

**KES Co., Ltd.**

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Report No.:
KES-SA-20T0236
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TEST REPORT**IEC 62368-1****Audio/video, information and communication technology equipment
Part 1: Safety requirements**

Report Number : KES-SA-20T0236

Date of issue : 2020-07-21

Total number of pages : 117

Applicant's name : HANWHA TECHWIN Co., LTD.

Address : 6, Pangyo-ro 319 Beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do,
13488, Korea

Test specification:

Standard : EN 62368-1:2014 (Second Edition) + A11:2017

Test procedure : -

Non-standard test method : N/A

Test Report Form No. : IEC62368_1B

Test Report Form(s) Originator : UL(US)

Master TRF : 2014-03

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Test Item description	CCTV Camera
Trade Mark	Hanwha Techwin Co., Ltd.
Manufacturer	HANWHA TECHWIN Co., LTD. 6, Pangyo-ro 319 Beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, 13488, Korea
Model/Type reference	HCB-7000PHA, HCB-7000PH, HCB-6000PH
Rating	0.07 A, 230 V~, 50 Hz

This test report is not related to KS Q ISO/IEC 17025 and KOLAS.

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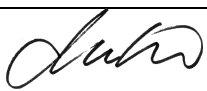
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Testing procedure and testing location:		
☒	KOLAS Testing Laboratory:	KES Co., Ltd. / Electrical Safety Laboratory
Testing location/ address		473-21, Gayeo-ro, Yeosu-si, Gyeonggi-do, Korea, Republic of
☐	Associated CB Testing Laboratory:	
Testing location/ address		
Tested by (name + signature).....		SeungUn, Kwon 
Approved by (name + signature)		JaeKwan, Cha 
☐	Testing procedure: TMP/CTF Stage 1	
Testing location/ address		
Tested by (name + signature).....		
Approved by (name + signature)		
☐	Testing procedure: WMT/CTF Stage 2	
Testing location/ address		
Tested by (name + signature).....		
Witnessed by (name + signature).....		
Approved by (name + signature)		
☐	Testing procedure: SMT/CTF Stage 3 or 4	
Testing location/ address		
Tested by (name + signature).....		
Approved by (name + signature)		
Supervised by (name + signature).....		

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

1 European group differences and national differences	(14 pages)
2 Photographs	(6 pages)
3 Schematics & Block diagram	(1 page)
4 Transformers information	(8 pages)
5 Instruction / Installation Manual	(7 pages)

Summary of testing:**Tests performed (name of test and test clause):**

All applicable test clauses

Testing location:

Refer to page 3

Summary of compliance with National Differences:**List of countries addressed**

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

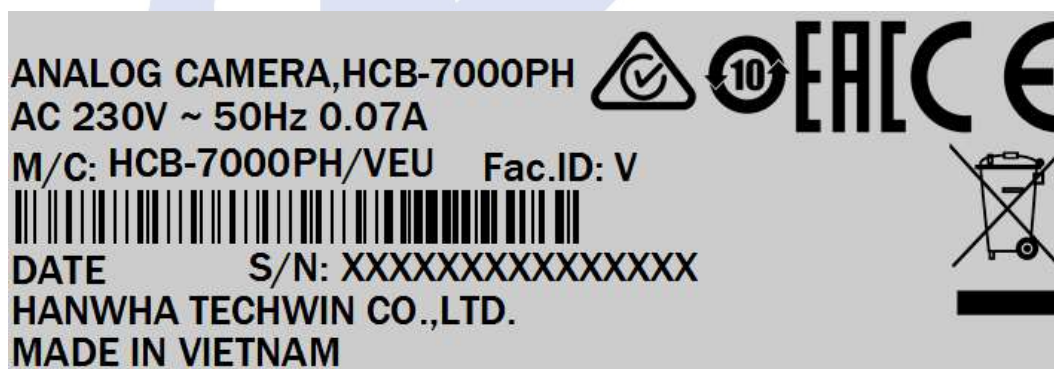
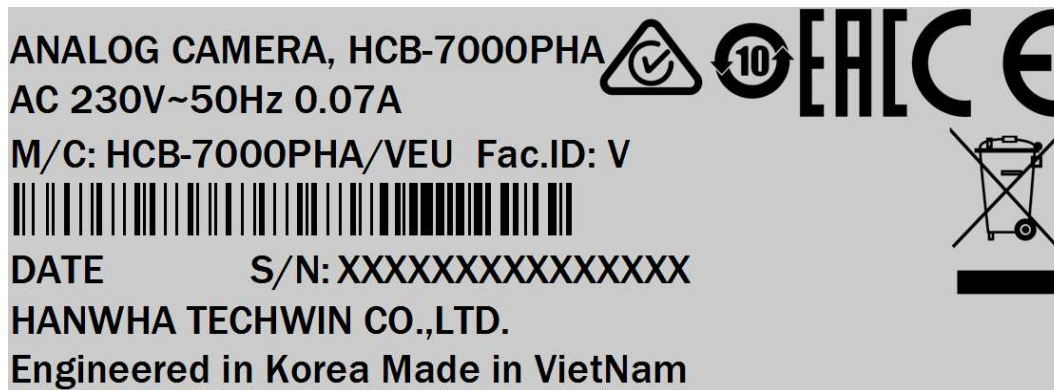
☒ The product fulfils the requirements of national and group differences according to EN 62368-1:2014+A11:2017.

The European Group Differences and National Differences for EN 62368-1:2014+A11:2017 are attached in end of this test report as appendices

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Copy of marking plate:

The artwork below may be only a draft.



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TEST ITEM PARTICULARS:	
Classification of use by	☒ Ordinary person ☐ Instructed person ☐ Skilled person ☐ Children likely to be present
Supply Connection	☒ AC Mains ☐ DC Mains ☐ External Circuit - 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 ☐ mating connector ☐ pluggable equipment type B - ☐ non-detachable supply cord ☐ appliance coupler ☐ permanent connection ☐ mating connector ☐ other: _____
Considered current rating of protective device as part of building or equipment installation	16 A; Installation location: ☒ building; ☐ equipment
Equipment mobility	☐ movable ☐ hand-held ☐ transportable ☒ stationary ☐ for building-in ☐ direct plug-in ☐ rack-mounting ☒ wall-mounted
Over voltage category (OVC)	☐ OVC I ☒ OVC II ☐ OVC III ☐ OVC IV ☐ other: _____
Class of equipment	☒ Class I ☐ Class II ☐ Class III
Access location	☐ restricted access location ☒ N/A
Pollution degree (PD)	☐ PD 1 ☒ PD 2 ☐ PD 3
Manufacturer's specified maximum operating ambient	55 °C
IP protection class	☒ IPX0 ☐ IP ____
Power Systems	☒ TN ☐ TT ☐ IT - ____ V L-L
Altitude during operation (m)	☒ 2000 m or less ☐ ____ m
Altitude of test laboratory (m)	☒ 2000 m or less ☐ ____ m
Mass of equipment (kg)	☒ 0.46 kg with non-detachable supply cord
POSSIBLE TEST CASE VERDICTS:	
- test case does not apply to the test object.....	N/A

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- test object does meet the requirement	P (Pass)
- test object does not meet the requirement	F (Fail)
TESTING:	
Date of receipt of test item	2020-06-24
Date (s) of performance of tests	2020-06-24 ~ 2020-07-20
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 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)	<u>Factory 1:</u> HANWHA TECHWIN SECURITY VIETNAM CO., LTD. Lot O-2, Que Vo Industrial Zone extended area, Nam Son commune, Bac Ninh city, Bac Ninh province, Vietnam <u>Factory 2:</u> D-TECH CO., LTD. 173-25, Saneop-ro, Gwonseon-gu, Suwon-si, Gyeonggi-do, Korea (Suwon Industrial Complex)

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GENERAL PRODUCT INFORMATION:**Report History –**

The equipment under test is CCTV Camera of insulation class I.

Clause 5 and 6: energy source classification

Manufacturer declared the primary circuit in the power board as ES3 and PS3.
Therefore, the primary circuit in power board is considered as ES3 and PS3 without any testing and evaluating in this test report.

Clause 5.4.2: Determination the clearance

The tested was measured a lower than 30 kHz frequencies were present on the power circuits unit. Also, clearance distance determination of this report applied the Procedure 2 highest value of the two procedures, see appended Table 5.4.1.8, 5.4.2 and 5.4.3.

Clause 8.7: Equipment mounted to a wall and ceiling

The equipment is intended to be installed on a wall or ceiling only, but the manufacturer does not specify a wall or ceiling mount. The equipment is provided with threaded holes which facilitate attaching a mount to the equipment, also provided the information for screw size (1/4"-20 UNC), number of screws (2 pcs) and recommended wall mount bracket in installation manual. Therefore relevant tests are performed according to clause 8.7.2, Test 2 and 3.

Annex F.1: Instructions

Instructions / instructional safeguards / user's manual are only in English.
The information shall be given in a language acceptable to the country where the apparatus is intended to be sold.

Annex G.7: Plug / External flexible cords

This test report does not cover the mains cord except for listed type in list of critical components.
Must be supplied with an approved cord set suitable for the countries where the requirement will be sold.

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ANNEX ZB: SPECIAL NATIONAL CONDITIONS (EN)

For special national condition in Denmark, Finland, Norway and Sweden, CLASS I PLUGGABLE EQUIPMENT TYPE A intended for connection to other equipment or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment must be connected to an earthed mains socket-outlet.

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 Sweden : "Apparaten skall anslutas till jordat uttag"

In Norway : "Apparatet må tilkoples jordet stikkontakt"

Instructions and equipment marking related to safety is applied in the language that is acceptable in the country in which the equipment is to be sold.

All tests were conducted at model, HCB-7000PHA by representative model.

Model Differences –

The models HCB-7000PHA, HCB-6000PH and HCB-7000PH are identical to each other, except for as follows,

Model	Difference
HCB-7000PHA	Basic model
HCB-7000PH	Identical to basic model (including measured input data also), except for non-hazardous secondary circuit of PCB pattern to adjust video output signal impedance value.
HCB-6000PH	Identical to HCB-7000PH model except for image pixel, not affecting safety.

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

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ENERGY SOURCE IDENTIFICATION AND CLASSIFICATION TABLE:

(Note 1: Identify the following six (6) energy source forms based on the origin of the energy.)
(Note 2: The identified classification e.g., ES2, TS1, should be with respect to its ability to cause pain or injury on the body or its ability to ignite a combustible material. Any energy source can be declared Class 3 as a worse case classification e.g. PS3, ES3.)

Electrically-caused injury (Clause 5):

(Note: Identify type of source, list sub-assembly or circuit designation and corresponding energy source classification)

Example: +5 V dc input

ES1

Source of electrical energy	Corresponding classification (ES)
Primary circuits	ES3 (Declaration)
Secondary circuit of PSU	ES1
Secondary outputs (+12 V) terminal for PSU	ES1
All accessible terminal outputs and accessible parts to ordinary person.	ES1

Electrically-caused fire (Clause 6):

(Note: List sub-assembly or circuit designation and corresponding energy source classification)

Example: Battery pack (maximum 85 watts):

PS2

Source of power or PIS	Corresponding classification (PS)
Primary circuits	PS3 (Declaration)
Secondary circuit of PSU	PS1
Secondary outputs (+12 V) terminal for PSU	PS1
All secondary signal output terminals	PS1

Injury caused by hazardous substances (Clause 7)

(Note: Specify hazardous chemicals, whether produces ozone or other chemical construction not addressed as part of the component evaluation.)

Example: Liquid in filled component

Glycol

Source of hazardous substances	Corresponding chemical
Electrolytic capacitor	Electrolyte

Mechanically-caused injury (Clause 8)

(Note: List moving part(s), fan, special installations, etc. & corresponding MS classification based on Table 35.)

Example: Wall mount unit

MS2

Source of kinetic/mechanical energy	Corresponding classification (MS)
Sharp edges and corners (Does not cause pain or injury).	MS1
Equipment mass (mass: 0.46 kg).	MS1
Wall/ceiling mount (mass: 0.46 kg, mounted > 2 m).	MS3

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ENERGY SOURCE IDENTIFICATION AND CLASSIFICATION TABLE:**Thermal burn injury (Clause 9)**

(Note: Identify the surface or support, and corresponding energy source classification based on type of part, location, operating temperature and contact time in Table 38.)

Example: Hand-held scanner – thermoplastic enclosure TS1

Source of thermal energy	Corresponding classification (TS)
Functional switch (plastic).	TS1
External enclosure for top, bottom, side and rear (plastic)	TS1

Radiation (Clause 10)

(Note: List the types of radiation present in the product and the corresponding energy source classification.)

Example: DVD – Class 1 Laser Product RS1

Type of radiation	Corresponding classification (RS)
RS1 (LED indicator: indicating lights type)	RS1

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ENERGY SOURCE DIAGRAM

Indicate which energy sources are included in the energy source diagram. Insert diagram below

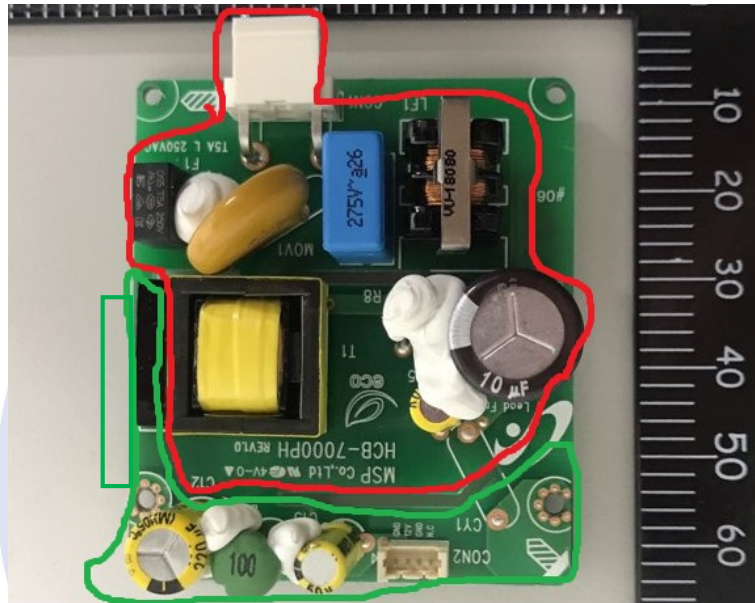
ES 1



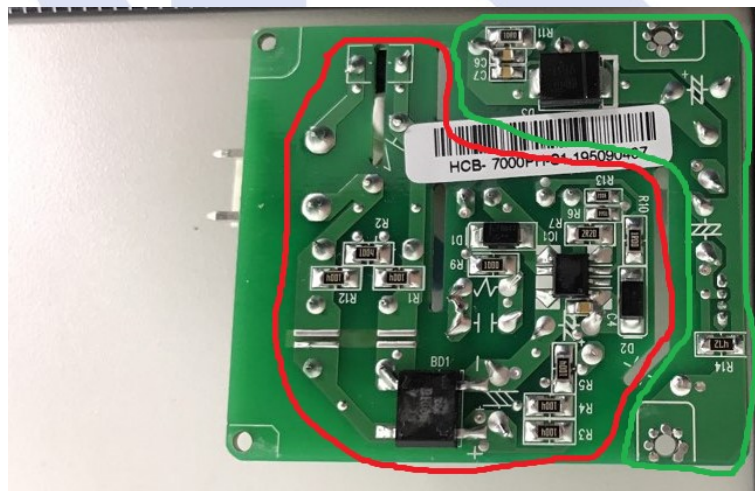
ES 2



ES 3



<Power supply unit - top view>



<Power supply unit - bottom view>

☒ ES

☐ PS

☐ MS

☐ TS

☐ RS

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ENERGY SOURCE DIAGRAM

Indicate which energy sources are included in the energy source diagram. Insert diagram below

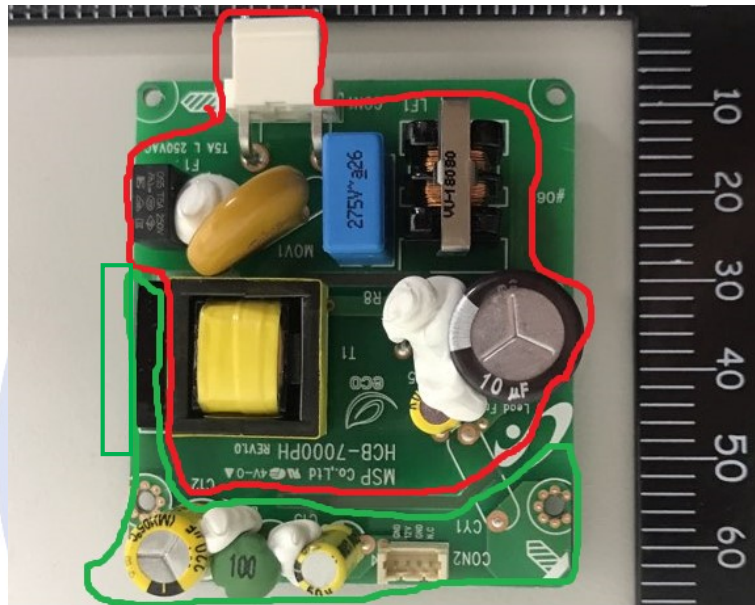
PS 1



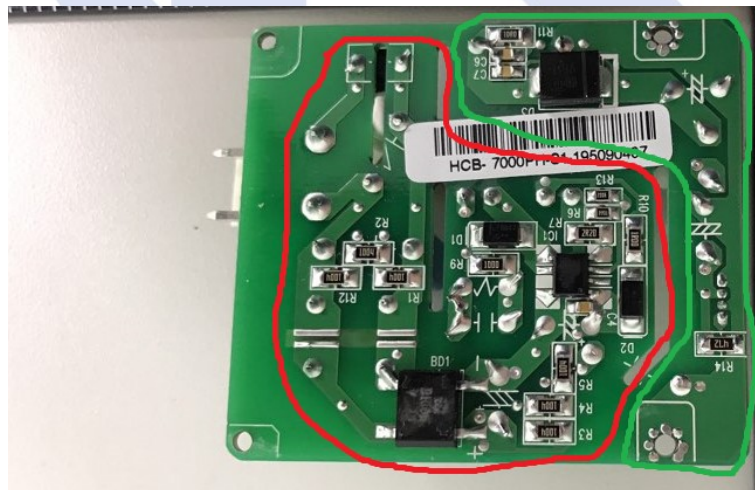
PS 2



PS 3



<Power supply unit - top view>



<Power supply unit - bottom view>

☐ ES

☒ PS

☐ MS

☐ TS

☐ RS

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ENERGY SOURCE DIAGRAM

Indicate which energy sources are included in the energy source diagram. Insert diagram below

MS 1



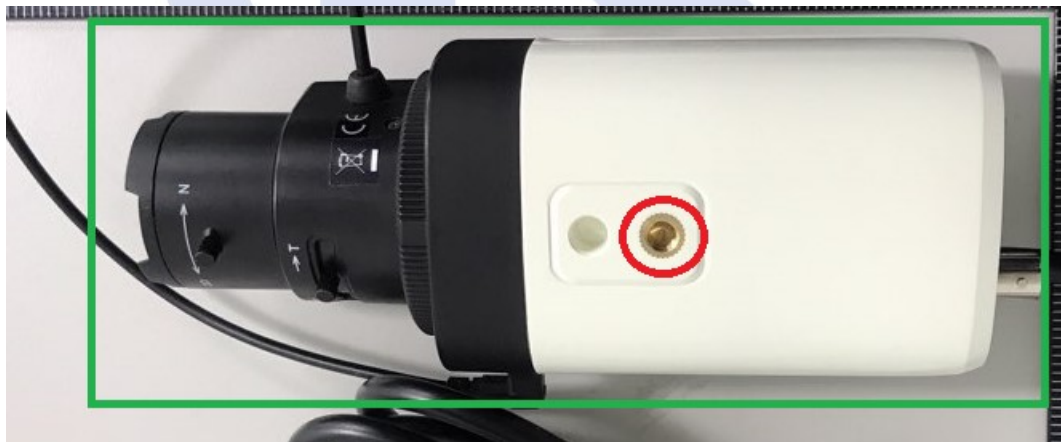
MS 2



MS 3



<External top view>



<External bottom view>

Note: External enclosure is considered as MS1 for sharp edge and corner.
 External enclosure is considered as MS1 for equipment mass.
 External enclosure is considered as MS3 for wall/ceiling mount.

