

TEST REPORT

For
CAR HEAD UNIT

Model: ADMEI (Other model see page 2)

Prepared for: CENSER PTY LTD
M01/6 Wellington Rd, Box Hill VIC 3128 AU

Prepared by: RED Laboratories Inc.
Room 101, Building A, Zhengtailai Hi-Tech Innovation Park, Yintian Creative
Park, Yantian Community, Xixiang Subdistrict, Bao'an District, Shenzhen,
Guangdong, China
TEL: +86-0755-23080724

Report Number: RED2607080051824ED-AM-A

Date of Test: 2026. 07. 01 to 2026. 07. 08

Date of Issue: 2026. 07. 08

Tested By: Steve Liu

Reviewed By: 

Approved By: 



TEST REPORT
IEC 62368-1
Audio/video, information and communication technology equipment
Part 1: Safety requirements

Report Number.....: RED2607080051824ED-AM-A

Date of issue.....: 2026. 07. 08

**Name of Testing Laboratory
preparing the Report.....:** RED Laboratories Inc.

Applicant's name.....: CENSER PTY LTD

Address.....: M01/6 Wellington Rd, Box Hill VIC 3128 AU

Test specification:

Standard.....: EN IEC 62368-1:2024/A11:2024

Test procedure.....: Test report

Non-standard test method.....: N/A

Test item description.....: CAR HEAD UNIT

Trademark(s).....: ADMEI

Manufacturer.....: CENSER PTY LTD

M01/6 Wellington Rd, Box Hill VIC 3128 AU

Model/Type reference.....: ADMEI, ADMEI7L, ADMEI7M, ADMEI9L, ADMEI10L, ADMEI7A,
ADMEI9A, ADMEI10A, ADMEI11A, ADMEI12A, ADMEI13A,
ADMEI14A

Ratings.....: Input: DC 12V

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

- Attachment 1: Photo documentation

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

Refer to content of this test report, see the chapters in detail.

All test perform on the model ADMEI

Testing location:

RED Laboratories Inc.

Room 101, Building A, Zhengtailai Hi-Tech Innovation Park, Yintian Creative Park, Yantian Community, Xixiang Subdistrict, Bao'an District, Shenzhen, Guangdong, China

Summary of compliance with National Differences

- IECCE Member countries that are also CENELEC members
Compliance with Group Differences evaluated ☐ yes ☐ No ☒ N/A
- IECCE Member countries with published National Differences which were evaluated:
Japan
- IECCE Member countries that did not publish any National Differences: N/A

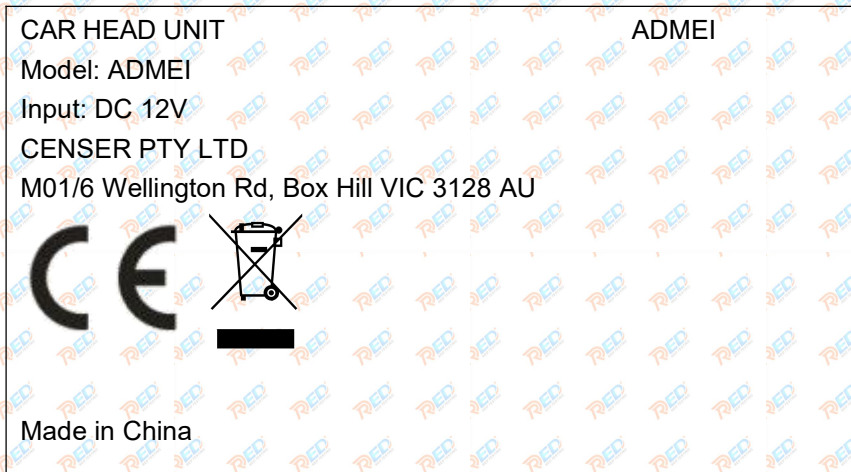
The product fulfils the requirements of J62368-1(2023)**Use of uncertainty of measurement for decisions on conformity (decision rule) :**

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

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

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.

**Remark:**

1.The above markings are the minimum requirements required by the safety lab. For the final production samples, the additional markings which do not give rise to misunderstanding may be added.

Test item particulars:

Product group	☒ end product	☐ built-in component
Classification of use by	☒ Ordinary person	☐ Children likely present
	☐ Instructed person	
	☐ Skilled person	
Supply connection	☒ AC mains	☐ DC mains
	☐ not mains connected:	
	☐ ES1	☐ ES2 ☐ ES3
Supply tolerance	☒ +10%/-10%	
	☐ +20%/-15%	
	☐ + %/ - %	
	☐ None	
Supply connection – type	☒ pluggable equipment type A -	
	☐ non-detachable supply cord	
	☐ appliance coupler	
	☐ direct plug-in	
	☐ pluggable equipment type B -	
	☐ non-detachable supply cord	
	☐ appliance coupler	
	☐ permanent connection	
	☐ mating connector	☐ other: not directly connected to the mains
Considered current rating of protective device	☐ A;	
	Location: ☐ building ☐ equipment	
	☒ N/A	
Equipment mobility	☒ movable	☐ hand-held ☐ transportable
	☐ direct plug-in	☐ stationary ☐ for building-in
	☐ wall/ceiling-mounted	☐ SRME/rack-mounted
	☐ other:	
Overvoltage category (OVC)	☐ OVC I	☒ OVC II ☐ OVC III
	☐ OVC IV	☐ other: Not directly connected to the mains
Class of equipment	☐ Class I	☐ Class II
	☒ Class II with functional earthing	
	☐ Class III	☐ Not classified ☐
Special installation location	☒ N/A	☐ restricted access area
	☐ outdoor location	☐
Pollution degree (PD)	☐ PD 1	☒ PD 2 ☐ PD 3
Manufacturer's specified T_{ma}	40 °C	☐ Outdoor: minimum °C
IP protection class	☒ IPX0	☐ IP__
Power systems	☒ TN	☐ TT ☐ IT - V _{L-L}
	☐ not AC mains	
Altitude during operation (m)	☐ 2000 m or less	☒ 5000 m
Altitude of test laboratory (m)	☒ 2000 m or less	☐ m
Mass of equipment (kg)	Approx 1.07kg	

RED Laboratories Inc.

