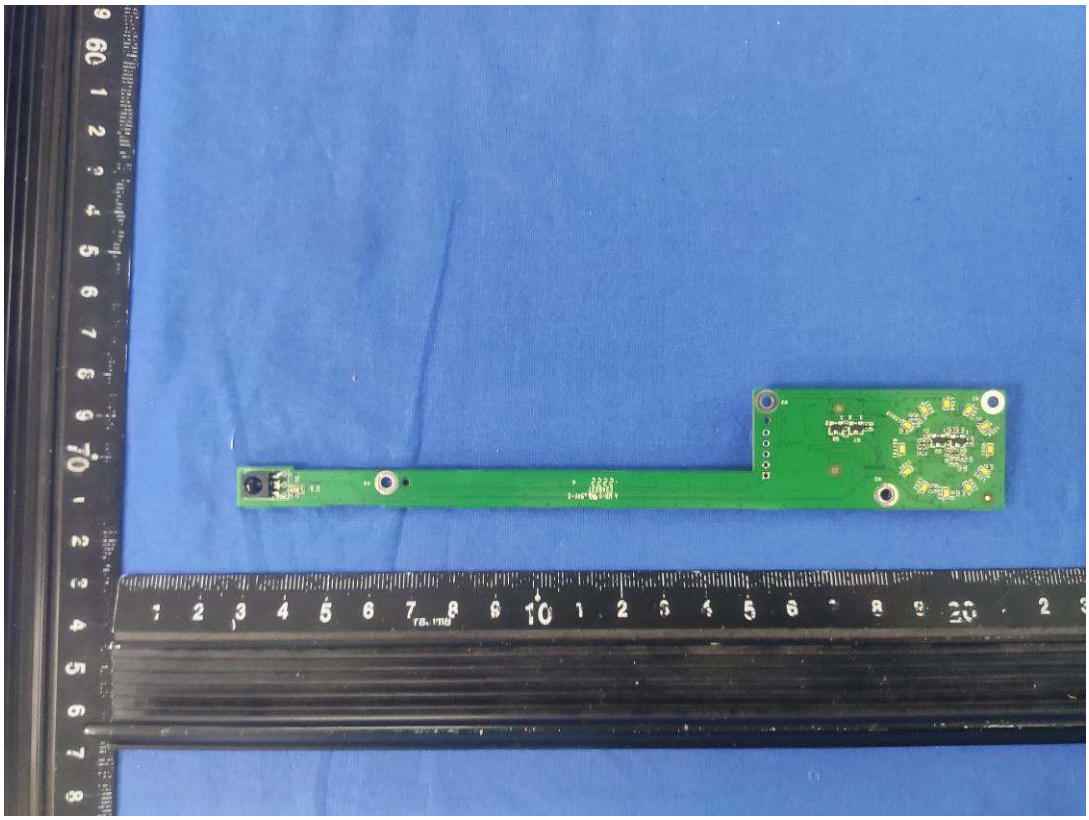
Picture 42 – Attached PCB view



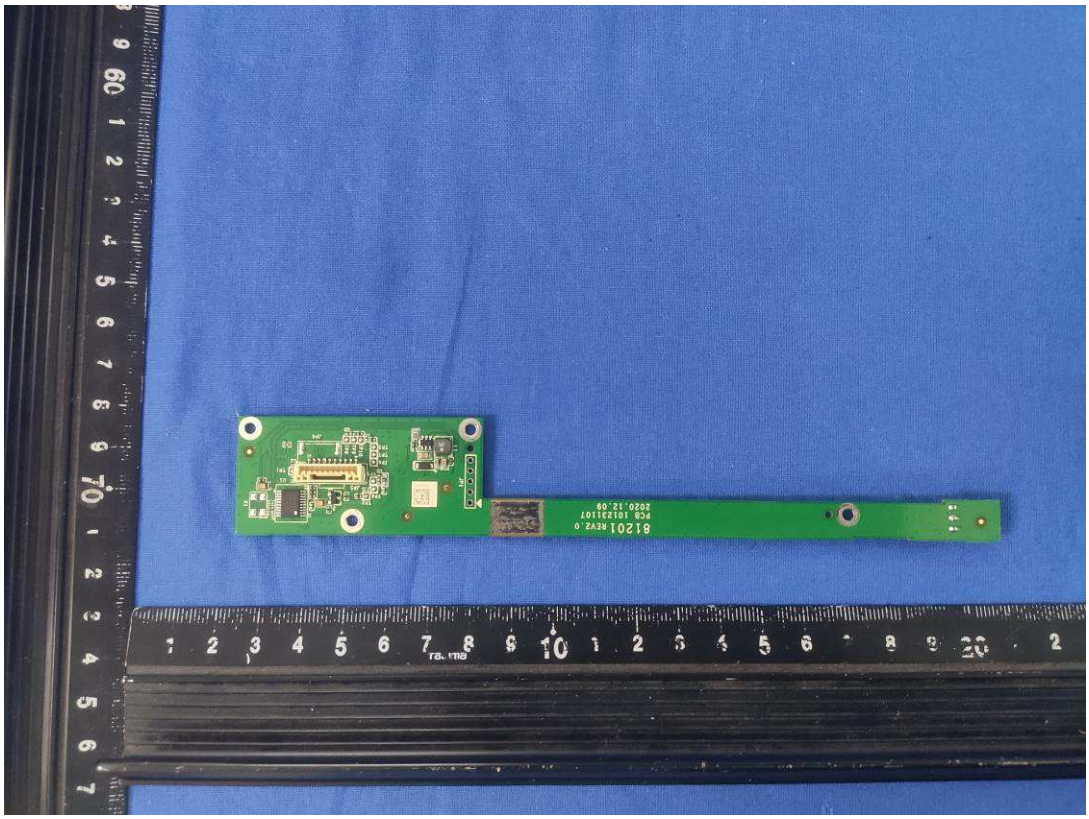
Picture 43 –Attached PCB view



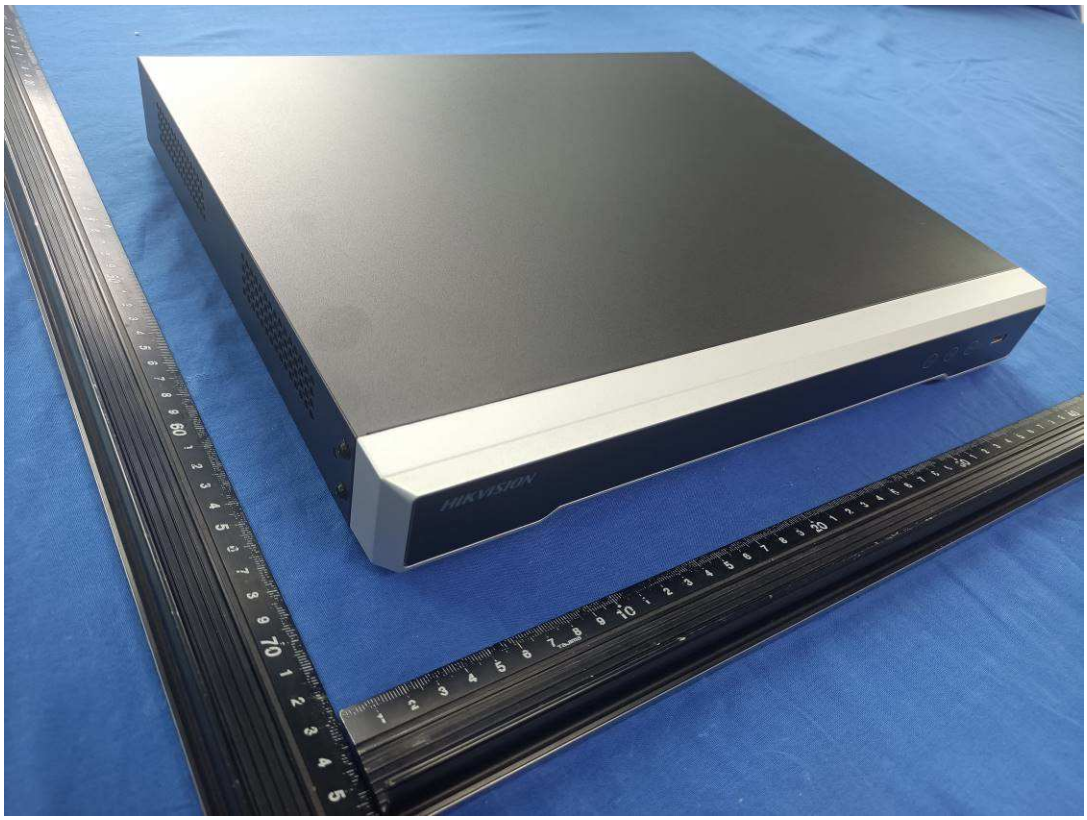
Picture 44 – Front plastic cover internal view



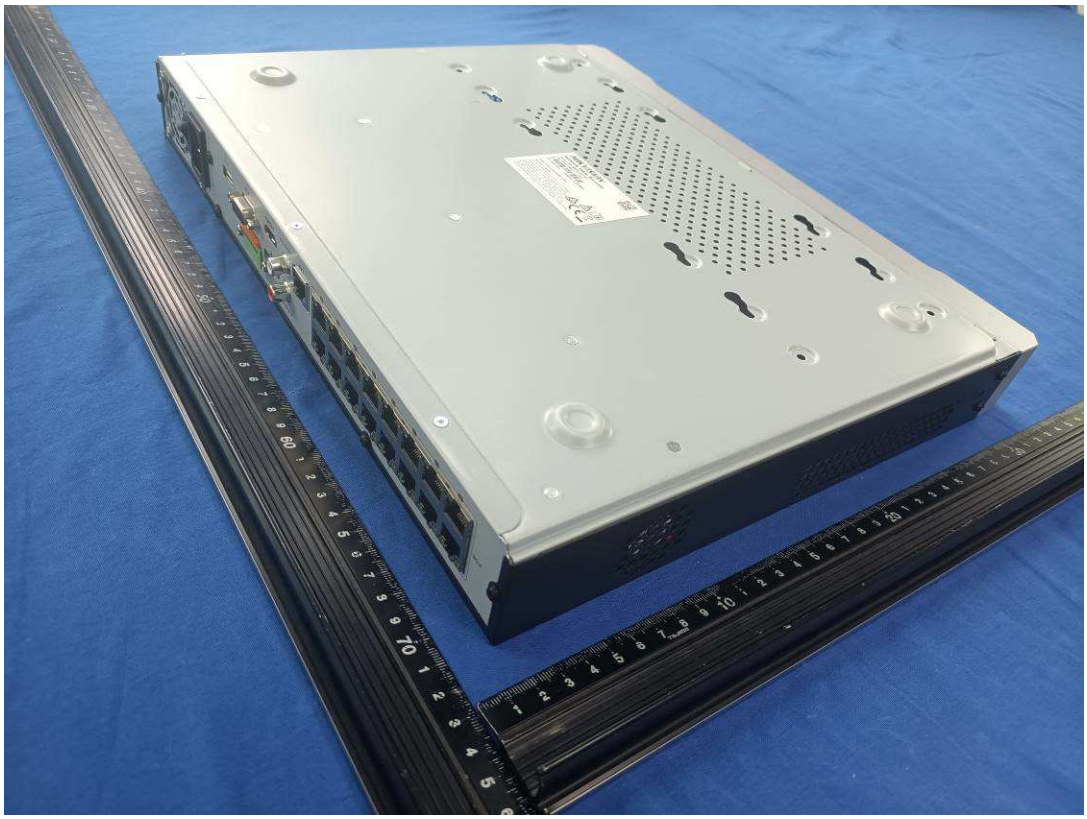
Picture 45 – PCB view (Front plastic cover)



Picture 46 – PCB view (Front plastic cover)



Picture 47 – Overall view (Front plastic cover appearance 5)