☐ ES ☐ PS ☒ MS ☐ TS ☐ RS

ENERGY SOURCE DIAGRAM

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Indicate which energy sources are included in the energy source diagram. Insert diagram below

TS 1



TS 2



TS 3



External top view>



<External top view>



<External bottom view>

☐ ES

☐ PS

☐ MS

☒ TS

☐ RS

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OVERVIEW OF EMPLOYED SAFEGUARDS				
Clause	Possible Hazard			
5.1	Electrically-caused injury			
Body Part (e.g. Ordinary)	Energy Source (ES3: Primary Filter circuit)	Safeguards		
		Basic	Supplementary	Reinforced (Enclosure)
Ordinary person	ES3: Primary circuits	Cl./Cr. distance Insulation sheet	Protective earth conductor.	Enclosure Cl./Cr. Distance Transf. complying with Annex G.5.3.
Ordinary person	ES1: All secondary circuits	N/A	N/A	N/A
Ordinary person	ES1: All output terminals	N/A	N/A	N/A
6.1	Electrically-caused fire			
Material part (e.g. mouse enclosure)	Energy Source (PS2: 100 Watt circuit)	Safeguards		
		Basic	Supplementary	Reinforced
Combustible material	PS3	Safeguard are verified according to cl. 5.4.1.4, 6.3.1, 6.3.2, 9.0, B.2.6 and B.3.	Safeguards are verified according to cl. 6.4.5 and 6.4.6.	Fire enclosure to be provided
Combustible material for internal wire	PS3	Safeguard are verified according to cl. 5.4.1.4, 6.3.1, 6.3.2, 9.0, B.2.6 and B.3.	Cl. 6.5.1 Complied with 60695-11-21	N/A
All output terminal	PS1	N/A	N/A	N/A
External wiring (Power supply cord)	PS3	N/A	N/A	Complies with annex G.7.

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7.1	Injury caused by hazardous substances			
Body Part (e.g., skilled)	Energy Source (hazardous material)	Safeguards		
		Basic	Supplementary	Reinforced
N/A	N/A	N/A	N/A	N/A
8.1	Mechanically-caused injury			
Body Part (e.g. Ordinary)	Energy Source (MS3:High Pressure Lamp)	Safeguards		
		Basic	Supplementary	Reinforced (Enclosure)
Ordinary person	MS1 (Sharp edges and corners)	N/A	N/A	N/A
Ordinary person	MS3 (Wall / Ceiling mount)	Wall-mounting holes are provided based on VESA standard.	1. Complied wall or ceiling mount tests. 2. Instructional safeguard	N/A
9.1	Thermal Burn			
Body Part (e.g., Ordinary)	Energy Source (TS2)	Safeguards		
		Basic	Supplementary	Reinforced
Ordinary person	TS1 (External surfaces with knob for front/side/rear)	N/A	N/A	N/A
10.1	Radiation			
Body Part (e.g., Ordinary)	Energy Source (Output from audio port)	Safeguards		
		Basic	Supplementary	Reinforced
Ordinary person	N/A	N/A	N/A	N/A
Supplementary Information:				
(1) See attached energy source diagram for additional details.				
(2) "N" – Normal Condition; "A" – Abnormal Condition; "S" Single Fault				

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IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
4	GENERAL REQUIREMENTS		P
4.1.1	Acceptance of materials, components and subassemblies	(See appended Table 4.1.2)	P
4.1.2	Use of components	Certified components are used in accordance with their ratings, certifications and they comply with applicable parts of this standard. Components not certified are used in accordance with their ratings and they comply with applicable parts of IEC 60950-1, IEC 60065 or the relevant component standard. Components, for which no relevant IEC-standard exists, have been tested under the conditions occurring in the equipment, using applicable parts of EN 62368-1. (See appended Table 4.1.2)	P
4.1.3	Equipment design and construction	Equipment is adequately designed and constructed.	P
4.1.15	Markings and instructions..... :	(See Annex F)	P
4.4.4	Safeguard robustness	See below:	P
4.4.4.2	Steady force tests..... :	(See Annex T.5)	P
4.4.4.3	Drop tests :	Stationary equipment	N/A
4.4.4.4	Impact tests :	(See Annex T.6)	P
4.4.4.5	Internal accessible safeguard enclosure and barrier tests :	No internal accessible safeguard is used.	N/A
4.4.4.6	Glass Impact tests :	Laminated glass is used at front panel.	N/A
4.4.4.7	Thermoplastic material tests :	(See Annex T.8)	P

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Clause	Requirement + Test	Result - Remark	Verdict
4.4.4.8	Air comprising a safeguard..... :	Clearance is provided as safeguard. Also rear enclosure secures that clearance is not reduced due to mechanical force by a body part or conductive part. During and after the tests of Annex T, clearance continues to comply with the requirements specified in clause 5.2.3.	P
4.4.4.9	Accessibility and safeguard effectiveness	During and after the relevant tests, class 3 energy sources do not become accessible to an ordinary person and all safeguard remains effective.	P
4.5	Explosion	During normal / abnormal operating conditions and single fault conditions, explosion does not occurred.	P
4.6	Fixing of conductors	See below:	P
4.6.1	Fix conductors not to defeat a safeguard	Conductors are adequately fixed.	P
4.6.2	10 N force test applied to :	Internal wires are connected with multi-connect housing. All multi-connect housing with wires cannot become displaced by 10 N force test.	P
4.7	Equipment for direct insertion into mains socket - outlets	No direct plug-in equipment.	N/A
4.7.2	Mains plug part complies with the relevant standard..... :		N/A
4.7.3	Torque (Nm) :		N/A
4.8	Products containing coin/button cell batteries	No coin/button cell batteries in the equipment.	N/A
4.8.2	Instructional safeguard		N/A
4.8.3	Battery Compartment Construction		N/A
	Means to reduce the possibility of children removing the battery..... :		—

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Clause	Requirement + Test	Result - Remark	Verdict
4.8.4	Battery Compartment Mechanical Tests		N/A
4.8.5	Battery Accessibility		N/A
4.9	Likelihood of fire or shock due to entry of conductive object.....	(See Annex P)	P
5	ELECTRICALLY-CAUSED INJURY		P
5.2.1	Electrical energy source classifications	(See appended table 5.2)	P
5.2.2	ES1, ES2 and ES3 limits	See below:	P
5.2.2.2	Steady-state voltage and current	See appended table 5.2)	P
5.2.2.3	Capacitance limits.....	(See appended table 5.2)	P
5.2.2.4	Single pulse limits	No single pulses generated	N/A
5.2.2.5	Limits for repetitive pulses	No repetitive pulses generated	N/A
5.2.2.6	Ringling signals	Not used an analogue telephone network ringing signal in the equipment.	N/A
5.2.2.7	Audio signals	No audio signals	N/A
5.3	Protection against electrical energy sources	See below:	P
5.3.1	General Requirements for accessible parts to ordinary, instructed and skilled persons	CAUTION applied in user manual.	P
5.3.2.1	Accessibility to electrical energy sources and safeguards	Bare part at ES3 are not accessible by ordinary person.	P
5.3.2.2	Contact requirements	ES3 voltage exceeds 420 Vpeak, but no contact to bare internal conductive part.	P
	a) Test with test probe from Annex V	No parts can be touched by test probes specified in Annex V.	P
	b) Electric strength test potential (V)	(See appended Table 5.4.9)	P
	c) Air gap (mm)		N/A
5.3.2.4	Terminals for connecting stripped wire	No stripped wire in the equipment.	N/A
5.4	Insulation materials and requirements		P
5.4.1.2	Properties of insulating material	Adequately insulating material is used.	P
5.4.1.3	Humidity conditioning	(See clause 5.4.8)	P

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Clause	Requirement + Test	Result - Remark	Verdict
5.4.1.4	Maximum operating temperature for insulating materials	(See appended Table 5.4.1.4)	P
5.4.1.5	Pollution degree	Pollution Degree 2	—
5.4.1.5.2	Test for pollution degree 1 environment and for an insulating compound	Not required.	N/A
5.4.1.5.3	Thermal cycling	Not required.	N/A
5.4.1.6	Insulation in transformers with varying dimensions	No such transformer is used.	N/A
5.4.1.7	Insulation in circuits generating starting pulses	No circuitry generating starting pulse.	N/A
5.4.1.8	Determination of working voltage	Considered (See appended Tables 5.4.2.2, 5.4.2.4, 5.4.3)	P
5.4.1.9	Insulating surfaces	Considered to be covered by a thin metallic foil for external plastic enclosure.	P
5.4.1.10	Thermoplastic parts on which conductive metallic parts are directly mounted	See below:	P
5.4.1.10.2	Vicat softening temperature.....	Ball pressure test is considered, see below:	N/A
5.4.1.10.3	Ball pressure	(See appended Table 5.4.1.10.3)	P
5.4.2	Clearances	To determine the required clearance, procedure 2 is taken, refer to general product information.	P
5.4.2.2	Determining clearance using peak working voltage	Not applicable.	N/A
5.4.2.3	Determining clearance using required withstand voltage	(See appended table 5.4.2.3)	—
	a) a.c. mains transient voltage	2500 V _{peak}	—
	b) d.c. mains transient voltage	a.c.	—
	c) external circuit transient voltage	No External circuit transient voltage	—
	d) transient voltage determined by measurement	Not considered	—
5.4.2.4	Determining the adequacy of a clearance using an electric strength test	Not applicable, clearances are determined according to Clause 5.4.2.3 using the required withstand voltages (See appended Table 5.3.2.3)	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.4.2.5	Multiplication factors for clearances and test voltages	Altitude during operation is less than 2000 m.	N/A
5.4.3	Creepage distances	See below:	P
5.4.3.1	General	Pollution degree 2 is considered. Frequencies less than 30 kHz are presented in power supply unit (See appended Table 5.4.2.2, 5.4.2.4, 5.4.3)	P
5.4.3.3	Material Group	Material Group IIIb	P
5.4.4	Solid insulation	See below:	P
5.4.4.2	Minimum distance through insulation	For Bobbin and insulating tape in transformer (T1), see appended Table 5.4.4.2. For insulation sheet used for Basic safeguards (See appended Table 4.1.2)	P
5.4.4.3	Insulation compound forming solid insulation	No compound forming solid insulation	N/A
5.4.4.4	Solid insulation in semiconductor devices	No semiconductor devices	N/A
5.4.4.5	Cemented joints		N/A
5.4.4.6	Thin sheet material	See below:	P
5.4.4.6.1	General requirements	See below:	P
5.4.4.6.2	Separable thin sheet material	Insulating tapes are used in transformer (T1) for reinforced insulation. Any combination of one layer passes the electric strength test for reinforced insulation.	P
	Number of layers (pcs)	two layers	P
5.4.4.6.3	Non-separable thin sheet material		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	(See Annex G.5 and G.6)	P
5.4.4.9	Solid insulation at frequencies >30 kHz	< 30 kHz (refer to general product information)	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.4.5	Antenna terminal insulation	No Antenna terminal	N/A
5.4.5.1	General		N/A
5.4.5.2	Voltage surge test		N/A
	Insulation resistance (MΩ)		—
5.4.6	Insulation of internal wire as part of supplementary safeguard	Internal wire are double or single insulated (Tested at 2900 or 1800 Vrms) The thickness of one layer is minimum 0.4 mm. Other Internal wires are ES1 electrical energy source. Also internal wires do not touch ES3.	—
5.4.7	Tests for semiconductor components and for cemented joints		N/A
5.4.8	Humidity conditioning	See below:	P
	Relative humidity (%)	93 %	—
	Temperature (°C)	30 °C	—
	Duration (h)	48 h	—
5.4.9	Electric strength test	To determine the electric strength test voltage, method 1 is taken as highest value of the three method. (See appended table 5.4.9)	P
5.4.9.1	Test procedure for a solid insulation type test	(See appended Table 5.4.9)	P
5.4.9.2	Test procedure for routine tests	Not applicable.	N/A
5.4.10	Protection against transient voltages between external circuit	The equipment is not connected to such external circuits	N/A
5.4.10.1	Parts and circuits separated from external circuits		N/A
5.4.10.2	Test methods		N/A
5.4.10.2.1	General		N/A
5.4.10.2.2	Impulse test		N/A
5.4.10.2.3	Steady-state test		N/A
5.4.11	Insulation between external circuits and earthed circuitry	The equipment is not connected to such external circuits	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.4.11.1	Exceptions to separation between external circuits and earth		N/A
5.4.11.2	Requirements		N/A
	Rated operating voltage U_{op} (V)		—
	Nominal voltage U_{peak} (V)		—
	Max increase due to variation U_{sp}		—
	Max increase due to ageing ΔU_{sa}		—
	$U_{op} = U_{peak} + \Delta U_{sp} + \Delta U_{sa}$		—
5.5	Components as safeguards		P
5.5.1	General	All components comply with the applicable requirements for that safeguard and used within its rating.	P
5.5.2	Capacitors and RC units	See below:	P
5.5.2.1	General requirement	(See Annex G.11 and appended Table 4.1.2)	P
5.5.2.2	Safeguards against capacitor discharge after disconnection of a connector	(See appended Table 5.5.2.2)	P
5.5.3	Transformers	(See Annex G.5.3)	P
5.5.4	Optocouplers	No optocouplers	N/A
5.5.5	Relays	No relays	N/A
5.5.6	Resistors	Three bleeder resistors (R1, R2 and R12), connected in series between Live and Neutral, located after mains fuse. Open circuit of one resistor does not cause infringement of the requirement for operation under fault conditions (See appended Table 5.5.2.2).	P
5.5.7	SPD's	(See Annex G.8)	P
5.5.7.1	Use of an SPD connected to reliable earthing	Not used for varistor between the mains and earth (used for varistor in across the mains).	N/A
5.5.7.2	Use of an SPD between mains and protective earth	No such varistor between mains and protective earth.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.5.8	Insulation between the mains and external circuit consisting of a coaxial cable..... :	No coaxial cable	—
5.6	Protective conductor		P
5.6.2	Requirement for protective conductors	See below:	P
5.6.2.1	General requirements	Adequate connector is used.	P
5.6.2.2	Colour of insulation	Green-and-yellow coloured wire used for protective earthing conductor on power supply cord.	P
5.6.3	Requirement for protective earthing conductors	Certified mains cord is used, see appended Table 4.1.2.	P
	Protective earthing conductor size (mm ²) :	Rated current of the equipment: 0.07 A. Cross-section area: Min. 0.75 mm ² . (See appended table 4.1.2, and B.2.5)	—
5.6.4	Requirement for protective bonding conductors	See below:	P
5.6.4.1	Protective bonding conductors	See below:	P
	Protective bonding conductor size (mm ²)..... :	Min. 0.75 mm ² .	P
	Protective current rating (A) :	Rated current of the circuit under test: 16 A	P
5.6.4.3	Current limiting and overcurrent protective devices	Only one fuse (F1) is provided (see appended Table 4.1.2.	P
5.6.5	Terminals for protective conductors	See below:	P
5.6.5.1	Requirement	Rated current of the equipment: 0.07 A. The equipment complies with the requirements in Clause 5.6.6.	P
	Conductor size (mm ²), nominal thread diameter (mm). :	Screw size is 3.5 mm	P
5.6.5.2	Corrosion	No risk of corrosion.	P
5.6.6	Resistance of the protective system	See below:	P
5.6.6.1	Requirements	Protective bonding conductor and appliance connector does not have excessive resistance.	P
5.6.6.2	Test Method Resistance (Ω) :	(See appended table 5.6.6.2)	P

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Clause	Requirement + Test	Result - Remark	Verdict
5.6.7	Reliable earthing	No permanently connected equipment	N/A
5.7	Prospective touch voltage, touch current and protective conductor current		P
5.7.2	Measuring devices and networks	See below:	P
5.7.2.1	Measurement of touch current	(See appended table 5.7.2.2 and 5.7.4)	P
5.7.2.2	Measurement of prospective touch voltage	(See appended table 5.2)	P
5.7.3	Equipment set-up, supply connections and earth connections	Tests are performed with protective earthing connection disconnected.	P
	System of interconnected equipment (separate connections/single connection)	System of interconnected equipment with one connection.	—
	Multiple connections to mains (one connection at a time/simultaneous connections)	No multiple connections to mains.	—
5.7.4	Earthed conductive accessible parts	(See appended table 5.7.2.2 and 5.7.4)	P
5.7.5	Protective conductor current	The protective conductor current does not exceed the ES2 limits.	P
	Supply Voltage (V)	253 Vac	—
	Measured current (mA)	0.14 mApeak	—
	Instructional Safeguard	The protective conductor current does not exceed the ES2 limits, instructional safeguard is not required.	N/A
5.7.6	Prospective touch voltage and touch current due to external circuits	No TNV or coaxial connections	N/A
5.7.6.1	Touch current from coaxial cables		N/A
5.7.6.2	Prospective touch voltage and touch current from external circuits		N/A
5.7.7	Summation of touch currents from external circuits	The equipment is not connected to such external circuits	N/A
	a) Equipment with earthed external circuits Measured current (mA)		N/A
	b) Equipment whose external circuits are not referenced to earth. Measured current (mA)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
6	ELECTRICALLY- CAUSED FIRE		P
6.2	Classification of power sources (PS) and potential ignition sources (PIS)		P
6.2.2	Power source circuit classifications	See below:	P
6.2.2.1	General	See below:	P
6.2.2.2	Power measurement for worst-case load fault ... :	(See appended table 6.2.2)	P
6.2.2.3	Power measurement for worst-case power source fault..... :	See below:	P
6.2.2.4	PS1 :	(See appended table 6.2.2)	P
6.2.2.5	PS2 :	No PS2 circuits	N/A
6.2.2.6	PS3 :	(See appended table 6.2.2)	P
6.2.3	Classification of potential ignition sources	See below:	P
6.2.3.1	Arcing PIS :	Arcing PIS is considered to exist in PS3. (See appended Table 6.2.3.1)	P
6.2.3.2	Resistive PIS :	Resistive PIS is considered to exist in PS3 (See appended table 6.2.3.2)	P
6.3	Safeguards against fire under normal operating and abnormal operating conditions		P
6.3.1 (a)	No ignition and attainable temperature value less than 90 % defined by ISO 871 or less than 300 °C for unknown materials :	(See appended table 5.4.1.5, 6.3.2, 9.0, B.2.6)	P
6.3.1 (b)	Combustible materials outside fire enclosure	No combustible materials outside fire enclosure in the equipment.	N/A
6.4	Safeguards against fire under single fault conditions		P
6.4.1	Safeguard Method	Method for control fire spread is used.	P
6.4.2	Reduction of the likelihood of ignition under single fault conditions in PS1 circuits	Method for control fire spread is used.	N/A
6.4.3	Reduction of the likelihood of ignition under single fault conditions in PS2 and PS3 circuits	Method for control fire spread is used.	N/A
6.4.3.1	General		N/A
6.4.3.2	Supplementary Safeguards		N/A
	Special conditions if conductors on printed boards are opened or peeled		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
6.4.3.3	Single Fault Conditions..... :	(See appended table B.4)	P
	Special conditions for temperature limited by fuse		N/A
6.4.4	Control of fire spread in PS1 circuits	No supplementary safeguards are needed.	N/A
6.4.5	Control of fire spread in PS2 circuits	No PS2 circuits	N/A
6.4.5.2	Supplementary safeguards :		N/A
6.4.6	Control of fire spread in PS3 circuit	All components in a PS3 are mounted on V-0 class material of printed boards and comply with the requirements of the relevant IEC components standard. - Metallic and V-0 class material is used for fire enclosure with clause 6.4.8. - Other, combustible materials not complying with the combustible requirements of PS2 or PS3 circuits within fire enclosure are volume of less than 1 750 mm ³ or mass of less than 4 g. - Certified power cord is used. - Certified internal wire insulation is used. (See appended Table 4.1.2 and Annex G)	P
6.4.7	Separation of combustible materials from a PIS	Metallic and V-0 class material is used for fire enclosure, see appended Table 4.1.2.	N/A
6.4.7.1	General..... :		P
6.4.7.2	Separation by distance		N/A
6.4.7.3	Separation by a fire barrier	No fire barrier in the equipment.	N/A
6.4.8	Fire enclosures and fire barriers	See below:	P
6.4.8.1	Fire enclosure and fire barrier material properties	See below:	P
6.4.8.2.1	Requirements for a fire barrier	No fire barrier in the equipment.	N/A
6.4.8.2.2	Requirements for a fire enclosure	The available power does not exceed 4000 W, V-0 class material is used for fire enclosure	P

