



Test Report issued under the responsibility of:



TEST REPORT

IEC 62368-1

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

Report Number : 190300022TWN-001
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Applicant's name : Squadrat GmbH
Address : In der Alting 4 , 90596 Schwanstetten (Nürnberg), Germany

Test specification:

Standard..... : IEC 62368-1:2014 (Second Edition)
Test procedure : CB Scheme
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	FULL Color LED Display
Trade Mark	 or 
Manufacturer	Transtech LED Co.,Ltd Room 201, Building A, No.1, QianWan 1st Road, Shengang Cooperation Zone,Qianhai, Shenzhen China
Model/Type reference	LED-FA012i2, LED-FA015i2, LED-FA019i2, LED-FA023i2, LED-FA025i2, LED-FA027i2, LED-FA031i2, LED-FA038i2
Ratings	Input: 100-240Vac, 50/60Hz, 16A Output: 100-240Vac, 50/60Hz, 14.5A Class I

Testing procedure and testing location:		
☒	CB Testing Laboratory:	Intertek Testing Services Taiwan Ltd.
Testing location/ address		5F, No. 423, Ruiguang Rd., Neihu District, Taipei 114, Taiwan
☐	Associated CB Testing Laboratory:	
Testing location/ address		
Tested by (name + function + signature)		Don Wu, Project handler
Approved by (name + function + signature)		Dan Chen, Reviewer
Don Wu Dan Chen		
☐	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)		

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

Appendix 1 (24 pages) – National Differences

Appendix 2 (1 page) – Manual

Photos (12 pages)

Summary of testing:

Tests performed (name of test and test clause):

4.6.2 10 N steady force test
 5.2 Classification of electrical energy sources
 5.3.2 Accessibility to electrical energy sources and safeguards
 5.4.1.4, 6.3.2, 9.0, B.2.6 Temperature measurements
 5.4.1.8 Determination of working voltage test
 5.4.2, 5.4.3 Clearances and creepage distances measurement
 5.4.4 Solid insulation measurement
 5.4.8 Humidity conditioning test
 5.4.9 Electric strength test
 5.5.2.2 Capacitor discharge test
 5.6.6 Resistance of protective conductors and their terminations test
 5.7.2.2, 5.7.4 Earthed accessible conductive part
 6.2.2 Electrical power sources (PS) measurements for classification
 6.2.3.1 Determination of potential ignition sources (arcing PIS)
 6.2.3.2 Determination of potential ignition sources (resistive PIS)
 8.7.2 Mounting means test
 B.2.5 Input test
 B.2.6 Operating temperature measurement
 B.3 Simulated abnormal operating conditions test
 B.4 Simulated single fault conditions test
 F.3.10 Marking durability test
 Q.1 Limited power source test
 T.2 Steady force test – 10 N
 T.3 Steady force test – 30 N
 T.5 Steady force test – 250 N
 T.6 Enclosure impact test
 V.1 Determination of accessible parts test

Testing location:

Intertek Testing Services Taiwan Ltd.

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

For IEC 62368-1:2014 (2nd edition) and EN 62368-1:2014+A11:2017:

Group difference, special national deviations of all CENELEC country.

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

Explanation of used codes for National Differences: AUSTRALIAN (AU).

All country differences listed in the CB Bulletin are covered by the Common Modifications, Special National Conditions, National Deviations, and National Requirements noted above except for the following countries which are documented in Country Differences. Attachments attached to this report: refer to appendix 1 for details.

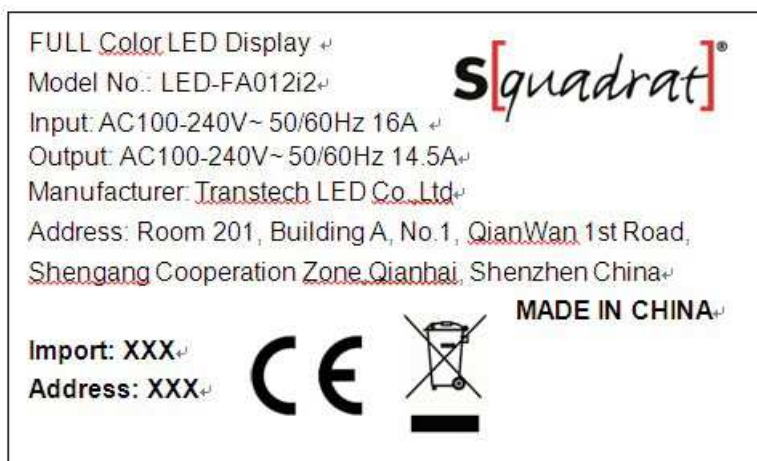
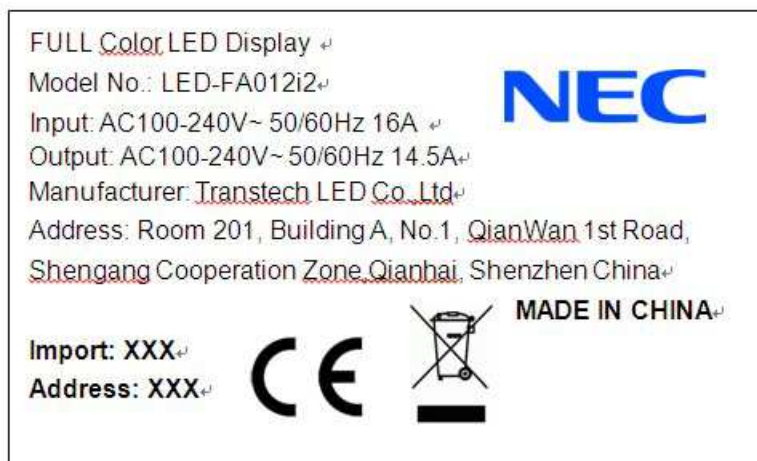
Compliance with the National requirements of "(countries)" as given in CB Bulletin of IECEE website dated February 2019 was confirmed.

☒ **The product fulfils the requirements of IEC 62368-1:2014 (2nd edition) and EN 62368-1:2014+A11:2017.**

Copy of marking plate:

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

(Representative)



Note:

1. The above markings are the minimum requirements required by the safety standard. For the final production samples, the additional markings which do not give rise to misunderstanding may be added.
2. When the equipment is vended to EUROPE, manufacturers and importers shall indicate on the electrical equipment their name, registered trade name or registered trade mark and the postal address at which they can be contacted or, where that is not possible, on its packaging or in a document accompanying the electrical equipment.

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	16A (or 20A for US and Canada); 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: Not direct connected to the mains
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:	40 °C
IP protection class	☐ IPX0 ☒ IP_20_
Power Systems	☒ TN ☐ TT ☐ IT - ____ V L-L
Altitude during operation (m)	☐ 2000 m or less ☒ 5000 m
Altitude of test laboratory (m)	☒ 2000 m or less ☐ ____ m
Mass of equipment (kg)	☒ Approx. 8.87 kg
POSSIBLE TEST CASE VERDICTS:	
- test case does not apply to the test object.....	N/A

- test object does meet the requirement	P (Pass)
- test object does not meet the requirement	F (Fail)
TESTING:	
Date of receipt of test item	December 31, 2018
Date (s) of performance of tests	December 31, 2018 – January 18, 2019
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. This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program. When determining the test conclusion, the Measurement Uncertainty of test has been considered.	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC60060-2:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided	☐ Yes ☒ Not applicable
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies)	Transtech LED Co.,Ltd Room 201, Building A, No.1, QianWan 1st Road, Shengang Cooperation Zone,Qianhai, Shenzhen China

GENERAL PRODUCT INFORMATION:
Product Description:

The product covered by this report is LED Display for indoor use.

The product shall be installed in a prepared recess in final system, such as in a wall, or similar situation. Or the product shall be installed with additional frame of back enclosure, so that qualified person can open the enclosure of product only when using special tools.

The further evaluation and testing must be checked and performed in the end-use condition for this product.

The LED module of display is fixed on front panel by magnet and should be installed with special tools by qualified person, moreover, frame of LED display MUST be wrapped the module in final system for double reinforced stationary.

The LED lamp of this equipment is classified as exempt group according to IEC 62471 (test for the whole LED module).

Dimension of this product is 608mm(L) x 342mm(W) x49mm(T)

Point spacing of LED: min.1.2mm, max.3.8mm.

There are two power supply module, one of them is backup, same as HUB cards. Power signal has backup function.

The LEDs of product is classified as Exempt Group according to IEC 62471.

Model Differences:

The all models covered by this report are identical, except model name, lattice distance of LED in panel for marketing purpose.

Arabic numerals in the model number representing lattice distance of LED, such as 019 represents lattice distance of LED is 1.9mm.

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

- normal conditions	N.C.	- single fault conditions	S.F.C
- functional insulation	FI	- basic insulation	BI
- double insulation	DI	- supplementary insulation	SI
- between parts of opposite polarity	BOP	- reinforced insulation	RI

Indicate used abbreviations (if any)

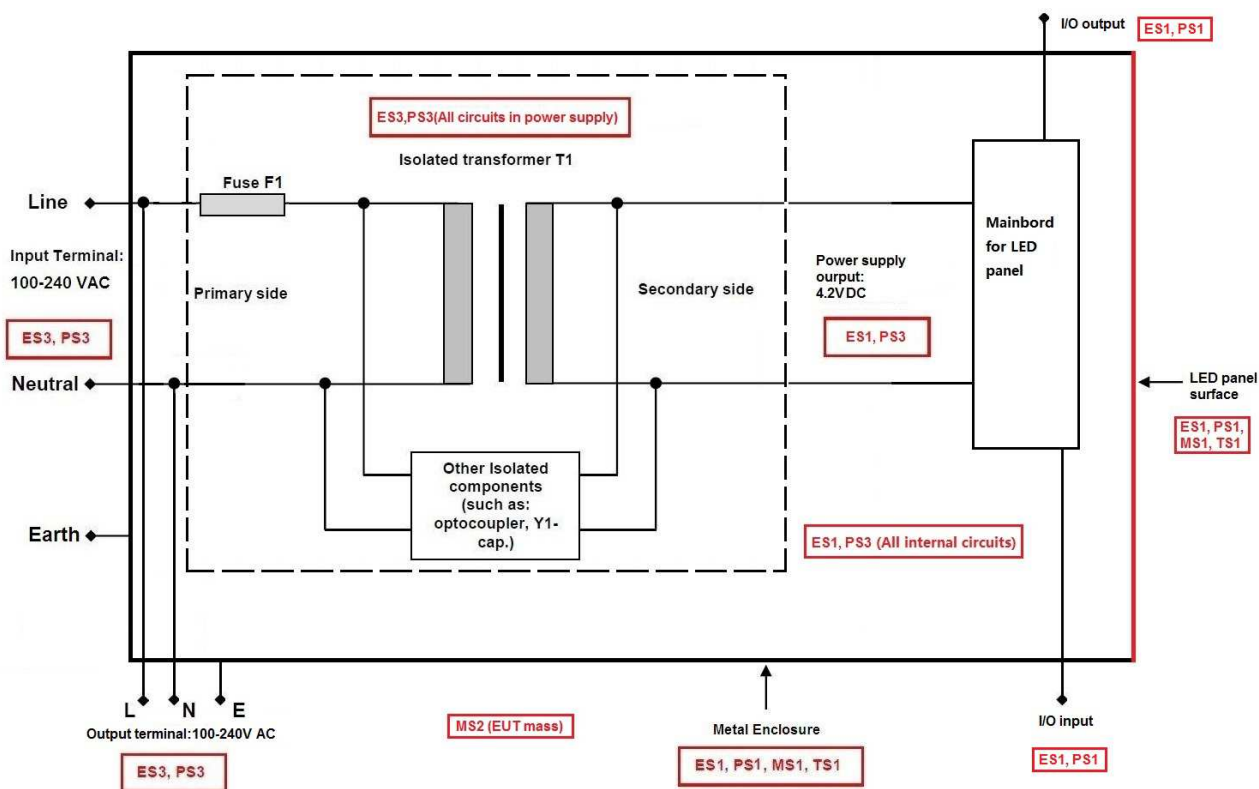
ENERGY SOURCE IDENTIFICATION AND CLASSIFICATION TABLE:	
(Note 1: Identify the following six (6) energy source forms based on the origin of the energy.) (Note 2: The identified classification e.g., ES2, TS1, should be with respect to its ability to cause pain or injury on the body or its ability to ignite 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)
100-240 Vac input (primary circuits)	ES3
Output of power supply module	ES1
All circuits in power supply module	ES3
I/O ports	ES1
Metal enclosure	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)
AC Input	PS3
All circuits in EUT	PS3
I/O ports connect to power button board	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
N/A	N/A
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)
Equipment mass	MS2
Sharp edge and corner	MS1
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)
Metal enclosure	TS1
Surface of panel	TS1

ENERGY SOURCE IDENTIFICATION AND CLASSIFICATION TABLE:	
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)
Indicating lights – LEDs	RS1

ENERGY SOURCE DIAGRAM

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

☒ ES ☒ PS ☒ MS ☒ TS ☒ RS



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	ES3: Primary circuits	Basic Insulation	Earthing	Enclosure and others parts
Ordinary	ES3: Accessible pins of appliance couple	N/A	N/A	Bleeder resistor (RX1, RX2, RX3, RX4, RX5, RX6)
Ordinary	ES1: Output of building-in power supply	N/A	N/A	N/A
Ordinary	ES1: Metal enclosure and LED panel	N/A	N/A	N/A
Ordinary	ES1: I/O port	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
All internal circuits	PS3: >100 Watt circuit	Equipment safeguard (no ignition occurs) comply with 6.3	Approved component	N/A
I/O ports	PS1: <15 Watt circuit	N/A	N/A	N/A
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	MS2: 7 kg < mass < 25 kg	N/A	N/A	N/A
Ordinary	MS3: All equipment mounted > 2 m	N/A	N/A	Comply with Clause 8.7
9.1	Thermal Burn			
Body Part (e.g., Ordinary)	Energy Source (TS2)	Safeguards		
		Basic	Supplementary	Reinforced

Ordinary	TS1: All accessible parts	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	RS1: Indicating lights	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				

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
4	GENERAL REQUIREMENTS		P
4.1.1	Acceptance of materials, components and subassemblies	(see appended tables 4.1.2)	P
4.1.2	Use of components	Components, which are certified to IEC and/or national standards, are used correctly within their ratings. Components not covered by IEC standards are tested under the conditions present in the equipment	P
4.1.3	Equipment design and construction	Considered	P
4.1.15	Markings and instructions.....:	(See Annex F)	P
4.4.4	Safeguard robustness	All safeguards comply with the relevant robustness tests and requirement	P
4.4.4.2	Steady force tests.....:	(See Annex T.2 & T.5)	P
4.4.4.3	Drop tests.....:		N/A
4.4.4.4	Impact tests.....:	(See Annex T.6)	P
4.4.4.5	Internal accessible safeguard enclosure and barrier tests.....:		N/A
4.4.4.6	Glass Impact tests.....:		N/A
4.4.4.7	Thermoplastic material tests.....:	(See Annex T.8)	P
4.4.4.8	Air comprising a safeguard.....:	No such type safeguard provided	N/A
4.4.4.9	Accessibility and safeguard effectiveness	During and after the tests, the EUT still complies with the relevant requirement of this standard	P
4.5	Explosion	No explosion occurs	P
4.6	Fixing of conductors	See below	P
4.6.1	Fix conductors not to defeat a safeguard	No conductors defeat a safeguard.	P
4.6.2	10 N force test applied to.....:	Internal component	P
4.7	Equipment for direct insertion into mains socket - outlets	The EUT is not such type 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 such batteries.	N/A
4.8.2	Instructional safeguard		N/A
4.8.3	Battery Compartment Construction		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Means to reduce the possibility of children removing the battery.....:		—
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 such single pulses within the EUT	N/A
5.2.2.5	Limits for repetitive pulses	No such repetitive pulses within the EUT	N/A
5.2.2.6	Ringing signals	No such ringing signal within the EUT	N/A
5.2.2.7	Audio signals	No audio amplifier within the EUT	N/A
5.3	Protection against electrical energy sources		P
5.3.1	General Requirements for accessible parts to ordinary, instructed and skilled persons		P
5.3.2.1	Accessibility to electrical energy sources and safeguards	ES3 source cannot access by ordinary person.	P
5.3.2.2	Contact requirements	See below	P
	a) Test with test probe from Annex V.....:	The test probe cannot access the hazardous live part	P
	b) Electric strength test potential (V)	See below	N/A
	c) Air gap (mm)	>1.5 mm	P
5.3.2.4	Terminals for connecting stripped wire	No such terminals intended to be used by ordinary person	N/A
5.4	Insulation materials and requirements		P
5.4.1.2	Properties of insulating material	No hygroscopic materials used as insulation	P
5.4.1.3	Humidity conditioning	(See sub-clause 5.4.8)	P
5.4.1.4	Maximum operating temperature for insulating materials	(See appended table 5.4.1.4)	P
5.4.1.5	Pollution degree	2	—

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.1.5.2	Test for pollution degree 1 environment and for an insulating compound		N/A
5.4.1.5.3	Thermal cycling		N/A
5.4.1.6	Insulation in transformers with varying dimensions	No such transformer within the EUT	N/A
5.4.1.7	Insulation in circuits generating starting pulses	No such device within the EUT	N/A
5.4.1.8	Determination of working voltage	(See appended table 5.4.1.8)	P
5.4.1.9	Insulating surfaces	LED surface considered	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..... :	(See appended table 5.4.1.10.2)	N/A
5.4.1.10.3	Ball pressure :	(See appended table 5.4.1.10.3)	P
5.4.2	Clearances	See below.	P
5.4.2.2	Determining clearance using peak working voltage	See table 5.4.2.2, 5.4.2.4 and 5.4.3	P
5.4.2.3	Determining clearance using required withstand voltage :	(See appended table 5.4.2.3)	P
	a) a.c. mains transient voltage :	2500 V	—
	b) d.c. mains transient voltage :		—
	c) external circuit transient voltage :		—
	d) transient voltage determined by measurement :		—
5.4.2.4	Determining the adequacy of a clearance using an electric strength test		N/A
5.4.2.5	Multiplication factors for clearances and test voltages :	The multiplication factor for altitude up to 5000m is 1.48	P
5.4.3	Creepage distances :	See table 5.4.2.2, 5.4.2.4 and 5.4.3	P
5.4.3.1	General		P
5.4.3.3	Material Group :	Material Group IIIb	—
5.4.4	Solid insulation	See below.	P
5.4.4.2	Minimum distance through insulation :	(See appended table 5.4.4.2)	P
5.4.4.3	Insulation compound forming solid insulation		N/A
5.4.4.4	Solid insulation in semiconductor devices		N/A
5.4.4.5	Cemented joints	No such device within the EUT	N/A
5.4.4.6	Thin sheet material	See below.	P

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.4.6.1	General requirements	Two layers of insulation tape around transformer body are used for double/reinforced and not subjected to handling or abrasion during ordinary or instructed person servicing.	P
5.4.4.6.2	Separable thin sheet material	Two layers of insulating tape provided as double/reinforced insulation and one layer passed the electric strength test for reinforced insulation.	P
	Number of layers (pcs)	2	P
5.4.4.6.3	Non-separable thin sheet material	No such device within the EUT	N/A
5.4.4.6.4	Standard test procedure for non-separable thin sheet material	No such device within the EUT	N/A
5.4.4.6.5	Mandrel test		N/A
5.4.4.7	Solid insulation in wound components		N/A
5.4.4.9	Solid insulation at frequencies >30 kHz		N/A
5.4.5	Antenna terminal insulation		N/A
5.4.5.1	General		N/A
5.4.5.2	Voltage surge test		N/A
	Insulation resistance (MΩ).....		—
5.4.6	Insulation of internal wire as part of supplementary safeguard	No such insulation of internal wire as part of supplementary insulation	N/A
5.4.7	Tests for semiconductor components and for cemented joints	Certified sources of optocouplers used.	P
5.4.8	Humidity conditioning	See below	P
	Relative humidity (%).....	93 %	—
	Temperature (°C)	40 °C	—
	Duration (h)	120 h	—
5.4.9	Electric strength test	(See appended table 5.4.9)	P
5.4.9.1	Test procedure for a solid insulation type test		P
5.4.9.2	Test procedure for routine tests	Considered in production procedure	P
5.4.10	Protection against transient voltages between external circuit	Not connected to such external circuit	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