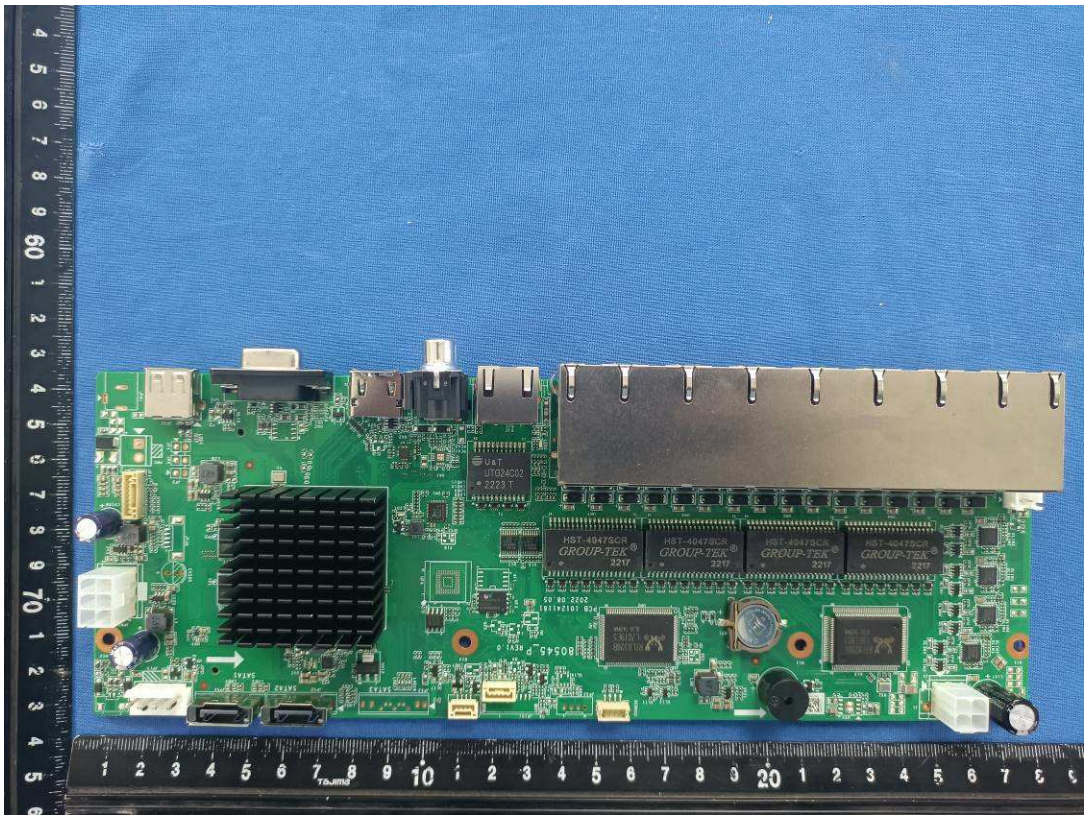


Picture 48 – Overall view

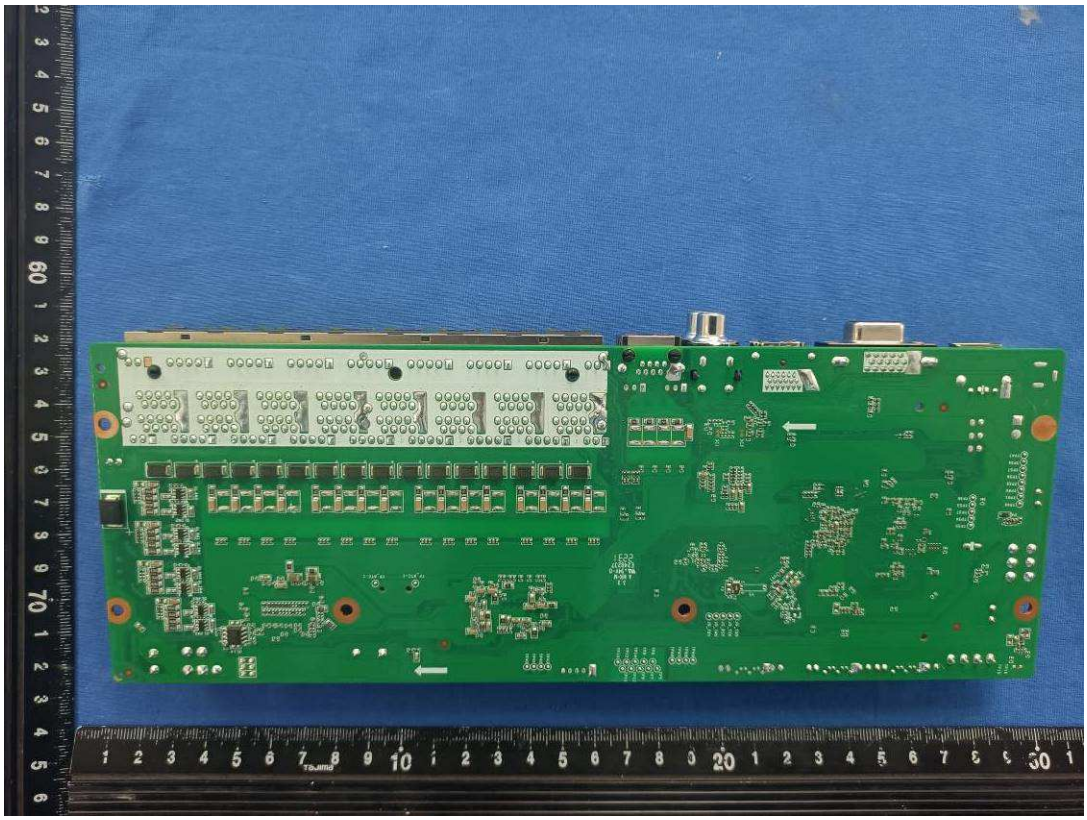
Picture 49 – internal view

Picture 50 – internal view (include mainboard model: DS-80545)

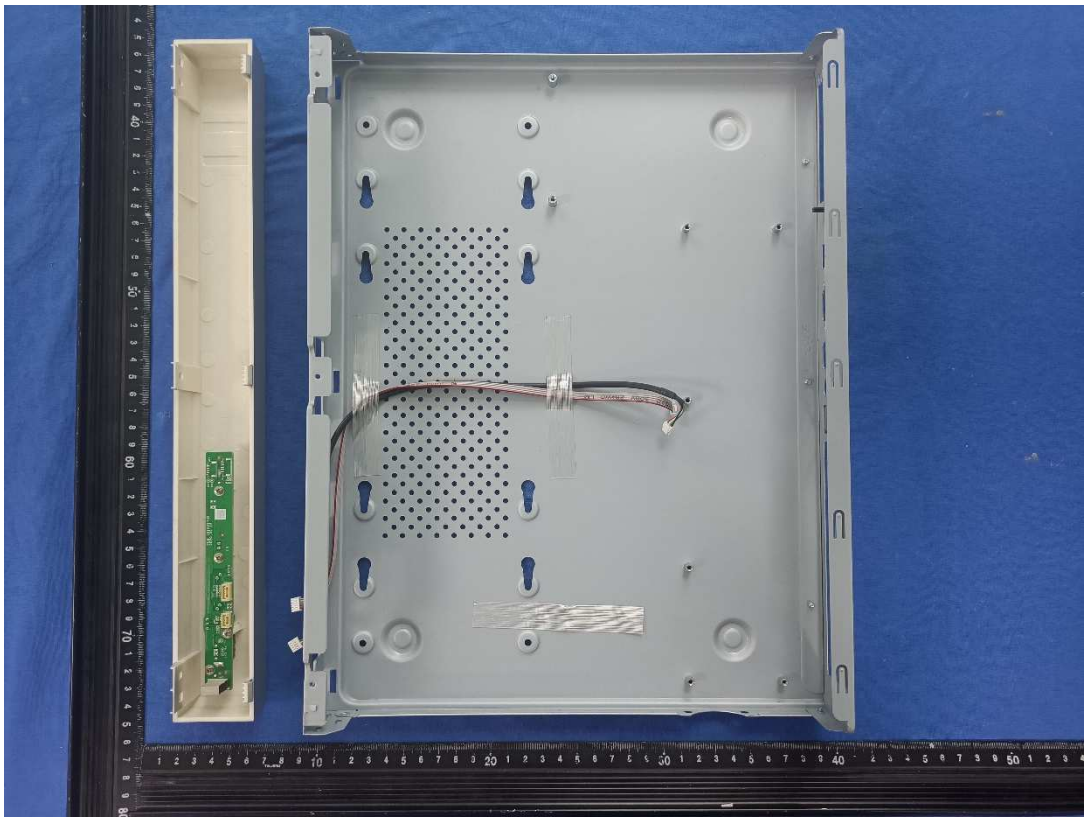
Picture 51 – internal view



Picture 52 – PCB view (mainboard model: DS-80545)

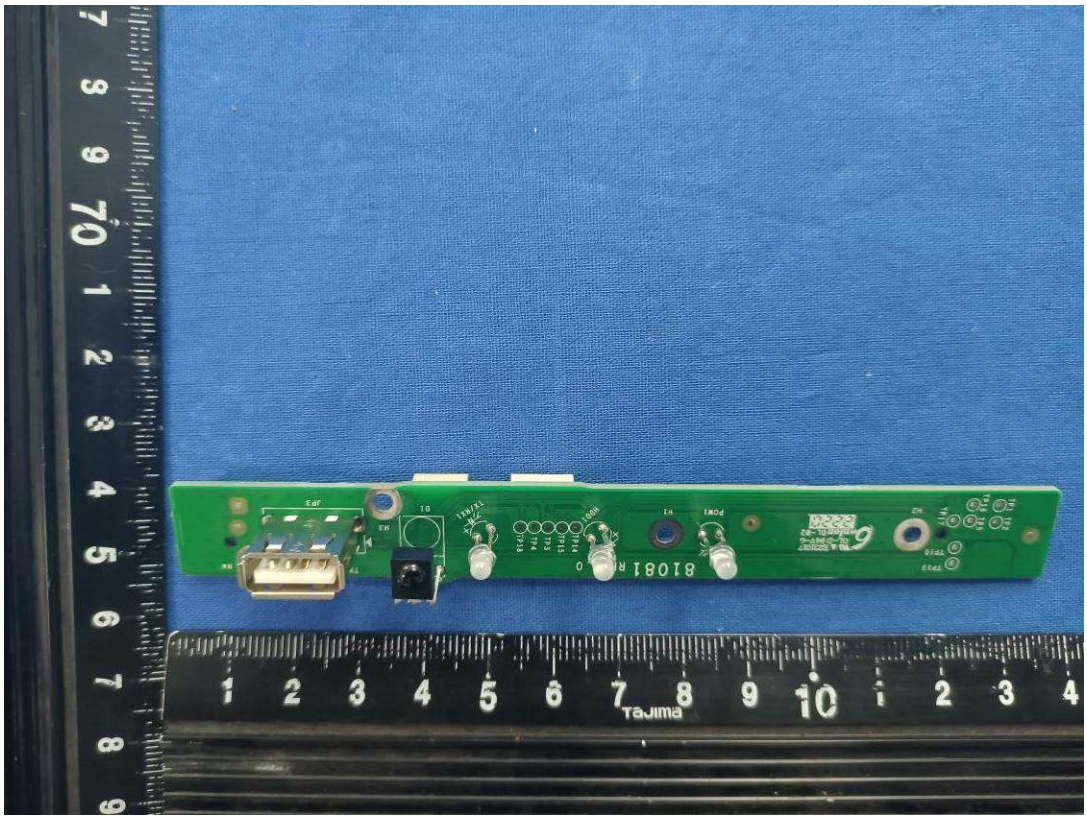


Picture 53 – PCB view (mainboard model: DS-80545)