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Clause	Requirement + Test	Result - Remark	Verdict
6.4.8.3	Constructional requirements for a fire enclosure and a fire barrier	(See appended Table 4.1.2)	P
6.4.8.3.1	Fire enclosure and fire barrier openings	See below:	P
6.4.8.3.2	Fire barrier dimensions	No fire barrier in the equipment.	N/A
6.4.8.3.3	Top Openings in Fire Enclosure: dimensions (mm)	No top openings in the equipment.	N/A
	Needle Flame test	Not required.	N/A
6.4.8.3.4	Bottom Openings in Fire Enclosure, condition met a), b) and/or c) dimensions (mm)	No bottom openings in the equipment	N/A
	Flammability tests for the bottom of a fire enclosure	Not required, metallic and V-0 class material are used for fire enclosure.	N/A
6.4.8.3.5	Integrity of the fire enclosure, condition met: a), b) or c)	No such door or cover in the equipment.	N/A
6.4.8.4	Separation of PIS from fire enclosure and fire barrier distance (mm) or flammability rating	Metallic and V-0 class material are used for fire enclosure.	P
6.5	Internal and external wiring		P
6.5.1	Requirements	CSA/UL type, rated min VW-1 which is equivalent to performance of burning characteristics test for contained in IEC 60695-11-21.	P
6.5.2	Cross-sectional area (mm ²)	Less than 0.75 mm ²	—
6.5.3	Requirements for interconnection to building wiring	All output terminals are limited power source, see Annex Q.1.	P
6.6	Safeguards against fire due to connection to additional equipment	See below:	P
	External port limited to PS2 or complies with Clause Q.1	(See Annex Q.1)	P
7	INJURY CAUSED BY HAZARDOUS SUBSTANCES		P
7.2	Reduction of exposure to hazardous substances	Electrolyte is not exposed under normal/abnormal operating and single fault conditions, see appended Tables B.2.6, B.3 and B.4.	P

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Clause	Requirement + Test	Result - Remark	Verdict
7.3	Ozone exposure	The equipment does not generate ozone.	N/A
7.4	Use of personal safeguards (PPE)		N/A
	Personal safeguards and instructions		—
7.5	Use of instructional safeguards and instructions		N/A
	Instructional safeguard (ISO 7010)		—
7.6	Batteries	No batteries	N/A
8	MECHANICALLY-CAUSED INJURY		P
8.1	General		P
8.2	Mechanical energy source classifications	<u>Line 1 in Table 35):</u> All edges and corners are rounded and/or smoothed, classified as MS1. <u>Line 5 in Table 35):</u> 0.46 kg, classified as MS1. <u>Line 6 in Table 35):</u> 0.46 kg mounted more than 2 m, classified as MS3.	P
8.3	Safeguards against mechanical energy sources	Instructional safeguard is provided in the user manual for instructed person.	P
8.4	Safeguards against parts with sharp edges and corners	Classified as MS1, additional safeguard is not required.	N/A
8.4.1	Safeguards		N/A
8.5	Safeguards against moving parts	No moving parts in the equipment.	N/A
8.5.1	MS2 or MS3 part required to be accessible for the function of the equipment		N/A
8.5.2	Instructional Safeguard		—
8.5.4	Special categories of equipment comprising moving parts		N/A
8.5.4.1	Large data storage equipment		N/A
8.5.4.2	Equipment having electromechanical device for destruction of media		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8.5.4.2.1	Safeguards and Safety Interlocks		N/A
8.5.4.2.2	Instructional safeguards against moving parts		N/A
	Instructional Safeguard		—
8.5.4.2.3	Disconnection from the supply		N/A
8.5.4.2.4	Probe type and force (N)		N/A
8.5.5	High Pressure Lamps	No high pressure lamps in the equipment.	N/A
8.5.5.1	Energy Source Classification		N/A
8.5.5.2	High Pressure Lamp Explosion Test		N/A
8.6	Stability	Wall or ceiling mounted equipment	N/A
8.6.1	Product classification		N/A
	Instructional Safeguard		—
8.6.2	Static stability		N/A
8.6.2.2	Static stability test		N/A
	Applied Force		—
8.6.2.3	Downward Force Test		N/A
8.6.3	Relocation stability test		N/A
	Unit configuration during 10° tilt		—
8.6.4	Glass slide test		N/A
8.6.5	Horizontal force test (Applied Force)		N/A
	Position of feet or movable parts		—
8.7	Equipment mounted to wall or ceiling	See below:	P
8.7.1	Mounting Means (Length of screws (mm) and mounting surface)	See general product information	P

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Clause	Requirement + Test	Result - Remark	Verdict
8.7.2	Direction and applied force	Test condition 2 and 3 are applied after the stress relief test. <Test 2 condition> <u>Weight of the equipment</u>: 0.46 kg, <u>Additional weight (Four times of the equipment)</u>: 1.84 kg, <u>Attachment points</u>: 2 point or 1 point <u>Applied force for each point (1.84 kg is worst case divided by 1 point)</u>: 1.82 N (1.84 kg) Test was performed with 1.82 N (1.84 kg) by four directions (Separated by 90°), inward direction (push) and outward direction (pull). Tests are repeatedly each 2 point during 60 s. <Test 3 condition> <u>Screw diameter</u>: 5.5 mm, <u>Applied torque</u>: 2.5 Nm The equipment does not dislodge and remains mechanically intact and secure during the tests.	P
8.8	Handles strength	No handles	N/A
8.8.1	Classification		N/A
8.8.2	Applied Force		N/A
8.9	Wheels or casters attachment requirements	No wheels or casters in the equipment.	N/A
8.9.1	Classification		N/A
8.9.2	Applied force		—
8.10	Carts, stands and similar carriers	No carts, stands and similar carriers	N/A
8.10.1	General		N/A
8.10.2	Marking and instructions		N/A
	Instructional Safeguard		—

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Clause	Requirement + Test	Result - Remark	Verdict
8.10.3	Cart, stand or carrier loading test and compliance		N/A
	Applied force		—
8.10.4	Cart, stand or carrier impact test		N/A
8.10.5	Mechanical stability		N/A
	Applied horizontal force (N)		—
8.10.6	Thermoplastic temperature stability (°C)		N/A
8.11	Mounting means for rack mounted equipment	The equipment is not intended for rack mounted equipment.	N/A
8.11.1	General		N/A
8.11.2	Product Classification		N/A
8.11.3	Mechanical strength test, variable <i>N</i>		N/A
8.11.4	Mechanical strength test 250N, including end stops		N/A
8.12	Telescoping or rod antennas	No telescoping or rod antennas in the equipment.	N/A
	Button/Ball diameter (mm)		—

9	THERMAL BURN INJURY		P
9.2	Thermal energy source classifications	The accessible parts are classified TS1. Tests are performed with the room ambient 20 - 25 °C, and the results are adjusted to reflect a value of 25 °C (See appended Tables 9.0, B.2.6, B.3 and B.4)	P
9.3	Safeguard against thermal energy sources	Measured temperature for external plastic enclosure does not exceed TS1 limit, see appended Table 9.0, B.2.6, B.3 and B.4.	P
9.4	Requirements for safeguards		P
9.4.1	Equipment safeguard	Measured temperature for external plastic enclosure does not exceed TS1 limit, see appended Table 9.0, B.2.6, B.3 and B.4.	P
9.4.2	Instructional safeguard	Instructional safeguard is not required.	N/A

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IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
10	RADIATION		P
10.2	Radiation energy source classification	See below:	P
10.2.1	General classification	LED panel is indicating lights type, classified RS1.	P
10.3	Protection against laser radiation	The equipment does not contain laser or laser diode.	N/A
	Laser radiation that exists equipment		—
	Normal, abnormal, single-fault		N/A
	Instructional safeguard		—
	Tool		—
10.4	Protection against visible, infrared, and UV radiation	Classified as RS1, additional safeguard is not required.	N/A
10.4.1	General		N/A
10.4.1.a)	RS3 for Ordinary and instructed persons		N/A
10.4.1.b)	RS3 accessible to a skilled person		N/A
	Personal safeguard (PPE) instructional safeguard		—
10.4.1.c)	Equipment visible, IR, UV does not exceed RS1:		N/A
10.4.1.d)	Normal, abnormal, single-fault conditions		N/A
10.4.1.e)	Enclosure material employed as safeguard is opaque		N/A
10.4.1.f)	UV attenuation		N/A
10.4.1.g)	Materials resistant to degradation UV		N/A
10.4.1.h)	Enclosure containment of optical radiation		N/A
10.4.1.i)	Exempt Group under normal operating conditions		N/A
10.4.2	Instructional safeguard		N/A
10.5	Protection against x-radiation	No X-radiation.	N/A
10.5.1	X- radiation energy source that exists equipment:		N/A
	Normal, abnormal, single fault conditions		N/A
	Equipment safeguards		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Instructional safeguard for skilled person		N/A
10.5.3	Most unfavourable supply voltage to give maximum radiation.....		—
	Abnormal and single-fault condition.....		N/A
	Maximum radiation (pA/kg).....		N/A
10.6	Protection against acoustic energy sources	Not personal music player.	N/A
10.6.1	General		N/A
10.6.2	Classification		N/A
	Acoustic output, dB(A)		N/A
	Output voltage, unweighted r.m.s.		N/A
10.6.4	Protection of persons		N/A
	Instructional safeguards.....		N/A
	Equipment safeguard prevent ordinary person to RS2		—
	Means to actively inform user of increase sound pressure		—
	Equipment safeguard prevent ordinary person to RS2		—
10.6.5	Requirements for listening devices (headphones, earphones, etc.)		N/A
10.6.5.1	Corded passive listening devices with analog input		N/A
	Input voltage with 94 dB(A) LAeq acoustic pressure output		—
10.6.5.2	Corded listening devices with digital input		N/A
	Maximum dB(A)		—
10.6.5.3	Cordless listening device		N/A
	Maximum dB(A)		—

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IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
B	NORMAL OPERATING CONDITION TESTS, ABNORMAL OPERATING CONDITION TESTS AND SINGLE FAULT CONDITION TESTS		P
B.2	Normal Operating Conditions	See below:	P
B.2.1	General requirements..... :	(See Test Item Particulars and appended test tables)	P
	Audio Amplifiers and equipment with audio amplifiers :	No audio amplifiers	N/A
B.2.3	Supply voltage and tolerances	Tolerance is taken as +10 % and - 10 % of rated input voltage in this test report.	P
B.2.5	Input test..... :	(See appended table B.2.5)	P
B.3	Simulated abnormal operating conditions		P
B.3.1	General requirements..... :	(See appended table B.3)	P
B.3.2	Covering of ventilation openings	No top openings	N/A
B.3.3	D.C. mains polarity test	The equipment is not intended to be connected dc mains.	N/A
B.3.4	Setting of voltage selector :	No voltage selector in the equipment.	N/A
B.3.5	Maximum load at output terminals :	No powered output terminals. but communication In/Out terminal used, see appended Table B.3	P
B.3.6	Reverse battery polarity	No battery.	N/A
B.3.7	Abnormal operating conditions as specified in Clause E.2.	No audio amplifiers	N/A
B.3.8	Safeguards functional during and after abnormal operating conditions	During an abnormal operating condition, all safeguards remain effective. After restoration of normal operating conditions, all safeguards comply with applicable requirements.	P
B.4	Simulated single fault conditions		P
B.4.2	Temperature controlling device open or short-circuited :	No temperature controlling device in the equipment.	N/A
B.4.3	Motor tests	No motors in the equipment.	N/A
B.4.3.1	Motor blocked or rotor locked increasing the internal ambient temperature :		N/A

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IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
B.4.4	Short circuit of functional insulation	See below:	P
B.4.4.1	Short circuit of clearances for functional insulation	The mains poles before mains fuse comply with the clearance for basic insulation. The other clearances for functional insulation are short-circuited.	P
B.4.4.2	Short circuit of creepage distances for functional insulation	The mains poles before mains fuse comply with the creepage distance for basic insulation. The other creepage distances for functional insulation are short-circuited.	P
B.4.4.3	Short circuit of functional insulation on coated printed boards	No coated printed board in the equipment.	N/A
B.4.5	Short circuit and interruption of electrodes in tubes and semiconductors	No electrodes in the equipment.	N/A
B.4.6	Short circuit or disconnect of passive components	(See Table B.4)	P
B.4.7	Continuous operation of components		N/A
B.4.8	Class 1 and Class 2 energy sources within limits during and after single fault conditions	During and after single fault conditions, No flame and ignition inside the equipment.	P
B.4.9	Battery charging under single fault conditions ... :	No battery	N/A
C	UV RADIATION		N/A
C.1	Protection of materials in equipment from UV radiation	The equipment does not produce significant 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 apparatus		N/A
C.2.4	Xenon-arc light exposure apparatus		N/A
D	TEST GENERATORS		N/A
D.1	Impulse test generators		N/A
D.2	Antenna interface test generator		N/A

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IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
D.3	Electronic pulse generator		N/A
E	TEST CONDITIONS FOR EQUIPMENT CONTAINING AUDIO AMPLIFIERS		N/A
E.1	Audio amplifier normal operating conditions	No audio amplifier	N/A
	Audio signal voltage (V)		—
	Rated load impedance (Ω)		—
E.2	Audio amplifier abnormal operating conditions		N/A
F	EQUIPMENT MARKINGS, INSTRUCTIONS, AND INSTRUCTIONAL SAFEGUARDS		P
F.1	General requirements	User manual is provided for ordinary person.	P
	Instructions – Language	English	—
F.2	Letter symbols and graphical symbols	See below:	P
F.2.1	Letter symbols according to IEC60027-1	Used letter symbols according to IEC 60027-1 in label and user manual.	P
F.2.2	Graphic symbols IEC, ISO or manufacturer specific	Used graphic symbols according to IEC, ISO standard.	P
F.3	Equipment markings		P
F.3.1	Equipment marking locations	The equipment markings are located on the outside surface of the equipment.	P
F.3.2	Equipment identification markings	See below:	P
F.3.2.1	Manufacturer identification	Hanwha Techwin Co., Ltd.	—
F.3.2.2	Model identification	HCB-7000PHA, HCB-7000PH, HCB-6000PH	—
F.3.3	Equipment rating markings	See below:	P
F.3.3.1	Equipment with direct connection to mains	(See Annex F.3.3.3 to F.3.3.6)	P
F.3.3.2	Equipment without direct connection to mains	Equipment with direct connection to mains.	N/A
F.3.3.3	Nature of supply voltage.....	The symbol (IEC 60417-1-5032) is used for ac mains.	—
F.3.3.4	Rated voltage	230 V	—
F.3.3.4	Rated frequency	50 Hz	—

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Clause	Requirement + Test	Result - Remark	Verdict
F.3.3.6	Rated current or rated power	0.07 A	—
F.3.3.7	Equipment with multiple supply connections	Only one supply connection.	N/A
F.3.4	Voltage setting device	No voltage setting device in the equipment.	N/A
F.3.5	Terminals and operating devices	See below:	P
F.3.5.1	Mains appliance outlet and socket-outlet markings	No mains appliance outlet and socket-outlet in the equipment.	—
F.3.5.2	Switch position identification marking	No disconnect switch	—
F.3.5.3	Replacement fuse identification and rating markings	Marked adjacent to the fuse on PCB of power supply unit as below. F1: T 5AL 250V	P
F.3.5.4	Replacement battery identification marking	No battery	N/A
F.3.5.5	Terminal marking location	(See Annex F.3.6.1)	P
F.3.6	Equipment markings related to equipment classification	See below:	P
F.3.6.1	Class I Equipment	Class I equipment.	P
F.3.6.1.1	Protective earthing conductor terminal	Symbol  (IEC60417-5019(2006-08)) on metal frame earth terminal	P
F.3.6.1.2	Neutral conductor terminal	Not permanently connected equipment.	N/A
F.3.6.1.3	Protective bonding conductor terminals	Not identified.	N/A
F.3.6.2	Class II equipment (IEC60417-5172)	Class I equipment.	N/A
F.3.6.2.1	Class II equipment with or without functional earth		N/A
F.3.6.2.2	Class II equipment with functional earth terminal marking		N/A
F.3.7	Equipment IP rating marking	No marking required, IPX0 by default	—
F.3.8	External power supply output marking	No external power supply output	N/A
F.3.9	Durability, legibility and permanence of marking	(See Annex F.3.10)	P