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.10.2.3	Steady-state test.....:		N/A
5.4.11	Insulation between external circuits and earthed circuitry		N/A
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		
5.5.1	General		P
5.5.2	Capacitors and RC units	Approved X-Capacitors and Y-Capacitors provided.	P
5.5.2.1	General requirement	See below.	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	(See subclause 5.4 or Annex G.12)	P
5.5.5	Relays		N/A
5.5.6	Resistors	(See test recorded 5.5.2.2)	P
5.5.7	SPD's	No such component within the EUT	N/A
5.5.7.1	Use of an SPD connected to reliable earthing		N/A
5.5.7.2	Use of an SPD between mains and protective earth		N/A
5.5.8	Insulation between the mains and external circuit consisting of a coaxial cable.....:	No antenna terminal within the EUT	N/A
5.6	Protective conductor		
5.6.2	Requirement for protective conductors	See below	P
5.6.2.1	General requirements	No switch or overcurrent protective device provided in earthing conductors and protective bonding conductors.	P
5.6.2.2	Colour of insulation	After appliance inlet, the insulation of protective bonding conductor is green-and-yellow.	P

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Clause	Requirement + Test	Result - Remark	Verdict
5.6.3	Requirement for protective earthing conductors	Provide the field installation instruction for earthing connector	P
	Protective earthing conductor size (mm ²):	2.5mm ² minimum	—
5.6.4	Requirement for protective bonding conductors	See below	P
5.6.4.1	Protective bonding conductors	Reliable connection of the green-and-yellow wire from earth pin of appliance inlet to PCB earthed trace.	P
	Protective bonding conductor size (mm ²).:	2.5mm ² minimum for protective bonding conductor	—
	Protective current rating (A) :	≤ 25	—
5.6.4.3	Current limiting and overcurrent protective devices	No such construction	P
5.6.5	Terminals for protective conductors	See below	P
5.6.5.1	Requirement	Provide the field installation instruction for earthing connector	P
	Conductor size (mm ²), nominal thread diameter (mm).:	Screw type 4.0 mm minimum.	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		P
5.6.6.2	Test Method Resistance (Ω).....:	(See appended table 5.6.6.2)	P
5.6.7	Reliable earthing	The equipment is not permanently connected equipment.	N/A
5.7	Prospective touch voltage, touch current and protective conductor current		P
5.7.2	Measuring devices and networks	Figure 5 of IEC 60990 applied	P
5.7.2.1	Measurement of touch current:	(See appended table 5.7.2.2, 5.7.4)	P
5.7.2.2	Measurement of prospective touch voltage	(See appended table 5.7.2.2, 5.7.4)	P
5.7.3	Equipment set-up, supply connections and earth connections	Considered	P
	System of interconnected equipment (separate connections/single connection):	Single connection.	—
	Multiple connections to mains (one connection at a time/simultaneous connections):		—
5.7.4	Earthed conductive accessible parts.....:	(See appended table 5.7.2.2, 5.7.4)	P
5.7.5	Protective conductor current	The protective conductor current does not exceed the ES2 limits. See test record.	P
	Supply Voltage (V).....:	264V/50Hz	—

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Clause	Requirement + Test	Result - Remark	Verdict
	Measured current (mA).....:	0.21	—
	Instructional Safeguard.....:		N/A
5.7.6	Prospective touch voltage and touch current due to external circuits	Not connected to a coaxial cable.	N/A
5.7.6.1	Touch current from coaxial cables		N/A
5.7.6.2	Prospective touch voltage and touch current to external circuits		N/A
5.7.7	Summation of touch currents from external circuits	Not such device.	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

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		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 appended table 6.2.2)	P
6.2.2.4	PS1.....:	(See appended table 6.2.2)	P
6.2.2.5	PS2.....:	(See appended table 6.2.2)	P
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.....:	All internal circuits are declared as arcing PIS	P
6.2.3.2	Resistive PIS.....:	All internal circuits are declared Resistive PIS	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	Built-in component, considered in end system	N/A
6.4	Safeguards against fire under single fault conditions		P
6.4.1	Safeguard Method	Control fire spread (also see sub-clause 6.4.4, 6.4.5, 6.4.6)	P

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Clause	Requirement + Test	Result - Remark	Verdict
6.4.2	Reduction of the likelihood of ignition under single fault conditions in PS1 circuits		N/A
6.4.3	Reduction of the likelihood of ignition under single fault conditions in PS2 and PS3 circuits		N/A
6.4.3.1	General		N/A
6.4.3.2	Supplementary Safeguards		N/A
	Special conditions if conductors on printed boards are opened or peeled		N/A
6.4.3.3	Single Fault Conditions :		N/A
	Special conditions for temperature limited by fuse		N/A
6.4.4	Control of fire spread in PS1 circuits	See below.	P
6.4.5	Control of fire spread in PS2 circuits	Compliance detailed as follows: - Printed board: rated min. V-1 class material; - Wire insulation and tubing: complying with Clause 6. - All other components: at least V-2 except for mounted on min. V-1 material or small parts of combustible material. - Consumable materials: not ignite during single fault conditions. - Isolating transformer: complying with G.5.3. (See test records 4.1.2 and Annex G)	P
6.4.5.2	Supplementary safeguards :	In addition of the compliance of subclause 6.4.5, a fire enclosure of subclause 6.4.8 provided with the equipment.	P
6.4.6	Control of fire spread in PS3 circuit	Metal chassis as fire enclosure and min. 5VB plastic enclosure is provided	P
6.4.7	Separation of combustible materials from a PIS	Separate by fire enclosure combustible materials	P
6.4.7.1	General..... :	Consider and see below	P
6.4.7.2	Separation by distance	Considered and PCB is min. V-1.	P
6.4.7.3	Separation by a fire barrier	No such parts	N/A
6.4.8	Fire enclosures and fire barriers	Equipment enclosure was evaluated as a fire enclosure	P
6.4.8.1	Fire enclosure and fire barrier material properties	Metal chassis is considered as fire enclosure	P

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Clause	Requirement + Test	Result - Remark	Verdict
6.4.8.2.1	Requirements for a fire barrier	No such parts	N/A
6.4.8.2.2	Requirements for a fire enclosure	Metallic enclosure provided	P
6.4.8.3	Constructional requirements for a fire enclosure and a fire barrier		P
6.4.8.3.1	Fire enclosure and fire barrier openings	No openings	P
6.4.8.3.2	Fire barrier dimensions		N/A
6.4.8.3.3	Top Openings in Fire Enclosure: dimensions (mm)		P
	Needle Flame test		N/A
6.4.8.3.4	Bottom Openings in Fire Enclosure, condition met a), b) and/or c) dimensions (mm)		P
	Flammability tests for the bottom of a 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.	P
6.4.8.4	Separation of PIS from fire enclosure and fire barrier distance (mm) or flammability rating		N/A
6.5	Internal and external wiring		P
6.5.1	Requirements	Internal wiring rated VW-1 which is considered to meet IEC/TS 60695-11-21	P
6.5.2	Cross-sectional area (mm ²)	See above	—
6.5.3	Requirements for interconnection to building wiring	No such device.	N/A
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	All I/O ports comply with Annex Q.1	P

7	INJURY CAUSED BY HAZARDOUS SUBSTANCES		N/A
7.2	Reduction of exposure to hazardous substances	No hazardous substances within the EUT	N/A
7.3	Ozone exposure	No ozone produced.	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

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Clause	Requirement + Test	Result - Remark	Verdict
8	MECHANICALLY-CAUSED INJURY		P
8.1	General	See below	P
8.2	Mechanical energy source classifications	Sharp edges and corners: MS1; Equipment mass: MS2	P
8.3	Safeguards against mechanical energy sources	Considered	P
8.4	Safeguards against parts with sharp edges and corners	The outer surface of the EUT is smoothed. No sharp edges and corners	P
8.4.1	Safeguards	Not required	N/A
8.5	Safeguards against moving parts	No such parts	N/A
8.5.1	MS2 or MS3 part required to be accessible for the function of the equipment	No such parts	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	Not Large data storage equipment	N/A
8.5.4.2	Equipment having electromechanical device for destruction of media	No such device	N/A
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.	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	Build-in equipment, consider in final system	N/A
8.6.1	Product classification		N/A
	Instructional Safeguard..... :	Not required	—
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	Not flooring standing equipment.	N/A
	Unit configuration during 10° tilt..... :		—

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Clause	Requirement + Test	Result - Remark	Verdict
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	Considered	P
8.7.1	Mounting Means (Length of screws (mm) and mounting surface)	See user manual	P
8.7.2	Direction and applied force	For each LED panel: 11N	P
8.8	Handles strength		N/A
8.8.1	Classification		N/A
8.8.2	Applied Force		N/A
8.9	Wheels or casters attachment requirements	No such device within the EUT	N/A
8.9.1	Classification		N/A
8.9.2	Applied force		—
8.10	Carts, stands and similar carriers	No such device within the EUT	N/A
8.10.1	General		N/A
8.10.2	Marking and instructions		N/A
	Instructional Safeguard.....:		—
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 EUT is not such 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 such device	N/A
	Button/Ball diameter (mm).....:		—
9	THERMAL BURN INJURY		P
9.2	Thermal energy source classifications	All accessible parts are classified TS1	P

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Clause	Requirement + Test	Result - Remark	Verdict
9.3	Safeguard against thermal energy sources	All accessible parts are classified TS1	P
9.4	Requirements for safeguards		P
9.4.1	Equipment safeguard	By enclosure	P
9.4.2	Instructional safeguard	Not required.	N/A

10	RADIATION		P
10.2	Radiation energy source classification	See below	P
10.2.1	General classification	Indicating LEDs	P
10.3	Protection against laser radiation	The EUT does not produce laser radiation	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	The EUT does not produce significant visible, infrared and UV radiation	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	The EUT does not produce x-radiation	N/A
10.5.1	X- radiation energy source that exists equipment :		N/A
	Normal, abnormal, single fault conditions		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Equipment safeguards..... :		N/A
	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	No such device.	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.)	No such device within the EUT	N/A
10.6.5.1	Corded passive listening devices with analog input		N/A
	Input voltage with 94 dB(A) L_{Aeq} 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)..... :		—

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 such component within the EUT (See Annex E)	N/A
B.2.3	Supply voltage and tolerances	Rated voltage $\pm 10\%$	P

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Clause	Requirement + Test	Result - Remark	Verdict
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 below	P
B.3.2	Covering of ventilation openings	(See appended table B.3 & B.4)	P
B.3.3	D.C. mains polarity test	Not connected to DC mains	N/A
B.3.4	Setting of voltage selector :	No setting of voltage selector within the EUT	N/A
B.3.5	Maximum load at output terminals :	(See appended table B.3 & B.4)	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 amplifier within the EUT	N/A
B.3.8	Safeguards functional during and after abnormal operating conditions	All safeguards remain effective	P
B.4	Simulated single fault conditions		P
B.4.2	Temperature controlling device open or short-circuited :	No such device within the EUT	N/A
B.4.3	Motor tests	No such device within the EUT	N/A
B.4.3.1	Motor blocked or rotor locked increasing the internal ambient temperature :		N/A
B.4.4	Short circuit of functional insulation	See below	P
B.4.4.1	Short circuit of clearances for functional insulation	(See appended table B.4)	P
B.4.4.2	Short circuit of creepage distances for functional insulation	(See appended table B.4)	P
B.4.4.3	Short circuit of functional insulation on coated printed boards	No coated printed boards within the EUT	N/A
B.4.5	Short circuit and interruption of electrodes in tubes and semiconductors	(See appended table B.4)	P
B.4.6	Short circuit or disconnect of passive components	(See appended table B.4)	P
B.4.7	Continuous operation of components	No such component intended for short time operation or intermittent operation	N/A
B.4.8	Class 1 and Class 2 energy sources within limits during and after single fault conditions		P
B.4.9	Battery charging under single fault conditions ... :		N/A
C	UV RADIATION		N/A
C.1	Protection of materials in equipment from UV radiation	The EUT does not produce UV radiation	N/A
C.1.2	Requirements		N/A
C.1.3	Test method		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
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	No such device within the EUT	N/A
D.2	Antenna interface test generator		N/A
D.3	Electronic pulse generator		N/A
E	TEST CONDITIONS FOR EQUIPMENT CONTAINING AUDIO AMPLIFIERS		N/A
E.1	Audio amplifier normal operating conditions	No audio amplifier within the EUT	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		P
	Instructions – Language	English. However, the local language for each country that would be marketed shall be provided	—
F.2	Letter symbols and graphical symbols		P
F.2.1	Letter symbols according to IEC60027-1	Letter symbols are used according to IEC 60027-1	P
F.2.2	Graphic symbols IEC, ISO or manufacturer specific	Graphic symbols are used according to IEC 60417-1 or ISO 3864-2 or ISO 7000	P
F.3	Equipment markings		P
F.3.1	Equipment marking locations	Marking is on enclosure which is not removable part	P
F.3.2	Equipment identification markings	See below	P
F.3.2.1	Manufacturer identification	See copy of marking plate.	—
F.3.2.2	Model identification	See copy of marking plate.	—
F.3.3	Equipment rating markings	See below	P
F.3.3.1	Equipment with direct connection to mains	See copy of marking plate.	P
F.3.3.2	Equipment without direct connection to mains	See copy of marking plate.	P
F.3.3.3	Nature of supply voltage.....	~ for AC Input	—
F.3.3.4	Rated voltage	See copy of marking plate.	—

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Clause	Requirement + Test	Result - Remark	Verdict
F.3.3.4	Rated frequency	See copy of marking plate	—
F.3.3.6	Rated current or rated power	See copy of marking plate.	—
F.3.3.7	Equipment with multiple supply connections	See copy of marking plate.	P
F.3.4	Voltage setting device	Only one power supply voltage, no voltage setting within the EUT	N/A
F.3.5	Terminals and operating devices	See below	P
F.3.5.1	Mains appliance outlet and socket-outlet markings	See copy of marking plate.	P
F.3.5.2	Switch position identification marking	No such marking used	N/A
F.3.5.3	Replacement fuse identification and rating markings	No such component within the EUT	N/A
F.3.5.4	Replacement battery identification marking	No battery within the EUT	N/A
F.3.5.5	Terminal marking location	See markings specified in F.3.6.1 and F.3.6.2.2 is not placed on removable parts such as screws.	P
F.3.6	Equipment markings related to equipment classification	See below	P
F.3.6.1	Class I Equipment	The EUT is a Class I equipment	P
F.3.6.1.1	Protective earthing conductor terminal	The symbol which complied with IEC 60417-5019 is marked beside earthing terminal of appliance inlet.	P
F.3.6.1.2	Neutral conductor terminal	The equipment is not permanently connected equipment.	N/A
F.3.6.1.3	Protective bonding conductor terminals	The symbol which complied with IEC 60417-5019 is marked near protective bonding conductor terminal of metal chassis.	P
F.3.6.2	Class II equipment (IEC60417-5172)	The EUT is a 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	IP20	—
F.3.8	External power supply output marking		N/A
F.3.9	Durability, legibility and permanence of marking	The marking on the EUT is durable and legible	P
F.3.10	Test for permanence of markings	After rubbing test by water and petroleum spirit, the marking is still legible; it is not easily removed and show no sign of curling	P
F.4	Instructions		P

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Clause	Requirement + Test	Result - Remark	Verdict
	a) Equipment for use in locations where children not likely to be present - marking	The EUT is not such type equipment	N/A
	b) Instructions given for installation or initial use	Relevant safety caution texts and installation instruction are available to the user in user's manual	P
	c) Equipment intended to be fastened in place	The EUT is not such type equipment	N/A
	d) Equipment intended for use only in restricted access area	The EUT is not such type equipment	N/A
	e) Audio equipment terminals classified as ES3 and other equipment with terminals marked in accordance F.3.6.1	No such terminals	N/A
	f) Protective earthing employed as safeguard	Class I equipment	P
	g) Protective earthing conductor current exceeding ES 2 limits	Not exceed ES2 limited	N/A
	h) Symbols used on equipment	Symbols explained.	P
	i) Permanently connected equipment not provided with all-pole mains switch	The EUT is not a permanently connected equipment	N/A
	j) Replaceable components or modules providing safeguard function	No replaceable components or modules within EUT	N/A
F.5	Instructional safeguards		P
	Where "instructional safeguard" is referenced in the test report it specifies the required elements, location of marking and/or instruction	The relative symbol or warning is provided on product, and the complete instructional safeguard is provided on the instruction	P
G	COMPONENTS		P
G.1	Switches		N/A
G.1.1	General requirements	No switch is used in PS3 circuit	N/A
G.1.2	Ratings, endurance, spacing, maximum load		N/A
G.2	Relays		N/A
G.2.1	General requirements	No such devices within the EUT	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 such devices within the EUT	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

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Clause	Requirement + Test	Result - Remark	Verdict
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 such devices within the EUT	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 such devices within the EUT	N/A
G.3.4	Overcurrent protection devices	Approved fuse provided	P
G.3.5	Safeguards components not mentioned in G.3.1 to G.3.5		N/A
G.3.5.1	Non-resettable devices suitably rated and marking provided		N/A
G.3.5.2	Single faults conditions.....:		N/A
G.4	Connectors		N/A
G.4.1	Spacings	No such device are used in ES2 or ES3 circuits	N/A
G.4.2	Mains connector configuration		N/A
G.4.3	Plug is shaped that insertion into mains socket-outlets or appliance coupler is unlikely	No mismatch of connectors, plugs or sockets possible	N/A
G.5	Wound Components		P
G.5.1	Wire insulation in wound components.....	(See Annex J)	P
G.5.1.2 a)	Two wires in contact inside wound component, angle between 45° and 90°	The tubing and insulation tape are provided for winding of transformer to protect against mechanical stress.	P
G.5.1.2 b)	Construction subject to routine testing	Approved triple insulated wire used in winding of transformer.	N/A
G.5.2	Endurance test on wound components	Approved triple insulated wire used in winding of transformer.	N/A
G.5.2.1	General test requirements	See above.	N/A
G.5.2.2	Heat run test	See above.	N/A
	Time (s)	See above.	—
	Temperature (°C)	See above.	—
G.5.2.3	Wound Components supplied by mains	See above.	N/A
G.5.3	Transformers		P

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
G.5.3.1	Requirements applied (IEC61204-7, IEC61558-1/-2, and/or IEC62368-1).....:	The transformer meets the requirements given in subclauses G.5.3.2 and G.5.3.3.	P
	Position.....:	T1 on power supply board	—
	Method of protection	See above and appended table B.3 & B.4.	—
G.5.3.2	Insulation	Primary windings and secondary windings are isolated by double/reinforced insulation (The core is considered as secondary).	P
	Protection from displacement of windings.....:	The end-turn of each winding is fixed by insulating tape.	—
G.5.3.3	Overload test	(See test recorded B.3 & B.4)	P
G.5.3.3.1	Test conditions	Tested in the complete equipment.	P
G.5.3.3.2	Winding Temperatures testing in the unit	(See test recorded B.3 & B.4)	P
G.5.3.3.3	Winding Temperatures - Alternative test method	Alternative test method was not considered.	N/A
G.5.4	Motors		N/A
G.5.4.1	General requirements	No such device	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