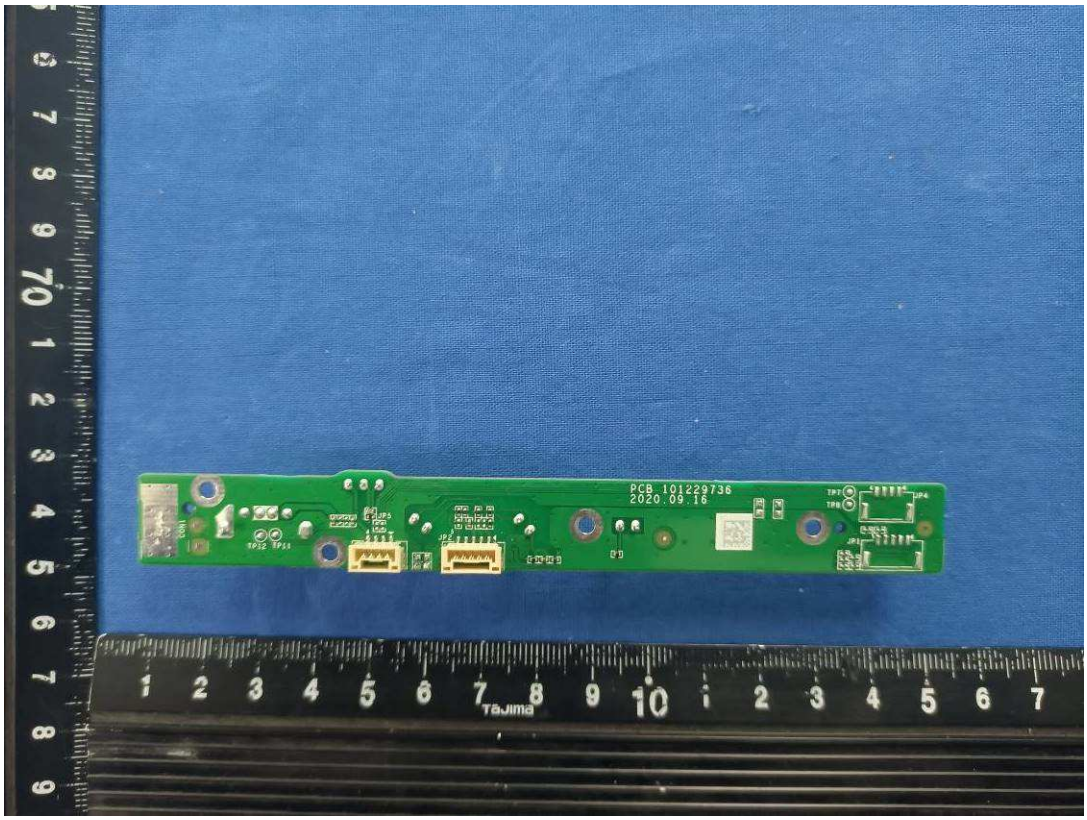


Picture 54 – Front plastic cover internal view

Picture 55 – Front plastic cover internal view



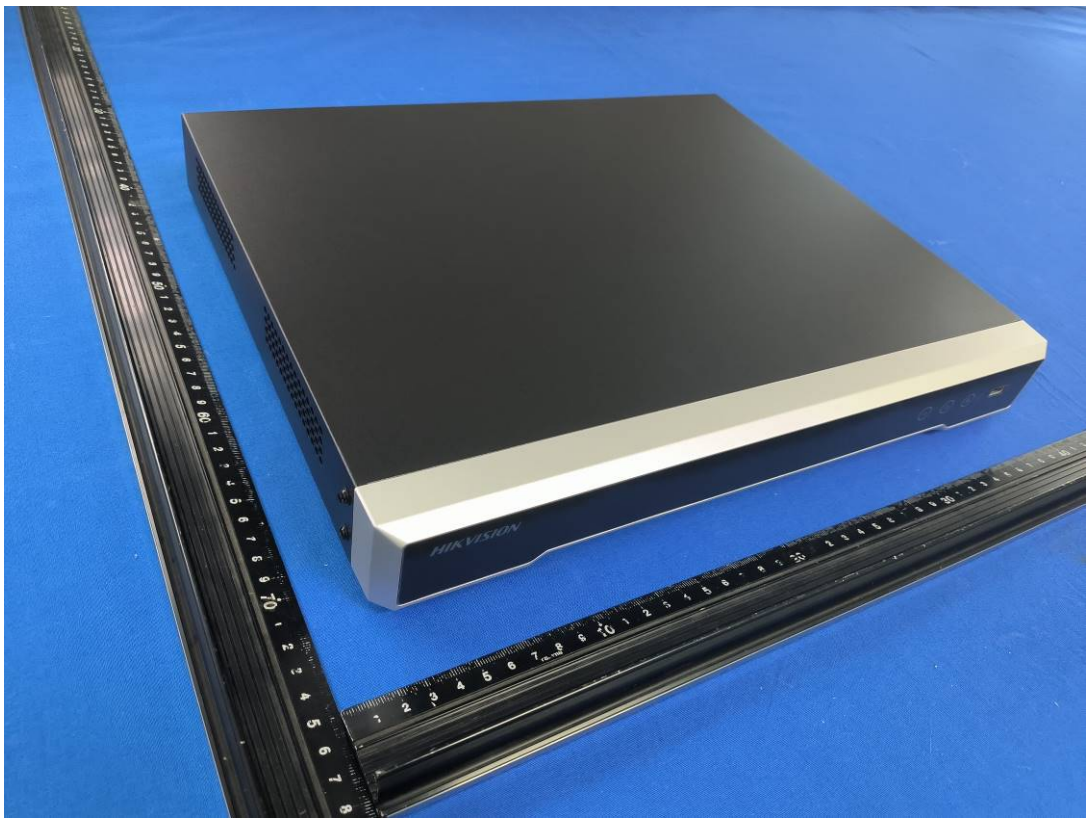
Picture 56 – PCB view (Front plastic cover)



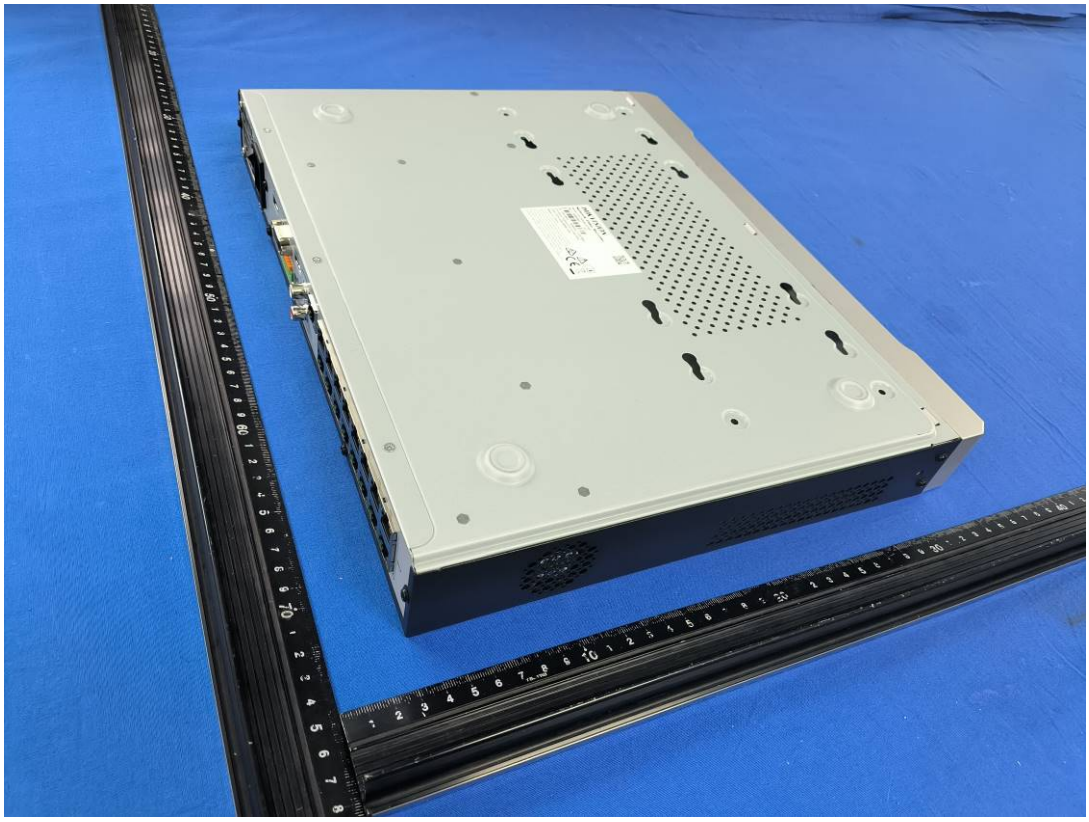
Picture 57 – PCB view (Front plastic cover)

Picture 58 – Overall view (Front plastic cover appearance 6)

Picture 59 – Front plastic cover internal view

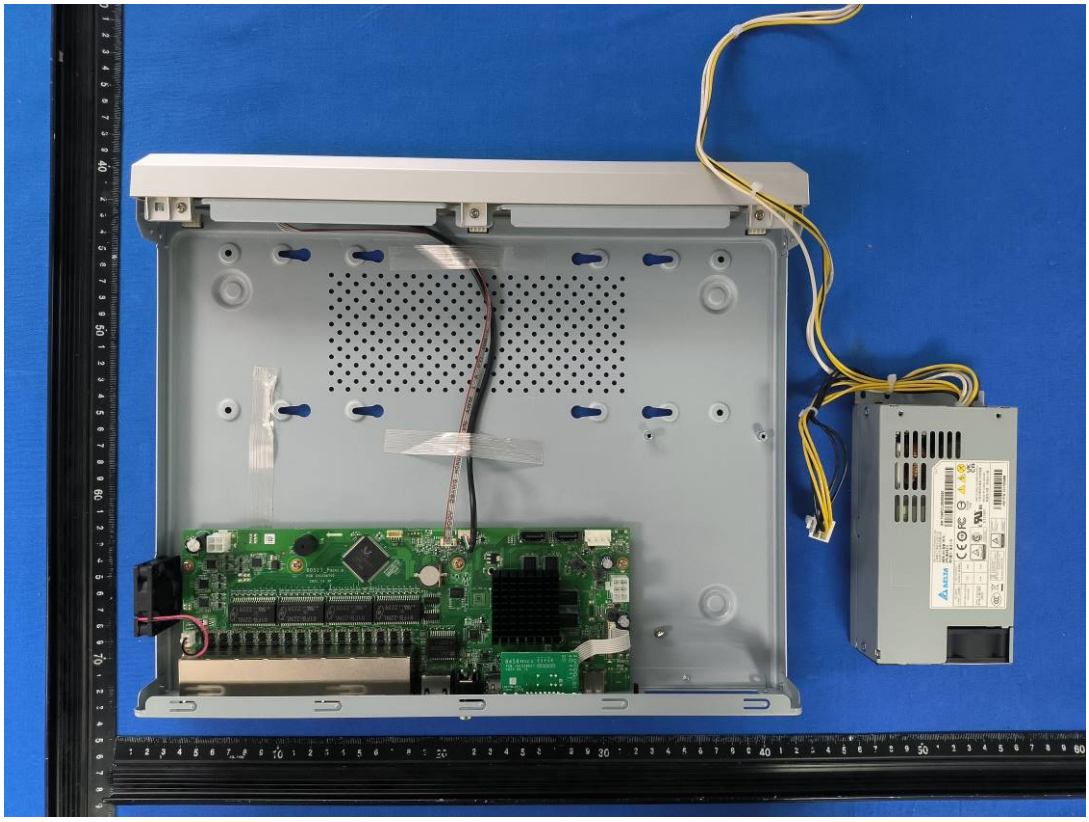


Picture 60 – PCB view (Front plastic cover)