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Clause	Requirement + Test	Result - Remark	Verdict
F.3.10	Test for permanence of markings	The marking plate was subjected to the permanence of marking test. The marking plate was rubbed with cloth soaked with water for 15s with the cloth soaked with petroleum spirit. After this test there was no damage to the marking plate. The marking on the label did not fade. There was no curling of the marking plate.	P
F.4	Instructions		P
	a) Equipment for use in locations where children not likely to be present - marking	No parts can be touched by test probes specified in Annex V.	N/A
	b) Instructions given for installation or initial use	Provided in user manual.	P
	c) Equipment intended to be fastened in place	Provided in installation manual.	P
	d) Equipment intended for use only in restricted access area	Equipment is not intended for use in restricted access area.	N/A
	e) Audio equipment terminals classified as ES3 and other equipment with terminals marked in accordance F.3.6.1		N/A
	f) Protective earthing employed as safeguard	Provided in user manual.	P
	g) Protective earthing conductor current exceeding ES 2 limits	No protective earthing conductor current exceeding ES2 limits, see Clause 5.7.4	P
	h) Symbols used on equipment	Graphical symbols are explained on the equipment.	P
	i) Permanently connected equipment not provided with all-pole mains switch	No permanently connected equipment.	N/A
	j) Replaceable components or modules providing safeguard function	No such part in the equipment.	N/A
F.5	Instructional safeguards	See below:	P
	Where "instructional safeguard" is referenced in the test report it specifies the required elements, location of marking and/or instruction		P
G	COMPONENTS		P
G.1	Switches		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.1.1	General requirements	No switches	N/A
G.1.2	Ratings, endurance, spacing, maximum load		N/A
G.2	Relays		N/A
G.2.1	General requirements	No relays	N/A
G.2.2	Overload test		N/A
G.2.3	Relay controlling connectors supply power		N/A
G.2.4	Mains relay, modified as stated in G.2		N/A
G.3	Protection Devices		P
G.3.1	Thermal cut-offs	No thermal cut-offs in the equipment.	N/A
G.3.1.1a) &b)	Thermal cut-outs separately approved according to IEC 60730 with conditions indicated in a) & b)		N/A
G.3.1.1c)	Thermal cut-outs tested as part of the equipment as indicated in c)		N/A
G.3.1.2	Thermal cut-off connections maintained and secure		N/A
G.3.2	Thermal links		N/A
G.3.2.1a)	Thermal links separately tested with IEC 60691	No thermal links in the equipment.	N/A
G.3.2.1b)	Thermal links tested as part of the equipment		N/A
	Aging hours (H)		—
	Single Fault Condition		—
	Test Voltage (V) and Insulation Resistance (Ω) . :		—
G.3.3	PTC Thermistors	No PTC thermistors in the equipment.	N/A
G.3.4	Overcurrent protection devices	Mains fuse (F1) is certified according to IEC 60127 series.	P
G.3.5	Safeguards components not mentioned in G.3.1 to G.3.5		P
G.3.5.1	Non-resettable devices suitably rated and marking provided	Marking is located close to the protective devices.	P
G.3.5.2	Single faults conditions.....:	(See appended Table B.4)	P
G.4	Connectors		P

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Clause	Requirement + Test	Result - Remark	Verdict
G.4.1	Spacings	Basic/double insulation between outer insulating surface of an AC connector (CON1) and conductive parts that are connected to ES3.	P
G.4.2	Mains connector configuration	Mains plugs that are listed in IEC 60083 are provided, see appended table 4.1.2.	P
G.4.3	Plug is shaped that insertion into mains socket-outlets or appliance coupler is unlikely	No plug has such a shape that insertion into mains socket-output or appliance coupler is likely to occur.	N/A
G.5	Wound Components		P
G.5.1	Wire insulation in wound components.....	Provided on the winding wire in transformer.	P
G.5.1.2 a)	Two wires in contact inside wound component, angle between 45° and 90°		P
G.5.1.2 b)	Construction subject to routine testing		N/A
G.5.2	Endurance test on wound components		N/A
G.5.2.1	General test requirements		N/A
G.5.2.2	Heat run test		N/A
	Time (s)		—
	Temperature (°C)		—
G.5.2.3	Wound Components supplied by mains		N/A
G.5.3	Transformers		P
G.5.3.1	Requirements applied (IEC61204-7, IEC61558-1/-2, and/or IEC62368-1).....	Transformer (T1) comply with the requirements in Annex G.5.3.2 and G.5.3.3.	P
	Position	(See appended table 4.1.2)	—
	Method of protection	(See appended table 4.1.2)	—
G.5.3.2	Insulation	The insulation complies with the relevant requirements in clause 5 and passes the relevant electric strength tests.	P
	Protection from displacement of windings.....	Secured to the soldering pins with wrapping.	—
G.5.3.3	Overload test	See below:	P

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IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
G.5.3.3.1	Test conditions	Complies.	P
G.5.3.3.2	Winding Temperatures testing in the unit	(See appended table B.4)	P
G.5.3.3.3	Winding Temperatures - Alternative test method	Not applicable.	N/A
G.5.4	Motors		N/A
G.5.4.1	General requirements	No motors in the equipment.	N/A
	Position		—
G.5.4.2	Test conditions		N/A
G.5.4.3	Running overload test		N/A
G.5.4.4	Locked-rotor overload test		N/A
	Test duration (days)		—
G.5.4.5	Running overload test for d.c. motors in secondary circuits		N/A
G.5.4.5.2	Tested in the unit		N/A
	Electric strength test (V)		—
G.5.4.5.3	Tested on the Bench - Alternative test method; test time (h)		N/A
	Electric strength test (V)		—
G.5.4.6	Locked-rotor overload test for d.c. motors in secondary circuits		N/A
G.5.4.6.2	Tested in the unit		N/A
	Maximum Temperature		N/A
	Electric strength test (V)		N/A
G.5.4.6.3	Tested on the bench - Alternative test method; test time (h)		N/A
	Electric strength test (V)		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		P

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Clause	Requirement + Test	Result - Remark	Verdict
G.6.1	General	Primary wire is used with Double insulated wire. Triple insulated winding wire (TIW) used on the transformer. See appended Table 4.1.2	P
G.6.2	Solvent-based enamel wiring insulation	Enamelled winding wire is not considered	N/A
G.7	Mains supply cords		P
G.7.1	General requirements	Approved sheathed PVC cord. (see appended table 4.1.2, and General product information)	N/A
	Type.....:	Non-detachable type	—
	Rated current (A).....:	0.007 A	—
	Cross-sectional area (mm ²), (AWG).....:	The cord is min. 0.75 mm ² within the current rating. (See appended table 4.1.2)	—
G.7.2	Compliance and test method	Approved mains cord and plug are used. (See appended table 4.1.2)	P
G.7.3	Cord anchorages and strain relief for non-detachable power supply cords	See below:	P
G.7.3.2	Cord strain relief	See below:	P
G.7.3.2.1	Requirements	Power cord complies with strain relief test (30 N applied) and torque test (0.25 Nm applied) after mould stress relief test.	P
	Strain relief test force (N)	30 N	—
G.7.3.2.2	Strain relief mechanism failure	The strain relief mechanism is used as basic safeguard. Power supply cord is connected with multi-connect housing (supplementary safeguard).	P
G.7.3.2.3	Cord sheath or jacket position, distance (mm)....:	Certified power cord provided (Min. 4.5 mm)	—
G.7.3.2.4	Strain relief comprised of polymeric material	Cord bushing is used.	N/A
G.7.4	Cord Entry	(See appended table 5.4.9)	P

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Clause	Requirement + Test	Result - Remark	Verdict
G.7.5	Non-detachable cord bend protection	Not hand-held or equipment intended to be moved.	N/A
G.7.5.1	Requirements		N/A
G.7.5.2	Mass (g)		—
	Diameter (mm)		—
	Temperature (°C)		—
G.7.6	Supply wiring space	The equipment is constructed by multi-connect housing, cord bushing and insulated material.	P
G.7.6.2	Stranded wire		N/A
G.7.6.2.1	Test with 8 mm strand		N/A
G.8	Varistors		P
G.8.1	General requirements	See below:	P
G.8.2	Safeguard against shock	Complies, see appended Table 4.1.2.	P
G.8.3	Safeguard against fire		P
G.8.3.2	Varistor overload test	Varistor (MOV1) connected across the mains. - Rated voltage: 230 V, - Maximum continuous a.c. voltage of a varistor: 460 V During and after the test, the varistors has no risk of fire and equipment safeguards remain effective.	P
G.8.3.3	Temporary overvoltage		N/A
G.9	Integrated Circuit (IC) Current Limiters		N/A
G.9.1 a)	Manufacturer defines limit at max. 5A.	No integrated circuit (IC) current limiters in the equipment.	N/A
G.9.1 b)	Limiters do not have manual operator or reset		N/A
G.9.1 c)	Supply source does not exceed 250 VA		—
G.9.1 d)	IC limiter output current (max. 5A)		—
G.9.1 e)	Manufacturers' defined drift		—
G.9.2	Test Program 1		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.9.3	Test Program 2		N/A
G.9.4	Test Program 3		N/A
G.10	Resistors		P
G.10.1	General requirements	Three bleeder resistors (R1, R2 and R12), connected in series between Live and Neutral, located after mains fuse. Open Circuit of one resistor does not cause infringement of the requirement for operation under fault conditions (See appended Table 5.5.2.2).	P
G.10.2	Resistor test		N/A
G.10.3	Test for resistors serving as safeguards between the mains and an external circuit consisting of a coaxial cable	The equipment is not connected to a coaxial cable.	N/A
G.10.3.1	General requirements		N/A
G.10.3.2	Voltage surge test		N/A
G.10.3.3	Impulse test		N/A
G.11	Capacitor and RC units		P
G.11.1	General requirements	Single X2 capacitor is certified according to IEC 60384-14.	P
G.11.2	Conditioning of capacitors and RC units	(See appended Table 4.1.2)	P
G.11.3	Rules for selecting capacitors	Single X2 capacitor is used adequately.	P
G.12	Optocouplers		N/A
	Optocouplers comply with IEC 60747-5-5:2007 Spacing or Electric Strength Test (specify option and test results).....:	No optocouplers	N/A
	Type test voltage Vini		—
	Routine test voltage, Vini,b		—
G.13	Printed boards		P
G.13.1	General requirements	See below:	P
G.13.2	Uncoated printed boards	(See appended Table 5.4.2.2, 5.4.2.4 and 5.4.3)	P

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Clause	Requirement + Test	Result - Remark	Verdict
G.13.3	Coated printed boards	No coated printed board in the equipment.	N/A
G.13.4	Insulation between conductors on the same inner surface	No such insulation in the equipment.	N/A
	Compliance with cemented joint requirements (Specify construction)		—
G.13.5	Insulation between conductors on different surfaces	No such insulation in the equipment.	N/A
	Distance through insulation		N/A
	Number of insulation layers (pcs)		—
G.13.6	Tests on coated printed boards	No coated printed board in the equipment.	N/A
G.13.6.1	Sample preparation and preliminary inspection		N/A
G.13.6.2a)	Thermal conditioning		N/A
G.13.6.2b)	Electric strength test		N/A
G.13.6.2c)	Abrasion resistance test		N/A
G.14	Coating on components terminals		N/A
G.14.1	Requirements	No coatings in the equipment.	N/A
G.15	Liquid filled components		N/A
G.15.1	General requirements	No liquid filled components in the equipment.	N/A
G.15.2	Requirements		N/A
G.15.3	Compliance and test methods		N/A
G.15.3.1	Hydrostatic pressure test		N/A
G.15.3.2	Creep resistance test		N/A
G.15.3.3	Tubing and fittings compatibility test		N/A
G.15.3.4	Vibration test		N/A
G.15.3.5	Thermal cycling test		N/A
G.15.3.6	Force test		N/A
G.15.4	Compliance		N/A
G.16	IC including capacitor discharge function (ICX)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
a)	Humidity treatment in accordance with sc5.4.8 – 120 hours	No IC including capacitor discharge function (ICX).	N/A
b)	Impulse test using circuit 2 with $U_c =$ to transient voltage		N/A
C1)	Application of ac voltage at 110% of rated voltage for 2.5 minutes		N/A
C2)	Test voltage		—
D1)	10,000 cycles on and off using capacitor with smallest capacitance resistor with largest resistance specified by manufacturer		N/A
D2)	Capacitance		—
D3)	Resistance		—
H	CRITERIA FOR TELEPHONE RINGING SIGNALS		N/A
H.1	General	Not used an analogue telephone network ringing signal in the equipment.	N/A
H.2	Method A		N/A
H.3	Method B		N/A
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 complied with		N/A
H.3.2.2	Tripping device		N/A
H.3.2.3	Monitoring voltage (V)		—
J	INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION		N/A
	General requirements		N/A

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IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
K	SAFETY INTERLOCKS		N/A
K.1	General requirements	No safety interlocks in the equipment.	N/A
K.2	Components of safety interlock safeguard mechanism		N/A
K.3	Inadvertent change of operating mode		N/A
K.4	Interlock safeguard override		N/A
K.5	Fail-safe		N/A
	Compliance		N/A
K.6	Mechanically operated safety interlocks		N/A
K.6.1	Endurance requirement		N/A
K.6.2	Compliance and Test method		N/A
K.7	Interlock circuit isolation		N/A
K.7.1	Separation distance for contact gaps & interlock circuit elements (type and circuit location)		N/A
K.7.2	Overload test, Current (A)		N/A
K.7.3	Endurance test		N/A
K.7.4	Electric strength test		N/A
L	DISCONNECT DEVICES		P
L.1	General requirements	The plug is considered as disconnect device.	P
L.2	Permanently connected equipment	Not permanently connected equipment.	N/A
L.3	Parts that remain energized	No parts that remain energized when the disconnect device is off.	N/A
L.4	Single phase equipment	The plug disconnects both poles simultaneously	P
L.5	Three-phase equipment	Not three-phase equipment.	N/A
L.6	Switches as disconnect devices	No switches in the equipment.	N/A
L.7	Plugs as disconnect devices	The plug is regarded as disconnect device. Relevant warning is provided in user manual.	P
L.8	Multiple power sources	Only single power source is used.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
M	EQUIPMENT CONTAINING BATTERIES AND THEIR PROTECTION CIRCUITS		N/A
M.1	General requirements	No battery	N/A
M.2	Safety of batteries and their cells		N/A
M.2.1	Requirements		N/A
M.2.2	Compliance and test method (identify method) .. :		N/A
M.3	Protection circuits		N/A
M.3.1	Requirements		N/A
M.3.2	Tests		N/A
	- Overcharging of a rechargeable battery		N/A
	- Unintentional charging of a non-rechargeable battery		N/A
	- Reverse charging of a rechargeable battery		N/A
	- Excessive discharging rate for any battery		N/A
M.3.3	Compliance		N/A
M.4	Additional safeguards for equipment containing secondary lithium battery		N/A
M.4.1	General		N/A
M.4.2	Charging safeguards		N/A
M.4.2.1	Charging operating limits		N/A
M.4.2.2a)	Charging voltage, current and temperature		—
M.4.2.2 b)	Single faults in charging circuitry		—
M.4.3	Fire Enclosure		N/A
M.4.4	Endurance of equipment containing a secondary lithium battery		N/A
M.4.4.2	Preparation		N/A
M.4.4.3	Drop and charge/discharge function tests		N/A
	Drop		N/A
	Charge		N/A
	Discharge		N/A
M.4.4.4	Charge-discharge cycle test		N/A
M.4.4.5	Result of charge-discharge cycle test		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
M.5	Risk of burn due to short circuit during carrying		N/A
M.5.1	Requirement		N/A
M.5.2	Compliance and Test Method (Test of P.2.3)		N/A
M.6	Prevention of short circuits and protection from other effects of electric current		N/A
M.6.1	Short circuits		N/A
M.6.1.1	General requirements		N/A
M.6.1.2	Test method to simulate an internal fault		N/A
M.6.1.3	Compliance (Specify M.6.1.2 or alternative method)		N/A
M.6.2	Leakage current (mA)		N/A
M.7	Risk of explosion from lead acid and NiCd batteries		N/A
M.7.1	Ventilation preventing explosive gas concentration		N/A
M.7.2	Compliance and test method		N/A
M.8	Protection against internal ignition from external spark sources of lead acid batteries		N/A
M.8.1	General requirements		N/A
M.8.2	Test method		N/A
M.8.2.1	General requirements		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 (Determination of compliance: inspection, data review; or abnormal testing)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
N	ELECTROCHEMICAL POTENTIALS		P
	Metal(s) used	Pollution degree considered	—
O	MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES		P
	Figures O.1 to O.20 of this Annex applied		—
P	SAFEGUARDS AGAINST ENTRY OF FOREIGN OBJECTS AND SPILLAGE OF INTERNAL LIQUIDS		P
P.1	General requirements	See below clauses:	P
P.2.2	Safeguards against entry of foreign object		P
	Location and Dimensions (mm)	No top openings in the equipment.	—
P.2.3	Safeguard against the consequences of entry of foreign object	See below:	P
P.2.3.1	Safeguards against the entry of a foreign object	No top openings in the equipment	N/A
	Openings in transportable equipment	Not transportable equipment.	N/A
	Transportable equipment with metalized plastic parts		N/A
P.2.3.2	Openings in transportable equipment in relation to metallized parts of a barrier or enclosure (identification of supplementary safeguard)	Not transportable equipment.	N/A
P.3	Safeguards against spillage of internal liquids	Internal liquid is not used in the equipment.	N/A
P.3.1	General requirements		N/A
P.3.2	Determination of spillage consequences		N/A
P.3.3	Spillage safeguards		N/A
P.3.4	Safeguards effectiveness		N/A
P.4	Metallized coatings and adhesive securing parts	Metallized coating is not used in the equipment.	N/A
P.4.2 a)	Conditioning testing		N/A
	Tc (°C).....		—
	Tr (°C)		—
	Ta (°C).....		—
P.4.2 b)	Abrasion testing	Metallized coating is not used in the equipment.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
P.4.2 c)	Mechanical strength testing	(See Annex T)	P
Q	CIRCUITS INTENDED FOR INTERCONNECTION WITH BUILDING WIRING		P
Q.1	Limited power sources	See below	P
Q.1.1 a)	Inherently limited output	External I / O port (for data signal only) are inherently limited, see Table Q.1.	P
Q.1.1 b)	Impedance limited output	No impedance limited output	N/A
	- Regulating network limited output under normal operating and simulated single fault condition		N/A
Q.1.1 c)	Overcurrent protective device limited output	No overcurrent protective device	N/A
Q.1.1 d)	IC current limiter complying with G.9	No IC current limiter.	N/A
Q.1.2	Compliance and test method	(See Table Q.1)	P
Q.2	Test for external circuits – paired conductor cable	The equipment is not supplying power to an external circuit paired conductor cable.	N/A
	Maximum output current (A)		—
	Current limiting method		—
R	LIMITED SHORT CIRCUIT TEST		N/A
R.1	General requirements		N/A
R.2	Determination of the overcurrent protective device and circuit		N/A
R.3	Test method Supply voltage (V) and short-circuit current (A)).		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	All materials have suitable flame class, no testing required.	N/A
	Samples, material		—
	Wall thickness (mm)		—
	Conditioning (°C)		—
	Test flame according to IEC 60695-11-5 with conditions as set out		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- 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)		—
	Test flame according to IEC 60695-11-5 with conditions as set out		N/A
	Test specimen does not show any additional hole		N/A
S.3	Flammability test for the bottom of a fire enclosure		N/A
	Samples, material		—
	Wall thickness (mm)		—
	Cheesecloth did not ignite		N/A
S.4	Flammability classification of materials		N/A
S.5	Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power does not exceed 4 000 W		N/A
	Samples, material		—
	Wall thickness (mm)		—
	Conditioning (test condition), (°C)		—
	Test flame according to IEC 60695-11-20 with conditions as set out		N/A
	After every test specimen was not consumed completely		N/A
	After fifth flame application, flame extinguished within 1 min		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
T	MECHANICAL STRENGTH TESTS		P
T.1	General requirements	See below:	P
T.2	Steady force test, 10 N	No hazard, refer to comment in appended Table 5.4.2.2, 5.4.2.4 and 5.4.3.	P
T.3	Steady force test, 30 N	(See appended table T.3)	P
T.4	Steady force test, 100 N	Not transportable, hand-held or direct plug-in equipment.	N/A
T.5	Steady force test, 250 N	(See appended table T.5)	P
T.6	Enclosure impact test	(See appended table T.6)	P
	Fall test	No hazard as result from the steel sphere fall test.	P
	Swing test	No hazard as result from the steel sphere swing test.	P
T.7	Drop test	Not movable equipment requiring lifting or handling by an ordinary person.	N/A
T.8	Stress relief test	(See appended table T.8)	P
T.9	Impact Test (glass)	Laminated glass is used at front panel.	N/A
T.9.1	General requirements		N/A
T.9.2	Impact test and compliance		N/A
	Impact energy (J).....		—
	Height (m)		—
T.10	Glass fragmentation test	No Glass	N/A
T.11	Test for telescoping or rod antennas	No telescoping or rod antennas in the equipment.	N/A
	Torque value (Nm)		—
U	MECHANICAL STRENGTH OF CATHODE RAY TUBES (CRT) AND PROTECTION AGAINST THE EFFECTS OF IMPLOSION		N/A
U.1	General requirements	No cathode ray tube in the equipment.	N/A
U.2	Compliance and test method for non-intrinsically protected CRTs		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
U.3	Protective Screen.....:		N/A
V	DETERMINATION OF ACCESSIBLE PARTS (FINGERS, PROBES AND WEDGES)		P
V.1	Accessible parts of equipment	Considered.	P
V.2	Accessible part criterion	Considered.	P