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Clause	Requirement + Test	Result - Remark	Verdict
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
G.6.1	General	Triple insulated wire used as reinforced safeguard in the isolating transformer (T1) that complied with Annex J.	P
G.6.2	Solvent-based enamel wiring insulation	Insulation is not relied on solvent-based enamel.	N/A
G.7	Mains supply cords		N/A
G.7.1	General requirements	No power supply cord provided.	N/A
	Type.....		—
	Rated current (A)		—
	Cross-sectional area (mm ²), (AWG).....		—
G.7.2	Compliance and test method		N/A
G.7.3	Cord anchorages and strain relief for non-detachable power supply cords		N/A
G.7.3.2	Cord strain relief		N/A
G.7.3.2.1	Requirements		N/A
	Strain relief test force (N)		—
G.7.3.2.2	Strain relief mechanism failure		N/A
G.7.3.2.3	Cord sheath or jacket position, distance (mm)		—
G.7.3.2.4	Strain relief comprised of polymeric material		N/A
G.7.4	Cord Entry		N/A
G.7.5	Non-detachable cord bend protection		N/A
G.7.5.1	Requirements		N/A
G.7.5.2	Mass (g)		—
	Diameter (m)		—
	Temperature (°C)		—
G.7.6	Supply wiring space		N/A
G.7.6.2	Stranded wire		N/A
G.7.6.2.1	Test with 8 mm strand		N/A
G.8	Varistors		N/A
G.8.1	General requirements	No such devices within the EUT	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.8.2	Safeguard against shock		N/A
G.8.3	Safeguard against fire		N/A
G.8.3.2	Varistor overload test		N/A
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.		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
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	The bleeder resistors (RX1, RX2, RX3, RX4, RX5, RX6) used after fuse F1, no test necessary. See 5.5.6	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		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	Approved X-cap. and Y-cap. used	P
G.11.2	Conditioning of capacitors and RC units		P
G.11.3	Rules for selecting capacitors		P
G.12	Optocouplers		P
	Optocouplers comply with IEC 60747-5-5:2007 Spacing or Electric Strength Test (specify option and test results)	Approved components used.	P
	Type test voltage Vini	See above.	—
	Routine test voltage, Vini,b	See above.	—
G.13	Printed boards		P
G.13.1	General requirements	See below	P

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Clause	Requirement + Test	Result - Remark	Verdict
G.13.2	Uncoated printed boards	The insulation between conductors on the outer surfaces of an uncoated printed board complied with the minimum clearance and creepage requirements.	P
G.13.3	Coated printed boards		N/A
G.13.4	Insulation between conductors on the same inner surface		N/A
	Compliance with cemented joint requirements (Specify construction)		—
G.13.5	Insulation between conductors on different surfaces		N/A
	Distance through insulation		N/A
	Number of insulation layers (pcs)		—
G.13.6	Tests on coated printed boards		N/A
G.13.6.1	Sample preparation and preliminary inspection		N/A
G.13.6.2a)	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	(See G.13)	N/A
G.15	Liquid filled components		N/A
G.15.1	General requirements	No such devices within the EUT	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
a)	Humidity treatment in accordance with sc5.4.8 – 120 hours	No such devices within the EUT	N/A
b)	Impulse test using circuit 2 with U_c = to transient voltage		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
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	No such devices within the EUT	N/A
H.2	Method A		N/A
H.3	Method B		N/A
H.3.1	Ringling 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		P
	General requirements		P
K	SAFETY INTERLOCKS		N/A
K.1	General requirements	No such devices within the EUT	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

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Clause	Requirement + Test	Result - Remark	Verdict
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	Appliance inlet is considered as disconnect devices.	P
L.2	Permanently connected equipment	Not permanently connected equipment.	N/A
L.3	Parts that remain energized	When the equipment is disconnected from mains, no remaining parts at hazardous voltage in the equipment.	P
L.4	Single phase equipment	The disconnect device disconnects both poles simultaneously.	P
L.5	Three-phase equipment		N/A
L.6	Switches as disconnect devices		N/A
L.7	Plugs as disconnect devices		N/A
L.8	Multiple power sources	No multiple power sources.	N/A
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

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Clause	Requirement + Test	Result - Remark	Verdict
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
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 Vz (m ³ /s).....:		—

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Clause	Requirement + Test	Result - Remark	Verdict
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
N	ELECTROCHEMICAL POTENTIALS		P
	Metal(s) used :		—
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	No openings	P
P.2.2	Safeguards against entry of foreign object		P
	Location and Dimensions (mm) :	No openings	—
P.2.3	Safeguard against the consequences of entry of foreign object		N/A
P.2.3.1	Safeguards against the entry of a foreign object		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) :		N/A
P.3	Safeguards against spillage of internal liquids	No such liquids within the EUT	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		N/A
P.4.2 a)	Conditioning testing		N/A
	T_c (°C)..... :		—
	T_r (°C) :		—
	T_a (°C)..... :		—
P.4.2 b)	Abrasion testing :	(See G.13.6.2)	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
P.4.2 c)	Mechanical strength testing	(See Annex T)	N/A
Q	CIRCUITS INTENDED FOR INTERCONNECTION WITH BUILDING WIRING		P
Q.1	Limited power sources	See below	P
Q.1.1 a)	Inherently limited output	Ethernet (RJ-45) port only.	P
Q.1.1 b)	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		N/A
Q.1.1 d)	IC current limiter complying with G.9		N/A
Q.1.2	Compliance and test method	(See appended table Annex Q.1)	P
Q.2	Test for external circuits – 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		N/A
	Samples, material		—
	Wall thickness (mm)		—
	Conditioning (°C)		—
	Test flame according to IEC 60695-11-5 with conditions as set out		N/A
	- Material not consumed completely		N/A
	- Material extinguishes within 30s		N/A
	- No burning of layer or wrapping tissue		N/A
S.2	Flammability test for fire enclosure and fire barrier integrity		N/A
	Samples, material		—
	Wall thickness (mm)		—
	Conditioning (°C)		—

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	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
T	MECHANICAL STRENGTH TESTS		P
T.1	General requirements	See below	P
T.2	Steady force test, 10 N	(See appended table T.2)	P
T.3	Steady force test, 30 N		N/A
T.4	Steady force test, 100 N		N/A
T.5	Steady force test, 250 N	(See appended table T.5)	P
T.6	Enclosure impact test	The EUT is still complying with relevant requirements of this standard	P
	Fall test	(See appended table T.6)	P
	Swing test		N/A
T.7	Drop test	Not such type equipment	N/A
T.8	Stress relief test	77°C of LED panel	P
T.9	Impact Test (glass)	No such devices within the EUT	N/A
T.9.1	General requirements		N/A
T.9.2	Impact test and compliance		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Impact energy (J)		—
	Height (m)		—
T.10	Glass fragmentation test	(See sub-clause 4.4.4.9)	N/A
T.11	Test for telescoping or rod antennas	No such devices within the EUT	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		N/A
U.2	Compliance and test method for non-intrinsically protected CRTs		N/A
U.3	Protective Screen.....		N/A
V	DETERMINATION OF ACCESSIBLE PARTS (FINGERS, PROBES AND WEDGES)		P
V.1	Accessible parts of equipment		P
V.2	Accessible part criterion		P

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	
LED lamp	Hangzhou Multi-Color Optoelectronics Co., Ltd	MC-1010BBC	1.0mmx1.0mm RGB-LED in Full Color with black, wavelength: blue:480nm, red: 630nm, green: 535nm, IF=10mA, View angle: 120 degree. Risk group 1	IEC 62471	Test by Alpha, Report No.: A1890072 01	
Plastic material of enclosure (Front panel)	E I DUPONT DE NEMOURS & CO INC	FR533NH	5VA, 155 degree C, Min. thickness, 0.75mm min.	UL 94	UL	
Metallic enclosure	Interchangeable	Interchangeable	Metal, min. 2.7mm thickness, Fixed together by welded and screws. overall dimension: 608mm(L) x 342mm(W) x49mm(T)	IEC/EN/UL 62368-1	Test with appliance	
All printed Wiring Board except power supply module	SHENGHONG ELECTRONIC CO LTD	SD-DB	V-0 ,130 degree C	UL 796	UL	
Alt.	Interchangeable	Interchangeable	Rated V-0 or better, min.130 degree C	UL 796	UL	
Internal primary lead to power output connector	U.I. Lapp GmbH	10269 for UL, H07V-K for VDE	Double insulation, 600 V, VW-1, 2.5mm², min. 105 degree C	UL 758 DIN EN 50525-2-51	UL VDE	
Internal primary lead to power supply module input	U.I. Lapp GmbH	10269 for UL, H07V-K for VDE	Double insulation, 600 V, VW-1, 2.5mm², min. 105 degree C	UL 758 DIN EN 50525-2-51	UL VDE	
Protective earthing wire	U.I. Lapp GmbH	10269 for UL, H07V-K for VDE	VW-1, 2.5mm², min. 80°C, min. 300V, green-and-yellow	UL 758 DIN EN 50525-2-51	UL VDE	
Protective bonding wire	U.I. Lapp GmbH	10269 for UL, H07V-K for VDE	VW-1, 2.5mm², min. 80°C, min. 300V, green-and-yellow	UL 758 DIN EN 50525-2-51	UL VDE	

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
Appliance Inlet	HARTING ELECTRONICS GMBH	09 49 111 10 00	Rated 250Vac, 16A	UL 1977 DIN EN 61984: 2009-11	UL VDE
Appliance Outlet	HARTING ELECTRONICS GMBH	09 49 211 10 01	Rated 250Vac, 16A	UL 1977 DIN EN 61984: 2009-11	UL VDE
Built-in power supply module					
Built-in power supply module	China Great wall Computer Shenzhen CO., LTD Power Supply Division.	GW- ESP210WV4.2	Rated input: 1) AC 100-120V, 50/60Hz, 2A; 2) AC 200-240V, 50/60Hz, 1.5A Output 1 :+4.2Vdc, 40A, 70°C; Output 2 :+4.2Vdc, 50A, 70°C;	IEC/EN/UL 62368-1	Test with appliance
PCB	Interchangeable	Interchangeable	Rated V-0 or better, min.130 degree C	UL 796	UL
Fuse (F1)	XC Electronics (Shen Zhen) Corp. Ltd.	5TE	T5AL,250Vac	IEC/EN60127-1 IEC/EN60127-3 UL248-14	VDE UL
Alt.	Hollyland Company Limited	5ET	T5AL,250Vac	IEC/EN60127-1 IEC/EN60127-3 UL248-14	VDE UL
Alt.	Shenzhen Lanson Electronics Co. Ltd.	SMT	T5AL,250Vac	IEC/EN60127-1 IEC/EN60127-3 UL248-14	VDE UL
Alt.	Ever Island Electric Co., Ltd. and Walter Electric	2010 Serie(s)	T5AL,250Vac	IEC/EN60127-1 IEC/EN60127-3 UL248-14	VDE UL
Alt.	Conquer Electronics Co., Ltd.	MST	T5AL,250Vac	IEC/EN60127-1 IEC/EN60127-3 UL248-14	VDE UL
X2 capacitor (CX1)	Wuxi Jiyang Electron Co Ltd	MKP	Max.1uF, Min. 250VAC, 110°C, type X2.	IEC/EN 60384-14 UL 60384-14	VDE UL
Alt.	Europtronic (Taiwan) Industrial Corp	MPX	Max.1uF, Min. 250VAC, 110°C, type X2.	IEC/EN 60384-14 UL 60384-14	VDE UL

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	
Alt.	Ultra Tech Xiphi Enterprise Co Ltd	HQX	Max.1uF, Min. 250VAC, 110°C, type X2.	IEC/EN 60384-14 UL 60384-14	VDE UL	
Alt.	Shenzhen Jing Yu Electronics Co Ltd	CBBX2	Max.1uF, Min. 250VAC, 110°C, type X2.	IEC/EN 60384-14 UL 60384-14	VDE UL	
Alt.	Shenzhen Jinghao Capacitor Co Ltd	CBB62B	Max.1uF, Min. 250VAC, 110°C, type X2.	IEC/EN 60384-14 UL 60384-14	VDE UL	
Alt.	Joey Electronics (Dong Guan) Co Ltd	MPX	Max.1uF, Min. 250VAC, 110°C, type X2.	IEC/EN 60384-14 UL 60384-14	VDE UL	
Alt.	Hua Jung Components Co Ltd	MKP	Max.1uF, Min. 250VAC, 110°C, type X2.	IEC/EN 60384-14 UL 60384-14	VDE UL	
Alt.	Epcos Electronic Components S A	B3292#	Max.1uF, Min. 250VAC, 110°C, type X2.	IEC/EN 60384-14 UL 60384-14	VDE UL	
Bleed resisitor RX1, RX2, RX3, RX4, RX5, RX6	Interchangeable	Interchangeable	Each min. 220K ohm, min. 1/4W.	IEC/EN/UL 62368-1	Test with appliance	
Bridge diode (BD1)	Interchangeable	Interchangeable	Min.4A, min.800V.	IEC/EN/UL 62368-1	Test with appliance	
Thermistor RT1	SEMITEC CORP	5D2-10	120/250V, max. 2.7A	IEC/EN 60730-1 IEC/EN 60730-2-2	VDE UL	
Electrolytic Capacitors (CE1)	Interchangeable	Interchangeable	100-120uF, min. 400V, min. 105°C.	IEC/EN/UL 62368-1	Test with appliance	
Line choke (LF1)	China Greatwall Technology Group Co.,Ltd.	GF-T1006-001	130°C	IEC/EN/UL 62368-1	Test with appliance	
-Triple insulated wire	Furukawa Electric Co Ltd	TEX-E	130 °C	UL 2353	UL	
Alt.	Totoku Electric Co LtdF	<u>TIW-E, TIW-3</u>	155 °C	UL 2353	UL	
Alt.	Totoku Electric Co LtdF	<u>TIW-2</u>	130 °C	UL 2353	UL	
Line choke (L1)	China Greatwall Technology Group Co.,Ltd.	CF-5026-001	130°C	IEC/EN/UL 62368-1	Test with appliance	
-Magnet Wire	Interchangeable	Interchangeable	130°C	UL 1446	UL	

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	
Line choke (L2)	China Greatwall Technology Group Co.,Ltd.	KT-EQ34-001	130°C	IEC/EN/UL 62368-1	Test with appliance	
-Insulation Tape	Jingjiang Yahua Pressure Sensitive Glue Co Ltd	PZ* (b), WF* (c)(h), CT* (c)(g), CT* (b)(g), PF* (d)(g)	130 °C	UL 510	UL	
-Tube	Great Holding Industrial Co Ltd	TFL, TFS, TFT	200 °C, VW-1	UL 224	UL	
Alt.	P LEO & CO LTD	2T-TFL-xx.x (a), 2T-TFS-xx.x (a), 2T-TFT-xx.x (a)	200 °C, VW-1	UL 224	UL	
Y2-capacitor (CY1,CY2,CY3,C Y4)	Murata MFG CO LTD	KH	Max. 2200pF, min.250 Vac, 125°C.	IEC/EN 60384-14 UL 60384-14	VDE UL	
Alt.	Murata MFG CO LTD	KY	Max. 2200pF, min.250 Vac, 125°C.	IEC/EN 60384-14 UL 60384-14	VDE UL	
Alt.	TDK-EPC CORP	CS	Max. 2200pF, min.250 Vac, 125°C.	IEC/EN 60384-14 UL 60384-14	VDE UL	
Alt.	Jya-Nay Co.,Ltd.	JY	Max. 2200pF, min.250 Vac, 125°C.	IEC/EN 60384-14 UL 60384-14	VDE UL	
Alt.	Success Electronics Corp. Ltd	SF	Max. 2200pF, min.250 Vac, 125°C.	IEC/EN 60384-14 UL 60384-14	VDE UL	
Alt.	HaoHua Electronic	CT7	Max. 2200pF, min.250 Vac, 125°C.	IEC/EN 60384-14 UL 60384-14	VDE UL	
Alt.	Walsin Technology Corp	AC	Max. 2200pF, min.250 Vac, 125°C.	IEC/EN 60384-14 UL 60384-14	VDE UL	
Alt.	Yinan Don's Electronic Component Co.,ltd	CT81	Max. 2200pF, min.250 Vac, 125°C.	IEC/EN 60384-14 UL 60384-14	VDE UL	
Alt.	Welson Industrial Co., Ltd.	KL	Max. 2200pF, min.250 Vac, 125°C.	IEC/EN 60384-14 UL 60384-14	VDE UL	

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	
Alt.	Shaanxi Huaxing Electronic Development Co. Ltd.	CT7Y2	Max. 2200pF, min.250 Vac, 125°C.	IEC/EN 60384-14 UL 60384-14	VDE UL	
Y1-capacitor (CY5)	Jya-Nay Co Ltd	JN	Max.2200pF, min. 250V, 125°C	IEC/EN 60384-14 UL 60384-14	VDE UL	
Alt.	Murata Mfg Co Ltd	KX	Max.2200pF, min. 250V, 125°C	IEC/EN 60384-14 UL 60384-14	VDE UL	
Alt.	Haohua Electronic Co	CT7	Max.2200pF, min. 250V, 125°C	IEC/EN 60384-14 UL 60384-14	VDE UL	
Alt.	Tdk Corporation	CD	Max.2200pF, min. 250V, 125°C	IEC/EN 60384-14 UL 60384-14	VDE UL	
Alt.	Success Electronics Co Ltd	SE, SB	Max.2200pF, min. 250V, 125°C	IEC/EN 60384-14 UL 60384-14	VDE UL	
Alt.	Walsin Technology Corp	AH	Max.2200pF, min. 250V, 125°C	IEC/EN 60384-14 UL 60384-14	VDE UL	
Alt.	Welson Industrial Co., Ltd.	WD	Max.2200pF, min. 250V, 125°C	IEC/EN 60384-14 UL 60384-14	VDE UL	
Alt.	Yinan Don's Electronic Component Co.,ltd	CT81	Max.2200pF, min. 250V, 125°C	IEC/EN 60384-14 UL 60384-14	VDE UL	
Opto coupler (IC1,IC5)	Everlight Electronics Co., Ltd.	EL101	Dti ≥0.4mm, Ext. Cr ≥6.0mm, 110°C	UL 1577 IEC/EN 60747-5-5	VDE UL	
Alt.	VISHAY Semiconductor GmbH	TCLT1009	Dti ≥0.4mm, Ext. Cr.≥6.0mm,100°C	UL 1577 IEC/EN 60747-5-5	VDE UL	
Alt.	Lite-On Technology Corporation	LTV-817	Dti ≥0.4mm, Ext. Cr ≥6.0mm, 100°C	UL 1577 IEC/EN 60747-5-5	VDE UL	
Alt.	Lite-On Technology Corporation	LTV-10XX	Dti = 0.4mm, Ext. Cr≥6.0mm, 100°C	UL 1577 IEC/EN 60747-5-5	VDE UL	
Alt.	Everlight Electronics Co., Ltd.	EL817	Dti ≥0.4mm; Ext. Cr ≥6.0mm, 110°C	UL 1577 IEC/EN 60747-5-5	VDE UL	