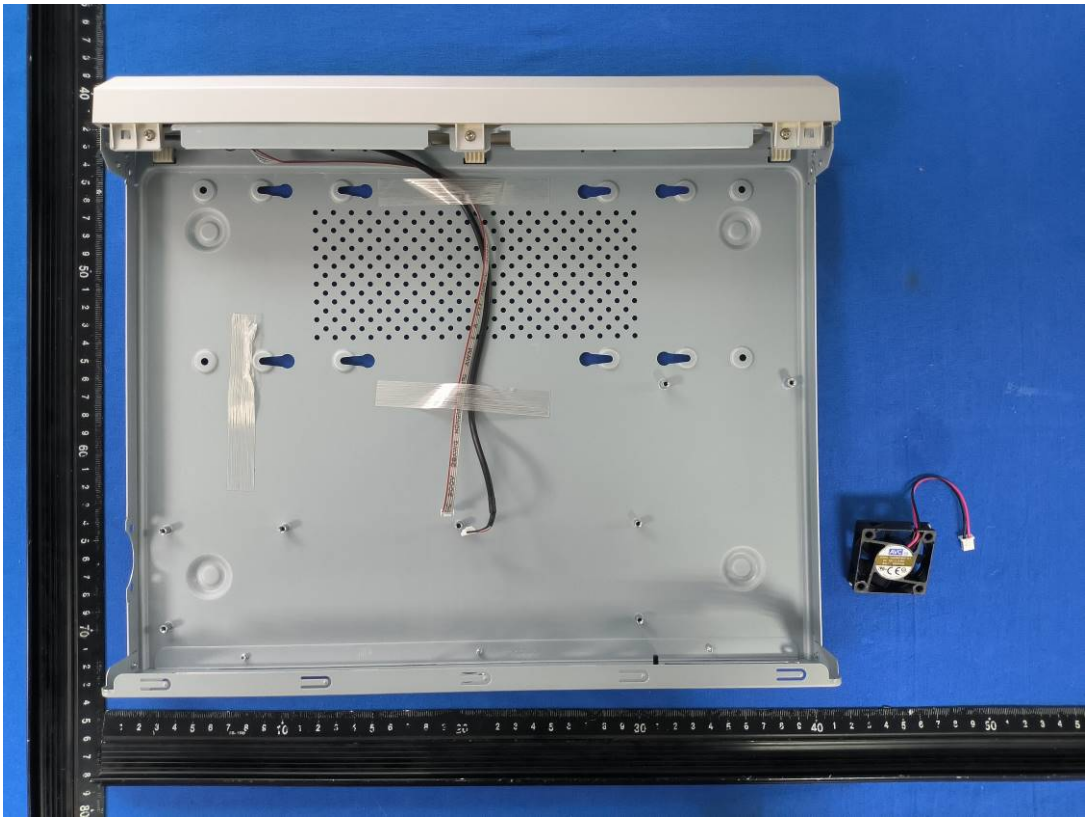
Picture 61 – Front plastic cover internal view

Picture 62 – PCB view (Front plastic cover)

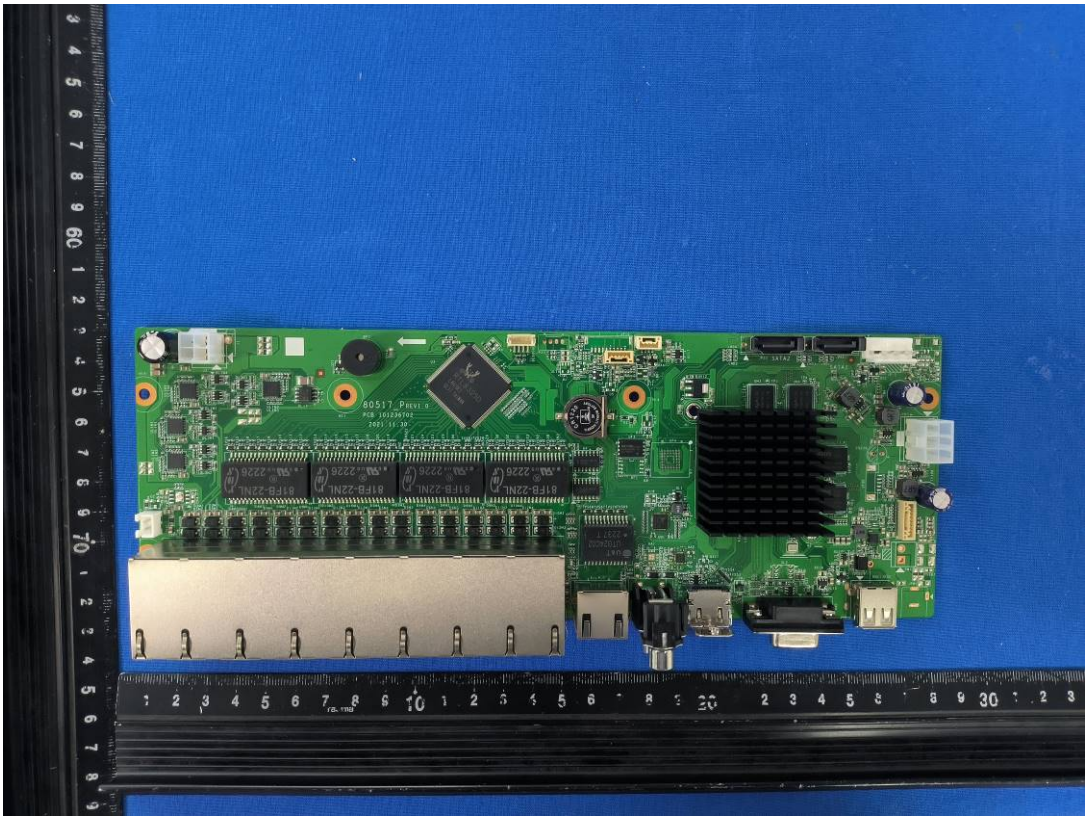


Picture 63 – Front plastic cover internal view

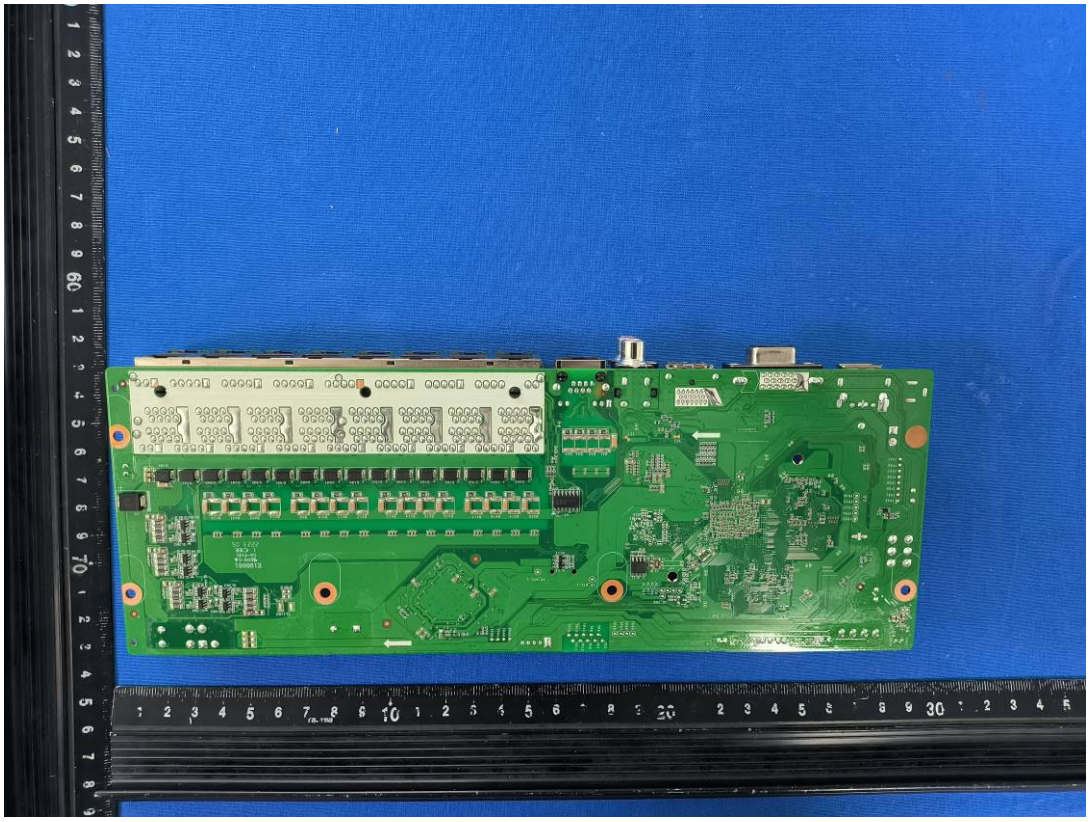
Picture 64 – PCB view (Front plastic cover)



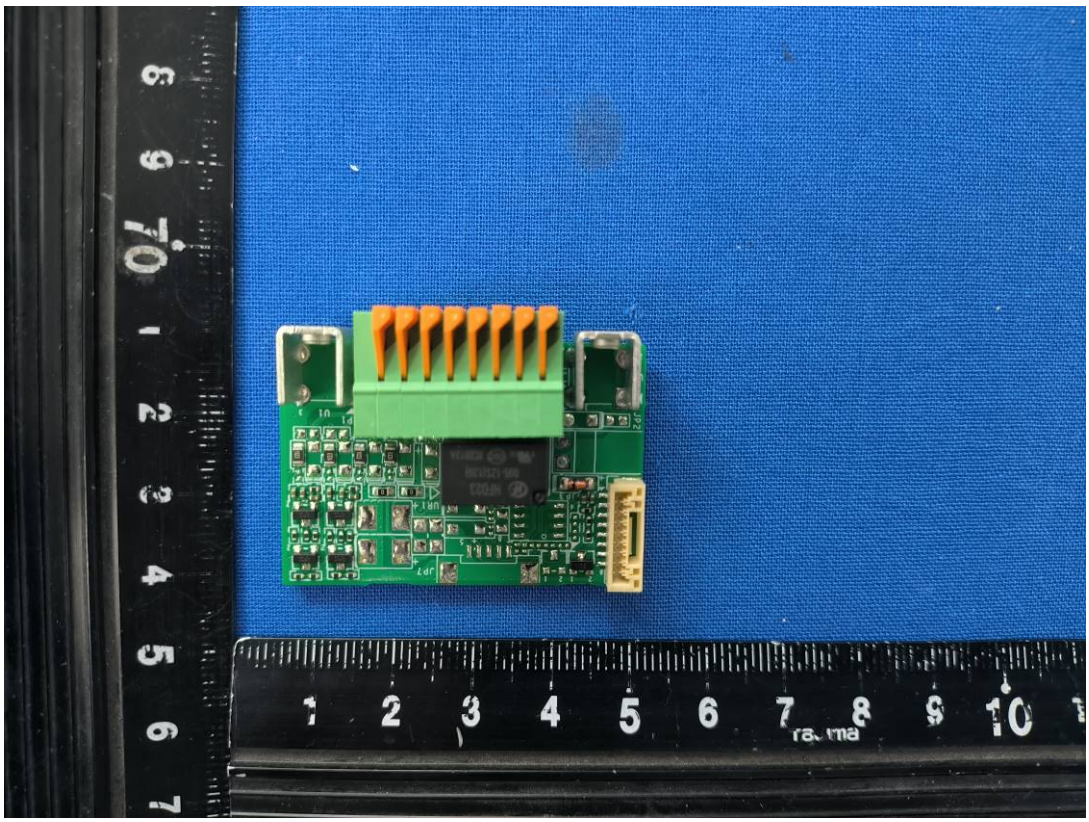
Picture 65 – Front plastic cover internal view