Add: Room 101, Building A, Zhengtailai Hi-Tech Innovation Park, Yintian Creative Park, Yantian Community, Xixiang Subdistrict, Bao'an District, Shenzhen, Guangdong, China

Hot line: +86-0755-23080724

E-mail: Cherry@red-test.com

Website: <https://www.red-test.com/>

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..... :** 2026. 07. 01**Date (s) of performance of tests..... :** 2026. 07. 01 to 2026. 07. 08**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.

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies)..... : CENSER PTY LTD
M01/6 Wellington Rd, Box Hill VIC 3128 AU

General product information and other remarks:

The equipment is used as office equipment or information technology equipment or Audio and Video equipment. Electrical components are mounted on PCB and enclosed by plastic enclosure.
The bottom enclosure is secured to top enclosure by snap.
The manufacturer specified maximum ambient temperature is 40°C.
The equipment is used for the altitude up to 5000m.
The client is declared that this equipment is supplied by ES1 and PS2 power source.
The equipment built-in a non-replaceable rechargeable Li-ion cell The battery cell is complied with IEC 62133-2:2017.
The equipment can't charging and discharging at the same time.
Pre-production samples without serial numbers.

Model differences:

All model are identical except for model name and color.

OVERVIEW OF ENERGY SOURCES AND SAFEGUARDS				
Clause	Possible Hazard			
5	Electrically-caused injury			
Class and Energy Source (e.g. ES3: Primary circuit)	Body Part (e.g. Ordinary)	Safeguards		
		B	S	R
ES1: All circuits	Ordinary	N/A	N/A	N/A
6	Electrically-caused fire			
Class and Energy Source (e.g. PS2: 100 Watt circuit)	Material part (e.g. Printed board)	Safeguards		
		B	1 st S	2 nd S
PS2: Input circuit	Enclosure, PCB	See 6.3	See 6.4	N/A
PS3: Internal cells	Enclosure, PCB	See 6.3	See 6.4	N/A
PS2: USB-C port, USB-A port, Type-C cable port,	Output wire (Type-C cable port)	See 6.3	See 6.5	N/A
7	Injury caused by hazardous substances			
Class and Energy Source (e.g. Ozone)	Body Part (e.g., Skilled)	Safeguards		
		B	S	R
Li-ion cell	Ordinary	See Annex M	N/A	N/A
8	Mechanically-caused injury			
Class and Energy Source (e.g. MS3: Plastic fan blades)	Body Part (e.g. Ordinary)	Safeguards		
		B	S	R
MS1: Sharp edges and comers	Ordinary	N/A	N/A	N/A
MS1: Mass of the unit (<7kg)	Ordinary	N/A	N/A	N/A
9	Thermal burn			
Class and Energy Source (e.g. TS1: LED Dimmer caps)	Body Part (e.g., Ordinary)	Safeguards		
		B	S	R
TS1: Accessible surface	Ordinary	N/A	N/A	N/A
10	Radiation			
Class and Energy Source (e.g. RS1: PMP sound output)	Body Part (e.g., Ordinary)	Safeguards		
		B	S	R
Exempt group: Indicating light only	Ordinary	N/A	N/A	N/A
Supplementary Information:				
"B" – Basic Safeguard; "S" – Supplementary Safeguard; "R" – Reinforced Safeguard				

ENERGY SOURCE DIAGRAM

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

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

☐ ES ☐ PS ☐ MS ☐ TS ☐ RS

See above table "OVERVIEW OF ENERGY SOURCES AND SAFEGUARDS" for details.

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
4	GENERAL REQUIREMENTS		P
4.1.1	Acceptance of materials, components and subassemblies		P
4.1.2	Use of components	Components which are certified to IEC and/or national standards are used correctly within their ratings. Components not covered by IEC standards are tested under the conditions present in the equipment. See also Annex G. See appended table 4.1.2	P
4.1.3	Equipment design and construction		P
4.1.4	Specified ambient temperature for outdoor use (°C) :		N/A
4.1.5	Constructions and components not specifically covered		N/A
4.1.8	Liquids, refrigerants and liquid filled components (LFCs)	(See Clause G.15)	N/A
4.1.15	Markings and instructions	(See Annex F)	P
4.4.3	Safeguard robustness		P
4.4.3.1	General		P
4.4.3.2	Steady force tests	(See Clause T.3, T.4, T.5)	P
4.4.3.3	Drop tests	(See Clause T.7)	P
4.4.3.4	Impact tests	(See Clause T.6)	N/A
4.4.3.5	Internal accessible safeguard tests	(See Clause T.3)	N/A
4.4.3.6	Glass impact tests	(See Clause T.9)	N/A
4.4.3.7	Glass fixation test		N/A
	Glass impact test (1J)	(See Clause T.9)	N/A
	Push/pull test (10 N)		N/A
4.4.3.8	Thermoplastic material tests	(See Clause T.8)	P
4.4.3.9	Air comprising a safeguard		N/A
4.4.3.10	Accessibility, glass, safeguard effectiveness		P
4.4.4	Displacement of a safeguard by an insulating liquid		N/A
4.4.5	Safety interlocks	(See Annex K)	N/A
4.5	Explosion		P
4.5.1	General	(See Annex M for batteries)	P