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	
Alt.	Toshiba Corporation Semiconductor & Storage Products Company	TLP781	Dti ≥0.4mm; Ext. Cr ≥7.6mm, 115°C	UL 1577 IEC/EN 60747-5- 5	VDE UL	
Alt.	CT Micro International Corporation	CT817	Dti ≥0.4mm; Ext. Cr ≥7.3mm, 115°C	UL 1577 IEC/EN 60747-5- 5	VDE UL	
Alt.	CT Micro International Corporation	CT1019	Ext. cr.>7.3mm, Dti.>0.4mm, min. 110°C,	UL 1577 IEC/EN 60747-5- 5	VDE UL	
Alt.	Shenzhen Orient Components Co. Ltd.	ORPC-817S x, ORPC-817 x	Dti ≥0.4mm; Ext. Cr ≥7.6mm, 110°C	UL 1577 IEC/EN 60747-5- 5	VDE UL	
Transformer (T1)	Shenzhen Signal Electronics Co., Ltd	KT-EQ34-003	Class B	IEC/EN/UL 62368-1	Test with appliance	
Alt.	Shenzhen Lici Electronics Co., Ltd	KT-EQ34-003	Class B	IEC/EN/UL 62368-1	Test with appliance	
-Insulation system	Shenzhen Signal Electronics Co., Ltd	CCP-130-1	Class B	UL 1446	UL	
Alt.	Shenzhen Lici Electronics Co., Ltd	LC-130	Class B	UL 1446	UL	
-Bobbin	CHANG CHUN PLASTICS CO LTD	T200HF	V-0, 150 °C	UL 94	UL	
-Triple insulated wire	Furukawa Electric Co Ltd	TEX-E	130 °C	UL 2353	UL	
Alt.	Totoku Electric Co LtdF	TIW-E, TIW-3	155 °C	UL 2353	UL	
-Insulation Tape	Jingjiang Yahua Pressure Sensitive Glue Co Ltd	PZ* (b), WF* (c)(h), CT* (c)(g), CT* (b)(g)	130 °C	UL 510	UL	
-Tube	Great Holding Industrial Co Ltd	TFL, TFS, TFT	200 °C, VW-1	UL 224	UL	
Alt.	P LEO & CO LTD	2T-TFL-xx.x (a), 2T-TFS-xx.x (a), 2T-TFT-xx.x (a)	200 °C, VW-1	UL 224	UL	

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	
Mylar sheet (used between PWB and metal shield)	DUPONT HONGJI FILMS FOSHAN CO LTD	MO31, EM	VTM-2 or better, 105°C. min.0.125 thickness	UL 94	UL	
Alt.	JIANGSU YUXING FILM TECHNOLOGY CO LTD	6023	VTM-2 or better, 105°C. min.0.038 thickness	UL 94	UL	
Alt.	SABIC INNOVATIVE PLASTICS JAPAN L L C	FR25A, FR60 (GG1)	VTM-0 or V-0, 125°C, min.0.13 thickness	UL 94	UL	
Alt.	YI-HSIN PLASTECH CO LTD	YIMEX PP-17	VTM-0 or V-0, 115°C, min.0.43 thickness	UL 94	UL	
Alt.	FORMEX, DIV OF ILLINOIS TOOL WORKS INC, FORMERLY	<u>FORMEX GK- (a)(d)(f2)</u>	VTM-0 or V-0, 115°C,min.0.1 thickness	UL 94	UL	
Alt.	CHENGDU KANGLONGXIN PLASTICS CO LTD	BK-10	VTM-0 or V-0, 110°C.min.0.25 thickness	UL 94	UL	
Insulation silicon sheet (used between BD1, Q1,Q3, Q4 ,Q5,Q6 and metal enclosure)	Shenzhen Bornsun Industrial Co Ltd	HN-400	Rated V-0, 150°C, min. 0.18mm thickness.	UL 94	UL	
Alt.	KunshanZhongdi Materials Technology Co Ltd	TSP-9000	Rated V-0, 150°C, Min. 0.10mm thickness.	UL 94	UL	
Alt.	DONGGUAN AOBOTEDAORE TECHNOLOGY CO., LTD	ABTCP800ABT,S B900ABTST600	Rated V-0, 150°C, min. 0.30mm thickness.	UL 94	UL	
Silicon rubber	SHENZHEN BORN SUN INDUSTRIAL CO LTD	BN-FS150, BN- FS150S	Rated V-0, 150°C, min. 0.50mm thickness.	UL 94	UL	

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	
Alt.	DONGGUAN AOBOTEDAORE TECHNOLOGY CO., LTD	ABTCP800ABT,S B900ABTST600	Rated V-0, 150°C, min. 0.30mm thickness.	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.
 - 3) An asterisk indicates a mark which assures the agreed level of surveillance.
 - 4) Thermal cycling test and electric strength test are evaluated and specified in the component certificate.
 - 5) All the plastic material mentioned are checked and found to be acceptable for using in this product.
- Checking date: Same as this report issued data, see also page 1.

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
Not applicable			1	
			2	
			3	
4.8.4.5	TABLE: Impact			—
Impacts per surface		Surface tested	Impact energy (Nm)	Comments

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

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:				

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 (Apk or Arms)	Hz	
1	264Vac 60Hz	Internal power board +4.2V output “+” to “-”	Normal	4.24VDC	--	--	ES1
			Abnormal OL	4.24VDC	--	--	
			Single fault – IC5 pin1-2 SC	4.24VDC	--	--	
			Single fault – IC5 pin3-4 SC	5.12Vpk	--	60	
			Single fault – IC7 pin1-2 SC	5.08Vpk	--	60	
			Single fault – IC7 pin3-4 SC	5.08Vpk	--	60	
			Single fault – IC5 pin1 OC	5.12Vpk	--	60	
			Single fault – IC5 pin3 OC	5.12Vpk	--	60	
			Single fault – IC7 pin1 OC	5.08Vpk	--	60	
			Single fault – IC7 pin3 OC	5.08Vpk	--	60	
2	264Vac 60Hz	Internal power board +4.2V output +/- to earth	Normal	--	0.24mA _{pk}	--	ES1
			Abnormal OL	--	0.24mA _{pk}	--	
			Single fault – IC5 pin1-2 SC	--	0.22mA _{pk}	--	
			Single fault – IC7 pin1-2 SC	--	0.22mA _{pk}	--	

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

5.2.2.3 - Capacitance Limits

No.	Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters		ES Class
				Capacitance, nF	Upk (V)	
1	264Vac 60Hz	Input terminal (Internal power board)	Normal	1000±10%	343	ES3
			Abnormal	-	-	
			Single fault – (SC)	-	-	

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:

1. Abnormal & Single fault conditions for No. 1 & No. 2 were evaluated at approved power supply.
2. Abnormal & Single fault conditions for No. 3 were evaluated at Annex Q. See Table Annex Q.1 for details.

Supplementary information: SC=Short Circuit, OC=Short Circuit

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) :	90/50	90/50	264/60	264/60	—
		Ambient T _{min} (°C) :					—
		Ambient T _{max} (°C) :					—
		T _{ma} (°C) :					—
Maximum measured temperature T of part/at:		T (°C)				Allowed T _{max} (°C)	
			Shift to 40°C		Shift to 40°C		
AC inlet		40.3	56.7	41.5	56.9	70	
Input wire		43.0	59.3	44.0	59.3	80	
Input terminal		47.2	63.6	47.9	63.2	Ref.	
CY1 body		50.2	66.5	49.4	64.7	125	
LF1 winding		52.3	68.6	50.8	66.2	130	
LF2 winding		60.7	77.0	53.6	68.9	130	
L1 winding		58.2	74.6	52.7	68.1	130	
RT1 body		83.1	99.4	59.3	74.7	Ref.	
C2 body		55.7	72.1	53.2	68.5	105	
CX1 body		53.3	69.6	53.4	68.8	100	
PCB near BD1		58.6	75.0	52.3	67.7	130	
PCB near Q1		55.3	71.6	59.5	74.8	130	
PCB near D1		54.4	70.8	54.4	69.8	130	
PCB near IC1		55.5	71.8	56.3	71.7	130	
L2 winding		52.9	69.2	52.9	68.3	130	
L2 winding		57.5	73.8	56.0	71.3	130	
CE1 body		53.2	69.5	53.6	68.9	105	
IC5 body		51.0	67.3	51.8	67.1	100	
CY5 body		54.6	71.0	55.2	70.6	125	
T1 coil		59.3	75.7	60.1	75.4	110	
T1 core		55.7	72.0	56.3	71.7	110	

IEC 62368-1							
Clause		Requirement + Test			Result - Remark		Verdict
EC3 body		53.6	69.9	54.5	69.8	105	
Mylar sheet		54.2	70.6	51.6	67.0	Ref.	
Power supply surface		50.0	66.4	51.0	66.4	Ref.	
CL2 body		48.5	64.8	49.9	65.3	105	
PCB near U57		54.3	70.7	55.2	70.6	130	
PCB near U11&U20		60.9	77.2	61.9	77.2	130	
PCB near U17		53.0	69.3	53.9	69.2	130	
PCB near U14& U12		58.7	75.1	59.6	75.0	130	
AC Output		38.7	55.0	39.5	54.8	70	
Ambient		23.7	40.0	24.6	40.0	--	
			Shift to 25°C		Shift to 25°C		
Metal enclosure		45.4	46.7	46.6	46.9	60	
Metal enclosure(on LED module)		49.6	50.9	51.1	51.4	60	
LED cover		49.7	51.0	51.5	51.8	77	
Ambient		23.7	25.0	24.6	25.0	--	
Supplementary information:							
Temperature T of winding:		t ₁ (°C)	R ₁ (Ω)	t ₂ (°C)	R ₂ (Ω)	T (°C)	Allowed T _{max} (°C)
Supplementary information:							
Note 1: Tma should be considered as directed by applicable requirement							
Note 2: Tma is not included in assessment of Touch Temperatures (Clause 9)							

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:			

IEC 62368-1			
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)
Bobbin of T1	CHANG CHUN PLASTICS CO LTD	125	1.2
Supplementary information:			

IEC 62368-1			
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)	cl (mm) ²	Required ³ cr (mm)	cr (mm)	
Power supply module								
L and N before F1	420	250	0.06	2.3	5.4	2.5	5.4	
L/N and earthing pin before F1	420	250	0.06	2.3	3.8	2.5	3.8	
Across F1	420	250	0.06	2.3	3.1	2.5	3.1	
IC5: Primary traces to secondary trace	420	250	125.1	4.5	9.7	5.0	9.7	
IC7: Primary traces to secondary trace	420	250	125.1	4.5	9.7	5.0	9.7	
Primary to secondary under CY5	420	250	125.1	4.5	8.3	5.0	8.3	
CE1 surface to metal enclosure	420	250	0.06	2.3	4.0	2.5	4.0	
CE1 surface to secondary circuit	420	250	125.1	4.5	5.0	5.0	6.5	
CY5 primary to T1 core	420	250	125.1	4.5	5.2	5.0	5.2	
T1: pri. pin to sec. winding	420	250	125.1	4.5	>6.5	5.0	>6.5	
T1: pri. pin to core	420	250	125.1	4.5	7.1	5.0	7.1	
EUT								
Primary circuits to accessible part (metal enclosure)	420	250	0.06	2.3	4.0	2.5	4.0	
Primary circuits to accessible part (LED panel)	420	250	0.06	4.5	>6.5	5.0	>6.5	
Supplementary information: Note 1: Only for frequency above 30 kHz Note 2: See table 5.4.2.4 if this is based on electric strength test Note 3: Provide Material Group 1, Pollution degree 2 is applicable. 2, Input voltage 100-240V, 50/60Hz. 3, Separation method between SELV and hazard circuit by double or reinforced insulation. 4, Altitude 5000m considered. 5, Transformer T1: TIW used as primary winding, core considered as secondary part, 2 layers of insulation tape wrapped around Transformer T1 as reinforced insulation.								

IEC 62368-1			
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:			II
Clearance distanced between:		Required withstand voltage	Required cl (mm)	Measured cl (mm)
Same as the "TABLE: Minimum Clearances/Creepage distance"		2500	1.5 x 1.48 = 2.22 (for BI) 3.0 x 1.48 = 4.44 (for RI)	Same as the "TABLE: Minimum Clearances/Creepage distance"
Supplementary information:				

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:				

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)
Isolated optocoupler		420	>30	See table 4.1.2	0.4	Min. 0.4
Transformer bobbin		420	>30	See table 4.1.2	0.4	Min. 1.0
Supplementary information:						

5.4.9	TABLE: Electric strength tests			P
Test voltage applied between:		Voltage shape (AC, DC)	Test voltage (V)	Breakdown Yes / No
Line and neutral after current fuse opened (FI)		DC	2500	No
Line/neutral and metal enclosure (BI)		DC	2500	No
Line/Neutral and secondary circuits (RI)		DC	4000	No
Line/neutral and LED panel (RI)		DC	4000	No
Transformer: Primary and Secondary (RI)		DC	4000	No
Transformer: Primary and core (RI)		DC	4000	No

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.9	TABLE: Electric strength tests		P
Test voltage applied between:		Voltage shape (AC, DC)	Test voltage (V)
			Breakdown Yes / No
Transformer: One layer Insulation tape (RI)		DC	4000
			No
Supplementary information:			

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	
264V,60Hz	L,N	N	--	4	ES1	
264V,60Hz	L,N	RX2 OC	--	4	ES1	
Supplementary information: X-capacitors installed for testing are: CX1=1μF ☐ bleeding resistor rating: RX1=RX2=RX3=RX4=RX5=RX6=220KΩ ☐ 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 C. Evaluated at approved power supply.						

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 protective earth of AC input connector and accessible metal enclosure (main body)	40	2	0.76	0.019	
	32	2	0.06	0.002	
Between protective earth of AC input connector and protective earth of AC output connector	40	2	0.52	0.013	
	32	2	0.64	0.020	
Supplementary information:					

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

5.7.2.2, 5.7.4	TABLE: Earthed accessible conductive part		P
Supply voltage	264 V, 60Hz	—	
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)	
Measured to metal enclosure	1	3.04 mA _{peak}	
	2*	N/A	
	3	N/A	
	4	N/A	
	5	N/A	
	6	N/A	
	8	N/A	
Supplementary Information:			
Notes:			
[1] Supply voltage is the anticipated maximum Touch Voltage			
[2] Earthed neutral conductor [Voltage differences less than 1% or more]			
[3] Specify method used for measurement as described in IEC 60990 sub-clause 4.3			
[4] IEC60990, sub-clause 6.2.2.7, Fault 7 not applicable.			
[5] (*) IEC60990, sub-clause 6.2.2.2 is not applicable if switch or disconnect device (e.g., appliance coupler) provided.			

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	
A	All internal circuits	Power (W) :	—	—	PS3 (declared)	
		V _A (V) :	—	—		
		I _A (A) :	—	—		
B	Ethernet (RJ-45) input port	Power (W) :	0	0	PS1	
		V _A (V) :	0	0		
		I _A (A) :	0	0		
C	Ethernet (RJ-45) output port	Power (W) :	0	0	PS1	
		V _A (V) :	0	0		
		I _A (A) :	0	0		
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 × I _{rms})	Arcing PIS? Yes / No
All internal circuits	--	--	--	Yes
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.				

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
All internal circuits	--	-	--	-	Yes

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.

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:			

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

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	
90V/50Hz	1.659	--	145.2	--	F1	1.659	Full display with white light Output load: 0.0A	
90V/60Hz	1.654	--	145.3	--	F1	1.654	Ditto	
100V/50Hz	1.524	16	145.5	--	F1	1.524	Ditto	
100V/60Hz	1.520	16	145.6	--	F1	1.520	Ditto	
240V/50Hz	0.717	16	143.4	--	F1	0.717	Ditto	
240V/60Hz	0.735	16	143.2	--	F1	0.735	Ditto	
264V/50Hz	0.674	--	143.1	--	F1	0.674	Ditto	
264V/60Hz	0.691	--	143.2	--	F1	0.691	Ditto	
90V/50Hz	15.659	--	1405.2	--	F1	15.659	Full display with white light Output load: 14.0A	
90V/60Hz	15.654	--	1405.3	--	F1	15.654	Ditto	
100V/50Hz	15.524	16	1545.5	--	F1	15.524	Ditto	
100V/60Hz	15.520	16	1545.6	--	F1	15.520	Ditto	
240V/50Hz	14.717	16	3503.4	--	F1	14.717	Ditto	
240V/60Hz	14.735	16	3503.2	--	F1	14.735	Ditto	
264V/50Hz	14.674	--	3839.1	--	F1	14.674	Ditto	
264V/60Hz	14.691	--	3839.2	--	F1	14.691	Ditto	
Supplementary information:								
1. The measured input current at rated voltage shall be. 110 % of rated current.								

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

B.3		TABLE: Abnormal operating condition tests						P
Ambient temperature (°C)					25, if not stated below			—
Power source for EUT: Manufacturer, model/type, output rating ..					See appended table 4.1.2			—
Component No.	Abnormal Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
For EUT with system maximum normal load:								
Transformer	O-L	264	3h50min	F1	0.691→ 0.998→ 1.110→ 0.099	K	T1 coil:114.4°C T1 core:94.3°C PCB near BD1:67.3°C L1 winding:67.8°C PCB near power supply :30.5°C Metal enclosure:41.0°C Ambient:24.2°C	Observation: Max load at 50 A steady, 50.5 A transformer shut down. Operated until steady state. No damage. No hazards.
Supplementary information: 1. Test table is provided to record abnormal and fault conditions for all applicable energy sources including Thermal burn injury. Column "Abnormal/Fault." Specify if test condition by indicating "Abnormal" then the condition for a Clause B.3 test or "Single Fault" then the condition for Clause B.4.								

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

B.4		TABLE: Fault condition tests						P
Ambient temperature (°C)						25, if not stated below		—
Power source for EUT: Manufacturer, model/type, output rating . :						See appended table 4.1.2		—
Component No.	Fault Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
BD1	SC	264	1s	F1	0	--	--	Observation: Fuse open Damaged: No damage, no hazards. Uoc:0V U2/500:0.18mA
C1	SC	264	1s	F1	0	--	--	Observation: Fuse open Damaged: No damage, no hazards. Uoc:0V U2/500:0.18mA
D1	SC	264	1s	F1	0	--	--	Observation: Fuse open Damaged: No damage, no hazards. Uoc:0V U2/500:0.18mA
D2	SC	264	1s	F1	0	--	--	Observation: Fuse open Damaged: No damage, no hazards. Uoc:0V U2/500:0.18mA
Q1pin G-D	SC	264	1s	F1	0	--	--	Observation: Fuse open Damaged: No damage, no hazards. Uoc:0V U2/500:0.18mA

IEC 62368-1								
Clause	Requirement + Test					Result - Remark		Verdict
Q1pin D-S	SC	264	1s	F1	0	--	--	Observation: Fuse open Damaged: No damage, no hazards. Uoc:0V U2/500:0.18mA
Q1pin G-S	SC	264	10min	F1	0.099	--	--	Observation: Unit shut down Damaged: No damage, no hazards. Uoc:0V U2/500:0.24mA
Q2pin G-D	SC	264	1s	F1	0	--	--	Observation: Fuse open Damaged: No damage, no hazards. Uoc:0V U2/500:0.18mA
Q2pin D-S	SC	264	1s	F1	0	--	--	Observation: Fuse open Damaged: No damage, no hazards. Uoc:0V U2/500:0.18mA
Q2pin G-S	SC	264	10min	F1	0.099	--	--	Observation: Unit shut down Damaged: No damage, no hazards. Uoc:0V U2/500:0.24mA
T1 pin 5,6	SC	264	10min	F1	0.191	--	--	Observation: Normal operation Damaged: No damage, no hazards. Uoc:4.24V U2/500:0.24mA

IEC 62368-1								
Clause	Requirement + Test					Result - Remark		Verdict
T1 pin 3,4	SC	264	10min	F1	0.214	T1	T1 coil:61.8°C T1 core:59.3°C PCB near BD1:50.5°C Metal enclosure:42.1°C Ambient:24.0°C	Observation: The current goes up and the power goes up The temperature can be stabilized Damaged: No damage, no hazards. Uoc:4.24V U2/500:0.24mA
T1 pin 1,2	SC	264	10min	F1	0.099	--	--	Observation: Unit shut down Damaged: No damage, no hazards. Uoc:0V U2/500:0.24mA
T1 pin 7,8	SC	264	10min	F1	0.099	--	--	Observation: Unit shut down Damaged: No damage, no hazards. Uoc:0V U2/500:0.24mA
IC5pin 1-2	SC	264	10min	F1	0.191	--	--	Observation: Normal operation Damaged: No damage, no hazards. Uoc:4.24V U2/500:0.24mA
IC5pin 3-4	SC	264	10min	F1	0.099	--	--	Observation: Unit shut down Damaged: No damage, no hazards. Uoc:0V U2/500:0.24mA

IEC 62368-1								
Clause	Requirement + Test					Result - Remark		Verdict
IC7 pin1-2	SC	264	10min	F1	0.099	--	--	Observation: Unit shut down Damaged: No damage, no hazards. Uoc:0V U2/500:0.24mA
IC7 pin3-4	SC	264	10min	F1	0.099	--	--	Observation: Unit shut down Damaged: No damage, no hazards. Uoc:0V U2/500:0.24mA
IC5 pin1	OC	264	10min	F1	0.099	--	--	Observation: Unit shut down Damaged: No damage, no hazards. Uoc:0V U2/500:0.24mA
IC5 pin3	OC	264	10min	F1	0.099	--	--	Observation: Unit shut down Damaged: No damage, no hazards. Uoc:0V U2/500:0.24mA
IC7 pin1	OC	264	10min	F1	0.099	--	--	Observation: Unit shut down Damaged: No damage, no hazards. Uoc:0V U2/500:0.24mA
IC7 pin3	OC	264	10min	F1	0.099	--	--	Observation: Unit shut down Damaged: No damage, no hazards. Uoc:0V U2/500:0.24mA

IEC 62368-1								
Clause	Requirement + Test					Result - Remark		Verdict
Q6 pin G-S	SC	264	10min	F1	0.099	--	--	Observation: Unit shut down Damaged: No damage, no hazards. Uoc:0V U2/500:0.24mA
Q8 pin G-S	SC	264	10min	F1	0.099	--	--	Observation: Unit shut down Damaged: No damage, no hazards. Uoc:0V U2/500:0.24mA
Supplementary information: 1. Simulate the worst case of overload at the same time on single fault condition.								