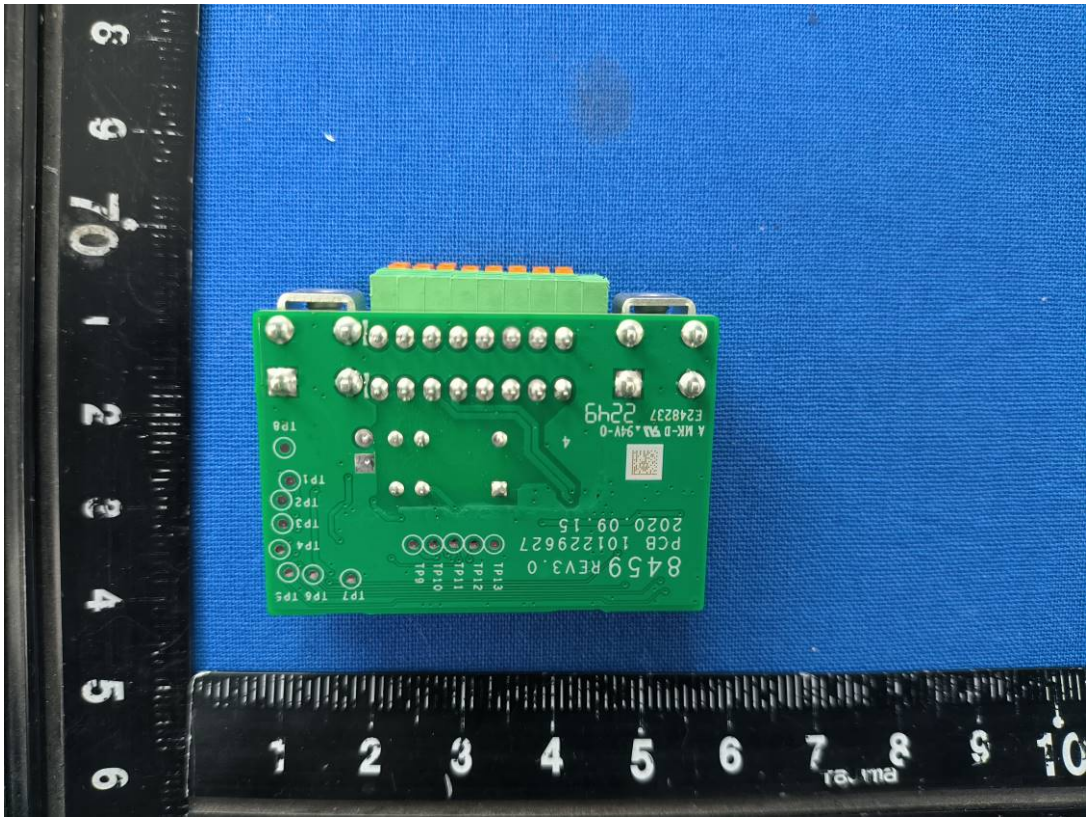
Picture 66 – PCB view (Front plastic cover)



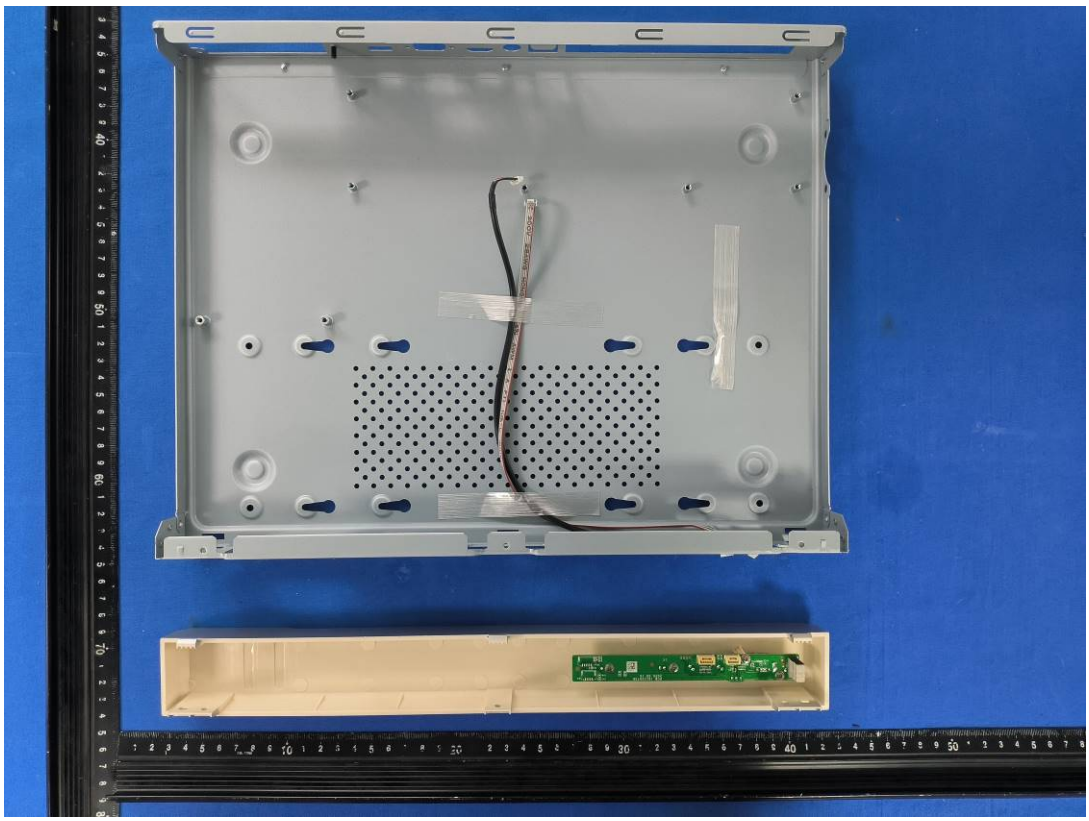
Picture 67 – Front plastic cover internal view



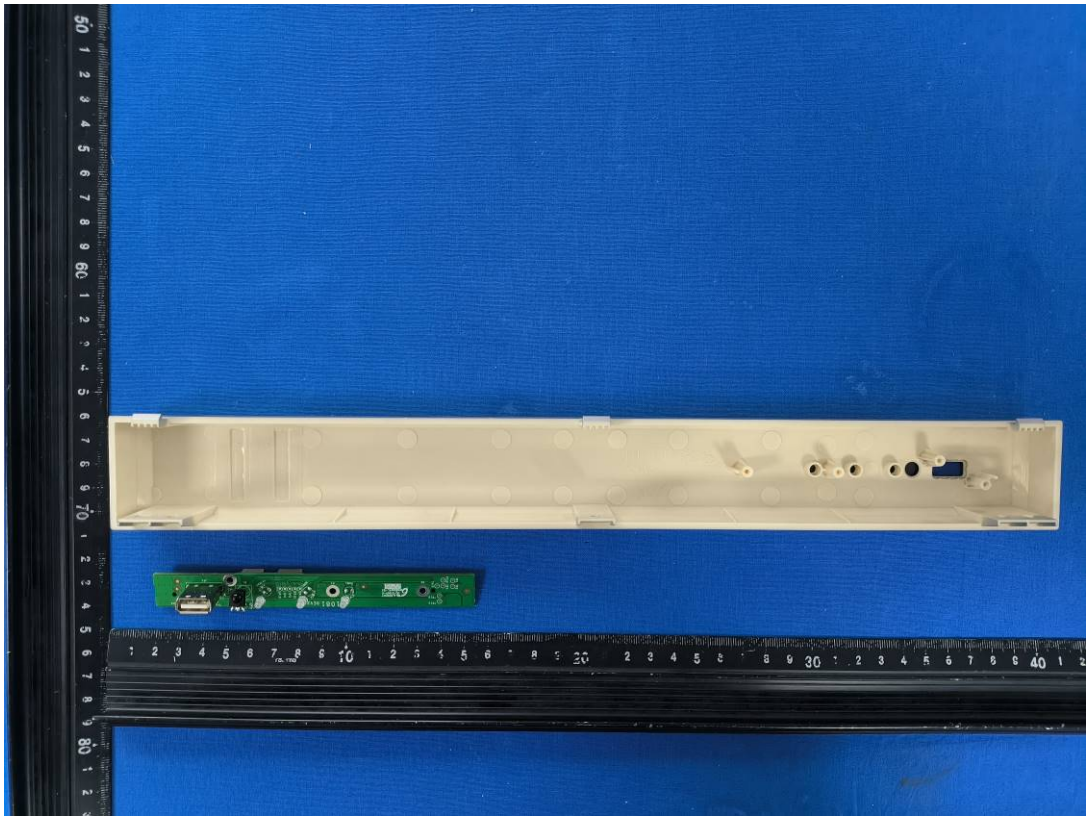
Picture 68 – PCB view (Front plastic cover)



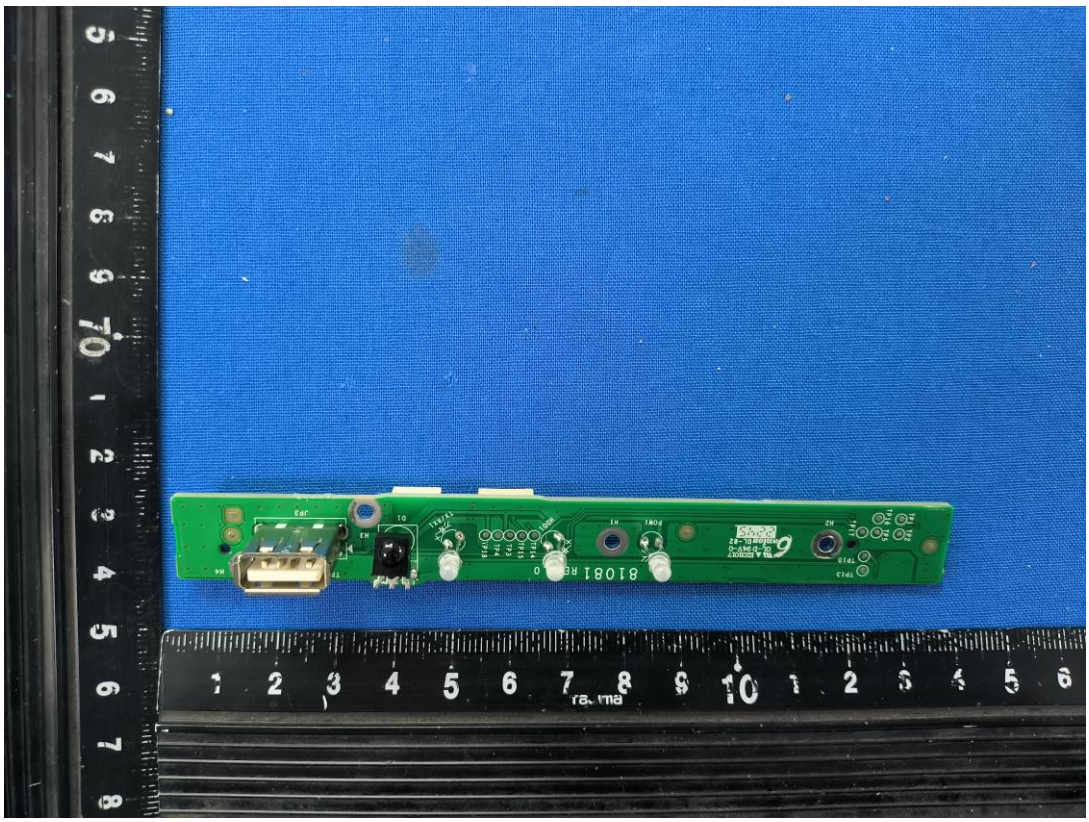
Picture 69 – Front plastic cover internal view