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IEC 62368-1					
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
- Description ²⁾ :	This test report does not cover the mains cord except for listed type in list of critical components (See general product information).				
Mains Plug (for CENELEC countries)	Longwell Company	LP-33	16 A / 250 V~	VDE 0620-2- 1/A1	VDE (40009003)
Mains cord	Longwell Company	H05VV-F	0.75 mm ² x 3	EN 50525-2- 11:2011	VDE (121253)
- Description ²⁾ :	Unit				
Enclosure (Body, Rear)	LOTTE CHEMICAL CORPORATION	HN-1064(+)	V-0, 130 °C Min. 1.5 mm thickness	UL 94	UL (E115797)
Enclosure (Front)	Interchangeable	Interchangeable	Metal, Min. 2.5 mm thickness	EN 62368-1	1.) Tested in the equipment
Cord Bushing	LI FENG GRANULATION (SHENZHEN) CO LTD	LF-32	V-0, 50 °C	EN 62368-1, UL 94	1), UL (E218975)
Connector (CON1)	YEON HO ELECTRONICS CO LTD	YAW396-03AV	7.5 A, 250 V~	EN 62368-1, UL 1977	1.), UL (E108706)
Bleeder resistor (R1, R2, R12)	YAGEO	RC1206FR- 071M00	1 MΩ, 1/4 W,	EN 62368-1	1.) Tested in the equipment
Alternative	Samsung Electro- Mechanics America, Inc.	RC3216F- 105CS			
Alternative	TA-I TECHNOLOGY CO., LTD	RM12FTN105			

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Clause	Requirement + Test		Result - Remark		Verdict
Fuse (F1)	ORISEL CO., LTD.	OS5	T5AL, 250 V~	IEC 60127-1, EC 60127-3	VDE (40022122)
Alternative	Cooper Bussmann LLC	SS-5	T5AL, 250 V~	IEC 60127-1, EC 60127-3	VDE (40015513)
Varistor (MOV1)	Joyin Co., Ltd.	JVR14N 681K	Max. Continuous a.c. voltage: 420 V, Peak current (1 puls, 8/20 μ s): 4500 A	IEC 61051-1: 2007, IEC 61051-2: 1991, IEC 61051-2: 1991/ AMD1: 2009, IEC 61051-2-2: 1991, IEC 60950-1: 2013, Annex Q	VDE (005937)
Alternative	Joyin Co., Ltd.	JVR14N 751K	Max. Continuous a.c. voltage: 460 V, Peak current (1 puls, 8/20 μ s): 4500 A		VDE (005937)
Alternative	Amotech Co., Ltd.	INR 14D681	Supply voltage: 680 V Max. Continuous a.c. voltage: 420 V, Peak current (1 puls, 8/20 μ s): 4500 A	IEC 61051- 1:2007 IEC 61051- 2:1991, IEC 61051- 2:1991/ AMD1:2009, IEC 61051-2-2: 1991	VDE (114190)
Alternative	Amotech Co., Ltd.	INR14D751	Supply voltage: 750 V Max. Continuous a.c. voltage: 460 V, Peak current (1 puls, 8/20 μ s): 4500 A		VDE (114190)
X-capacitor (CX1)	ZhuHai Sungho Electronic Co.,Ltd.	CMPP	X2, 0.1 μ F Min. 100 °C Min. 275 V~	IEC 60384-14	VDE (40026078)
Alternative	Sunil Electronics Ind. Co., Ltd.	436D	X2, 0.1 μ F Min. 100 °C Min. 275 V~	IEC 60384-14	VDE (40028050)
Alternative	Cowell Fashion Co., Ltd. Pilkor Electronics REPUBLIC OF KOREA	PCX2 337	X2, 0.1 μ F Min. 100 °C Min. 275 V~	IEC 60384-14	SEMKO (0256-10)

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IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Line filter (LF1)	Dong Heung Electronics Co., Ltd.	VU-18080	Min. 130 °C	EN 62368-1	1.) Tested in the equipment
Bobbin	Sumitomo Bakelite Co., Ltd	PM-8375	PF, V-0, 150 °C Min. 0.49 mm thick.	UL 94, UL 746	UL (E41429)
Alternative	Sumitomo Bakelite Co., Ltd	PM-9820	PF, V-0, 150 °C Min. 0.51 mm thick.	UL 94, UL 746	UL (E41429)
Alternative	CHANG CHUN PLASTICS CO LTD	T375HF	PMC, V-0, 150 °C Min. 0.43 mm thick.	UL 94, UL 746	UL (E59481)
Transformer (T1)	Dong Heung Electronics Co., Ltd.	MSP-7000PH-T1	Class B	EN 62368-1	1.) Tested in the equipment
Alternative	Dong In System Co., Ltd.				
Bobbin for transformer	Sumitomo Bakelite Co., Ltd.	PM-9820	PF, V-0, 150 °C Min. 0.51 mm thick.	UL 94, UL 746	UL (E209189)
Alternative	Sumitomo Bakelite Co., Ltd.	PM-8375	PF, V-0, 150 °C Min. 0.49 mm thick.	UL 94, UL 746	UL (E209189)
Alternative	Chang Chun Plastics Co., Ltd.	T375HF	PMC, V-0, 150 °C Min. 0.43 mm thick.	UL 94, UL 746	UL (E59481)
Alternative	Chang Chun Plastics Co., Ltd.	T200HF	PMC, V-0, 150 °C Min. 0.70 mm thick.	UL 94, UL 746	UL (E59481)
Triple Insulation wire for transf.	KBI COSMOLINK CO., LTD.	TIW-M	Reinforce, 130 °C 0.25 Ø	IEC 62368-1: 2014	VDE (138053)
Alternative	Furukawa Electric Co., Ltd.	TEX-E	Reinforce, 130 °C 0.25 Ø	IEC 62368-1: 2014	VDE (006735)
Alternative	Penglai Daxindian Lianqing Magnet Wire Factory	SSY-B	Reinforce, 130 °C 0.25 Ø	IEC 62368-1: 2014	VDE (40033831)
Insulation tape for transf.	Duck Sung Hitech Co Ltd	DTS-204 (e),	PET film, 130 °C	UL 510	UL (E105147)

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Clause	Requirement + Test			Result - Remark		Verdict
PCB	King Star PC	KSR-D	V-0, 130 °C	UL 796	UL (E335236)	
Alternative	Interchangeable	Interchangeable	Min. V-0, 105 °C	UL 796	UL	
Insulation sheet (PSU bottom)	SABIC JAPAN L L C	420SE0(f2)(w)(GG)(rr2)	PBT, V-2, 75 °C Min. 0.4 mm thick	IEC 60695-11-10, UL 94	UL (E207780)	
Alt.)	Interchangeable	Interchangeable	Min. V-2, 75 °C Min. 0.4 mm thick	IEC 60695-11-10, UL 94	UL	
Supplementary information: 1) Provided evidence ensures the agreed level of compliance. See OD-CB2039. 2) Description line content is optional. Main line description needs to clearly detail the component used for testing 1.) Tested as part of the Apparatus according to IEC 62368-1:2014 (Second Edition)						

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IEC 62368-1				
Clause	Requirement + Test		Result - Remark	Verdict
4.8.4, 4.8.5	TABLE: Lithium coin/button cell batteries mechanical tests			N/A
(The following mechanical tests are conducted in the sequence noted.)				
4.8.4.2	TABLE: Stress relief test			—
Part		Material	Oven Temperature (°C)	Comments
4.8.4.3	TABLE: Battery replacement test			—
Battery part no. :				—
Battery Installation/withdrawal		Battery Installation/Removal Cycle		Comments
		1		
		2		
		3		
		4		
		5		
		6		
		8		
		9		
		10		
		4.8.4.4	TABLE: Drop test	
Impact Area		Drop Distance	Drop No.	Observations
			1	
			2	
			3	
4.8.4.5	TABLE: Impact			—
Impacts per surface		Surface tested	Impact energy (Nm)	Comments

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Clause	Requirement + Test	Result - Remark	Verdict
4.8.4, 4.8.5	TABLE: Lithium coin/button cell batteries mechanical tests		N/A
(The following mechanical tests are conducted in the sequence noted.)			
4.8.4.6	TABLE: Crush test		—
Test position	Surface tested	Crushing Force (N)	Duration force applied (s)
Supplementary information:			

4.8.5	TABLE: Lithium coin/button cell batteries mechanical test result		N/A
Test position	Surface tested	Force (N)	Duration force applied (s)
Supplementary information:			

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IEC 62368-1							
Clause	Requirement + Test			Result - Remark			Verdict
5.2	TABLE: Classification of electrical energy sources						P
5.2.2.2 – Steady State Voltage and Current conditions							
No.	Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters			ES Class
				U (Vrms or Vpk)	I (A _{pk} or A _{rms} *)	Hz	
1	253	Primary circuitry	Normal	-	-	-	ES3 (Declared)
			Abnormal	-	-	-	
			Single fault – SC/OC	-	-	-	
2	253	Secondary circuits (transformer output)	Normal	Max. 13.2 Vrms	-	-	ES1
			Abnormal	-	-	-	
			Single fault – SC/OC	-	-	-	
3	253	All outer output terminals	Normal	-	0.018 mA _{pk}	-	ES1
			Abnormal	-	-	-	
			Single fault – SC/OC	-	0.032 mA _{pk}	-	
2) Additional Info: Frequency, Pulse duration, Pulse off time, Capacitance value, etc. - Critical ES consideration is at PSU. Separately, touch current of accessible conductive parts is considered at table 5.7.4. *) Current was measured because voltage is not fulfilled by the ES1 limits.							
5.2.2.3 - Capacitance Limits							
No.	Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters		ES Class	
				Capacitance, nF	Upk (V)		
1	253	Phase to Phase	Normal	Max. 120 (Total rated value of capacitor plus 20 % of specified tolerance)	Limit: 75 V (Referred from Table 5) Measured value: Max. 16 Vdc after 2 s.	ES1	
			Abnormal				
			Single fault (R1- OC)				

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IEC 62368-1							
Clause	Requirement + Test			Result - Remark			Verdict
Test Conditions: Normal – Maximum rated load Abnormal – Supplementary information: SC=Short Circuit, OC=Open Circuit							
5.2.2.4 - Single Pulses							
No.	Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters			ES Class
				Duration (ms)	Upk (V)	Ipk (mA)	
			Normal				
			Abnormal				
			Single fault – SC/OC				
5.2.2.5 - Repetitive Pulses							
No.	Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters			ES Class
				Off time (ms)	Upk (V)	Ipk (mA)	
			Normal				
			Abnormal				
			Single fault – SC/OC				
Test Conditions: Normal – Abnormal - Supplementary information: SC=Short Circuit, OC=Open Circuit							

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IEC 62368-1							
Clause	Requirement + Test			Result - Remark			Verdict
5.4.1.4, 6.3.2, 9.0, B.2.6	TABLE: Temperature measurements						P
	Supply voltage (V)	253 V *)	207 V *)	253 V **)	207 V **)	—	
	Ambient Tmin (°C)	-	-	-	-	—	
	Ambient Tmax (°C)	23.3	23.8	24.1	23.1	—	
	Tma (°C)	55.0	55.0	55.0	55.0	—	
Maximum measured temperature T of part/at: 6)		T (°C) 1)				Allowed Tmax (°C)	
CON1 connector body		63.5	62.4	61.9	63.4	115	
Line Filter, LF1 coil (130 °C)		66.2	64.8	64.1	65.7	120 3)	
X-capacitor, CX1 body		67.1	65.7	63.9	65.4	100	
E. Capacitor, C1 body (105 °C)		68.3	66.7	56.3	68.2	105	
Varistor, MOV1 body		66.4	65.0	64.2	65.8	-	
BD1 body		67.5	66.1	65.9	67.6	-	
PWB near BD1		68.0	66.6	66.2	68.1	105	
Transformer, T1 coil (Class B)		71.7	70.0	69.1	71.1	120 3)	
Transformer, T1 core (Class B)		72.1	70.1	69.1	71.3	130	
PWB near D3		67.8	66.7	66.5	68.0	105	
PWB near IC1		60.6	59.8	59.3	60.6	105	
PWB near U301		69.2	68.5	68.5	69.8	105	
Maximum measured temperature T of part/at: 7)		T (°C) 2)				Allowed Tmax (°C)	
Top enclosure (Label side) _ non-metallic 5)		30.8	30.9	28.8	29.9	94	
Bottom enclosure (Other side of the label side) _ non-metallic 5)		28.8	28.2	27.8	28.7	94	
Rear enclosure _ non-metallic 5)		28.4	28.1	27.2	28.2	94	
Function button _ non-metallic 4)		27.9	27.8	26.8	27.6	77	
Supplementary information:							
Temperature T of winding:		t1 (°C)	R1 (Ω)	t2 (°C)	R2 (Ω)	T (°C)	Allowed Tmax (°C)

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Clause	Requirement + Test	Result - Remark	Verdict
supplementary information:			
Note 1: T _{ma} should be considered as directed by applicable requirement			
Note 2: T _{ma} is not included in assessment of Touch Temperatures (Clause 9)			
- Maximum ambient temperature (T _{ma}): 55 °C			
1) Calculated value for T _{ma} (Measured value – T _{amb} + T _{ma})			
2) Calculated value for T _{amb} : 25 °C			
3) Minus (-) 10 K applied for thermo-couple method for windings.			
4) External surfaces touched occasionally for very short period (> 1 s and < 10 s).			
5) External surfaces touched occasionally (top, side, front and rear) for very short period (< 1 s).			
6) Parts inside the equipment			
7) Parts outside the equipment			
*) Label upward **) Label downward			

5.4.1.10.2	TABLE: Vicat softening temperature of thermoplastics		N/A
Penetration (mm).....:			—
Object/ Part No./Material	Manufacturer/t rademark	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	Test temperature (°C)	Impression diameter (mm)
AC connector (CON1) / Type: YAW396-03AV	YEON HO ELECTRONICS CO LTD	125	1.0
Bobbin for transformer (T1) Type: T375HF *) , **)	Chang Chun Plastics Co., Ltd.	125	0.8
Bobbin for transformer (T1) Type: PM-9820 *) , **)	Sumitomo Bakelite Co., Ltd	125	0.7
Bobbin for transformer (T1) Type: T200HF **)	Chang Chun Plastics Co., Ltd.	125	0.7
Bobbin for transformer (T1) Type: PM-8375 **)	Sumitomo Bakelite Co., Ltd	125	0.8
Bobbin for line filter (LF1) Type: T375HF	CHANG CHUN PLASTICS CO LTD	125	0.7
Bobbin for line filter (LF1) Type: PM-8375	Sumitomo Bakelite Co., Ltd	125	0.6
Supplementary information: *) Dong In System Co., Ltd. **) Dong Heung Electronics Co., Ltd.			

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Clause	Requirement + Test			Result - Remark			Verdict	
5.4.2.2, 5.4.2.4 and 5.4.3	TABLE: Minimum Clearances/Creepage distance						P	
Clearance (cl) and creepage distance (cr) at/of/between:		Up (V)	U r.m.s. (V)	Frequency (kHz) ¹⁾	Required cl (mm) ⁴⁾	cl (mm) ^{2), 4)}	Required cr (mm) ³⁾	cr (mm)
Basic insulation								
Live to Neutral before fuse F1		326	230	--	--	--	2.5	4.0
Across the fuse		326	230	--	--	--	2.5	> 3.0
Primary and frame (GND)		326	230	--	--	--	2.5	5.0
Reinforced insulation:								
T1 pr. pin 5 and sec. D3		244	113	--	--	--	5.0	8.0
R10 pr. and sec. C13 (-)		232	115	--	--	--	5.0	9.0
T1 pr. pin 2 and sec. C12		328	118	--	--	--	5.0	8.0
R10 pr. and sec. C13 (+)		240	114	--	--	--	5.0	> 6.7
D2 pr. and sec. C13 (+)		194	113	--	--	--	5.0	> 7.0
R5 pr. and sec. R14		196	113	--	--	--	5.0	> 10.0
R3 pr. and sec. GND		208	112	--	--	--	5.0	6.0
T1 pr. pins and sec. pins ^{5), 6)}		456	127	--	--	--	5.0	6.9
T1 pr. pins and sec. pins ^{5), 7)}		464	123	--	--	--	5.0	7.8
Supplementary information:								
Equipment is checked with 10 N force test on all possible components.								
¹⁾ Only for frequency above 30 kHz								
²⁾ See table 5.4.2.4 if this is based on electric strength test								
³⁾ Provide Material Group IIb								
⁴⁾ Not applicable, clearances are determined according to clause 5.4.2.3 using the required withstand voltages, see appended table 5.4.2.3.								
⁵⁾ Measured highest voltage for transformer between primary and secondary.								
⁶⁾ Constitution in the transformer minimum distance by Dong Heung Electronics Co., Ltd.								
⁷⁾ Constitution in the transformer minimum distance by Dong In System Co., Ltd.								

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Clause	Requirement + Test	Result - Remark	Verdict
5.4.2.3	TABLE: Minimum Clearances distances using required withstand voltage		P
	Overvoltage Category (OV)..... :		II
	Pollution Degree..... :		2
Clearance distanced between:		Required withstand voltage	Required cl (mm)
Measured cl (mm)			
Primary (Basic insulation)			
Live to Neutral before fuse F1		2500	1.5
Across the fuse		2500	1.5
Primary and frame (GND)		2500	1.5
Reinforced insulation:			
T1 pr. pin 5 and sec. D3		2500	3.0
R10 pr. and sec. C13 (-)		2500	3.0
T1 pr. pin 2 and sec. C12		2500	3.0
R10 pr. and sec. C13 (+)		2500	3.0
D2 pr. and sec. C13 (+)		2500	3.0
R5 pr. and sec. R14		2500	3.0
R3 pr. and sec. GND		2500	3.0
T1 pr. pins and sec. pins ¹⁾		2500	3.0
T1 pr. pins and sec. pins ²⁾		2500	3.0
Supplementary information:			
¹⁾ Constitution in the transformer minimum distance by Dong Heung Electronics Co., Ltd.			
²⁾ Constitution in the transformer minimum distance by Dong In System Co., Ltd.			

5.4.2.4	TABLE: Clearances based on electric strength test			N/A
Test voltage applied between:		Required cl (mm)	Test voltage (kV) peak/ r.m.s. / d.c.	Breakdown Yes / No
Supplementary information:				

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IEC 62368-1					
Clause	Requirement + Test			Result - Remark	Verdict
5.4.4.2, 5.4.4.5 c) 5.4.4.9	TABLE: Distance through insulation measurements				P
Distance through insulation di at/of:	Peak voltage (V)	Frequency (kHz)	Material	Required DTI (mm)	DTI (mm)
Enclosure	326	N/A	Polycarbonate (PC)	0.40	1.7 mm
Insulation sheet	340	0.06	PBT	0.40	0.43
Transformer (T1) bobbin	464	18.9 *)	PF or PMC	0.40	0.5 mm
Insulating tape in transformer (T1)	464	18.9 *)	Polyester tape	2 layers	2 layers
Supplementary information:					
*) The maximum frequency measured is 18.9 kHz.					