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:									Verdict	
- Chemical leaks									N/A	
- Explosion of the battery									N/A	
- Emission of flame or expulsion of molten metal									N/A	
- Electric strength tests of equipment after completion of tests									N/A	
Supplementary information:										
1) Considered for real time clock battery. Also see appended table B.4.										

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)	

Annex M.4	Table: Additional safeguards for equipment containing secondary lithium batteries				N/A
Battery identification	Charging at T_{lowest} (°C)	Observation	Charging at $T_{highest}$ (°C)	Observation	

Supplementary Information:

Annex Q.1	TABLE: Circuits intended for interconnection with building wiring (LPS)					P
Note: Measured UOC (V) with all load circuits disconnected:						
Output Circuit	Components	U _{oc} (V)	I _{sc} (A)		S (VA)	
			Meas.	Limit	Meas.	Limit
Ethernet (RJ-45) input port	Normal	0	0	≤ 8.0 A	0	≤ 100 VA
Ethernet (RJ-45) input port	Normal	0	0	≤ 8.0 A	0	≤ 100 VA
Supplementary Information: SC=Short circuit, OC=Open circuit The RJ45, Audio port, Antenna port, TV cable and VGA ports and CI card are used for data transmission only.						

T.2, T.3, T.4, T.5	TABLE: Steady force test				P
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IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Part/Location	Material	Thickness (mm)	Force (N)	Test Duration (sec)	Observation
Components	1)	--	10	5	No damage
Enclosure	1)	--	250	5	No damage
LED cover	1)	--	250	5	No damage
Supplementary information: 1) See appended table 4.1.2					

T.6, T.9	TABLE: Impact tests				P
Part/Location	Material	Thickness (mm)	Vertical distance (mm)	Observation	
Enclosure/ top	1)	--	1300	Intact	
Enclosure/ side	1)	--	1300	Intact	
Enclosure/ bottom	1)	--	1300	Intact	
LED cover	1)	--	1300	Intact	
Supplementary information: 1) See appended table 4.1.2					

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

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	
LED cover	1)	--	77	7	Intact	
Supplementary information:						
1) See appended table 4.1.2.						

List of test equipment used:

A completed list of used test equipment shall be provided in the Test Reports when a Manufacturer Testing Laboratory according to TMP/CTF stage 1 or WMT/CTF stage 2 procedure has been used.

Clause	Measurement / testing	Testing / measuring equipment / material used	Range used	Calibration date
N/A				

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT			
IEC 62368-1			
EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES			
(Audio/video, information and communication technology equipment - Part 1: Safety requirements)			
Differences according to: EN 62368-1:2014+A11:2017			
Attachment Form No.: EU_GD_IEC62368_1B_II			
Attachment Originator: Nemko AS			
Master Attachment: Date 2017-09-22			
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	CENELEC COMMON MODIFICATIONS (EN)						—
	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						P
	Delete all the “country” notes in the reference document (IEC 62368-1:2014) according to the following list:						P
	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	
	For special national conditions, see Annex ZB.						—

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
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.		N/A
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.		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.		P
10.2.1	Add the following to c) and d) in table 39: For additional requirements, see 10.5.1.		N/A

IEC62368_1B - ATTACHMENT			
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.		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.		N/A
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		N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
G.7.1	Add the following note: NOTE Z1 The harmonized code designations corresponding to the IEC cord types are given in Annex ZD.		N/A
Bibliography	Add the following standards: Add the following notes for the standards indicated: 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.		
ZB	ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)		—

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
4.1.15	Denmark, Finland, Norway and Sweden To the end of the subclause the following is added: Class I pluggable equipment type A intended for connection to other equipment or a network shall, if safety relies on connection to reliable earthing or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment shall be connected to an earthed mains socket-outlet. The marking text in the applicable countries shall be as follows: In Denmark: "Apparatets stikprop skal tilsluttes en stikkontakt med jord som giver forbindelse til stikproppens jord." In Finland: "Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan" In Norway: "Apparatet må tilkoples jordet stikkontakt" In Sweden: "Apparaten skall anslutas till jordat uttag"		N/A
4.7.3	United Kingdom To the end of the subclause the following is added: The torque test is performed using a socket-outlet complying with BS 1363, and the plug part shall be assessed to the relevant clauses of BS 1363. Also see Annex G.4.2 of this annex	The EUT is not directly plug-in equipment	N/A
5.2.2.2	Denmark After the 2nd paragraph add the following: A warning (marking safeguard) for high touch current is required if the touch current exceeds the limits of 3,5 mA a.c. or 10 mA d.c.		N/A

IEC62368_1B - ATTACHMENT			
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 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.		N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
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).		P
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 such device used as safeguard	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.		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.		N/A
5.6.5.1	To the second paragraph the following is added: The range of conductor sizes of flexible cords to be accepted by terminals for equipment with a rated current over 10 A and up to and including 13 A is: 1,25 mm ² to 1,5 mm ² in cross-sectional area.		N/A
5.7.5	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.		N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
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. 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.”.		N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
5.7.6.2	Denmark To the end of the subclause the following is added: The warning (marking safeguard) for high touch current is required if the touch current or the protective current exceed the limits of 3,5 mA .		N/A
B.3.1 and B.4	Ireland and United Kingdom The following is applicable: To protect against excessive currents and short-circuits in the primary circuit of direct plug-in equipment , tests according to Annexes B.3.1 and B.4 shall be conducted using an external miniature circuit breaker complying with EN 60898-1, Type B, rated 32A. If the equipment does not pass these tests, suitable protective devices shall be included as an integral part of the direct plug-in equipment , until the requirements of Annexes B.3.1 and B.4 are met		N/A

IEC62368_1B - ATTACHMENT			
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		P
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.	The EUT is not directly plug-in equipment	N/A

IEC62368_1B - ATTACHMENT			
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.		P
G.7.1	Ireland To the first paragraph the following is added: Apparatus which is fitted with a flexible cable or cord shall be provided with a plug in accordance with Statutory Instrument 525: 1997, "13 A Plugs and Conversion Adapters for Domestic Use Regulations: 1997. S.I. 525 provides for the recognition of a standard of another Member State which is equivalent to the relevant Irish Standard		P
G.7.2	Ireland and United Kingdom To the first paragraph the following is added: A power supply cord with a conductor of 1,25 mm ² is allowed for equipment which is rated over 10 A and up to and including 13 A.		N/A

IEC62368_1B - ATTACHMENT			
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		N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT IEC 62368-1 (AUSTRALIA / NEW ZEALAND) NATIONAL DIFFERENCES (Audio/video, information and communication technology equipment)			
Differences according to.....: AS/NZS 62368.1:2018			
Attachment Form No.....: AU_NZ_ND_IEC62368_1B			
Attachment Originator: JAS-ANZ			
Master Attachment.....: 2018-02			
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	National Differences		—
Appendix ZZ	Variations to IEC 62368-1:2014 (ED. 2.0) for Australia and New Zealand		—
ZZ1 Scope	This Appendix lists the normative variations to IEC 62368-1:2014 (ED. 2.0)		—
ZZ2 Variations	The following modifications are required for Australian/New Zealand conditions:		—
2	Add the following to the list of normative references: The following normative documents are referenced in Appendix ZZ: -AS/NZS 3112, <i>Approval and test specification—Plugs and socket-outlets</i> -AS/NZS 3123, <i>Approval and test specification—Plugs, socket-outlets and couplers for general industrial application</i> -AS/NZS 3191, <i>Electric flexible cords</i> -AS/NZS 60065, <i>Audio, video and similar electronic apparatus—Safety requirements (IEC 60065:2015 (ED.8.0) MOD)</i> -AS/NZS 60320.1, <i>Appliance couplers for household and similar general purposes, Part 1: General requirements (IEC 60320-1, Ed.2.1 (2007) MOD)</i> -AS/NZS 60320.2.2, <i>Appliance couplers for household and similar general purposes Part 2.2: Interconnection couplers for household and similar equipment (IEC 60320-2-2, Ed.2.0 (1998) MOD)</i> -AS/NZS 60695.2.11, <i>Fire hazard testing, Part 2.11: Glowing/hot wire based test methods—Glow-wire flammability test method for end-products</i> -AS/NZS 60695.11.5, <i>Fire hazard testing, Part 11.5: Test flames—Needle-flame test method—Apparatus, confirmatory test arrangement and guidance</i> -AS/NZS 60695.11.10, <i>Fire hazard testing, Part</i>		P

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	<i>11.10: Test flames—50 W horizontal and vertical flame test methods</i> -AS/NZS 60884.1, <i>Plugs and socket-outlets for household and similar purposes, Part 1: General requirements</i> -AS/NZS 60950.1:2015, <i>Information technology equipment—Safety, Part 1: General requirements (IEC 60950-1, Ed.2.2 (2013), MOD)</i> IEC 61032:1997, <i>Protection of persons and equipment by enclosures—Probes for verification</i> -AS/NZS 61558.1:2008 (including Amendment 2:2015), <i>Safety of Power Transformers, Power Supplies, Reactors and Similar Products, Part 1: General requirements and tests (IEC 61558-1 Ed 2.1, MOD)</i> -AS/NZS 61558.2.16, <i>Safety of transformers, reactors, power supply units and similar products for voltages up to 1 100 V, Part 2.16: Particular requirements and tests for switch mode power supply units and transformers for switch mode power supply units.</i>		
4.1.1	Application of requirements and acceptance of materials, components and subassemblies 1 <i>Replace the text ‘IEC 60950-1’ with ‘AS/NZS 60950.1:2015’.</i> 2 <i>Replace the text ‘IEC 60065’ with ‘AS/NZS 60065’.</i>		P
4.7	Equipment for direct insertion into mains socket-outlets		N/A
4.7.2	Requirements <i>Delete the text of the second paragraph and replace with the following:</i> Equipment with a plug portion, suitable for insertion into a 10 A 3-pin flat-pin socket-outlet complying with AS/NZS 3112 shall comply with the requirements in AS/NZS 3112 for equipment with integral pins for insertion into socket-outlets.	The EUT is not directly plug-in equipment	N/A
4.7.3	Compliance Criteria <i>Delete the first paragraph and Note 1 and Note 2 and replace with the following:</i> <i>Compliance is checked by inspection and, if necessary, by the tests in AS/NZS 3112.</i>		N/A
4.8	<i>Delete existing clause title and replace with the following:</i> 4.8 Products containing coin/button cell batteries		N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
4.8.1	General 1 Second dashed point, <i>delete</i> the text and <i>replace</i> with the following: – include coin/button cell batteries with a diameter of 32 mm or less. 2 After the second dashed point, <i>insert</i> the following Note: NOTE 1: Batteries are specified in IEC 60086-2. 3 After the third dashed point, <i>renumber</i> the existing Note as 'NOTE 2'. 4 Fifth dashed point, <i>delete</i> the word 'lithium'.	No battery	N/A
4.8.2	Instructional Safeguard First line, <i>delete</i> the word 'lithium'.		N/A
4.8.3	Construction First line, after the word 'Equipment' <i>insert</i> the words 'containing one or more coin/button batteries and'		N/A
4.8.5	Compliance criteria <i>Delete</i> the first paragraph and <i>replace</i> with the following: <i>Compliance is checked by applying a force of 30 N +/-1 N for 10 s to the battery compartment door/cover by a rigid test finger according to test probe 11 of IEC 61032:1997 at the most unfavourable place and in the most unfavourable direction. The force shall be applied in one direction at a time.</i>		N/A
5.4.10.2	Test methods		N/A
5.4.10.2.1	General <i>Delete</i> the first paragraph and <i>replace</i> with the following: In Australia only, the separation is checked by the test of both Clause 5.4.10.2.2 and Clause 5.4.10.2.3. In New Zealand, the separation is checked by the test of either Clause 5.4.10.2.2 or Clause 5.4.10.2.3.	Not connected to such external circuit	N/A
Table 29	<i>Replace</i> the table with the following:		N/A

IEC62368_1B - ATTACHMENT				
Clause	Requirement + Test		Result - Remark	Verdict
Parts	Impulse test		Steady state test	
	New Zealand	Australia	New Zealand	Australia
Parts indicated in Clause 5.4.10.1 a) ^a	2.5 kV 10/700 µs	7.0 kV for hand-held telephones and headsets, 2.5 kV for other equipment. 10/700 µs	1.5 kV	3 kV
Parts indicated in Clause 5.4.10.1 b) and c) ^b	1.5 kV 10/700 µs ^c		1.0 kV	1.5 kV
^a Surge suppressors shall not be removed. ^b Surge suppressors may be removed, provided that such devices pass the impulse test of Clause 5.4.10.2.2 when tested as components outside the equipment. ^c During this test, it is allowed for a surge suppressor to operate and for a sparkover to occur in a GDT.				
5.4.10.2.2	After the first paragraph, <i>insert</i> new Notes 201 and 202 as follows: NOTE 201 For Australia, the 7 kV impulse simulates lightning surges on typical rural and semi-rural network lines. NOTE 202 For Australia, the value of 2.5 kV for Clause 5.4.10.1 a) was chosen to ensure the adequacy of the insulation concerned and does not necessarily simulate likely overvoltages.			N/A
5.4.10.2.3	After the first paragraph, <i>insert</i> new Notes 201 and 202 as follows: NOTE 201 For Australia, where there are capacitors across the insulation under test, it is recommended that d.c. test voltages are used. NOTE 202 The 3 kV and 1.5 kV values for Australia have been determined considering the low frequency induced voltages from the power supply distribution system.			N/A
6	Electrically-caused fire			N/A
6.1	General After the first paragraph, <i>insert</i> the following new paragraph: Alternatively, the requirements of Clauses 6.2 to 6.5.2 are considered to be fulfilled if the equipment complies with the requirements of Clause 6.202			N/A
6.6	After Clause 6.6, <i>add</i> the new Clauses 6.201 and 6.202 as follows: 6.201 External power supplies, docking stations and other similar devices and 6.202 Resistance to fire—Alternative tests (see special national conditions)			N/A
8.5.4	Special categories of equipment comprising moving parts			N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
8.5.4.1	Large data storage equipment In the first dashed row and the second dashed rows <i>replace</i> 'IEC 60950-1:2005' with 'AS/NZS 60950.1:2015'.	Not Large data storage equipment	N/A
8.6	Stability of equipment		P
8.6.1 and Table 36	Requirements 1. Table 36, <i>insert</i> Footnote c at the end of the 'Glass slide' heading, and <i>add</i> a new Footnote c after the text of Footnote b in the last row of Table 36 as follows: c The glass slide test is not applicable to floor standing equipment, even though the equipment may have controls or a display. 2. Table 36, fifth row, <i>insert</i> '201' at the end of 'No stability requirements' 3. Table 36, ninth row, <i>insert</i> '201' at the end of 'No stability requirements' 4. Table 36, <i>add</i> the following new footnote: 201 MS2 and MS3 television sets and display devices, designed only for fixing to a wall, ceiling or equipment rack, are not subjected to stability requirements only if the instructional safeguard of Clause 8.6.1.201 is provided. Otherwise, the glass slide requirements of Clause 8.6.4 and horizontal force requirements of Clause 8.6.5 apply. 5. Second paragraph beneath Table 36, <i>delete</i> the words 'MS2 and MS3 television sets' and <i>replace</i> with 'MS2 and MS3 television sets and display devices'		P
8.6.1	After Clause 8.6.1 <i>add</i> the following new clauses: 8.6.1.201 Instructional safeguard for fixed-mount television sets (see special national conditions)		P
Annex F Paragraph F.3.5.1	Mains appliance outlet and socket-outlet markings <i>Replace</i> 'IEC 60320-2-2' with 'AS/NZS 60320.2.2'.		P
Annex G Paragraph G.4.2	Mains connectors 1 In the second line <i>insert</i> 'or AS/NZS 3123' after 'IEC 60906-1'. 2 In the second line <i>insert</i> 'or AS/NZS 60320 series' after 'IEC 60320 series' 3 <i>Add</i> the following new paragraph: 10 A or 15 A 250 V flat pin plugs for the connection of equipment to mains-powered socket-outlets for household or similar general use shall comply with AS/NZS 3112 or AS/NZS 60884.1.		P

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
Paragraph G.5.3.1	Transformers, General 1 In the third dashed point <i>replace</i> 'IEC 61558-1 and the relevant parts of IEC 61558-2' with 'AS/NZS 61558-1 and the relevant parts of AS/NZS 61558.2' 2 In the fourth dashed point <i>replace</i> 'IEC 61558-2-16' with 'AS/NZS 61558.2.16'.	Evaluated at approved power supply	P
Paragraph G.7.1	Mains supply cords, General In the fourth dashed paragraph, <i>replace</i> 'IEC 60320-1' with 'AS/NZS 60320.1'		P
Table G.5	Sizes of conductors 1 In the second row, first column, <i>delete</i> '6' and <i>replace</i> with '7.5' 2 In the second row, second column, <i>delete</i> '0,75' and <i>replace</i> with '0.75' ^b 3 <i>Delete</i> Note 1. 4 <i>Replace</i> 'NOTE 2' with 'NOTE:'. 5 <i>Delete</i> the text of 'Footnote b' and <i>replace</i> with the following: ^b This nominal cross-sectional area is only allowed for Class II appliances if the length of the power supply cord, measured between the point where the cord, or cord guard, enters the appliance, and the entry to the plug does not exceed 2 m (0.5 mm ² three-core supply flexible cords are not permitted; see AS/NZS 3191). 6 In Footnote c <i>replace</i> 'IEC 60320-1' with 'AS/NZS 60320.1' 7 In Footnote d <i>replace</i> 'IEC 60320-1' with 'AS/NZS 60320.1'		P
Annex M Paragraph M.3.2	Protection circuits for batteries provided within the equipment, Test method After the first dashed point <i>add</i> the following Note: NOTE 201: In cases where the voltage source is provided by power from an unassociated power source, consideration should be given to the effects of possible single fault conditions in the unassociated equipment. If the power source is unknown then it should be assumed that the maximum limit of SELV may be applied to the source input under assumed single fault conditions in the source when assessing the charging circuit in the equipment under test.	No batter	N/A
	Special national conditions (if any)		P