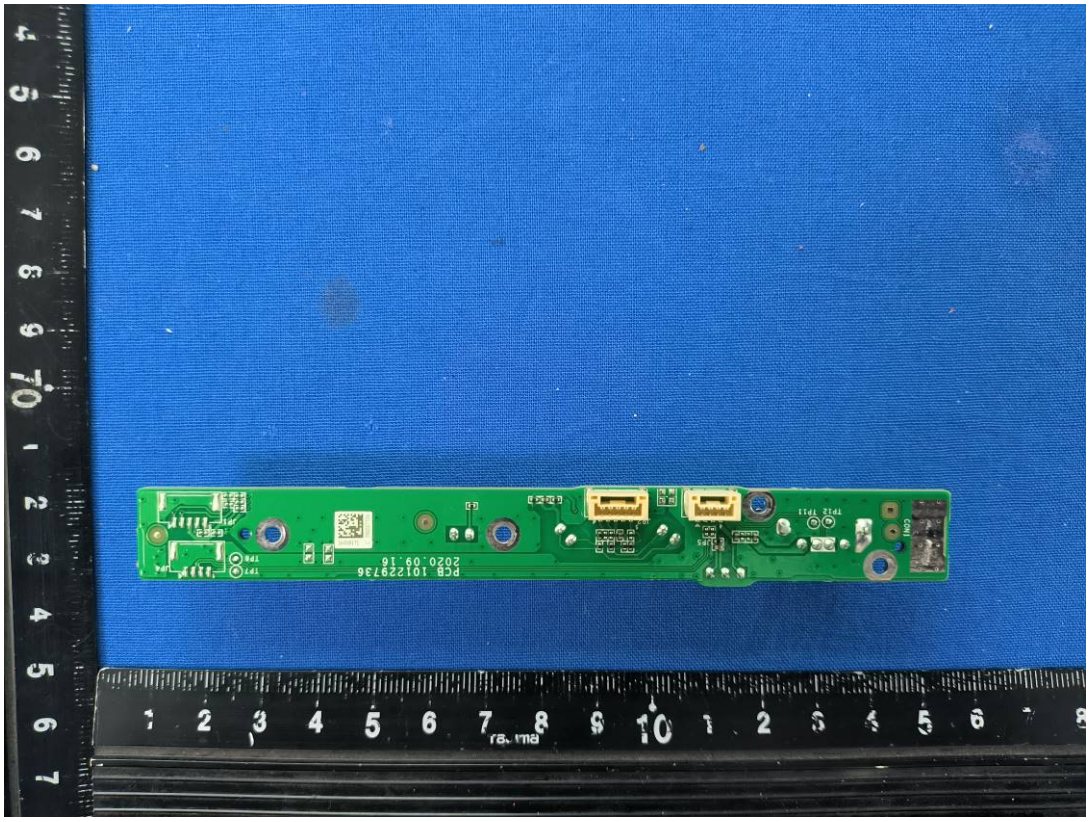
Picture 70 – PCB view (Front plastic cover)



Picture 71 – Front plastic cover internal view



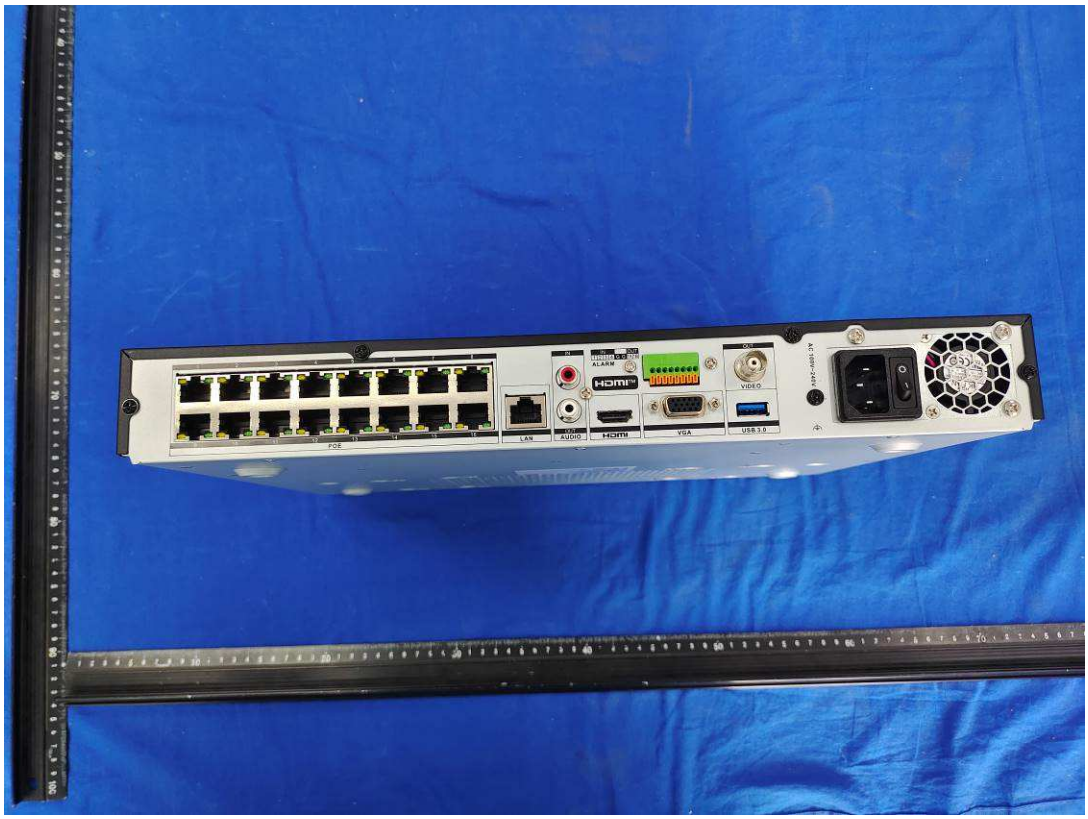
Picture 72 – PCB view (Front plastic cover)



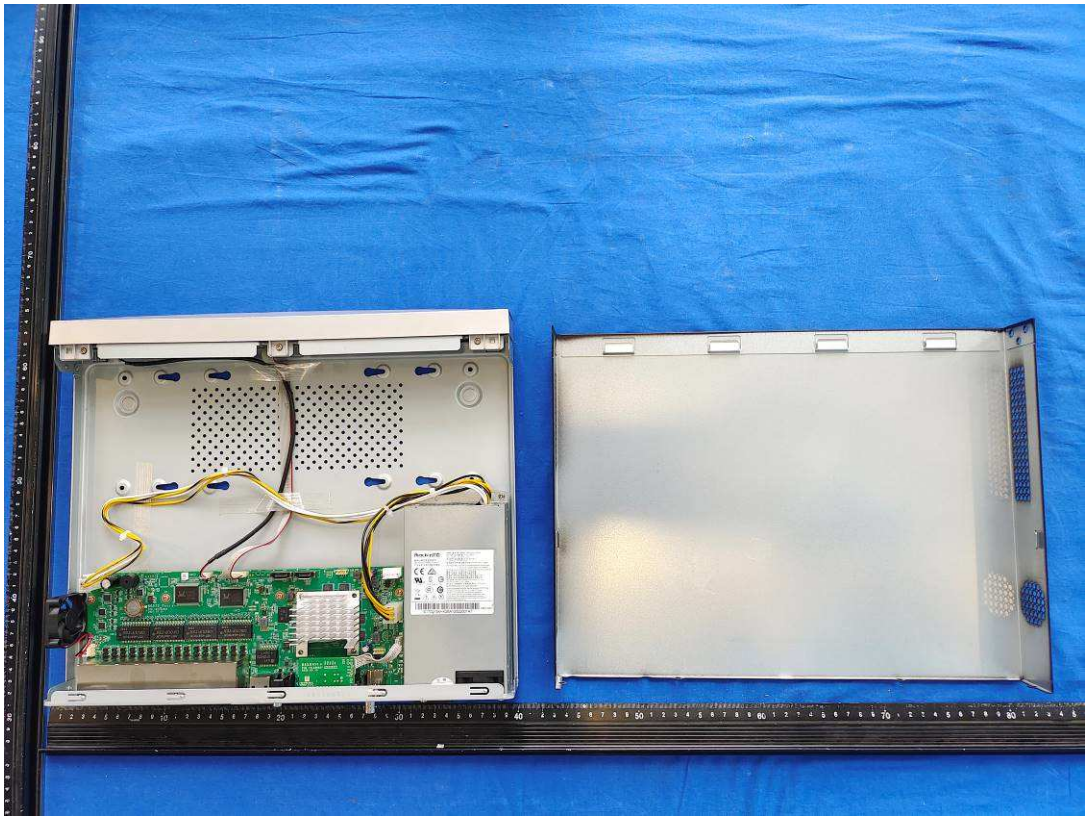
Picture 73 – Front plastic cover internal view

Picture 74 – Overall view (Front plastic cover appearance 7)