5.4.9	TABLE: Electric strength tests			P
Test voltage applied between:		Voltage shape (AC, DC)	Test voltage (V) **)	Breakdown Yes / No
Basic/supplementary:				
Primary and metal chassis GND		AC	1800	No
Insulation sheet *)		AC	1800	No
Reinforced:				
Primary to Secondary		AC	2900	No
Primary – Secondary in T1 transformer		AC	2900	No
Bobbin in T1 transformer		AC	2900	No
Insulating tape in T901 transformer		AC	2900	No
Supplementary information:				
*) Insulation sheet between SMPS board (bottom) and metal chassis				
**) RMS values are considered peak values (2500 Vpeak and 4000 Vpeak).				

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IEC 62368-1					
Clause	Requirement + Test			Result - Remark	Verdict
5.5.2.2	TABLE: Stored discharge on capacitors				P
Supply Voltage (V), Hz	Test Location	Operating Condition (N, S)	Switch position On or off	Measured Voltage (after 2 seconds)	ES Classification
264 V, 60 Hz	Phase to Phase	N	On	0.5 Vd.c.	ES1
264 V, 60 Hz	Phase to Phase	S (R1 open)	On	16 Vd.c.	ES1
Supplementary information: X-capacitors installed for testing are: CX1 is max. 0.1 μ F ☒ bleeding resistor rating: R1, R2 and R12 are each 1/4 W, 1 M Ω ☐ ICX: Notes: A. Test Location: Phase to Neutral; Phase to Phase; Phase to Earth; and/or Neutral to Earth B. Operating condition abbreviations: N – Normal operating condition (e.g., normal operation, or open fuse); S –Single fault condition					

5.6.6.2	TABLE: Resistance of protective conductors and terminations				P
Accessible part	Test current (A)	Duration (min)	Voltage drop (V)	Resistance (Ω)	
Between plug and conductive metal part	32	2	2.17	0.068	
Supplementary information:					

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IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.7.2.2, 5.7.4	TABLE: Earthed accessible conductive part		P
Supply voltage			—
Location		Test conditions specified in 6.1 of IEC 60990 or Fault Condition No in IEC 60990 clause 6.2.2.1 through 6.2.2.8, except for 6.2.2.7	Touch current (mA)
Mains to earthed accessible conductive parts on output terminal (USB port)		1	0.032 mA _{peak} ¹⁾
		2*	²⁾
		3	³⁾
		4	⁴⁾
		5	³⁾ , ⁴⁾
		6	⁴⁾
		8	⁵⁾
Supplementary Information: 1) No Y capacitor was applied. 2) Not applicable, disconnect device is provided in the equipment, See below note [5]. 3) Not applicable, IT power system is not considered. 4) Not applicable, Single-phase equipment. 5) Not applicable, no accessible conductive parts which are incidentally electrically connected to other parts. Notes: [1] Supply voltage is the anticipated maximum Touch Voltage [2] Earthed neutral conductor [Voltage differences less than 1% or more] [3] Specify method used for measurement as described in IEC 60990 sub-clause 4.3 [4] IEC60990, sub-clause 6.2.2.7, Fault 7 not applicable. [5] (*) IEC60990, sub-clause 6.2.2.2 is not applicable if switch or disconnect device (e.g., appliance coupler) provided.			

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IEC 62368-1					
Clause	Requirement + Test			Result - Remark	Verdict
6.2.2	TABLE: Electrical power sources (PS) measurements for classification				P
Source	Description	Measurement	Max Power after 3 s	Max Power after 5 s ^{*)}	PS Classification
Primary circuits in PSU	Normal	Power (W):	--	--	PS3 (Declared)
		VA (V).....:	--	--	
		IA (A):	--	--	
		VA (V).....:	--	--	
		IA (A):	--	--	
+ 12 V secondary output on the PSU	Normal	Power (W):	6.24	--	PS1
		VA (V).....:	11.8	--	
		IA (A):	0.53	--	
Supplementary Information:					
(*) Measurement taken only when limits at 3 seconds exceed PS1 limits					

6.2.3.1	TABLE: Determination of Potential Ignition Sources (Arcing PIS)				P
Location		Open circuit voltage After 3 s (V _p)	Measured r.m.s current (I _{rms})	Calculated value (V _p x I _{rms})	Arcing PIS? Yes / No
Primary circuits in PSU		> 50 V _{peak}	—	> 15	Yes
All secondary circuits		< 50 V _{peak}	—	< 15	No
Supplementary information:					
An Arcing PIS requires a minimum of 50 V (peak) a.c. or d.c. An Arcing PIS is established when the product of the open circuit voltage (V _p) and normal operating condition rms current (I _{rms}) is greater than 15.					

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IEC 62368-1					
Clause	Requirement + Test			Result - Remark	Verdict
6.2.3.2	TABLE: Determination of Potential Ignition Sources (Resistive PIS)				P
Circuit Location (x-y)	Operating Condition (Normal / Describe Single Fault)	Measured wattage or VA During first 30 s (W / VA)	Measured wattage or VA After 30 s (W / VA)	Protective Circuit, Regulator, or PTC Operated? Yes / No (Comment)	Resistive PIS? Yes/No
Components in primary circuits	N/A	N/A	N/A	N/A	Yes
Components secondary circuits for PS1	N/A	N/A	N/A	N/A	No
Supplementary Information: A combination of voltmeter, VA and ammeter IA may be used instead of a wattmeter. If a separate voltmeter and ammeter are used, the product of (VA x IA) is used to determine Resistive PIS classification. A Resistive PIS: (a) dissipates more than 15 W, measured after 30 s of normal operation, or (b) under single fault conditions has either a power exceeding 100 W measured immediately after the introduction of the fault if electronic circuits, regulators or PTC devices are used, or has an available power exceeding 15 W measured 30 s after introduction of the fault. Resistive PIS is considered to exist in PS2 and PS3					

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IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
8.5.5	TABLE: High Pressure Lamp		N/A
Description	Values	Energy Source Classification	
Lamp type.....:		—	
Manufacturer		—	
Cat no.:		—	
Pressure (cold) (MPa).....:		MS_	
Pressure (operating) (MPa)		MS_	
Operating time (minutes)		—	
Explosion method		—	
Max particle length escaping enclosure (mm) .:		MS_	
Max particle length beyond 1 m (mm).....:		MS_	
Overall result			
Supplementary information:			

B.2.5	TABLE: Input test						P
U (V)	I (A)	I rated (A)	P (W)	P rated (W)	Fuse No	I fuse (A)	Condition/status
207	0.033	-	1.42	-	F1	0.033	-
230	0.032	0.07	1.45	-	F1	0.032	
253	0.032	-	1.48	-	F1	0.032	
Supplementary information: Equipment may be have rated current or rated power or both.							

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IEC 62368-1								
Clause	Requirement + Test				Result - Remark			Verdict
B.3	TABLE: Abnormal operating condition tests							P
Ambient temperature (°C)					See below			—
Power source for EUT: Manufacturer, model/type, output rating ...					N/A			—
Component No.	Abnormal Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
12 Vdc output in power supply unit	Overload	253 V	4 h 30 min	F1	0.08	T1 coil	102.6 *)	NCD, NB, NH
						T1 core	100.9 *)	
						Ambient	23.8	
Supplementary information: 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. SC=Short circuit, OC=Open circuit, NCD=No component damaged, NH=No hazard, NO=Normal operation. NB= No indication of dielectric breakdown Maximum ambient temperature (Tma) : 55 °C. *) Calculated value for Tma (Measured value – Tamb +Tma).								

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Clause	Requirement + Test	Result - Remark	Verdict
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B.4	TABLE: Fault condition tests							P
Ambient temperature (°C)					20 to 28 °C		—	
Power source for EUT: Manufacturer, model/type, output rating ..					See below;		—	
Component No.	Fault Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
BD1 (AC to +)	SC	253	10 min	F1	0.03	-	-	LF1 winding opened immediately, BD1 damaged, NB, NC, NT, NH.
BD1 (AC to +)	SC	207	20 min	F1	0.03	-	-	LF1 winding opened immediately, BD1 damaged, NB, NC, NT, NH.
C1	SC	253	25 min	F1	0.03	-	-	LF1 winding opened immediately, BD1 damaged, NB, NC, NT, NH.
IC1 (pin 1 to 5)	SC	253	22 min	F1	0.03	-	-	LF1 winding opened immediately, BD1, IC1 damaged, NB, NC, NT, NH.
IC1 (pin 1 to 4)	SC	253	22 min	F1	0.03	-	-	LF1 winding opened immediately, BD1, IC1, R7 damaged, NB, NC, NT, NH.
D3 (A to C)	SC	253	30 min	F1	0.03	-	-	Camera video off immediately, NCD, NB, NC, NT, NH

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IEC 62368-1								
Clause	Requirement + Test				Result - Remark			Verdict
C12	SC	253	52 min	F1	0.03	-	-	Camera video off immediately, NCD, NB, NC, NT, NH
D1 (A to C)	SC	253	40 min	F1	0.03	-	-	Camera video off immediately, NCD, NB, NC, NT, NH
D5 (A to C)	SC	253	25 min	F1	0.03	-	-	Camera video off immediately, NCD, NB, NC, NT, NH
Supplementary information: SC=Short circuit, OC=Open circuit, NCD=No component damaged, NH=No hazard, NO=Normal operation. NB= No indication of dielectric breakdown, NC= Cheesecloth remained intact, NT= Tissue paper remained intact.								

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IEC 62368-1										
Clause	Requirement + Test			Result - Remark				Verdict		
Annex M	TABLE: Batteries								N/A	
The tests of Annex M are applicable only when appropriate battery data is not available										
Is it possible to install the battery in a reverse polarity position?										
	Non-rechargeable batteries			Rechargeable batteries						
	Discharging		Un-intentional charging	Charging		Discharging		Reversed charging		
	Meas. current	Manuf. Specs.		Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.	
Max. current during normal condition										
Max. current during fault condition										
Test results:										
- Chemical leaks										
- Explosion of the battery										
- Emission of flame or expulsion of molten metal										
- Electric strength tests of equipment after completion of tests										
Supplementary information:										

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IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Annex M.4	TABLE: Additional safeguards for equipment containing secondary lithium batteries				N/A
Battery/Cell No.	Test conditions	Measurements			Observation
		U	I (A)	Temp (C)	
	Normal				
	Abnormal				
	Single fault –SC/OC				
	Normal				
	Abnormal				
	Single fault – SC/OC				
Supplementary Information:					
Battery identification	Charging at T_{lowest} (°C)	Observation	Charging at $T_{highest}$ (°C)	Observation	
Supplementary Information:					

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IEC 62368-1						
Clause	Requirement + Test			Result - Remark		Verdict
Annex Q.1	TABLE: Circuits intended for interconnection with building wiring (LPS)					N/A
Note: Measured UOC (V) with all load circuits disconnected:						
Output Circuit	Components	U _{oc} (V)	I _{sc} (A)		S (VA)	
			Meas.	Limit	Meas.	Limit
Terminals for RS-485 Control, D&N Input, MD Output ports and Video output ¹⁾	Normal condition	0	0	8	0	100
Supplementary Information: SC=Short circuit, OC=Open circuit						
¹⁾ Signal transmission only.						

T.2, T.3, T.4, T.5	TABLE: Steady force test					P
Part/Location	Material	Thickness (mm)	Force (N)	Test Duration (sec)	Observation	
Components on internal parts	-	-	10	5	T2: No reduction of clearance/creepage distances.	
Top/Rear/Front/ Bottom/Side cover near PSU	Metal	1.7	30	5	T3: Energy source did not become accessible, equipment safeguards were not defeated.	
Top/Rear/Front/ Bottom/Side cover near PSU	Metal	1.7	250	5	T5: Energy source did not become accessible, equipment safeguards were not defeated.	
Supplementary information:						

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IEC 62368-1				
Clause	Requirement + Test		Result - Remark	Verdict
T.6, T.9	TABLE: Impact tests			P
Part/Location	Material	Thickness (mm)	Vertical distance (mm)	Observation
Top/Rear/Front/Bottom/Side cover near PSU	Metal	1.7	1 300	T6: Energy source did not become accessible, equipment safeguards were not defeated.
Supplementary information:				

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

T.8	TABLE: Stress relief test				P
Part/Location	Material	Thickness (mm)	Oven Temperature (°C)	Duration (h)	Observation
Outer enclosure	Plastic	1.7	82.1 *)	7	No risk of shrinkage or distortion.
Supplementary information:					
*) Oven Temperature = Maximum measured temperature value +10 K					

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Attachment 1 – European group differences**ATTACHMENT TO TEST REPORT IEC 62368-1 2th Ed.
EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES**

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

Differences according to: EN 62368-1:2014+A11:2017**Attachment Form No. : EU_GD_IEC62368_1B_II****Attachment Originator.....: Nemko AS****Master Attachment: Date 2017-09-22****Copyright © 2017 IEC System for Conformity Testing and Certification of Electrical Equipment (IECEE), Geneva, Switzerland. All rights reserved.**

Clause	Requirement + Test	Result – Remark	Verdict				
	CENELEC COMMON MODIFICATIONS (EN)		P				
	Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 62368-1:2014 are prefixed “Z”.		P				
CONTENTS	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					
	Delete all the “country” notes in the reference document (IEC 62368-1:2014) according to the following list:		—				
	0.2.1	Note		1	Note 3	4.1.15	Note
	4.7.3	Note 1 and 2		5.2.2.2	Note	5.4.2.3.2.2 Table 13	Note c
	5.4.2.3.2.4	Note 1 and 3		5.4.2.5	Note 2	5.4.5.1	Note
	5.5.2.1	Note		5.5.6	Note	5.6.4.2.1	Note 2 and 3
	5.7.5	Note		5.7.6.1	Note 1 and 2	10.2.1 Table 39	Note 2, 3 and 4
	10.5.3	Note 2		10.6.2.1	Note 3	F.3.3.6	Note 3

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Attachment 1 – European group differences

Clause	Requirement + Test	Result – Remark	Verdict
	For special national conditions, see Annex ZB.		—
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.	Considered.	P
4.Z1	Add the following new subclause after 4.9: To protect against excessive current, short-circuits and earth faults in circuits connected to an a.c. mains , protective devices shall be included either as integral parts of the equipment or as parts of the building installation, subject to the following, a), b) and c): a) except as detailed in b) and c), protective devices necessary to comply with the requirements of B.3.1 and B.4 shall be included as parts of the equipment; b) for components in series with the mains input to the equipment such as the supply cord, appliance coupler, r.f.i. filter and switch, short-circuit and earth fault protection may be provided by protective devices in the building installation; c) it is permitted for pluggable equipment type B or permanently connected equipment , to rely on dedicated overcurrent and short-circuit protection in the building installation, provided that the means of protection, e.g. fuses or circuit breakers, is fully specified in the installation instructions. If reliance is placed on protection in the building installation, the installation instructions shall so state, except that for pluggable equipment type A the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet.	Integral parts of the equipment over current protective device (fuse) provided.	P
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.	The equipment is not connected to such external circuits, refer to Table 14, ID number 1.	N/A
10.2.1	Add the following to ^{c)} and ^{d)} in table 39: For additional requirements, see 10.5.1.	No X-Ray	N/A

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Attachment 1 – European group differences

Clause	Requirement + Test	Result – Remark	Verdict
10.5.1	Add the following after the first paragraph: <i>For RS 1 compliance is checked by measurement under the following conditions:</i> <i>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 presets 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.</i> NOTE Z1 Soldered joints and paint lockings are examples of adequate locking. <i>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.</i> <i>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.</i> <i>For RS1, the dose-rate shall not exceed 1 µSv/h taking account of the background level.</i> NOTE Z2 These values appear in Directive 96/29/Euratom of 13 May 1996.	No X-Ray	N/A
10.6.1	Add the following paragraph to the end of the subclause: EN 71-1:2011, 4.20 and the related tests methods and measurement distances apply.	This equipment is not portable audio equipment.	N/A

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Attachment 1 – European group differences

Clause	Requirement + Test	Result – Remark	Verdict																																
10.Z1	Add the following new subclause after 10.6.5. 10.Z1 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	No other types of radiation.	N/A																																
G.7.1	Add the following note: NOTE Z1 The harmonized code designations corresponding to the IEC cord types are given in Annex ZD.		P																																
Bibliography	Add the following standards: Add the following notes for the standards indicated: <table><tr><td>IEC 60130-9</td><td>NOTE Harmonized as EN 60130-9.</td></tr><tr><td>IEC 60269-2</td><td>NOTE Harmonized as HD 60269-2.</td></tr><tr><td>IEC 60309-1</td><td>NOTE Harmonized as EN 60309-1.</td></tr><tr><td>IEC 60364</td><td>NOTE some parts harmonized in HD 384/HD 60364 series.</td></tr><tr><td>IEC 60601-2-4</td><td>NOTE Harmonized as EN 60601-2-4.</td></tr><tr><td>IEC 60664-5</td><td>NOTE Harmonized as EN 60664-5.</td></tr><tr><td>IEC 61032:1997</td><td>NOTE Harmonized as EN 61032:1998 (not modified).</td></tr><tr><td>IEC 61508-1</td><td>NOTE Harmonized as EN 61508-1.</td></tr><tr><td>IEC 61558-2-1</td><td>NOTE Harmonized as EN 61558-2-1.</td></tr><tr><td>IEC 61558-2-4</td><td>NOTE Harmonized as EN 61558-2-4.</td></tr><tr><td>IEC 61558-2-6</td><td>NOTE Harmonized as EN 61558-2-6.</td></tr><tr><td>IEC 61643-1</td><td>NOTE Harmonized as EN 61643-1.</td></tr><tr><td>IEC 61643-21</td><td>NOTE Harmonized as EN 61643-21.</td></tr><tr><td>IEC 61643-311</td><td>NOTE Harmonized as EN 61643-311.</td></tr><tr><td>IEC 61643-321</td><td>NOTE Harmonized as EN 61643-321.</td></tr><tr><td>IEC 61643-331</td><td>NOTE Harmonized as EN 61643-331.</td></tr></table>	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.		P
IEC 60130-9	NOTE Harmonized as EN 60130-9.																																		
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IEC 61643-321	NOTE Harmonized as EN 61643-321.																																		
IEC 61643-331	NOTE Harmonized as EN 61643-331.																																		