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.5.2	No explosion during normal/abnormal operating conditions	(See Clause B.2, B.3)	P
	No harm by explosion during single fault conditions	(See Clause B.4)	P
4.6	Fixing of conductors and conductive parts		N/A
	Fix conductors and conductive parts not to defeat a safeguard		N/A
	Compliance is checked by test.....:	(See Clause T.2)	N/A
4.7	Equipment for direct insertion into mains socket-outlets		N/A
4.7.2	Mains plug part complies with relevant standard.....:		N/A
4.7.3	Torque (Nm).....:		N/A
4.8	Equipment containing coin or button cell batteries		N/A
4.8.1	General		N/A
4.8.2	Instructional safeguard.....:		N/A
4.8.3	Coin or button cell battery compartment, door or cover construction		N/A
	Open torque test		N/A
4.8.4.2	Stress relief test	(See Clause T.8)	N/A
4.8.4.3	Battery replacement test		N/A
4.8.4.4	Drop test	(See Clause T.7)	N/A
4.8.4.5	Impact test	(See Clause T.6)	N/A
4.8.4.6	Crush test		N/A
4.8.5	Compliance		N/A
	30N force test with test probe		N/A
	20N force test with test hook		N/A
4.9	Likelihood of fire or shock due to entry of conductive object		N/A
4.10	Component requirements		P
4.10.1	Disconnect device	(See Annex L)	N/A
4.10.2	Switches and relays	(See Annex G)	N/A
4.10.3	Mains power supply cords	(See Clause G.7)	N/A
4.10.4	Batteries and their protection circuits	(See Annex M)	P
5	ELECTRICALLY-CAUSED INJURY		P
5.2	Classification and limits of electrical energy sources		P
5.2.2	ES1 and ES2 limits		P
5.2.2.2	Steady-state voltage and current limits.....:	(See appended table 5.2)	P