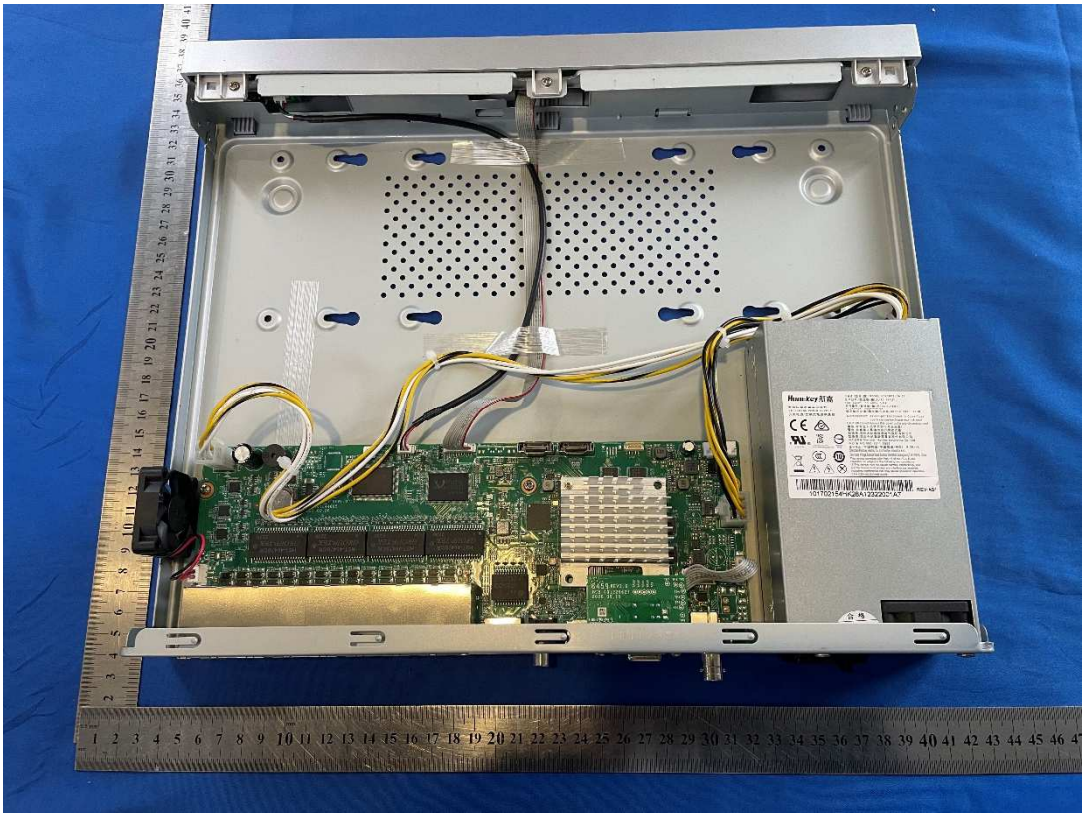
Picture 75 – Overall view



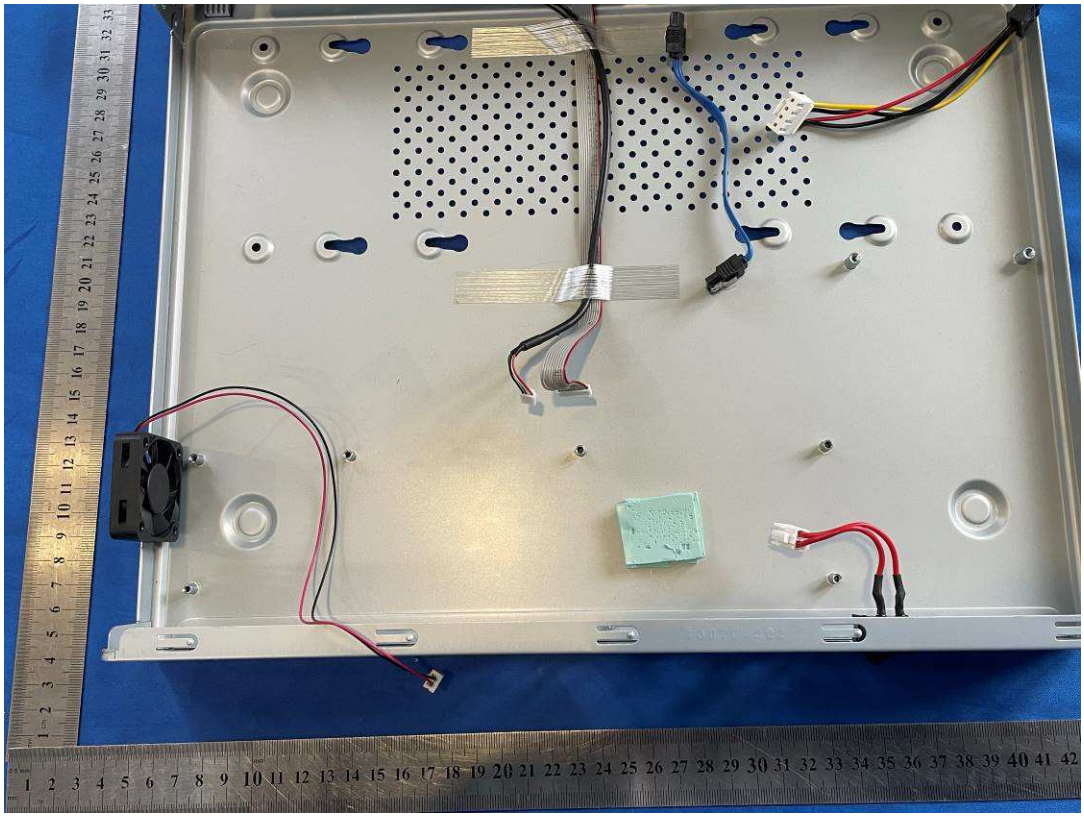
Picture 76 – Overall view



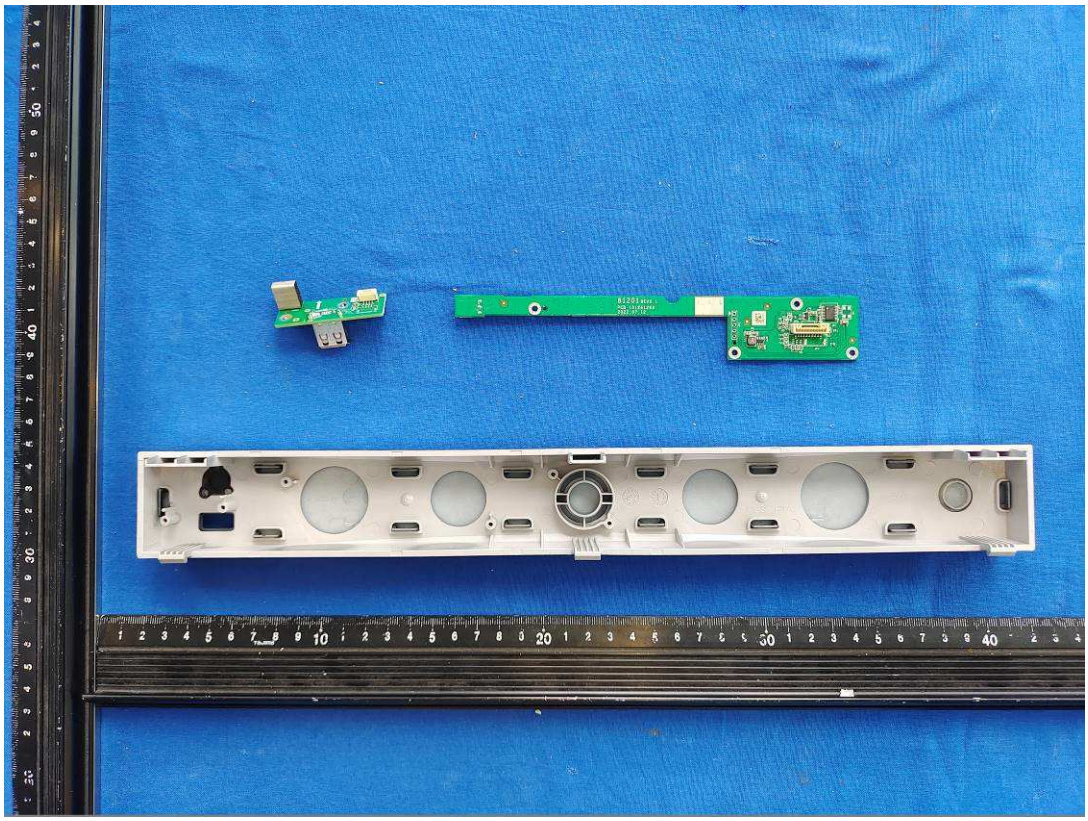
Picture 77 – Internal view



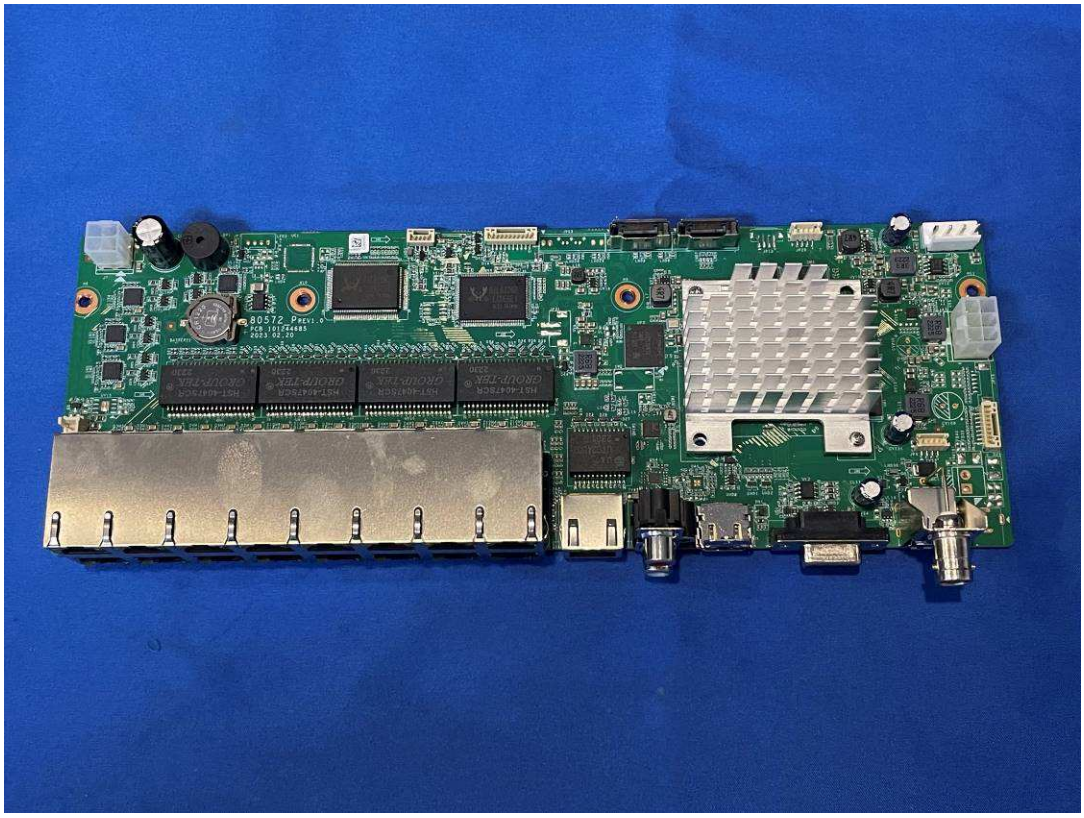
Picture 78 – Internal view



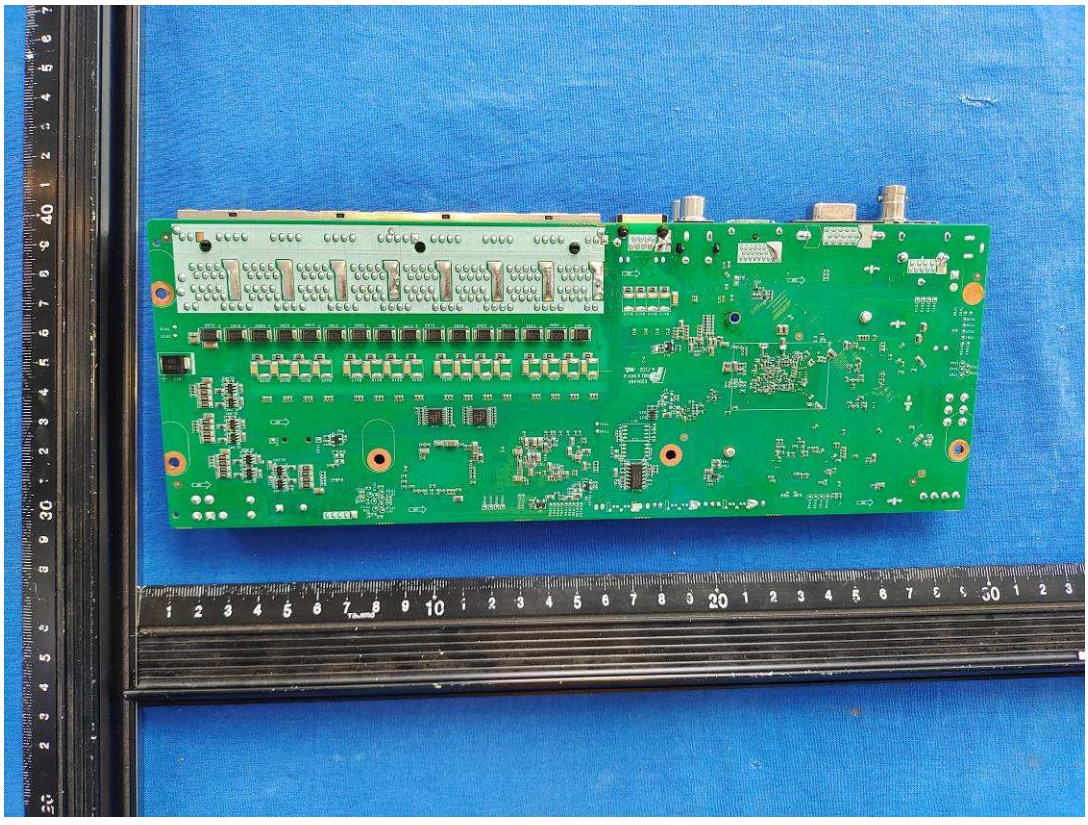
Picture 79 – Internal view



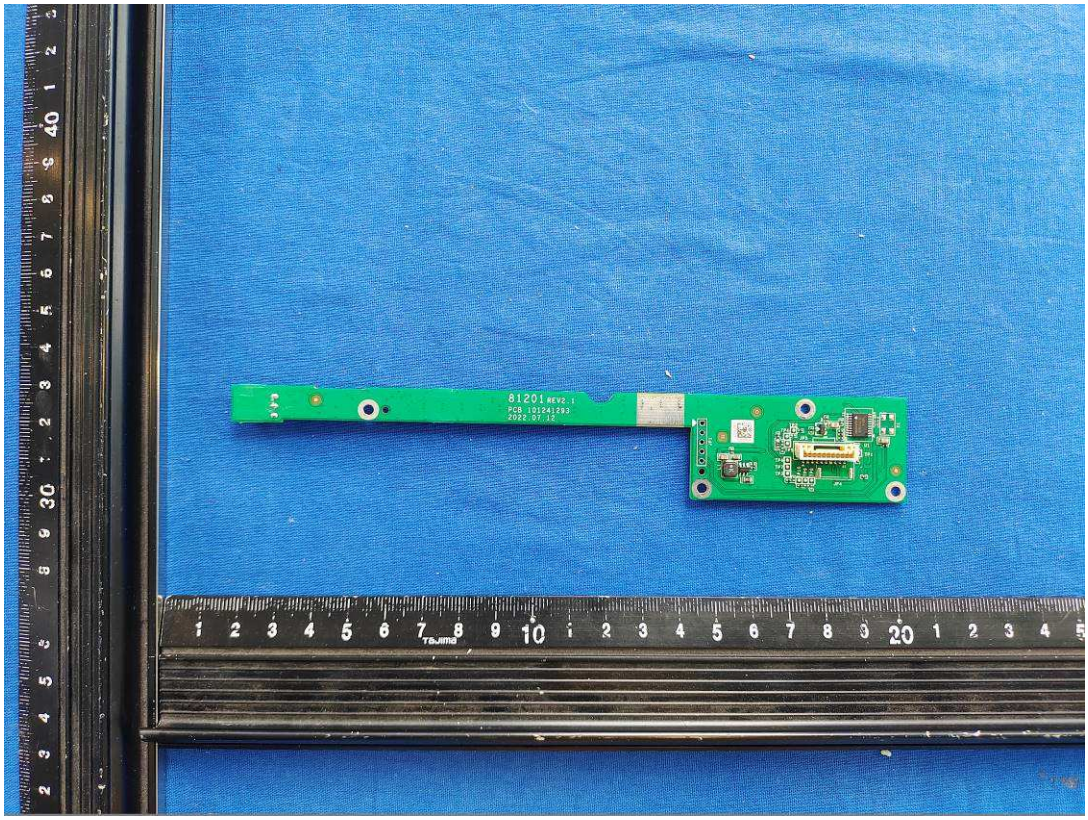
Picture 80 – Add Front plastic cover Internal view