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Attachment 1 – European group differences

Clause	Requirement + Test	Result – Remark	Verdict
ZB	ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)		—
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”	For special national condition in Denmark, Finland, Norway and Sweden, CLASS I PLUGGABLE EQUIPMENT TYPE A intended for connection to other equipment or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment must be connected to an earthed mains socket-outlet. Marking text provided on inlet near side of the apparatus in name plate label 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 Sweden: “Apparaten skall anslutas till jordat uttag” In Norway: “Apparatet må tilkoples jordet stikkontakt” Instructions and equipment marking related to safety is applied in the language that is acceptable in the country in which the equipment is to be sold.	P

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Clause	Requirement + Test	Result – Remark	Verdict
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	Not provided. Refer to General Product Information in main test report.	N/A
5.2.2.2	Denmark After the 2nd paragraph add the following: A warning (marking safeguard) for high touch current is required if the touch current exceeds the limits of 3,5 mA a.c. or 10 mA d.c.	Not exceeds the limits of 3.5 mA a.c. or 10 mA d.c.	N/A

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Attachment 1 – European group differences

Clause	Requirement + Test	Result – Remark	Verdict
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 1,5kV. It is permitted to bridge this insulation with a capacitor complying with EN 60384-14:2005, subclass Y2. A capacitor classified Y3 according to EN 60384-14:2005, may bridge this insulation under the following conditions: • the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 60384-14, which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in	Not connected to a telecommunication network nor a cable distribution system.	N/A

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Attachment 1 – European group differences

Clause	Requirement + Test	Result – Remark	Verdict
	5.4.11; • the additional testing shall be performed on all the test specimens as described in EN 60384-14; the impulse test of 2,5 kV is to be performed before the endurance test in EN 60384-14, in the sequence of tests as described in EN 60384-14.		
5.5.2.1	Norway After the 3rd paragraph the following is added: Due to the IT power system used, capacitors are required to be rated for the applicable line-to-line voltage (230 V).	Noted	--
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.	No resistors bridging basic insulation in the equipment.	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. <i>Justification:</i> In Denmark an existing 13 A socket outlet can be protected by a 20 A fuse.	No socket outlets.	N/A
5.6.4.2.1	Ireland and United Kingdom After the indent for pluggable equipment type A , the following is added: – the protective current rating is taken to be 13 A, this being the largest rating of fuse used in the mains plug.	Refer to General Product Information in main test report.	N/A
5.6.5.1	To the second paragraph the following is added: The range of conductor sizes of flexible cords to be accepted by terminals for equipment with a rated current over 10 A and up to and including 13 A is: 1,25 mm ² to 1,5 mm ² in cross-sectional area.	Refer to General Product Information in main test report.	N/A

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Attachment 1 – European group differences

Clause	Requirement + Test	Result – Remark	Verdict
5.7.5	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.	Not exceeds the limits of 3.5 mA a.c. or 10 mA d.c	N/A
5.7.6.1	Norway and Sweden To the end of the subclause the following is added: The screen of the television distribution system is normally not earthed at the entrance of the building and there is normally no equipotential bonding system within the building. Therefore the protective earthing of the building installation needs to be isolated from the screen of a cable distribution system. It is however accepted to provide the insulation external to the equipment by an adapter or an interconnection cable with galvanic isolator, which may be provided by a retailer, for example. The user manual shall then have the following or similar information in Norwegian and Swedish language respectively, depending on in what country the equipment is intended to be used in: “Apparatus connected to the protective earthing of the building installation through the mains connection or through other apparatus with a connection to protective earthing – and to a television distribution system using coaxial 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.	Not for connection to cable distribution systems.	N/A

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Attachment 1 – European group differences

Clause	Requirement + Test	Result – Remark	Verdict
	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."	Not for connection to cable distribution systems.	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 .	Not exceeds the limits of 3.5 mA	N/A
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	Not a direct plug-in equipment.	N/A

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Attachment 1 – European group differences

Clause	Requirement + Test	Result – Remark	Verdict
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 poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with the standard sheets DK 6-1a in DS 60884-2-D1 or EN 60309-2. 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 <i>Justification:</i> Heavy Current Regulations, Section 6c	Refer to General Product Information in main test report.	N/A
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.	Not a direct plug-in equipment.	N/A

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Attachment 1 – European group differences

Clause	Requirement + Test	Result – Remark	Verdict
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.	Refer to General Product Information in main test report.	N/A
G.7.1	Ireland To the first paragraph the following is added: Apparatus which is fitted with a flexible cable or cord shall be provided with a plug in accordance with Statutory Instrument 525: 1997, "13 A Plugs and Conversion Adapters for Domestic Use Regulations: 1997. S.I. 525 provides for the recognition of a standard of another Member State which is equivalent to the relevant Irish Standard	Refer to General Product Information in main test report.	N/A
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.	Refer to General Product Information in main test report.	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
ZC	ANNEX ZC, NATIONAL DEVIATIONS (EN)		—
10.5.2	Germany The following requirement applies: For the operation of any cathode ray tube intended for the display of visual images operating at an acceleration voltage exceeding 40 kV, authorization is required, or application of type approval (Bauartzulassung) and marking. <i>Justification:</i> German ministerial decree against ionizing radiation (Röntgenverordnung), in force since 2002-07-01, implementing the European Directive 96/29/EURATOM. NOTE Contact address: Physikalisch-Technische Bundesanstalt, Bundesallee 100, D-38116 Braunschweig, Tel.: Int +49-531-592-6320, Internet: http://www.ptb.de	Not exceeding 40 kV	N/A
F.1	Italy The following requirements shall be fulfilled: • The power consumption in Watts (W) shall be indicated on TV receivers and in their instruction for use (Measurement according to EN 60555-2). Note/Nota EN 60555-2 has since been replaced by IEC 60107-1:1997. • TV receivers shall be provided with an instruction for use, schematic diagrams and adjustments procedure in Italian language. • Marking for controls and terminals shall be in Italian language. Abbreviation and international symbols are allowed provided that they are explained in the instruction for use.	No TV receivers	N/A N/A N/A

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Attachment 2 – Photographs



<Top _ outside view>



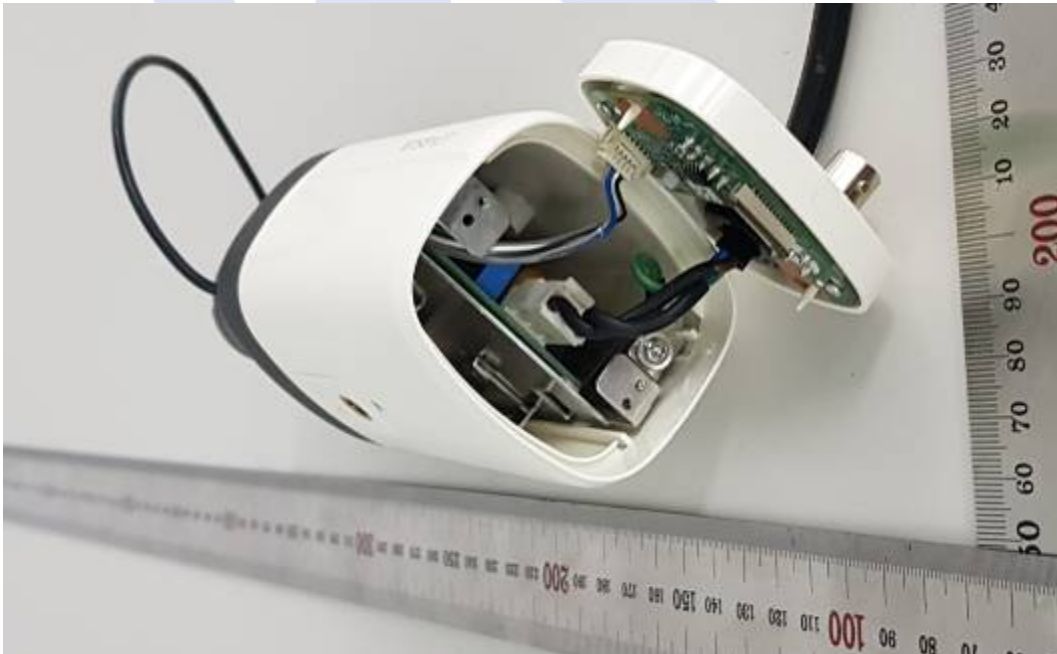
<Bottom _ outside view>

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Attachment 2 – Photographs



<Top, rear and side _ outside view>



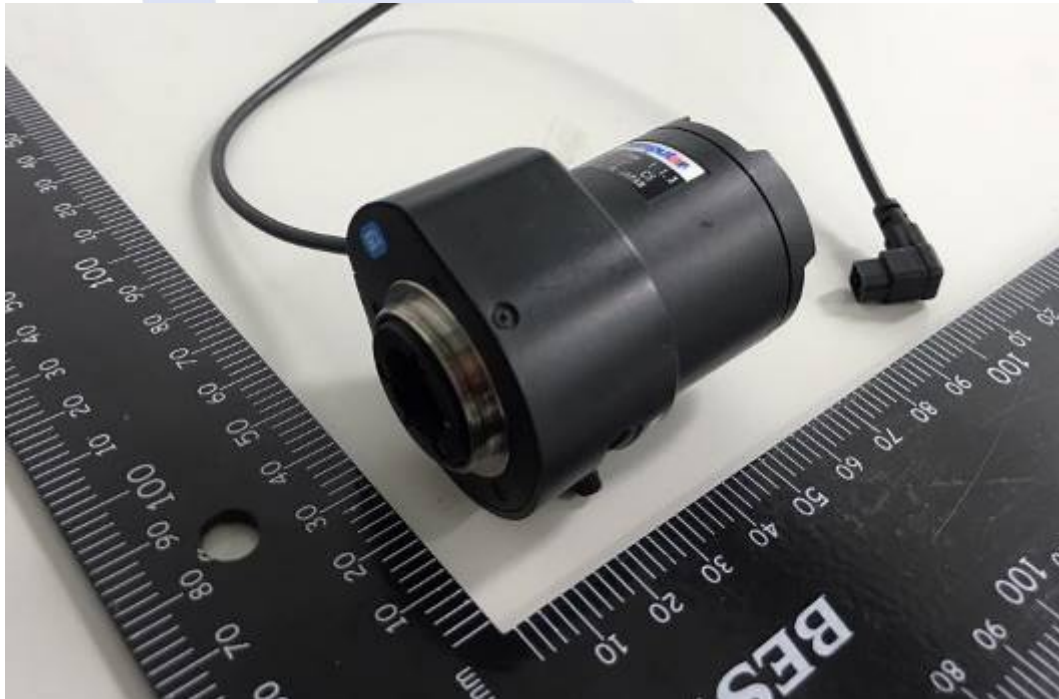
<Rear side without rear cover _ outside view>

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Attachment 2 – Photographs



<Insulation sheet near metal frame_ internal view>



<Lens _ view>

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Attachment 2 – Photographs



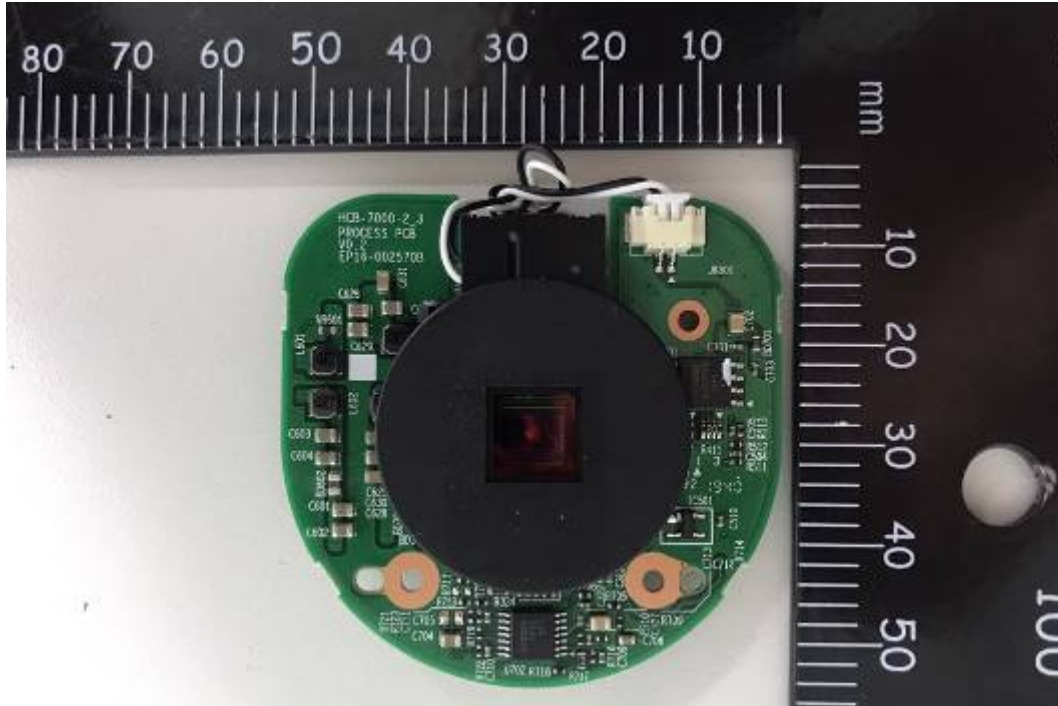
<Power supply unit internal circuit's board _ top view>



<Power supply unit internal circuit's board _ bottom view>

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Attachment 2 – Photographs



<Front lens unit internal circuit's board _ top view>



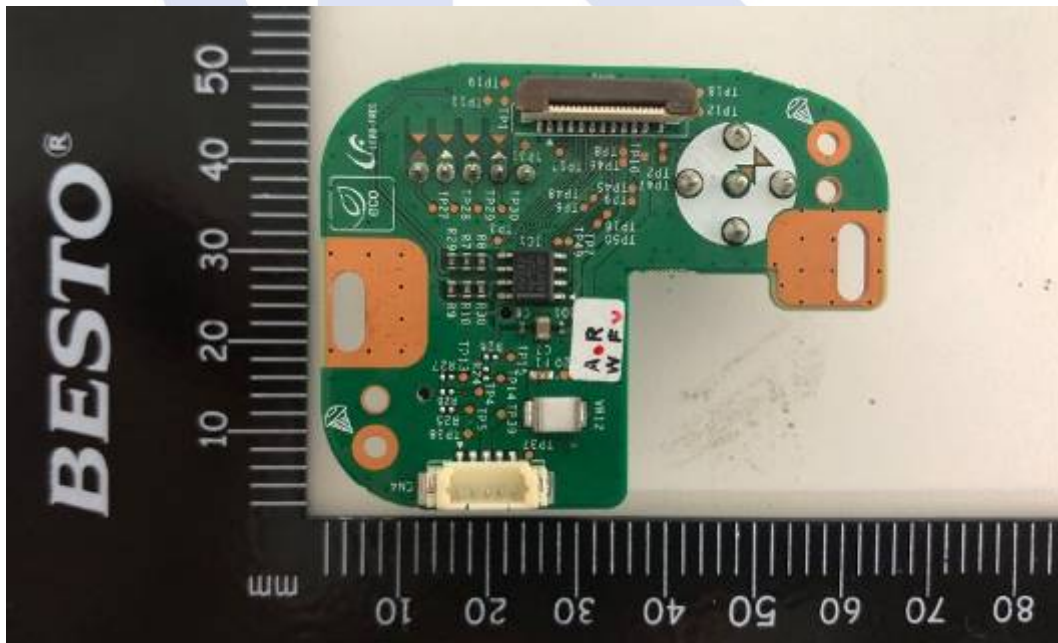
<Front lens unit internal circuit's board _ bottom view>

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Attachment 2 – Photographs



< Internal control circuit's board _ top view>



< Internal control circuit's board _ bottom view>

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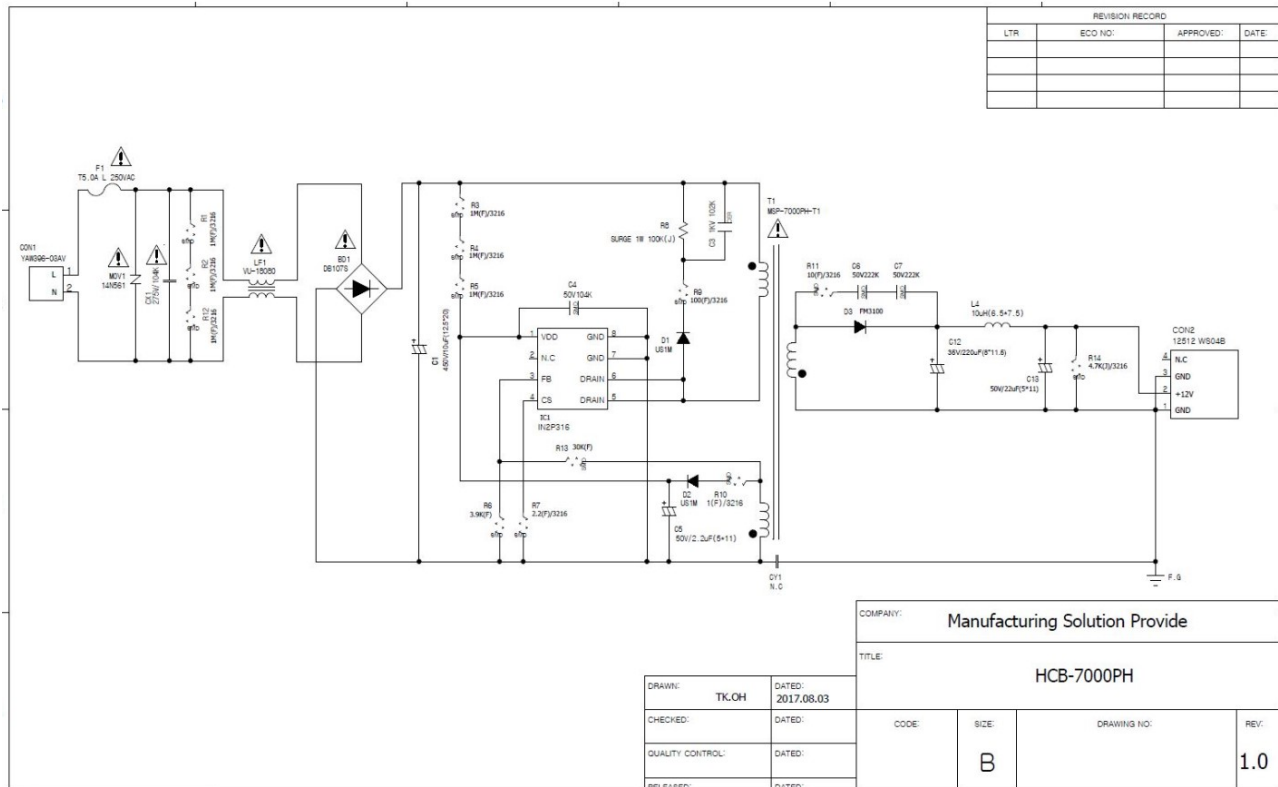
3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Report No.:

KES-SA-20T0236

Page (102) of (117)

Attachment 3 – Schematics & Block diagram



Power supply unit

KES

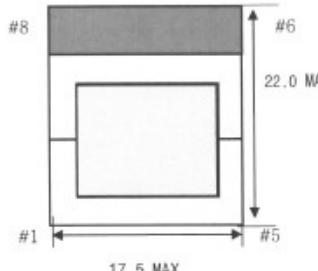
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Attachment 4 – Transformers information

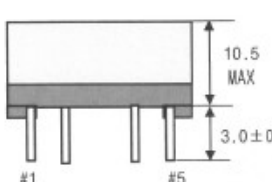
CUSTOMER : Manufacturing Solution Provide CO.,LTD.

SPECIFICATION		SHEET NO.	1 OF 19	
		DATE	2017. 08. 07.	
PART NAME	MAIN TRANS	MODEL NAME		
PART NO.	MSP-7000PH-T1	DESCRIPTION	EFD 1614	

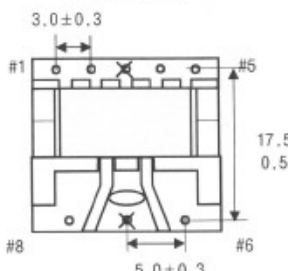
1. APPEARANCE & DIMENSION



- TOP VIEW -



- FRONT VIEW -



- BOTTOM VIEW -

*** MARKING (BLACK)**

MSP-7000PH-T1 ← CODE NO

DH 0000

→ PRODUCTION LINE

→ WEEK

→ YEAR

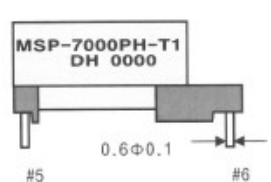
→ MAKER

*** PRODUCTION LINE**

1. A : CHUN AN

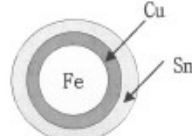
2. B : BAZHOU

3. Y : YANTAI



- SIDE VIEW -

***. PIN PLATING SPEC**



*** PIN LENGTH: BEFORE SOLDERING**

0705-00양식04

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www.kes.co.kr

Report No.:

KES-SA-20T0236

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Attachment 4 – Transformers information

CUSTOMER : Manufacturing Solution Provide CO.,LTD.