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.2.2.3	Capacitance limits..... :	(See appended table 5.2)	N/A
5.2.2.4	Single pulse limits..... :	(See appended table 5.2)	N/A
5.2.2.5	Limits for repetitive pulses..... :	(See appended table 5.2)	N/A
5.2.2.6	Ringing signals	(See Annex H)	N/A
5.2.2.7	Audio signals	(See Clause E.1)	N/A
5.3	Protection against electrical energy sources		P
5.3.1	General Requirements for accessible parts to ordinary, instructed and skilled persons	All circuits as ES1.	P
5.3.1 a)	ES2/ES3 circuits that are not ES2/ES3 mains		N/A
5.3.1 b)	Skilled persons not unintentional contact ES3 bare conductors		N/A
5.3.2.1	Accessibility to electrical energy sources and safeguards		N/A
	Accessibility to outdoor equipment bare parts		N/A
5.3.2.2	Contact requirements		N/A
	Test with test probe from Annex V..... :		—
5.3.2.2 a)	Air gap – electric strength test potential (V)..... :	(See appended table 5.4.9)	N/A
5.3.2.2 b)	Air gap – distance (mm)		N/A
5.3.2.3	Compliance		N/A
5.3.2.4	Terminals for connecting stripped wire		N/A
5.4	Insulation materials and requirements		P
5.4.1.2	Properties of insulating material		P
5.4.1.3	Compliance		N/A
	Non-hygroscopic materials		N/A
5.4.1.4	Maximum operating temperature for insulating materials..... :	(See appended table 5.4.1.4, 9.3, B.1.5, B.2.6)	P
5.4.1.5	Pollution degrees..... :	2	—
5.4.1.5.2	Test for pollution degree 1 environment and for an insulating compound		N/A
5.4.1.5.3	Thermal cycling test		N/A
5.4.1.6	Insulation in transformers with varying dimensions		N/A
5.4.1.7	Insulation in circuits generating starting pulses		N/A
5.4.1.8	Determination of working voltage..... :	(See appended table 5.4.1.8)	N/A
5.4.1.9	Insulating surfaces		N/A
5.4.1.10	Thermoplastic parts on which conductive metallic parts are directly mounted		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.1.10.2	Vicat test.....:	(See appended table 5.4.1.10.2)	N/A
5.4.1.10.3	Ball pressure test.....:	(See appended table 5.4.1.10.3)	N/A
5.4.2	Clearances		N/A
5.4.2.1	General requirements		N/A
	Clearances in circuits connected to AC Mains, Alternative method	(See Annex X)	N/A
5.4.2.2	Procedure 1 for determining clearance		N/A
	Temporary overvoltage		—
5.4.2.3	Procedure 2 for determining clearance		N/A
5.4.2.3.2.2	AC mains transient voltages.....:		—
5.4.2.3.2.3	DC mains transient voltages		—
5.4.2.3.2.4	External circuit transient voltages.....:		—
5.4.2.3.2.5	Transient voltage determined by measurement.....:		—
5.4.2.3.3	Exceptions of determining required withstand voltage.....:		N/A
5.4.2.3.4	Determining clearances using required withstand voltage.....:	(See appended table 5.4.2, 5.4.3)	N/A
5.4.2.4	Determining the adequacy of a clearance using an electric strength test	(See appended table 5.4.2, 5.4.3)	N/A
5.4.2.5	Multiplication factors for clearances and test voltages.....:		—
5.4.2.6	Clearance measurement.....:	(See appended table 5.4.2, 5.4.3)	N/A
5.4.3	Creepage distances		N/A
5.4.3.1	General		N/A
5.4.3.3	Material group and CTI.....:		—
5.4.3.4	Creepage distances measurement.....:	(See appended table 5.4.2, 5.4.3)	N/A
5.4.4	Solid insulation		N/A
5.4.4.1	General requirements		N/A
5.4.4.2	Minimum distance through insulation	(See appended table 5.4.4.2)	N/A
5.4.4.3	Insulating compound forming solid insulation		N/A
5.4.4.4	Solid insulation in semiconductor devices		N/A
5.4.4.5	Insulating compound forming cemented joints		N/A
5.4.4.6	Thin sheet material		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.4.6.1	General requirements		N/A
5.4.4.6.2	Separable thin sheet material	(See appended table 5.4.9)	N/A
	Number of layers (pcs)		N/A
5.4.4.6.3	Non-separable thin sheet material		N/A
	Number of layers (pcs)		N/A
5.4.4.6.4	Standard test procedure for non-separable thin sheet material.....	(See appended table 5.4.9)	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, E_P , K_R , d , V_{PW} (V).....	(See appended table 5.4.4.9)	N/A
	Alternative by electric strength test, tested voltage (V), K_R	(See appended tables 5.4.4.9 and 5.4.9)	N/A
5.4.5	Antenna terminal insulation		N/A
5.4.5.1	General		N/A
5.4.5.2	Voltage surge test		N/A
5.4.5.3	Insulation resistance (M Ω).....		N/A
	Electric strength test.....	(See appended table 5.4.9)	N/A
5.4.6	Insulation of internal wire as part of supplementary safeguard		N/A
5.4.7	Tests for semiconductor components and for cemented joints		N/A
5.4.8	Humidity conditioning		N/A
	Relative humidity (%), temperature (°C), duration (h).....		—
5.4.9	Electric strength test	(See appended table 5.4.9)	N/A
5.4.10	Safeguards against transient voltages from external circuits		N/A
5.4.10.1	Parts and circuits separated from external circuits		N/A
5.4.10.2	Test methods		N/A
5.4.10.2.1	General		N/A
5.4.10.2.2	Impulse test.....		N/A
5.4.10.2.3	Steady-state test.....	(See appended table 5.4.9)	N/A
5.4.10.3	Verification for insulation breakdown.....		N/A
5.4.11	Separation between external circuits and earth		N/A
5.4.11.1	Exceptions to separation between external circuits and earth		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.11.2	Requirements		N/A
	Surge suppressors bridge separation between external circuit and earth		N/A
	Rated operating voltage U_{op} (V).....:		—
	Nominal voltage U_{peak} (V).....:		—
	Max increase due to variation ΔU_{sp}:		—
	Max increase due to ageing ΔU_{sa}:		—
5.4.11.3	Test method and compliance.....:	(See appended table 5.4.9)	N/A
	Test voltage (V) of additional test.....:		—
	Measured current (mA) of additional test.....:		N/A
5.4.12	Insulating liquid		N/A
5.4.12.1	General requirements		N/A
5.4.12.2	Electric strength of an insulating liquid.....:	(See appended table 5.4.9)	N/A
5.4.12.3	Compatibility of an insulating liquid		N/A
	Thermal classification of IEC 60085.....:		—
5.4.12.4	Container for insulating liquid		N/A
5.5	Components as safeguards		
5.5.1	General		N/A
5.5.2	Capacitors and RC units		N/A
5.5.2.1	General requirement		N/A
5.5.2.2	Capacitor discharge after disconnection of a connector.....:	(See appended table 5.5.2.2)	N/A
5.5.3	Transformers	(See Clause G.5.3)	N/A
5.5.4	Optocouplers	(See Clause 5.4 or Clause G.12)	N/A
5.5.5	Relays	(See Clause 5.4)	N/A
5.5.6	Resistors	(See Clause G.10)	N/A
	Application type of resistors.....:		N/A
5.5.7	Surge suppressors	(See Clause G.8)	N/A
	GDT.....:		N/A
5.5.8	Insulation between the mains and an external circuit consisting of a coaxial cable.....:		N/A
	Insulation resistance ($M\Omega$).....:		N/A
	Electric strength test.....:	(See appended table 5.4.9)	N/A
5.5.9	Safeguards for socket-outlets in outdoor equipment		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	RCD rated residual operating current (mA).....:		N/A
5.6	Protective conductor		
5.6.2	Requirements for protective conductors		N/A
5.6.2.1	General requirements		N/A
5.6.2.2	Colour of insulation		N/A
5.6.3	Requirements for protective earthing conductors		N/A
	Protective earthing conductor size (mm ²)		—
	Protective earthing conductor serving as a reinforced safeguard		N/A
	Protective earthing conductor serving as a double safeguard		N/A
5.6.4	Requirements for protective bonding conductors		N/A
5.6.4.1	Protective bonding conductors		N/A
	Protective bonding conductor size (mm ²).....:		—
5.6.4.2	Protective current rating (A).....:		—
5.6.5	Terminals for protective conductors		N/A
5.6.5.1	Terminal size for connecting protective earthing conductors (mm).....:		N/A
	Terminal size for connecting protective bonding conductors (mm).....:		N/A
	Relevant IEC standard.....:		N/A
5.6.5.2	Corrosion		N/A
5.6.6	Resistance of the protective bonding system		N/A
5.6.6.1	Requirements		N/A
5.6.6.2	Test method.....:	(See appended table 5.6.6)	N/A
5.6.6.3	Resistance (Ω) or voltage drop.....:	(See appended table 5.6.6)	N/A
5.6.7	Reliable connection of a protective earthing conductor		N/A
5.6.8	Functional earthing		N/A
	Conductor size (mm ²).....:		N/A
	Class II with functional earthing marking		N/A
	Appliance inlet cl & cr (mm).....:		N/A
5.7	Prospective touch voltage, touch current and protective conductor current		N/A
5.7.2	Measuring devices and networks		N/A
5.7.2.1	Measurement of touch current		N/A
5.7.2.2	Measurement of voltage		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.7.3	Equipment set-up, supply connections and earth connections		N/A
5.7.4	Unearthed accessible parts.....:	(See appended table 5.7.4)	N/A
5.7.5	Earthed accessible conductive parts.....:	(See appended table 5.7.5)	N/A
5.7.6	Requirements when touch current exceeds ES2 limits		N/A
	Protective conductor current (mA).....:		N/A
	Instructional Safeguard.....:		N/A
5.7.7	Prospective touch voltage and touch current associated with external circuits		N/A
5.7.7.1	Touch current from coaxial cables		N/A
5.7.7.2	Prospective touch voltage and touch current associated with paired conductor cables		N/A
5.7.8	Summation of touch currents from external circuits		N/A
	a) Equipment connected to an earthed external circuit, current (mA).....:		N/A
	b) Equipment connected to an unearthed external circuit, current (mA).....:		N/A
5.8	Backfeed safeguard in battery backed up supplies		N/A
	Mains terminal ES.....:	(See appended table 5.8)	N/A
	Air gap (mm).....:	(See appended table 5.4.2, 5.4.3)	N/A