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
6.201	External power supplies, docking stations and other similar devices For external power supplies, docking stations and other similar devices, during and after abnormal operating conditions and during single fault conditions the output voltage— – at all ES1 outlets or connectors shall not increase by more than 10% of its rated output voltage under normal operating condition; and – of a USB outlet or connector shall not increase by more than 3 V or 10% of its rated output voltage under normal operating conditions, whichever is higher. For equipment with multiple rated output voltages, the requirements apply with the equipment configured for each rated output voltage in turn. NOTE: This is intended to reduce the possibility of battery fire or explosion in attached equipment or accessories when charging secondary lithium batteries. <i>Compliance shall be checked by measurement, taking into account the abnormal operating conditions of Annex B.3 and the simulated single-fault conditions of Annex B.4</i>		P
6.202	Resistance to fire—Alternative tests		N/A
6.202.1	General Parts of non-metallic material shall be resistant to ignition and spread of fire. This requirement does not apply to decorative trims, knobs and other parts unlikely to be ignited or to propagate flames from inside the equipment, or the following: a) Components that are contained in an enclosure having a flammability category of V-0 according to AS/NZS 60695.11.10 and having openings only for the connecting wires filling the openings completely, and for ventilation not exceeding 1 mm in width regardless of length. b) The following parts which would contribute negligible fuel to a fire: – small mechanical parts, the mass of which does not exceed 4 g, such as mounting parts, gears, cams, belts and bearings; – small electrical components, such as capacitors with a volume not exceeding 1 750 mm³, integrated circuits, transistors and optocoupler packages, if these components are mounted on		N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	material of flammability category V-1, or better, according to AS/NZS 60695.11.10. NOTE: In considering how to minimize propagation of fire and what 'small parts' are, account should be taken of the cumulative effect of small parts adjacent to each other for the possible effect of propagating the fire from one part to another.		
	<i>Compliance shall be checked by the tests of Clauses 6.202.2, 6.202.3 and 6.202.4.</i> For the base material of printed boards, compliance shall be checked by the test of Clause 6.202.5. The tests shall be carried out on parts of non-metallic material which have been removed from the equipment. When the glow-wire test is carried out, the parts shall be placed in the same orientation as they would be in normal use. These tests are not carried out on internal wiring.		N/A
6.202.2	Testing of non-metallic materials Parts of non-metallic material shall be subject to the glow-wire test of AS/NZS 60695.2.11 which shall be carried out at 550°C. Parts for which the glow-wire test cannot be carried out, such as those made of soft or foamy material, shall meet the requirements specified in ISO 9772 for category FH-3 material. The glow-wire test shall be not carried out on parts of material classified at least FH-3 according to ISO 9772 provided that the relevant part is not thinner than the sample tested.		N/A
6.202.3	Testing of insulating materials Parts of insulating material supporting Potential Ignition Sources shall be subject to the glow-wire test of AS/NZS 60695.2.11 which shall be carried out at 750°C. The test shall be also carried out on other parts of insulating material which are within a distance of 3 mm of the connection. NOTE: Contacts in components such as switch contacts are considered to be connections		N/A
	For parts which withstand the glow-wire test but produce a flame, other parts above the connection within the envelope of a vertical cylinder having a diameter of 20 mm and a height of 50 mm shall be subjected to the needle-flame test. However, parts shielded by a barrier which meets the needle-flame test need not be tested		N/A
	The needle-flame test shall be made in accordance with AS/NZS 60695.11.5 with the		N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	following modifications:		
	Clause of AS/NZS 60695.11.5	Change	
	9 Test procedure		
	9.2 Application of needle-flame	<i>Delete</i> the first and second paragraphs and <i>replace</i> with the following: The specimen shall be arranged so that the flame can be applied to a vertical or horizontal edge as shown in the examples of Figure 1. If possible the flame shall be applied at least 10 mm from a corner. The duration of application of the test flame shall be 30 s 1 s.	
	9.3 Number of test specimens	<i>Replace</i> with the following: The test shall be made on one specimen. If the specimen does not withstand the test, the test may be repeated on two further specimens, both of which shall withstand the test.	
	11 Evaluation of test results	<i>Replace</i> with the following: The duration of burning (tb) shall not exceed 30 s. However, for printed circuit boards, it shall not exceed 15 s.	

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	The needle-flame test shall not be carried out on parts of material classified as V-0 or V-1 according to AS/NZS 60695.11.10, provided that the relevant part is not thinner than the sample tested.		
6.202.4	Testing in the event of non-extinguishing material If parts, other than enclosures, do not withstand the glow wire tests of Clause 6.202.3, by failure to extinguish within 30 s after the removal of the glowwire tip, the needle-flame test detailed in Clause 6.202.3 shall be made on all parts of non-metallic material which are within a distance of 50 mm or which are likely to be impinged upon by flame during the tests of Clause 6.202.3. Parts shielded by a separate barrier which meets the needle-flame test need not be tested. NOTE 1: If the enclosure does not withstand the glow-wire test the equipment is considered to have failed to meet the requirements of Clause 6.202 without the need for consequential testing. NOTE 2: If other parts do not withstand the glow-wire test due to ignition of the tissue paper and if this indicates that burning or glowing particles can fall onto an external surface underneath the equipment, the equipment is considered to have failed to meet the requirements of Clause 6.202 without the need for consequential testing. NOTE 3: Parts likely to be impinged upon by the flame are considered to be those within the envelope of a vertical cylinder having a radius of 10 mm and a height equal to the height of the flame, positioned above the point of the material supporting, in contact with, or in close proximity to, connections.		N/A
6.202.5	Testing of printed boards The base material of printed boards shall be subjected to the needle-flame test of Clause 6.202.3. The flame shall be applied to the edge of the board where the heat sink effect is lowest when the board is positioned as in normal use. The flame shall not be applied to an edge, consisting of broken perforations, unless the edge is less than 3 mm from a potential ignition source. The test is not carried out if— – the printed board does not carry any potential ignition source; – the base material of printed boards, on which the available apparent power at a connection exceeds 15 VA operating at a voltage exceeding 50 V and equal or less than 400 V (peak) a.c. or d.c. under normal operating conditions, is of flammability category V-1 or better according to AS/NZS		N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	60695.11.10, or the printed boards are protected by an enclosure meeting the flammability category V-0 according to AS/NZS 60695.11.10, or made of metal, having openings only for connecting wires which fill the openings completely; or – the base material of printed boards, on which the available equipment power at a connection exceeds 15 VA operating at a voltage exceeding 400 V (peak) a.c. or d.c. under normal operating conditions, and base material of printed boards supporting spark gaps which provides protection against overvoltages, is of flammability category V-0 according to AS/NZS 60695.11.10 or the printed boards are contained in a metal enclosure, having openings only for connecting wires which fill the openings completely. <i>Conformance shall be determined using the smallest thickness of the material.</i> NOTE: Available apparent power is the maximum apparent power which can be drawn from the supplying circuit through a resistive load whose value is chosen to maximize the apparent power for more than 2 min when the circuit supplied is disconnected.		
6.202.6	For open circuit voltages greater than 4 kV Potential ignition sources with open circuit voltages exceeding 4 kV (peak) a.c. or d.c. under normal operating conditions shall be contained in a FIRE ENCLOSURE which shall comply with flammability category V-1 or better according to AS/NZS 60695.11.10.	No voltages more than 4 kV	N/A
8.6.1.201	8.6.1.201 Instructional safeguard for fixed-mount television sets MS2 and MS3 television sets and display devices designed only for fixed mounting to a wall of ceiling or equipment rack shall, where required in Table 36, footnote 201, have an instructional safeguard in accordance with Clause F.5 which may be on the equipment or included in the installation instructions or equivalent document accompanying the equipment. The elements of the instructional safeguard shall be as follows: – element 1a: not available; – element 2: 'Stability Hazard' or equivalent wording; – element 3: 'The television set may fall, causing serious personal injury or death' or equivalent text; – element 4: the following or equivalent text: To prevent injury, this television set must be securely attached to the floor/wall in accordance with the installation instructions		P

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
8.6.1.202	Restraining device MS2 and MS3 television sets and display devices that are not solely fixed-mounted should be provided with a restraining device such as a fixing point to facilitate restraining the equipment from toppling forward. The restraining device shall be capable of withstanding a pull of 100 N in all directions without damage. Where a restraining device is provided, instructions shall be provided in the instructions for installation or instructions for use to ensure correct and safe installation.	Sales to New Zealand and Australia need an additional evaluation.	N/A

Safety Information



WARNING!
Read the safety precautions in this section before installing, powering, operating or servicing this product.

The following symbols are used to identify important safety information on the product and in this manual:



Safety hazard.
Risk of severe injury or death



WARNING!
Refer to manual before installing, powering or servicing.



WARNING!
Hazardous voltage. Risk of Lethal or severe Electric shock.



WARNING!
Hot surface. Do not touch.



WARNING!
Fire hazard.



WARNING!
Emission hazardous to eyesight.



This product is for professional use only. It is not for household use.
This product presents risks of severe injury or death due to fire hazards, electric shock and falls.

Read this manual before installing, powering or servicing this product, follow the safety precautions listed below and observe all warnings in this manual and printed on the product.
If you have questions about how to operate the panel safely, please contact your Transtech supplier.



PROTECTION FROM ELECTRIC SHOCK

- Connect the product to AC mains power within the range 100 -240V nominal at 50/60 Hz only.
- Disconnect the entire installation from power and ensure that power cannot be reconnected, even accidentally, before carrying out any installation or maintenance work.
- Double-pole/neutral fusing is used. If the installation is not completely disconnected from power, parts may remain live even if one of the two mains fuses has blown.
- Disconnect the product from power when not in use.
- Always ground (earth) the product electrically.
- Use only a source of power that complies with local building and electrical code and has both overload and ground-fault (earth-fault) protection.
- Connect the Header to power using only the cables supplied by Transtech for this product.
- Protect power cables from water and rain.
- Connect the Header to power using only 32 amp-rated industrial Type B power plugs and socket outlets that comply with IEC 60309 (or a comparable national standard) and provide an electrical connection to ground (protective earth).
- External power switches or socket outlets used to supply Headers with power must be located near the product and easily accessible so that the product can easily be disconnected from power.
- Do not connect any other device than other Sky series panels to the power throughput connector in the base of the product.
- Connect no more than nine Transtech series panels in total for one main power cable.
- Before using the product, check that all power distribution equipment and cables are in perfect condition and rated for the current requirements of all connected devices.

- Do not use the product if the power cable or a power plug is in any way damaged, defective or showing signs of overheating.
- Do not attempt to open any cover.
- Refer any service operation not described in this manual to a qualified technician.

PROTECTION FROM FIRE



- Provide a minimum clearance of 30 cm (11.8 in.) around the cover at the back of the panel base.
- Do not stick filters, masks or other materials directly onto LED modules.
- Do not modify the product in any way not described in this manual.
- Install only genuine Transtech parts in or on the product unless an alternative is described in this manual.
- Do not operate the product if the ambient temperature (T_a) exceeds 40° C (104°F).



PROTECTION FROM INJURY



- Ensure that any structure used for support as well as all fastening and connecting hardware can hold at least 10 times the weight of all supported devices and equipment.
- Do not suspend panels using any other method of attachment than those described in this manual.
- Do not suspend more than three panels from one Header.
- Create an installation by installing panels at the top and working downwards. Disassemble an installation by removing panels at the bottom and working upwards.
- Check that all external covers and rigging hardware are securely fastened.



- Block access below the work area and work from a stable platform whenever installing, servicing or moving the product.
- Do not look at lit LEDs from a distance of less than 40cm (1ft.4 in.) without suitable protective eyewear.
- Do not view lit LEDs with optical instruments that may concentrate the light output