SPECIFICATION				SHEET NO. 2 OF 19																																																																																																
				DATE 2017. 08. 07.																																																																																																
PART NAME		MAIN TRANS		MODEL NAME																																																																																																
PART NO.		MSP-7000PH-T1		DESCRIPTION EFD 1614																																																																																																
2. SCHEMATIC DIAGRAM.																																																																																																				
W1 W5 S1 W3 W2 W4 8 6 START MARK. TUBE.				1 2 3 4 5 8 7 6																																																																																																
3. WINDING SPECIFICATION				<table border="1"> <thead> <tr> <th colspan="2">WINDING</th> <th colspan="2">BOTTOM VIEW</th> <th colspan="2">C.C.W</th> </tr> <tr> <th colspan="2">REMOVE PIN</th> <th colspan="2">#3,7</th> <th colspan="2"></th> </tr> <tr> <th colspan="2">N.C PIN</th> <th colspan="2"></th> <th colspan="2"></th> </tr> <tr> <th colspan="2">CUT PIN</th> <th colspan="2"></th> <th colspan="2"></th> </tr> <tr> <th colspan="2">P/S, TUBE PIN</th> <th colspan="2">#6,8</th> <th colspan="2"></th> </tr> </thead></table>		WINDING		BOTTOM VIEW		C.C.W		REMOVE PIN		#3,7				N.C PIN						CUT PIN						P/S, TUBE PIN		#6,8																																																																				
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0705-00장식04

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Attachment 4 – Transformers information

CUSTOMER : Manufacturing Solution Provide CO.,LTD.

SPECIFICATION		SHEET NO.	5 OF 19	
		DATE	2017. 08. 07.	
PART NAME	MAIN TRANS	MODEL NAME		
PART NO.	MSP-7000PH-T1	DESCRIPTION	EFD 1614	

7. INTERNAL CONSTRUCTION

<PRI.(#1~#5)>

<SEC.(#6~#8)>

• WINDING

• P.S TAPE

NO	REVISION	DATE	CHECK	DRAWN	CHECKED	APPROVED
1				SH	[Signature]	[Signature]
2						
3						
4						

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 KES-SA-20T0236
 Page (106) of (117)

Attachment 4 – Transformers information

APPROVAL SHEET				DATE	2017. 09. 28						
				PAGE	OF						
CUSTOMER	M S P										
PART NAME	SWITCHING TRANS	MODEL NO.									
PART NO.	MSP-7000PH-T1	DESCRIPTION	EFD1614"H"								
BOBBIN 도면 (A)											
<table border="1"> <tr> <td>3.</td> <td></td> </tr> <tr> <td>2.</td> <td></td> </tr> <tr> <td>1.</td> <td></td> </tr> </table>						3.		2.		1.	
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2.											
1.											
<table border="1"> <tr> <td>DESIGN</td> <td>CHECKED</td> <td>APPROVED</td> <td>MATERIAL: PHENOL</td> <td>UL REC: UL94V-0</td> <td>SCALE: 1/1</td> </tr> </table>						DESIGN	CHECKED	APPROVED	MATERIAL: PHENOL	UL REC: UL94V-0	SCALE: 1/1
DESIGN	CHECKED	APPROVED	MATERIAL: PHENOL	UL REC: UL94V-0	SCALE: 1/1						
DRAWN BY	CHECK BY	APPR. BY	REVISION		DATE						
				Safety							

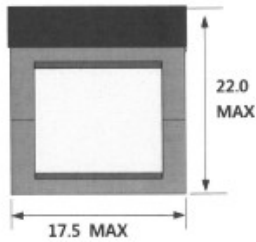
DIS DONG - IN SYSTEM CO.,LTD.

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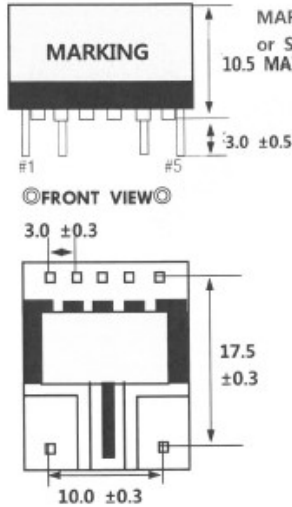
Attachment 4 – Transformers information

APPROVAL SHEET		DATE	2017. 09. 28
		PAGE	OF
CUSTOMER	M S P		
PART NAME	SWITCHING TRANS	MODEL NO.	
PART NO.	MSP-7000PH-T1	DESCRIPTION	EFD1614"H"

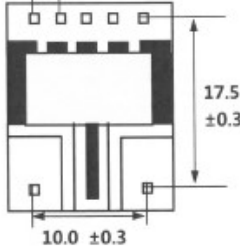
1. DIMENSIONS (UNIT:mm)



◎TOP VIEW◎



◎FRONT VIEW◎



◎BOTTOM VIEW◎

* MARKING *

MSP-7000PH-T1 ← PART NO

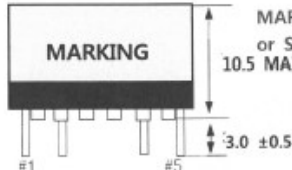
DI AA BB ← LOT NO

← WEEK

← YEAR

← MAKER

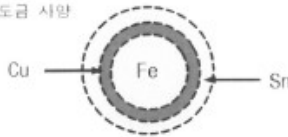
MARKING	
PART NO.	MSP-7000PH-T1
(LOT NO)	AA : YEAR
	BB : WEEK
MAKER	DONG IN SYSTEM



MARKING 정면
or SIDE
10.5 MAX

◎SIDE VIEW◎

★. PIN 도금 사양



DRAWN BY	CHECK BY	APPR. BY	REVISION	DATE



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				PAGE	OF
CUSTOMER	M S P				
PART NAME	SWITCHING TRANS		MODEL NO.		
PART NO.	MSP-7000PH-T1		DESCRIPTION		EFD1614"H"

2. CONNECTION (BOTTOM VIEW)

REMOVED PIN	#3
N.C PIN	#
TUBE PIN	#6,7

* CORE CENTER BOND : SK-015B
 * 권선시(6번PIN-7번PIN)2차측을 권선기쪽으로 끼우고 권선함

3. WINDING SPECIFICATION

NO	TERMINAL		WIRE	Ts	WINDING METHOD	INSULATION		BARRIER	
	S	F				MATERIAL (l/mm)	Ts	PRI	SEC
W1	1	-	2UEW 0.16Ø X 3	11.5	SOLENOID	POLYESTER TAPE 0.025 / 8.0	2		
W2	4	5	2UEW 0.17Ø	116	SOLENOID	POLYESTER TAPE 0.025 / 8.0	2		
W3	2	1	2UEW 0.16Ø X 2	20	SOLENOID	POLYESTER TAPE 0.025 / 8.0	2		
W4	6	7	TIW 0.25Ø	15	SOLENOID	POLYESTER TAPE 0.025 / 8.0	2		
W5	1	-	2UEW 0.16Ø X 2	6	SPACE	POLYESTER TAPE 0.025 / 8.0	3		
S1	1	CORE SHIELD (2UEW 0.16Ø X 2) : #1 PIN - CORE 접지							
CORE FIXING TAPE				POLYESTER TAPE 0.025 / 5.0mm (YELLOW)			3		

DRAWN BY	CHECK BY	APPR. BY	REVISION	DATE



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 KES-SA-20T0236
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Attachment 4 – Transformers information

APPROVAL SHEET				DATE	2017. 09. 28
				PAGE	OF
CUSTOMER	M S P				
PART NAME	SWITCHING TRANS	MODEL NO.			
PART NO.	MSP-7000PH-T1	DESCRIPTION	EFD1614"H"		
8. CONSTRUCTION					
DRAWN BY	CHECK BY	APPR. BY	REVISION		DATE
				Safety	

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Attachment 4 – Transformers information

APPROVAL SHEET				DATE	2017. 09. 28
				PAGE	OF
CUSTOMER	M S P				
PART NAME	SWITCHING TRANS		MODEL NO.		
PART NO.	MSP-7000PH-T1		DESCRIPTION	EFD1614"H"	
9. MATERIAL LIST					
NO	ITEM	MATERIAL	MANUFACTURER	FILE NO.	
1	CORE	LP-4 EFD1614 PC-40 EFD1614 HX-4P EFD1614	HAININGRINGTONG CO.,LTD. JI SHUN MAGNETIC CO.,LTD. NANTONG HUAXING MAGNETIC MATERIAL CO.,LTD		
2	BOBBIN	PHENOL 94V-0 EFD1614 "H" TYPE 7PIN	SUMITOMO BAKEUTE CO. LTD CHANG CHUN PLASTICS CO. LTD	E41429 E59481	
3	WIRE	POLYURETHANE ENAMELED COPPER WIRE UEW 0.16Ø,0.17Ø	YOUNG WHA ELECTRONICS CO. LTD.	E141925	
		TIW-M TRIPLE INSULATION WIRE 0.25Ø	COSMOLINK CO., LTD.	E213764	
4	INSULATION TAPE	POLYESTERS TAPE T = 0.025mm , W = 8.0mm (YELLOW)	DUCK SUNG HITECH CO. LTD.	E105147	
5	CORE BINDING TAPE	POLYESTERS TAPE T = 0.025mm , W = 5.0mm (YELLOW)			
6	PIN TERMINAL	SOLDER COATED COPPER	DAE-A LEAD CO.,LTD.		
7	ADHESIVE	SK-015B	SEKYE CHEMICAL CO.,LTD.		
8	VARNISH	SR-337*	SEKYE CHEMICAL CO.,LTD.	E257443	
9	SOLDER	Sn99.3 / Cu0.7 or EQV.	ALPHA METALS CO.,LTD or EQV.		
10	MARKING	INK (BON MARQUE) or EQV.	ATL CO.,LTD or EQV.		
11	FLUX	EP9301, DP-500K JS-7000S-1 or EQV.	ALPHA METALS CO.,LTD DUIYUAN TECH(HUIZHOU)CO.,LTD KOKI SANBI KOREA CO., LTD. or EQV.		
DRAWN BY	CHECK BY	APPR. BY	REVISION		DATE

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Attachment 5 – Instruction / Installation Manual

safety information

	CAUTION RISK OF ELECTRIC SHOCK. DO NOT OPEN	
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK) NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.		



This symbol indicates that dangerous voltage consisting a risk of electric shock is present within this unit.



This exclamation point symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING

- To prevent damage which may result in fire or electric shock hazard, do not expose this appliance to rain or moisture.
- To prevent injury, this apparatus must be securely attached to the floor/wall in accordance with the installation instructions.

WARNING

1. Be sure to use only the standard adapter that is specified in the specification sheet. Using any other adapter could cause fire, electrical shock, or damage to the product.
2. Incorrectly connecting the power supply or replacing battery may cause explosion, fire, electric shock, or damage to the product.
3. Do not connect multiple cameras to a single adapter. Exceeding the capacity may cause abnormal heat generation or fire.
4. Securely plug the power cord into the power receptacle. insecure connection may cause fire.
5. When installing the camera, fasten it securely and firmly. The fall of camera may cause personal injury.

4_safety information

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Attachment 5 – Instruction / Installation Manual

6. Do not place conductive objects (e.g. screwdrivers, coins, metal parts, etc.) or containers filled with water on top of the camera. doing so may cause personal injury due to fire, electric shock, or falling objects.
7. Do not install the unit in humid, dusty, or sooty locations. doing so may cause fire or electric shock.
8. If any unusual smells or smoke come from the unit, stop using the product. in such case, immediately disconnect the power source and contact the service center. continued use in such a condition may cause fire or electric shock.
9. If this product fails to operate normally, contact the nearest service center. never disassemble or modify this product in any way. (Hanwha Techwin is not liable for problems caused by unauthorized modifications or attempted repair.)
10. When cleaning, do not spray water directly onto parts of the product. doing so may cause fire or electric shock.

● SAFETY INFORMATION

CAUTION

1. Do not drop objects on the product or apply strong shock to it. Keep away from a location subject to excessive vibration or magnetic interference.
2. Do not install in a location subject to high temperature (over 55°C), low temperature (below -10°C), or high humidity. Doing so may cause fire or electric shock.
3. If you want to relocate the already installed product, be sure to turn off the power and then move or reinstall it.
4. Remove the power plug from the outlet when there is a lightning. Neglecting to do so may cause fire or damage to the product.
5. Keep out of direct sunlight and heat radiation sources. It may cause fire.
6. Install it in a place with good ventilation.
7. Avoid aiming the camera directly towards extremely bright objects such as sun, as this may damage the CMOS image sensor.
8. Apparatus shall not be exposed to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on the apparatus.
9. The Mains plug is used as a disconnect device and shall stay readily operable at any time
10. Do not expose the camera to radioactivity. Radioactivity exposure may damage the CMOS.

English_5

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Attachment 5 – Instruction / Installation Manual

safety information

FCC Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions :

- 1) This device may not cause harmful interference, and
- 2) This device must accept any interference received including interference that may cause undesired operation.

CAUTION

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.



IC Compliance Notice

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations of ICES-003.



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

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

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

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

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



Correct disposal of batteries in this product

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

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

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

6_ safety information

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Attachment 5 – Instruction / Installation Manual

important safety instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus.
13. Unplug this apparatus when a card is used. Use caution when moving the cart/ apparatus combination to avoid injury from tip-over.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as powersupply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. This product is intended to be supplied by a Listed Power Supply Unit marked "Class 2" or "LPS" and rated from 24 Vac (50/60 Hz) min.0.37 A or 12 Vdc, min.0.41A.
16. If you use excessive force when installing the product, the camera may be damaged and malfunction.
If you forcibly install the product using non-compliant tools, the product may be damaged.



● IMPORTANT SAFETY INSTRUCTIONS

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important safety instructions

17. Do not install the product in a place where chemical substances or oil mist exists or may be generated. As edible oils such as soybean oil may damage or warp the product, do not install the product in the kitchen or near the kitchen table.
This may cause damage to the product.
18. When installing the product, be careful not to allow the surface of the product to be stained with chemical substance.
Some chemical solvents such as cleaner or adhesives may cause serious damage to the product's surface.
19. If you install/disassemble the product in a manner that has not been recommended, the production functions/performance may not be guaranteed.
Install the product by referring to "Installation & connection" in the user manual.
20. Installing or using the product in water can cause serious damage to the product.



Apparatus shall not be exposed to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on the apparatus



Hanwha Techwin cares for the environment at all product manufacturing stages, and is taking measures to provide customers with more environmentally friendly products.
The Eco mark represents Hanwha Techwin's devotion to creating environmentally friendly products, and indicates that the product satisfies the EU RoHS Directive.

8_important safety instructions

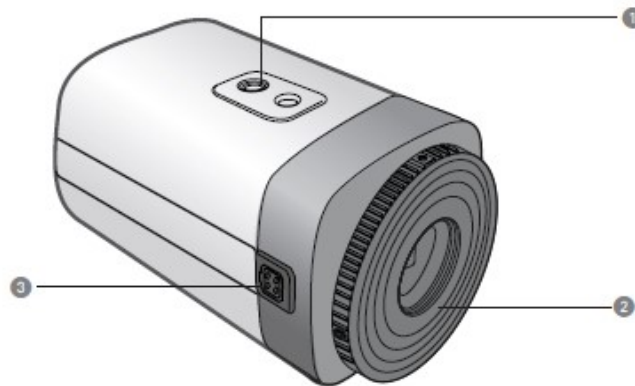
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Attachment 5 – Instruction / Installation Manual

introduction

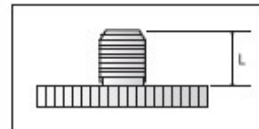
OVERVIEW

Front View



① Tripod Mounting Bracket Screw Hole :

- Used to fix the camera on a bracket.
 The screw sizes for this hole are as follows.
 1/4"-20 UNC (20 THREAD)
 L:4.5mm±0.2mm (ISO standard), or 0.178"
 (ASA standard)



② Lens adaptor : Install this if you use the lens.

③ Auto Iris Lens Connector : Used to connect Auto Iris Lens plug.



- Auto shutter adaptor, c-mount adaptor and supporting board are not provided with the camera.
 Please check the installed documentation of tripod for the installation of cameras.

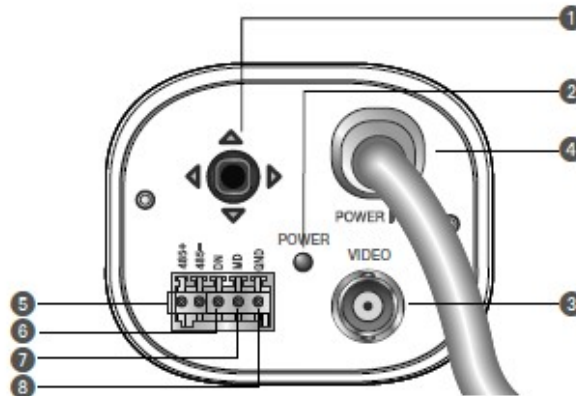
12_ introduction

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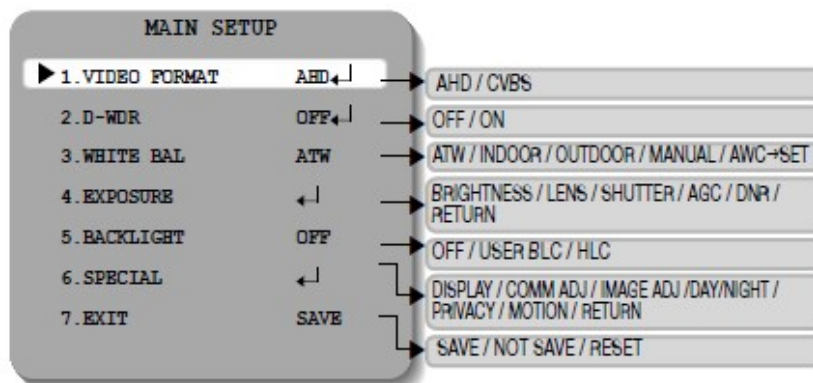
Attachment 5 – Instruction / Installation Manual

ENGLISH

HCB-7000PHA Quick Manual



- ① **Function Setup switch** : Display the menu on the screen and move the cursor to four directions to confirm status or changing a selected item.
 ※ Switching between AHD and CVBS modes: Press the SET button for more than 5 seconds.
- ② **Power LED** : This lamp is lit when the camera is receiving power normally.
- ③ **Video OUT Terminal** : Video signals are output through this port. Connect this port to the Video IN port of a AHD DVR.
- ④ **Power Cable** : High Voltage Type
- ⑤ **RS-485 Control Port** : You can control SETUP MENU through this port by using external controllers like a Remote controller that RS-485 Communication is supported.
- ⑥ **D & N Input Port** : You can switch to Day & Night Mode by connecting an external signal to this port.
- ⑦ **MD Output Port** : Motion detection signals are output through this port.
- ⑧ **GND**



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