6	ELECTRICALLY- CAUSED FIRE		P
6.2	Classification of power sources and potential ignition sources		P
6.2.2	Power source circuit classifications.....:	(See appended table 6.2.2)	P
6.2.3	Classification of potential ignition sources		P
6.2.3.1	Arcing PIS	(See appended table 6.2.3.1)	N/A
6.2.3.2	Resistive PIS	(See appended table 6.2.3.2)	P
6.3	Safeguards against fire under normal operating and abnormal operating conditions		P
6.3.1	No ignition and attainable temperature value less than 90 % defined by ISO 871 or less than 300 °C for unknown materials.....:	(See appended table 5.4.1.4, 9.3, B.1.5 and B.2.6)	P
	Combustible materials not inside a fire enclosure.....:		N/A
6.4	Safeguards against fire under single fault conditions		P
6.4.1	Safeguard method.....:		—

IEC 62368-1			
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	Supplementary safeguards		N/A
6.4.3.2	Single fault conditions..... :	(See appended table B.4)	N/A
	Special conditions for temperature limited by fuse		N/A
6.4.4	Control of fire spread in PS1 circuits		N/A
6.4.5	Control of fire spread in PS2 circuits		P
6.4.5.2	Supplementary safeguards	Compliance detailed as follows: – Printed board: rated V-1 or better. – Wire insulation: complying with Clause 6 (See Table 4.1.2 for wiring used). – All other components: at least V-2. – Have a mass of combustible material of less than 4 g.	P
6.4.6	Control of fire spread in PS3 circuits	V-0 fire enclosure used. V-0 fire barriers used.	P
6.4.7	Separation of combustible materials from a PIS		P
6.4.7.2	Separation by distance		N/A
6.4.7.3	Separation by a fire barrier		N/A
6.4.8	Fire enclosures and fire barriers		P
6.4.8.2	Fire enclosure and fire barrier material properties		P
6.4.8.2.1	Requirements for a fire barrier		P
6.4.8.2.2	Requirements for a fire enclosure		P
6.4.8.3	Constructional requirements for a fire enclosure and a fire barrier		P
6.4.8.3.1	Fire enclosure and fire barrier openings	No openings	N/A
6.4.8.3.2	Fire barrier dimensions		N/A
6.4.8.3.3	Top openings and properties		N/A
	Openings dimensions (mm)..... :		N/A
	Flammability tests for the top of a fire enclosure	(See Clause S.2)	N/A
6.4.8.3.4	Bottom openings and properties		N/A
	Openings dimensions (mm)..... :		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Flammability tests for the bottom of a fire enclosure	(See Clause S.3)	N/A
	Instructional Safeguard.....:		N/A
6.4.8.3.5	Side openings and properties		N/A
	Openings dimensions (mm).....:		N/A
6.4.8.3.6	Integrity of a fire enclosure, condition met: a), b) or c).....:		N/A
6.4.8.4	Separation of a PIS from a fire enclosure and a fire barrier distance (mm) or flammability rating.....:		N/A
6.4.9	Flammability of insulating liquid		N/A
	Auto ignition temperature (°C).....:		N/A
	Flashpoint temperature (°C).....:		N/A
6.5	Internal and external wiring		P
6.5.1	General requirements		P
6.5.2	Requirements for interconnection to building wiring.....:	VW-1 wires used, which considered to equivalent to IEC/TS 60695-11-21	P
6.5.3	Internal wiring size (mm ²) for socket-outlets.....:		N/A
6.6	Safeguards against fire due to the connection to additional equipment		P

7	INJURY CAUSED BY HAZARDOUS SUBSTANCES		P
7.2	Reduction of exposure to hazardous substances		N/A
7.3	Ozone exposure		N/A
7.4	Use of personal safeguards or personal protective equipment (PPE)		N/A
	Personal safeguards and instructions.....:		—
7.5	Use of instructional safeguards and instructions		N/A
	Instructional safeguard (ISO 7010).....:		—

8	MECHANICALLY-CAUSED INJURY		P
8.2	Mechanical energy source classifications		P
8.3	Safeguards against mechanical energy sources		N/A
8.4	Safeguards against parts with sharp edges and corners		N/A
8.4.1	Requirements	MS1	N/A
	Instructional Safeguard.....:		N/A
8.4.2	Compliance criteria		N/A
8.5	Safeguards against moving parts		N/A
8.5.1	Requirements		N/A

RED Laboratories Inc.