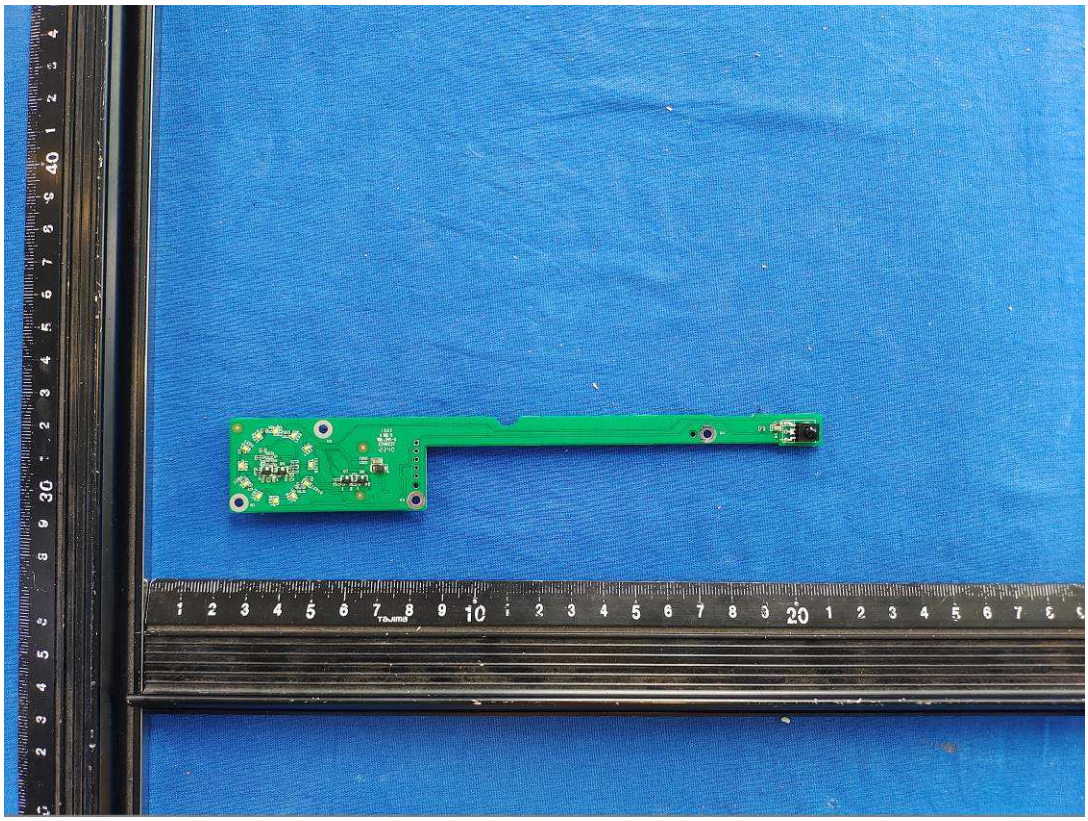
Picture 81 – PCB view (Model: DS-80572)



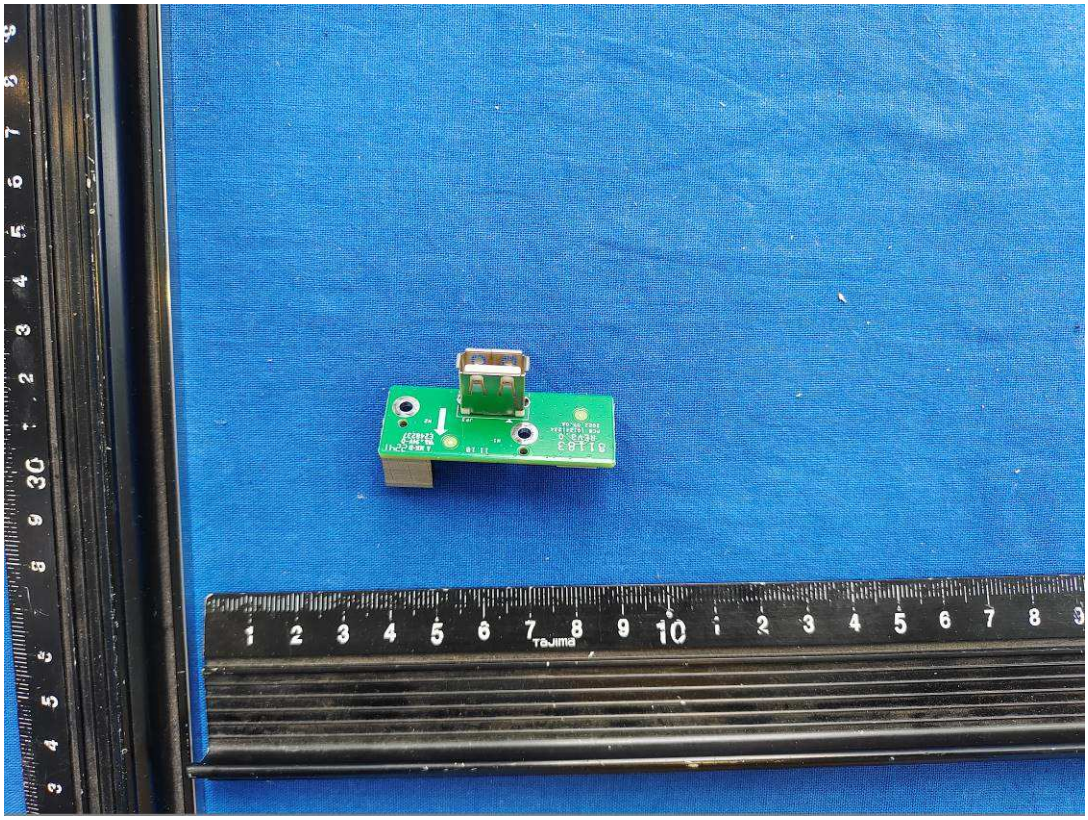
Picture 82 – PCB view (Model: DS-80572)



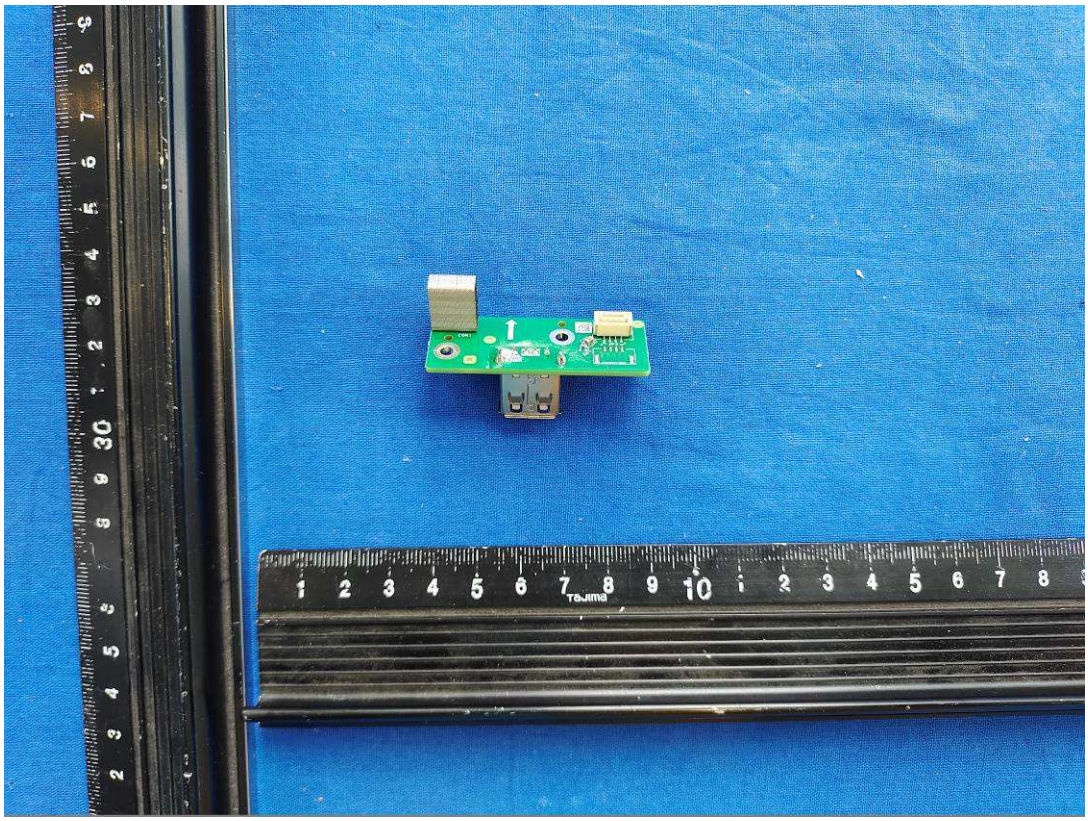
Picture 83 – Add Front plastic cover PCB view



Picture 84 – Add Front plastic cover PCB view



Picture 85 – Add Front plastic cover USB part PCB view



Picture 86 – Add Front plastic cover USB part PCB view