Photo 1 - External view of EUT

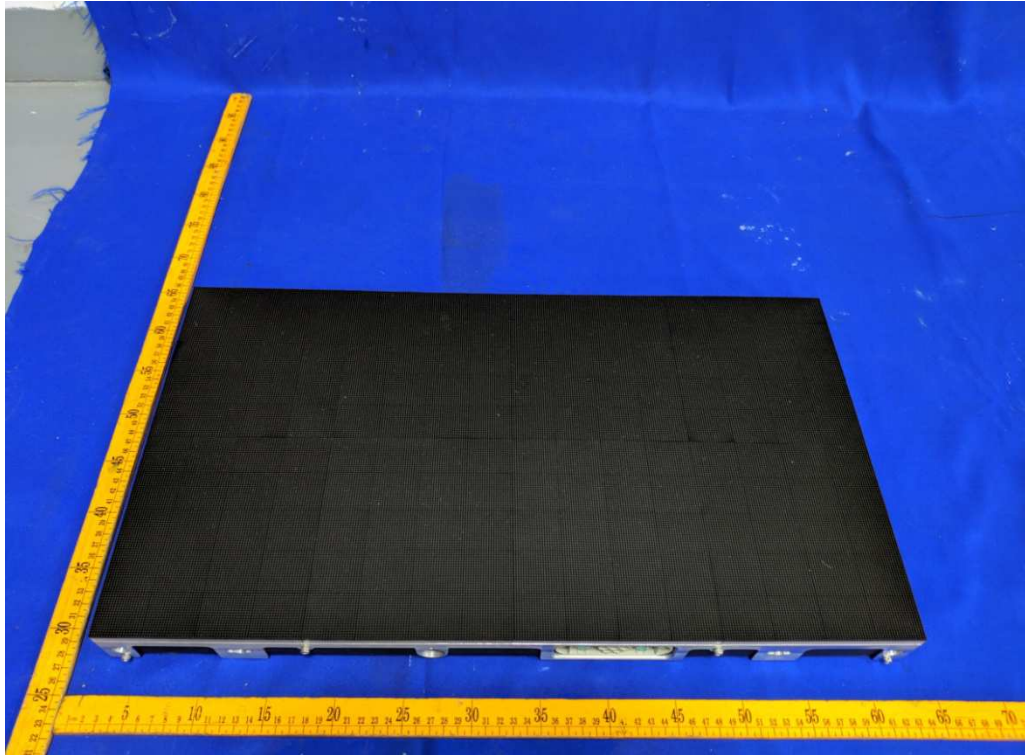


Photo 2 - External view of EUT

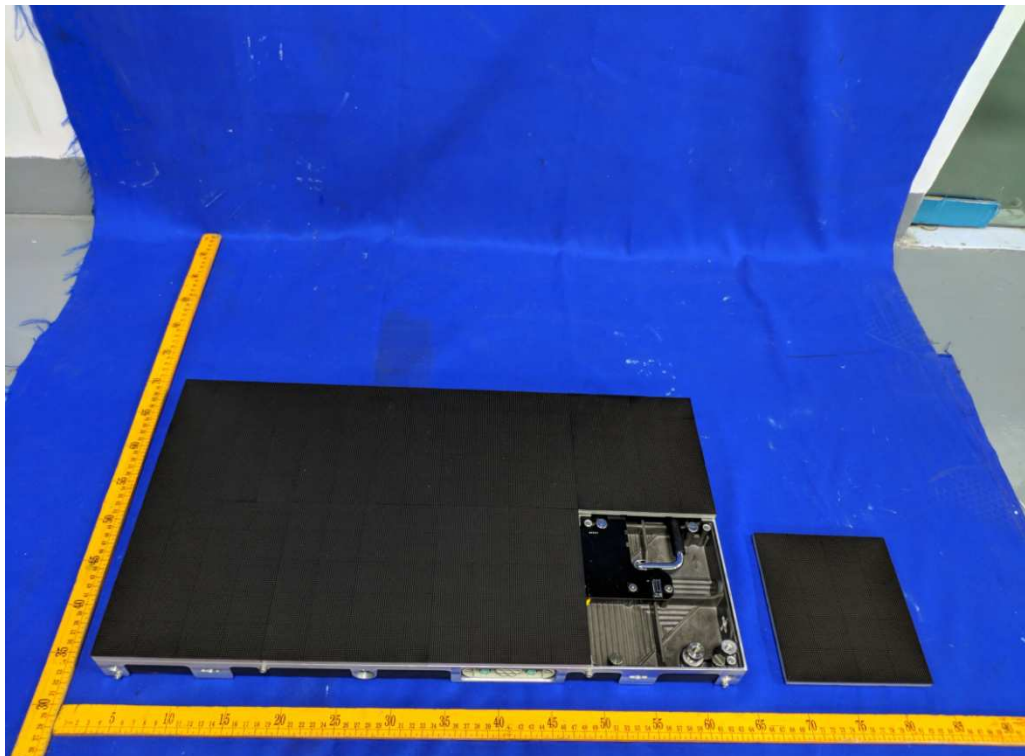


Photo 3 - External view of EUT



Photo 4 - Output view of EUT



Photo 5 - Input view of EUT



Photo 6 - Internal view of EUT

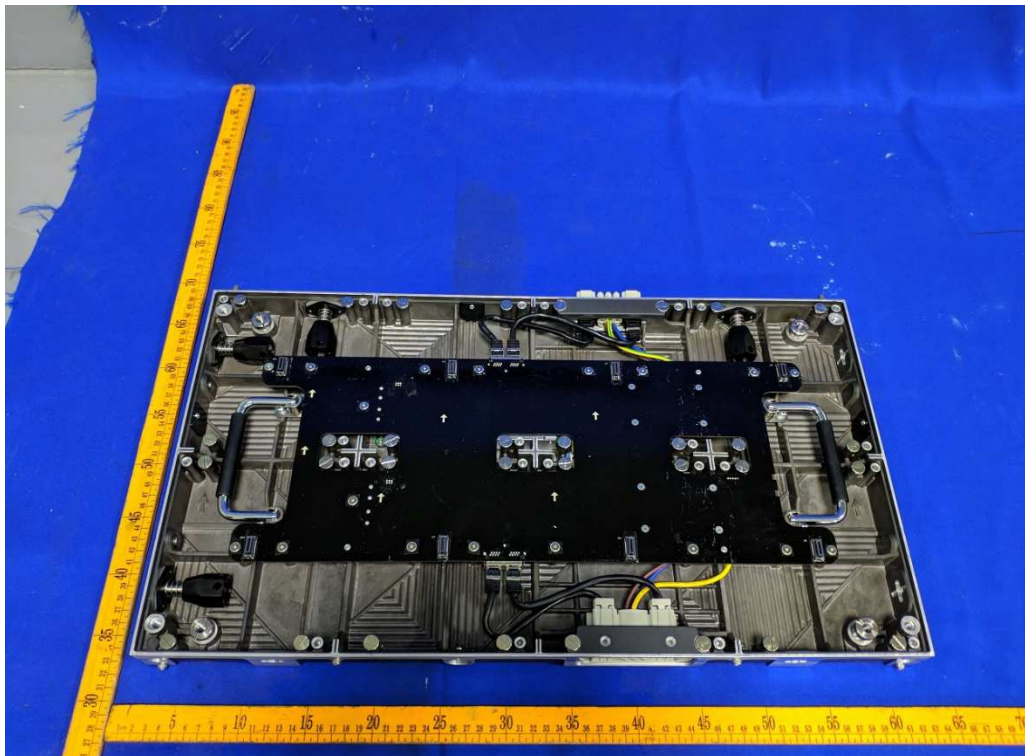


Photo 7 - Internal view of EUT

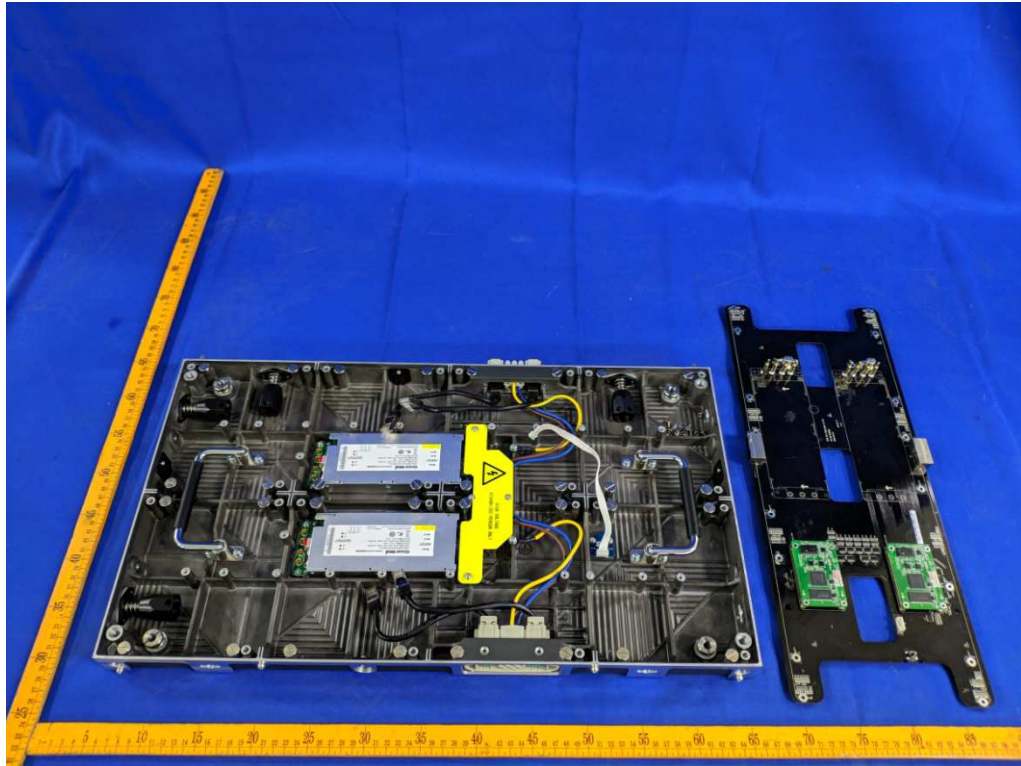


Photo 8 - Internal view of EUT

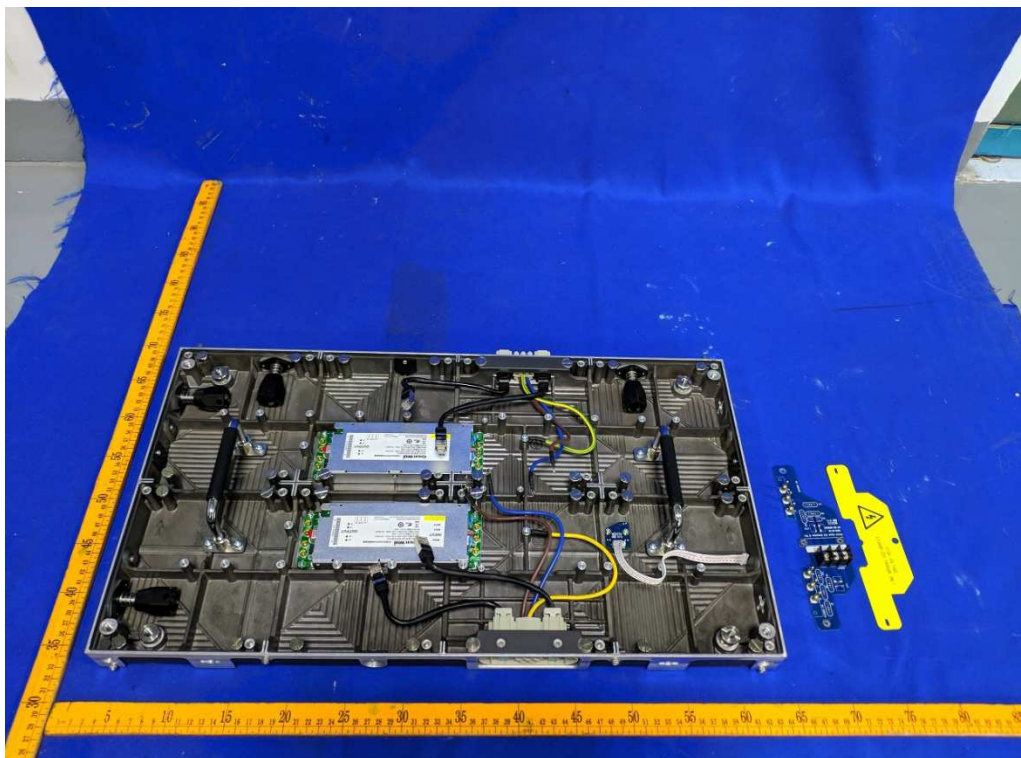


Photo 9 - Bottom view of Transfer Switch Board

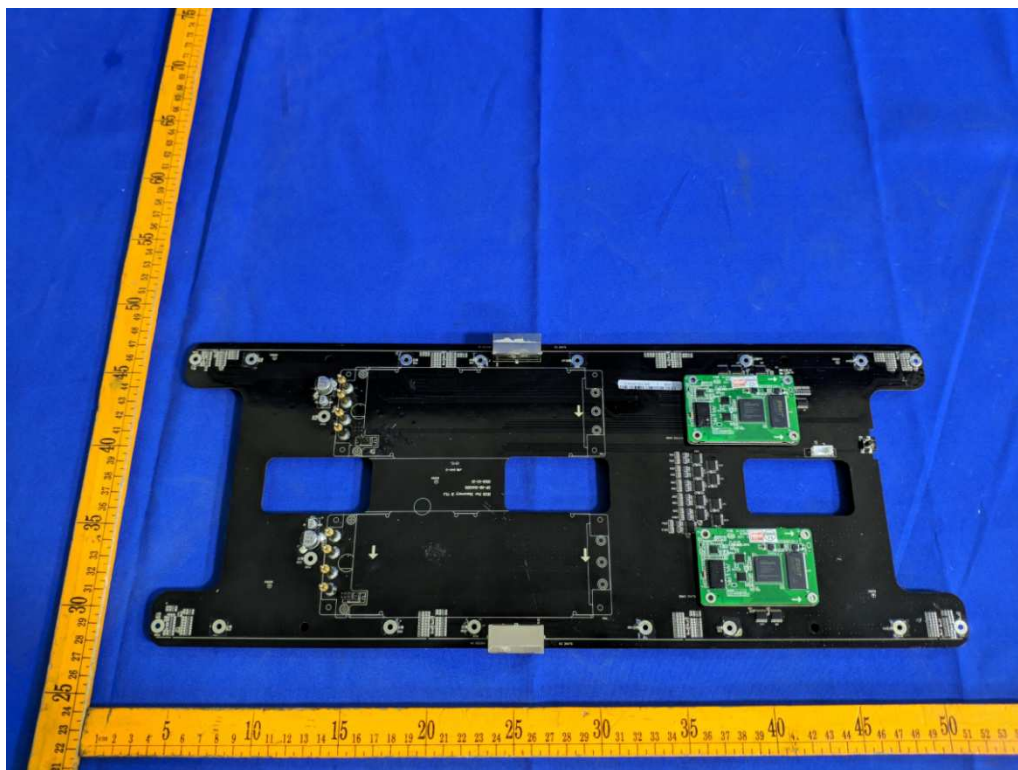


Photo 10 - Top view of HUB board

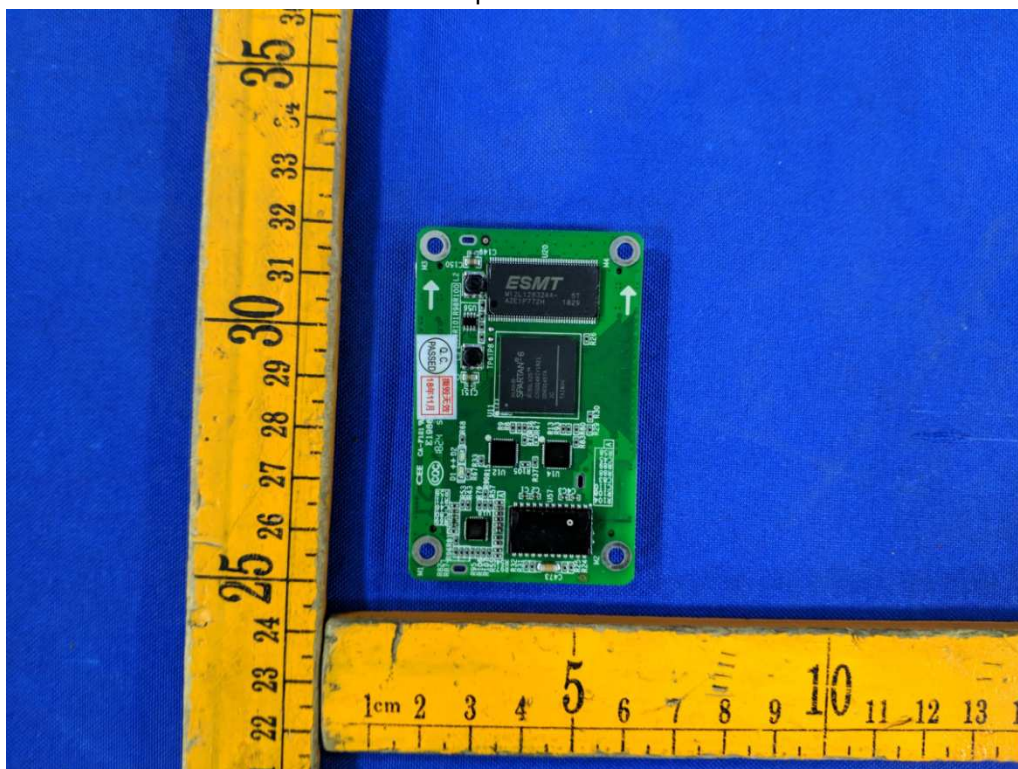


Photo 11 - Bottom view of HUB board

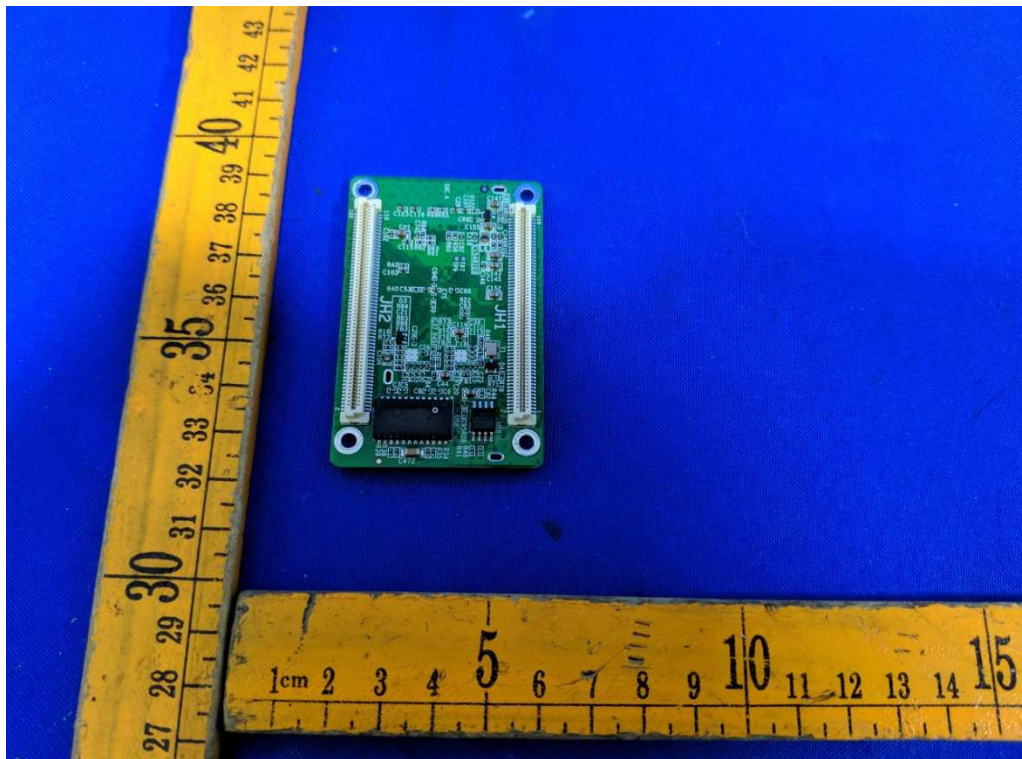


Photo 12 - Top view of panel board

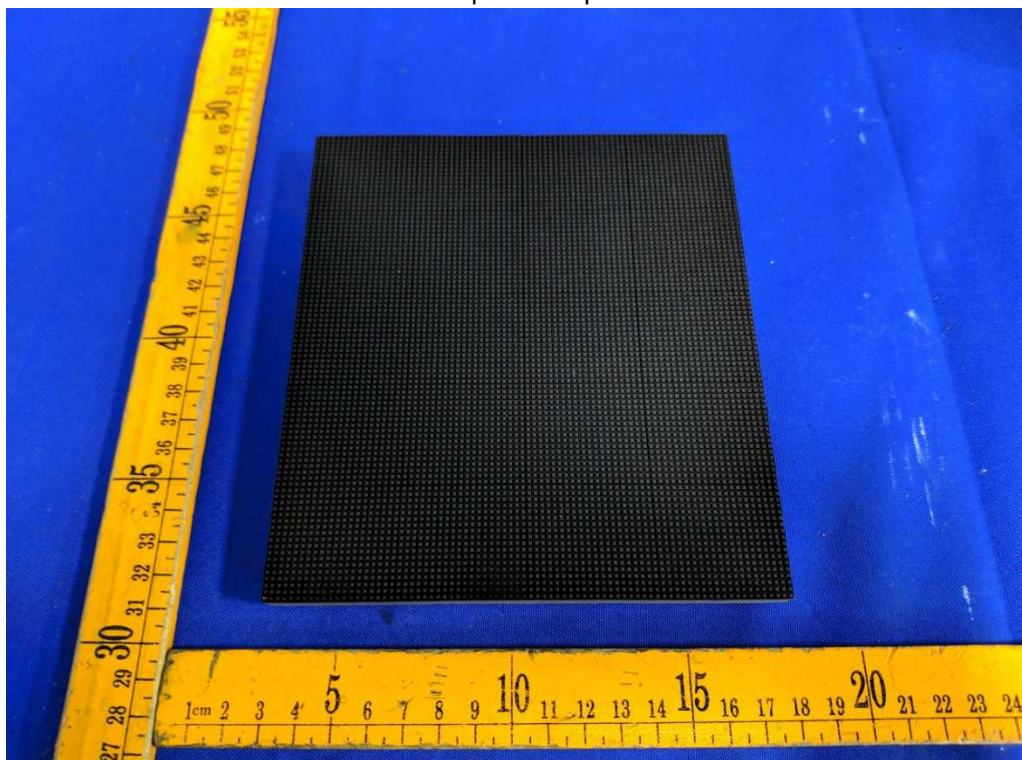


Photo 13 - Bottom view of panel board