Add: Room 101, Building A, Zhengtailai Hi-Tech Innovation Park, Yintian Creative Park, Yantian Community, Xixiang Subdistrict, Bao'an District, Shenzhen, Guangdong, China

Hot line: +86-0755-23080724

E-mail: Cherry@red-test.com

Website: <https://www.red-test.com/>

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Fingers, jewellery, clothing, hair, etc., contact with MS2 or MS3 parts		N/A
	MS2 or MS3 part required to be accessible for the function of the equipment		N/A
	A manually activated stopping device for moving MS3		N/A
	Moving MS3 parts only accessible to skilled person		N/A
8.5.2	Instructional safeguard.....:		N/A
8.5.4	Special categories of equipment containing moving parts		N/A
8.5.4.1	General		N/A
8.5.4.2	Equipment containing work cells with MS3 parts		N/A
8.5.4.2.1	Protection of persons in the work cell		N/A
8.5.4.2.2	Access protection override		N/A
8.5.4.2.2.1	Override system		N/A
8.5.4.2.2.2	Visual indicator		N/A
8.5.4.2.3	Emergency stop system		N/A
	Maximum stopping distance from the point of activation (m).....:		N/A
	Space between end point and nearest fixed mechanical part (mm)..... :		N/A
8.5.4.2.4	Endurance requirements		N/A
	Mechanical system subjected to 100 000 cycles of operation		N/A
	- Mechanical function check and visual inspection		N/A
	- Cable assembly.....:		N/A
8.5.4.3	Equipment having electromechanical device for destruction of media		N/A
8.5.4.3.1	Equipment safeguards		N/A
8.5.4.3.2	Instructional safeguards against moving parts..... :		N/A
8.5.4.3.3	Disconnection from the supply		N/A
8.5.4.3.4	Cut type and test force (N)..... :		N/A
8.5.4.3.5	Compliance		N/A
8.5.5	High pressure lamps		N/A
	Explosion test.....:		N/A
8.5.5.3	Glass particles dimensions (mm).....:		N/A
8.6	Stability of equipment		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
8.6.1	Requirements		N/A
	Instructional safeguard for MS2 and MS3 television sets..... :		N/A
8.6.2	Static stability		N/A
8.6.2.2	Static stability test..... :		N/A
8.6.2.3	Downward force test		N/A
8.6.3	Relocation stability		N/A
	Wheels diameter (mm)..... :		—
	Tilt test		N/A
8.6.4	Glass slide test		N/A
8.6.5	Horizontal force test..... :		N/A
8.7	Equipment mounted to wall, ceiling or other structure		N/A
8.7.1	Requirements		N/A
	Mount means type..... :		N/A
8.7.2	Test methods		N/A
	Test 1, additional downwards force (N)..... :		N/A
	Horizontal force to a wall or another structure		N/A
	Test 2, number of attachment points and test force (N)..... :		N/A
	Test 3, nominal diameter (mm) and applied torque (Nm)..... :		N/A
8.8	Handles strength		N/A
8.8.1	General		N/A
8.8.2	Handle strength test		N/A
	Number of handles..... :		—
	Weight applied (kg)..... :		—
8.9	Wheels or casters attachment requirements		N/A
8.9.2	Pull test		N/A
8.10	Carts, stands and similar carriers		N/A
8.10.1	General		N/A
8.10.2	Marking and instructions..... :		N/A
8.10.3	Cart, stand or carrier loading test		N/A
	Loading force applied (N)..... :		N/A
8.10.4	Cart, stand or carrier impact test	(See Clause T.6)	N/A
	Loading force applied (N) on each supporting surface..... :		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
8.10.5	Mechanical stability		N/A
	Force applied (N).....:		N/A
8.10.6	Thermoplastic temperature stability	(See Clause T.8)	N/A
8.11	Mounting means for slide-rail mounted equipment (SRME)		N/A
8.11.1	General		N/A
8.11.2	Requirements		N/A
	Instructional Safeguard.....:		N/A
8.11.3	Mechanical strength test		N/A
8.11.3.1	Downward force test, force applied (N).....:		N/A
8.11.3.2	Lateral push force test		N/A
8.11.3.3	Integrity of slide rail end stops		N/A
8.11.4	Compliance criteria		N/A
8.12	Telescoping or rod antennas		N/A
	No sharp edges or points		N/A
	Button/ball diameter (mm).....:		N/A

9	THERMAL BURN INJURY		P
9.2	Thermal energy source classifications		P
9.3	Touch temperature limits		P
9.3.1	Touch temperatures of accessible parts.....:	(See appended table 5.4.1.4, 9.3, B.1.5, B.2.6)	P
9.3.2	Test method and compliance		P
9.4	Safeguards against thermal energy sources		P
9.5	Requirements for safeguards		P
9.5.1	Equipment safeguard		P
9.5.2	Instructional safeguard.....:		N/A
9.6	Requirements for wireless power transmitters		N/A
9.6.1	General		N/A
9.6.2	Specification of the foreign objects		N/A
9.6.3	Test method and compliance criteria.....:	(See appended table 9.6)	N/A