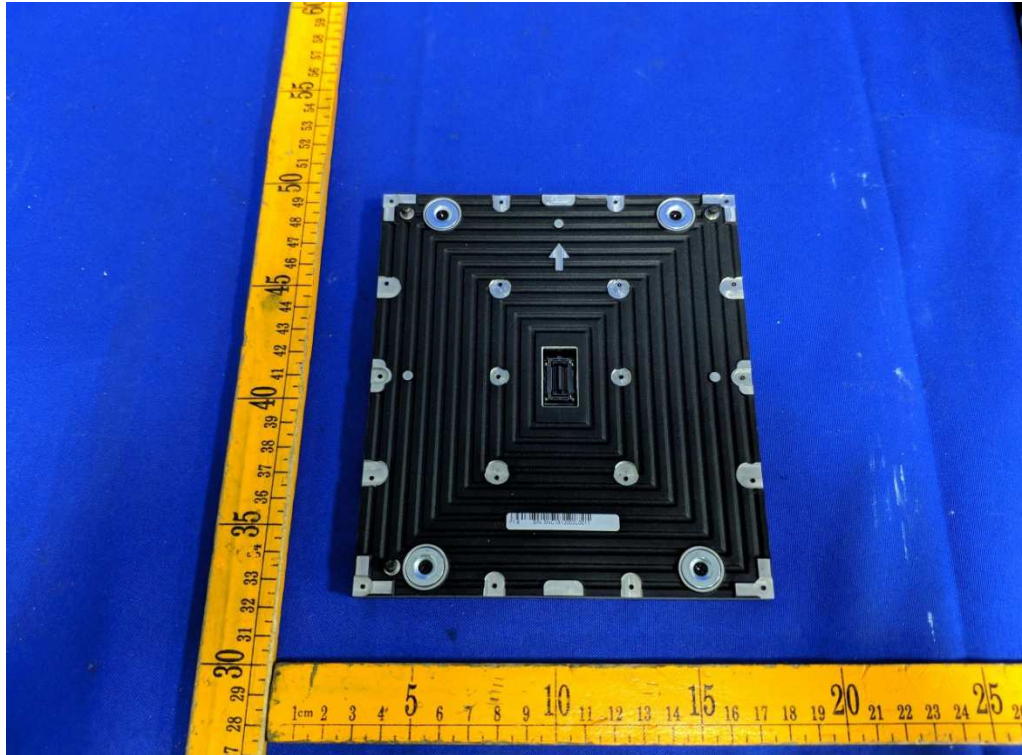


Photo 14 - Top side of power module

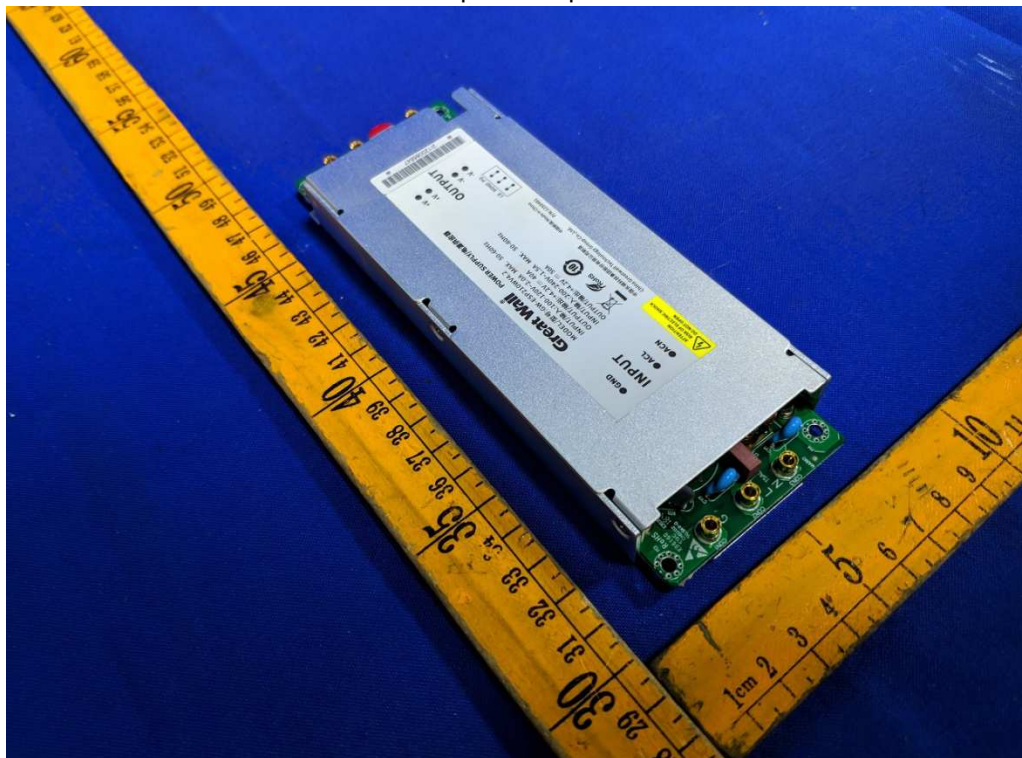


Photo 15 - Bottom side of power module

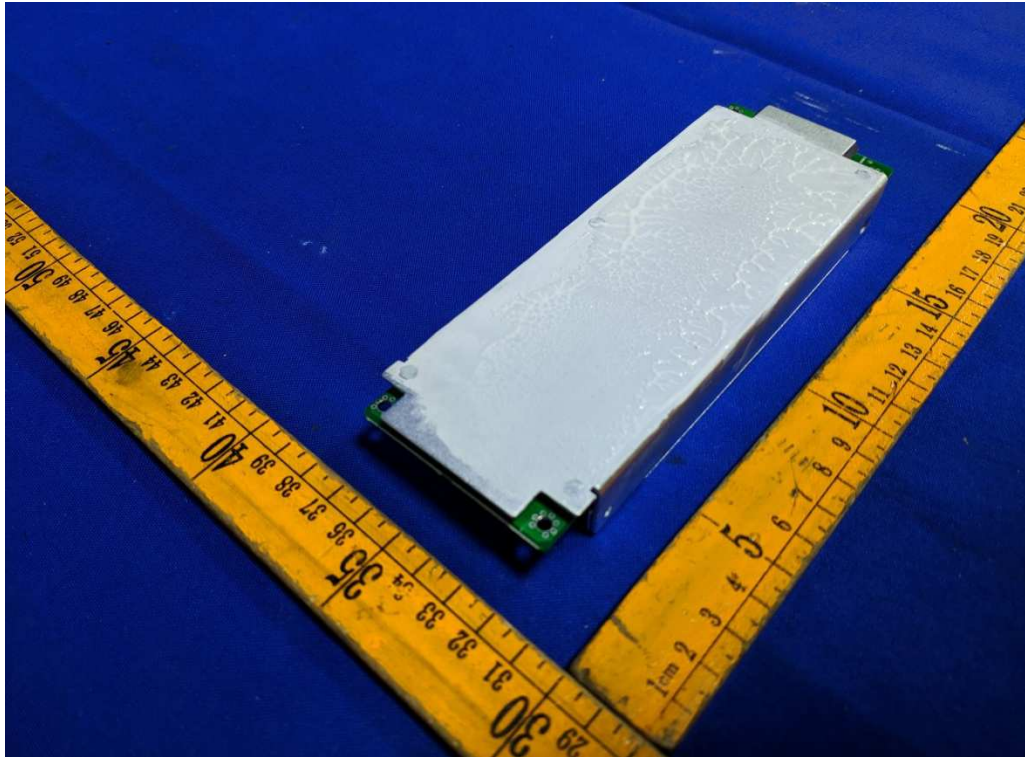


Photo 16 - Internal view of power module

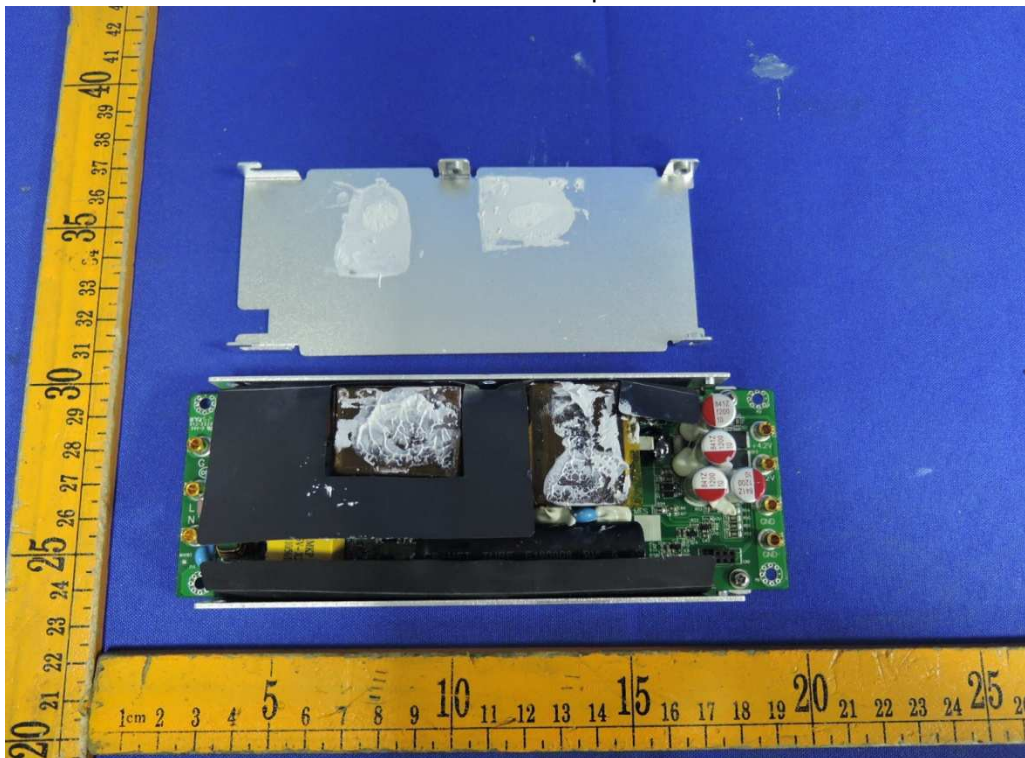


Photo 17 - Internal view 2 of power module

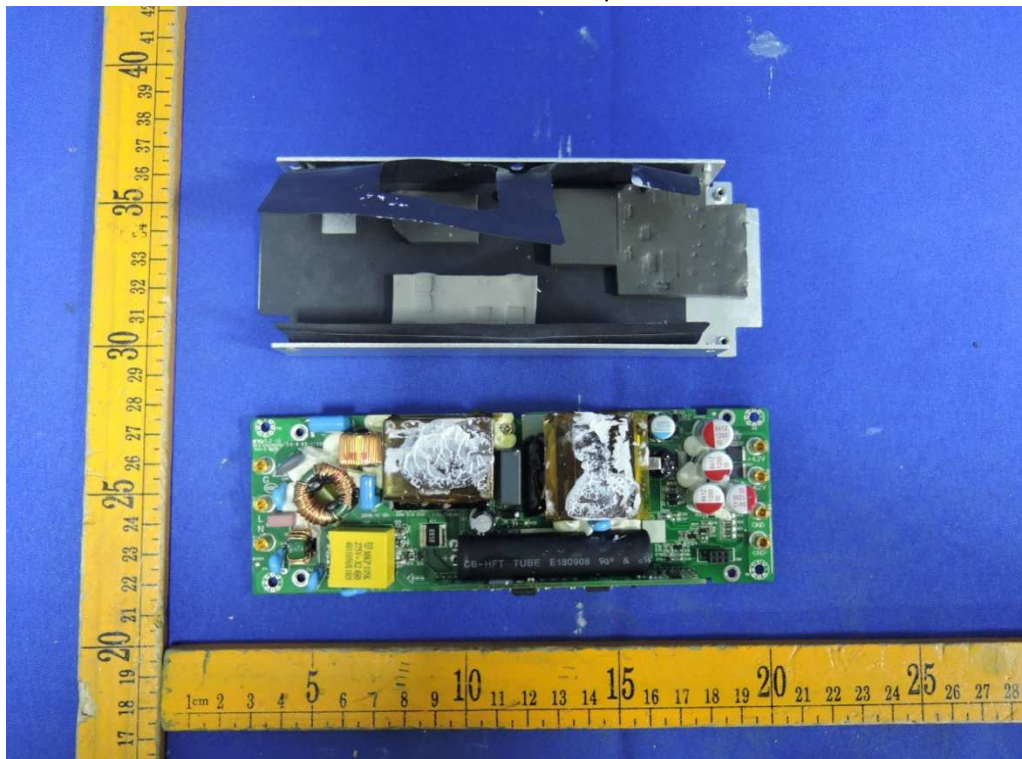


Photo 18 - Trace side of power module board

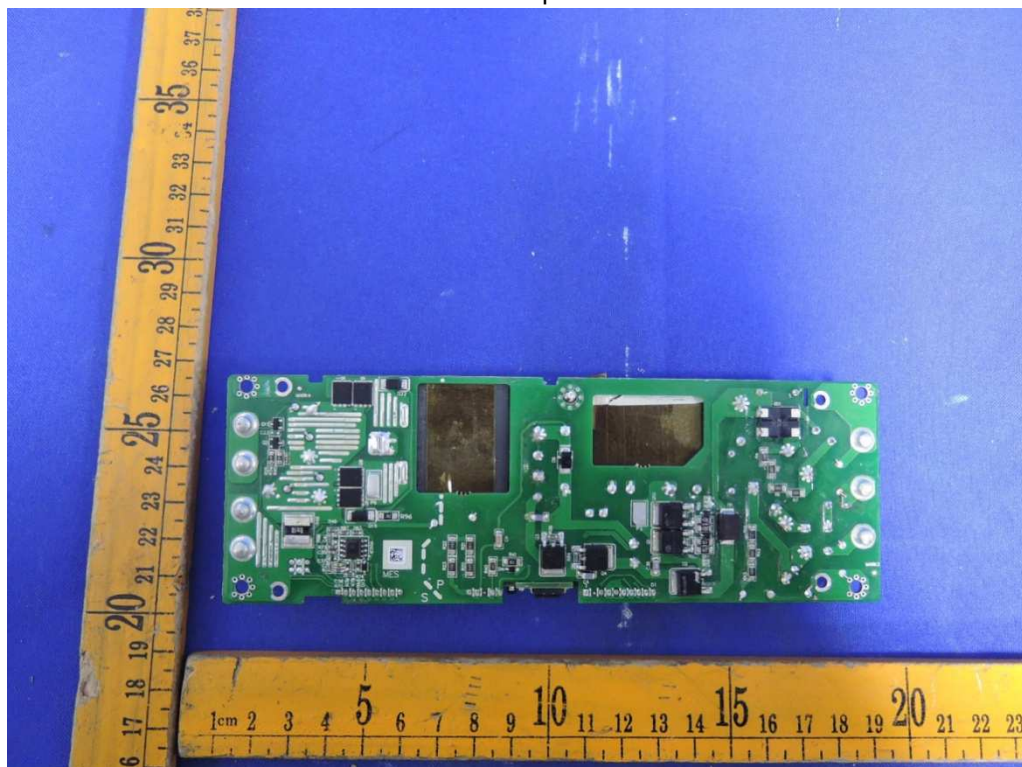


Photo 19 - Top view of transformer

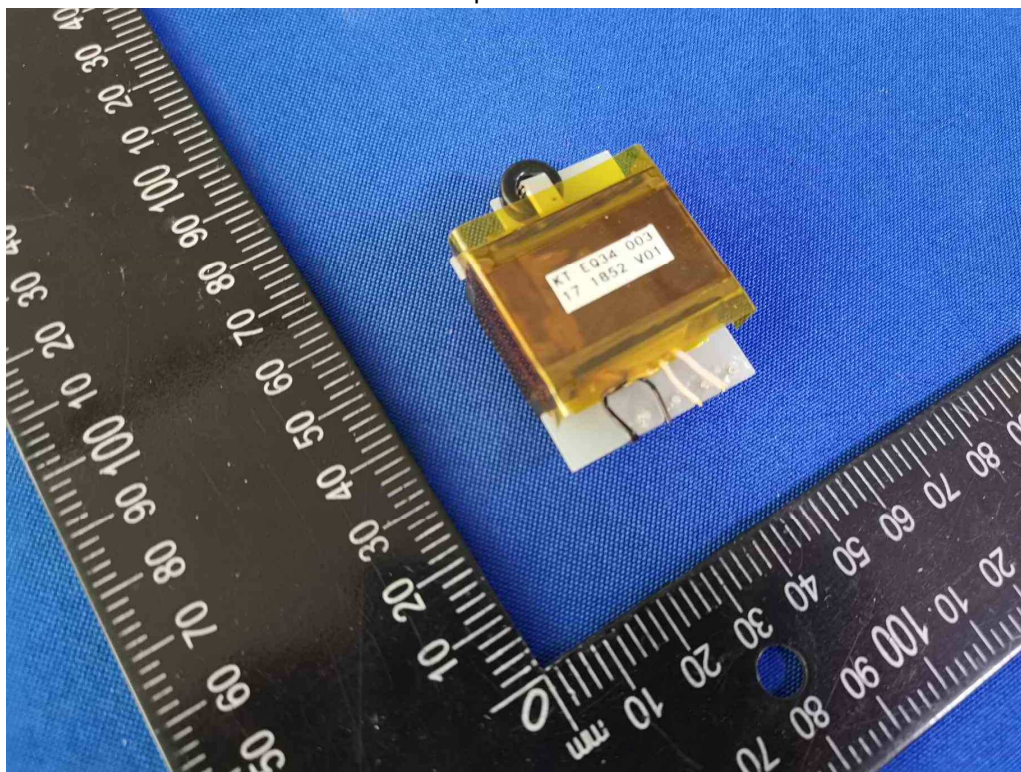


Photo 20 - Bottom view of transformer

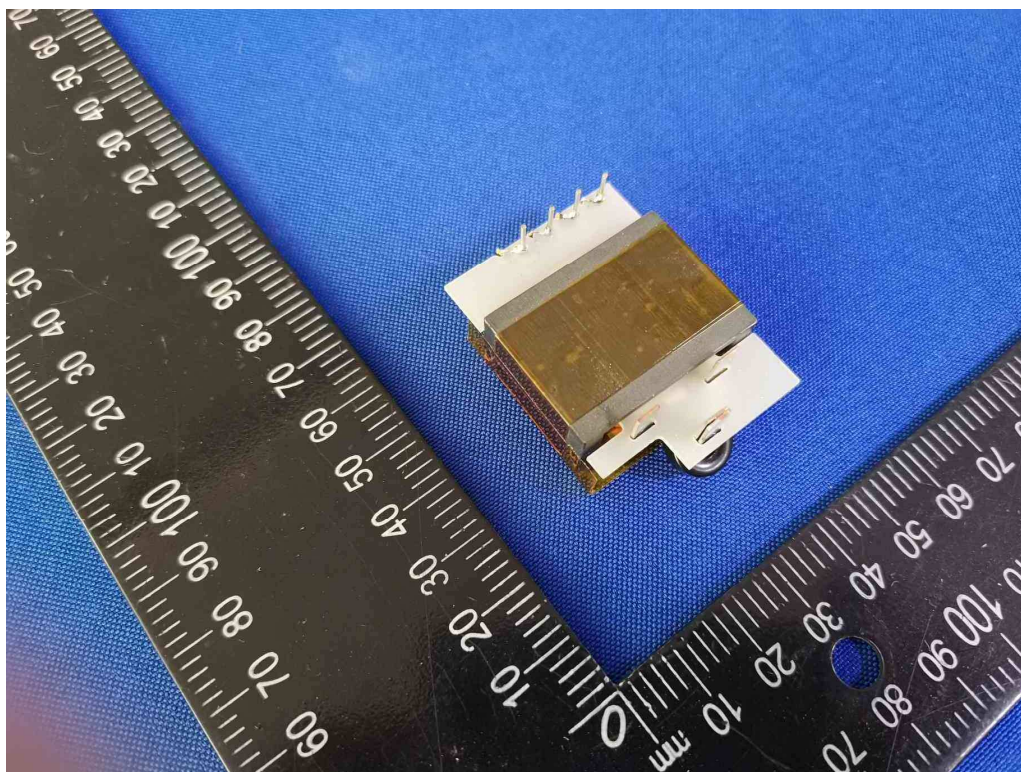


Photo 21 - Detail view of transformer

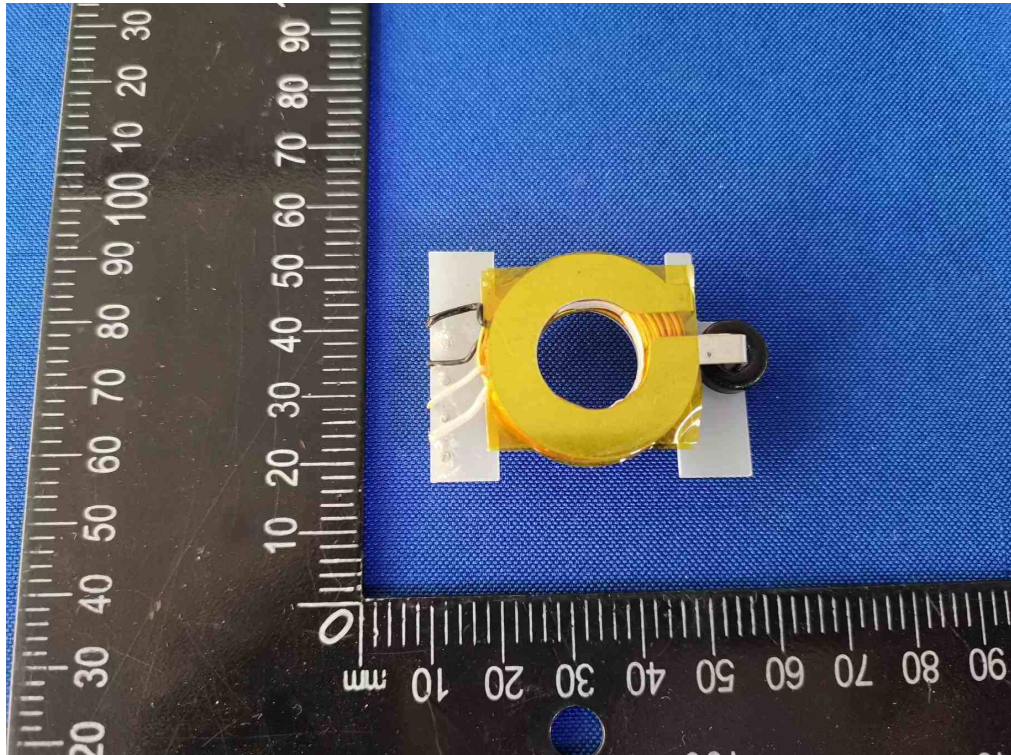


Photo 22 - Detail view of transformer

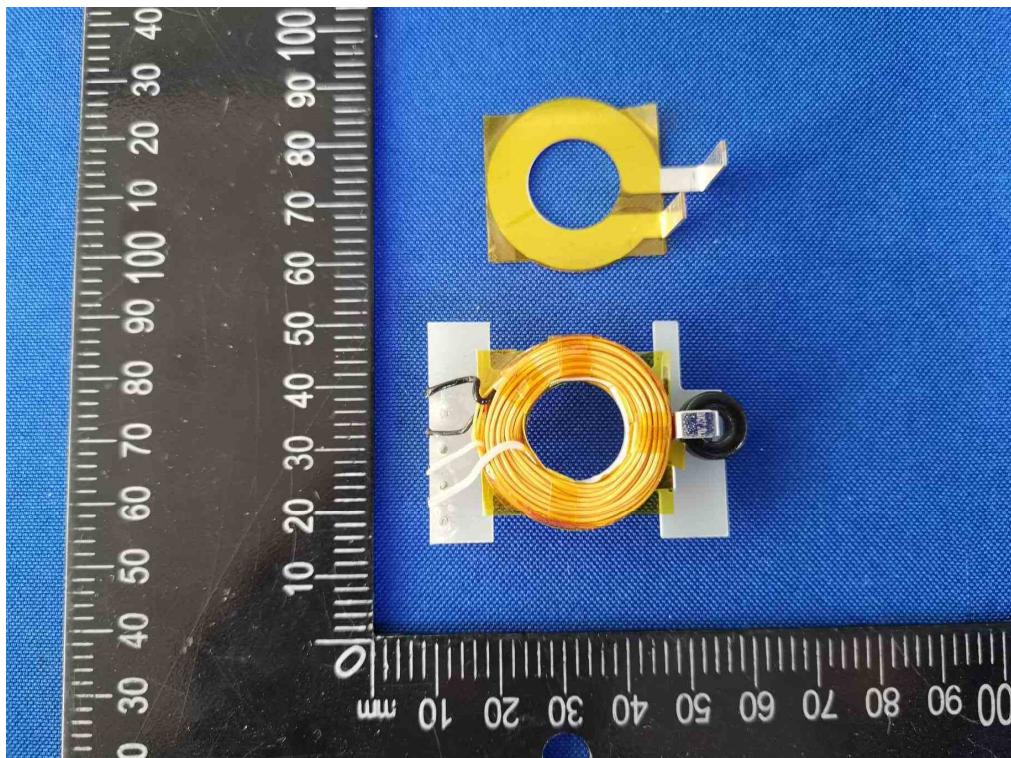


Photo 23 - Internal view of one power supply and HUB board