10	RADIATION		P
10.2	Radiation energy source classifications		P
10.2.1	General classification		P
	Lasers.....:		—

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Lamps and lamp systems.....:	RS1: Indicating light as exempt group	—
	Image projectors.....:		—
	X-Ray.....:		—
	Personal music player.....:		—
10.3	Safeguards against laser radiation		N/A
	The standard(s) equipment containing laser(s) comply.....:		N/A
10.4	Safeguards against optical radiation from lamps and lamp systems (including LED types)		N/A
10.4.1	General requirements		N/A
	Instructional safeguard provided for accessible radiation level needs to exceed		N/A
	Risk group marking and location.....:		N/A
	Information for safe operation and installation		N/A
10.4.2	Requirements for equipment safeguards		N/A
	UV radiation exposure.....:	(See Annex C)	N/A
10.4.3	Instructional safeguard.....:		N/A
10.5	Safeguards against X-radiation		N/A
10.5.1	Requirements		N/A
	Instructional safeguard for skilled persons.....:		N/A
10.5.3	Maximum radiation (pA/kg).....:	(See appended tables B.3 & B.4)	N/A
10.6	Safeguards against acoustic energy sources		N/A
10.6.1	General		N/A
10.6.2	Classification		N/A
	Acoustic output $L_{Aeq,T}$, dB(A).....:		N/A
	Unweighted RMS output voltage (mV).....:		N/A
	Digital output signal (dBFS).....:		N/A
10.6.3	Requirements for dose-based systems		N/A
10.6.3.1	General requirements		N/A
10.6.3.2	Dose-based warning and automatic decrease		N/A
10.6.3.3	Exposure-based warning and requirements		N/A
	30 s integrated exposure level (MEL30).....:		N/A
	Warning for MEL ≥ 100 dB(A).....:		N/A
10.6.4	Measurement methods		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
10.6.5	Protection of persons		N/A
	Instructional safeguards.....:		N/A
10.6.6	Requirements for listening devices (headphones, earphones, etc.)		N/A
10.6.6.1	Corded listening devices with analogue input		N/A
	Listening device input voltage (mV).....:		N/A
10.6.6.2	Corded listening devices with digital input		N/A
	Max. acoustic output $L_{Aeq,T}$, dB(A).....:		N/A
10.6.6.3	Cordless listening devices		N/A
	Max. acoustic output $L_{Aeq,T}$, dB(A).....:		N/A

B	NORMAL OPERATING CONDITION TESTS, ABNORMAL OPERATING CONDITION TESTS AND SINGLE FAULT CONDITION TESTS		P
B.1	General		P
B.1.5	Temperature measurement conditions	(See appended table 5.4.1.4, 9.3, B.1.5, B.2.6)	P
B.1.6	Specific output conditions		P
B.2	Normal operating conditions		P
B.2.1	General requirements.....:	(See Test Item Particulars and appended test tables)	P
	Audio Amplifiers and equipment containing an audio amplifiers.....:	(See Annex E)	N/A
B.2.3	Supply voltage and tolerances		P
B.2.5	Input test.....:	(See appended table B.2.5) (See Clause E.3 for audio amplifier)	P
B.2.6.4	Equipment intended for building-in or rack-mounting		N/A
B.3	Simulated abnormal operating conditions		P
B.3.1	General		P
B.3.2	Covering of ventilation openings		N/A
	Instructional safeguard.....:		N/A
B.3.3	DC mains polarity test		N/A
B.3.4	Setting of voltage selector		N/A
B.3.5	Maximum load at output terminals		P
B.3.6	Reverse battery polarity		N/A
B.3.7	Audio amplifier abnormal operating conditions	(See Clause E.3.2)	N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
B.3.8	Safeguards functional during and after abnormal operating conditions..... :	(See appended table B.3, B.4)	P
B.4	Simulated single fault conditions		P
B.4.1	General		P
B.4.2	Temperature controlling device		N/A
B.4.3	Blocked motor test		N/A
B.4.4	Functional insulation		P
B.4.4.1	Short circuit of clearances for functional insulation		P
B.4.4.2	Short circuit of creepage distances for functional insulation		P
B.4.4.3	Short circuit of functional insulation on coated printed boards		N/A
B.4.5	Short-circuit and interruption of electrodes in tubes and semiconductors		N/A
B.4.6	Short circuit or disconnection of passive components		P
B.4.7	Continuous operation of components		N/A
B.4.8	Compliance criteria during and after single fault conditions..... :	(See appended table B.3, B.4)	P
B.4.9	Battery charging and discharging under single fault conditions	(See Annex M)	P
C	UV RADIATION		N/A
C.1	Protection of materials in equipment from UV radiation		N/A
C.1.2	Requirements		N/A
C.1.3	Test method and compliance criteria		N/A
C.2	UV light conditioning test		N/A
C.2.1	Test apparatus..... :		N/A
C.2.2	Mounting of test samples		N/A
C.2.3	Carbon-arc light-exposure test		N/A
C.2.4	Xenon-arc light-exposure test		N/A
D	TEST GENERATORS		N/A
D.1	Impulse test generators		N/A
D.2	Antenna interface test generator		N/A
D.3	Electronic pulse generator		N/A
E	TEST CONDITIONS FOR EQUIPMENT INTENDED TO AMPLIFY AUDIO SIGNALS		N/A
E.1	Electrical energy source classification for audio signals		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Maximum non-clipped output power (W).....:		—
	Rated load impedance (Ω)		—
	Open-circuit output voltage (V).....:		—
	Instructional safeguard.....:		—
E.2	Audio signals used during test		N/A
E.2.1	Pink noise test signal		N/A
E.2.2	Sine-wave signal		N/A
E.3	Operating conditions of equipment containing an audio amplifier		N/A
E.3.1	Normal operating conditions	(See appended table B.2.5, E.3.1)	N/A
E.3.2	Abnormal operating conditions	(See appended table B.3, B.4)	N/A
E.3.3	Audio equipment temperature measurement conditions.....:		N/A
F	EQUIPMENT MARKINGS, INSTRUCTIONS, AND INSTRUCTIONAL SAFEGUARDS		P
F.1	General		P
	Language	English	—
F.2	Letter symbols and graphical symbols		P
F.2.1	Letter symbols according to IEC 60027-1		P
F.2.2	Graphic symbols according to IEC, ISO or manufacturer specific		P
F.3	Equipment markings		P
F.3.1	Equipment marking locations		P
F.3.2	Equipment identification markings		P
F.3.2.1	Manufacturer identification	See copy of marking plate.	P
F.3.2.2	Model identification	See copy of marking plate.	P
F.3.3	Equipment rating markings		P
F.3.3.1	Equipment with direct connection to mains		N/A
F.3.3.2	Equipment without direct connection to mains		P
F.3.3.3	Nature of the supply voltage.....:	DC	P
F.3.3.4	Rated voltage.....:	See copy of marking plate	P
F.3.3.5	Rated frequency.....:	Not connected to a.c. mains.	N/A
F.3.3.6	Rated current or rated power.....:	See copy of marking plate	P
F.3.3.7	Equipment with multiple supply connections		N/A
F.3.4	Voltage setting device		N/A
F.3.5	Markings on terminals and operating devices		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
F.3.5.1	Mains appliance outlet and socket-outlet markings :		N/A
F.3.5.2	Switch position identification marking.....:		N/A
F.3.5.3	Replacement fuse identification and rating markings.....:		N/A
	Instructional safeguards for neutral fuse.....:		N/A
F.3.5.4	Replacement battery identification marking.....:	No such battery on the equipment.	N/A
F.3.5.5	Neutral conductor terminal		N/A
F.3.5.6	Terminal marking location		N/A
F.3.6	Equipment markings related to equipment classification		N/A
F.3.6.1	Class I equipment		N/A
F.3.6.1.1	Protective earthing conductor terminal.....:		N/A
F.3.6.1.2	Protective bonding conductor terminals		N/A
F.3.6.2	Equipment class marking.....:		N/A
F.3.6.3	Functional earthing terminal marking.....:		N/A
F.3.7	Equipment IP rating marking.....:		N/A
F.3.8	External power supply unit output marking.....:		N/A
F.3.9	Durability, legibility and permanence of markings		P
F.3.10	Test for permanence of markings	The label was subjected to the permanence of marking test. The label was rubbed with cloth soaked with water for 15 sec. And then again for 15 sec. with the cloth soaked with petroleum spirit. After each test, the marking remained legible.	P
F.4	Instructions		P
	– Information prior to installation and initial use		P
	– Equipment for use in locations where children not likely to be present		N/A
	– Instructions for installation and interconnection		N/A
	– Equipment intended for use only in restricted access area		N/A
	– Equipment intended to be fastened in place		N/A
	– Instructions for audio equipment terminals		N/A
	– Protective earthing used as a safeguard		N/A
	– Protective conductor current exceeding ES2 limits		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	– Graphic symbols used on equipment		N/A
	– Permanently connected equipment not provided with all-pole mains switch		N/A
	– Replaceable components or modules providing safeguard function		N/A
	– Equipment containing insulating liquid		N/A
	– Installation instructions for outdoor equipment		N/A
F.5	Instructional safeguards		N/A
G	COMPONENTS		P
G.1	Switches		N/A
G.1.1	General		N/A
G.1.2	Ratings, endurance, spacing, maximum load		N/A
G.1.3	Test method and compliance criteria		N/A
G.2	Relays		N/A
G.2.1	Requirements and compliance criteria		N/A
G.2.2	Overload test		N/A
G.2.3	Relay controlling connectors supplying power to other equipment		N/A
G.2.4	Test method and compliance criteria		N/A
G.3	Protective devices		P
G.3.1	Thermal cut-offs		N/A
	Thermal cut-outs separately approved according to IEC 60730-1 with conditions indicated in a) & b)		N/A
	Thermal cut-outs tested as part of the equipment as indicated in c)		N/A
G.3.1.2	Test method and compliance criteria		N/A
G.3.2	Thermal links		N/A
G.3.2.1	a) Thermal links tested separately according to IEC 60691 with specifics		N/A
	b) Thermal links tested as part of the equipment		N/A
G.3.2.2	Test method and compliance criteria		N/A
G.3.3	PTC thermistors		P
G.3.4	Overcurrent protection devices		N/A
G.3.5	Safeguards components not mentioned in G.3.1 to G.3.4		N/A
G.3.5.1	Non-resettable devices suitably rated and marking provided		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
G.3.5.2	Single faults conditions.....:	(See appended table B.3, B.4)	N/A
G.4	Connectors		N/A
G.4.1	Spacings		N/A
G.4.2	Mains connectors configuration.....:		N/A
G.4.3	Plug is shaped that insertion into mains socket-outlets or appliance coupler is unlikely		N/A
G.5	Wound components		N/A
G.5.1	Wire insulation in wound components		N/A
G.5.1.2	Protection against mechanical stress		N/A
G.5.2	Endurance test		N/A
G.5.2.1	General test requirements		N/A
G.5.2.2	Heat run test		N/A
	Test time (days per cycle).....:		—
	Test temperature (°C).....:		—
G.5.2.3	Wound components supplied from the mains		N/A
G.5.2.4	Compliance criteria		N/A
G.5.3	Transformers		N/A
G.5.3.1	General		N/A
	Compliance method.....:		N/A
G.5.3.2	Insulation		N/A
	Protection from displacement of windings.....:		—
G.5.3.3	Transformer overload tests		N/A
G.5.3.3.1	Test conditions		N/A
	Position.....:		N/A
	Method of protection.....:		N/A
G.5.3.3.2	Winding temperatures		N/A
G.5.3.3.3	Winding temperatures - alternative test method		N/A
G.5.3.4	Transformers using FIW		N/A
G.5.3.4.1	General		N/A
	FIW wire nominal diameter.....:		—
G.5.3.4.2	Transformers with basic insulation only		N/A
G.5.3.4.3	Transformers with double insulation or reinforced insulation.....:		N/A
G.5.3.4.4	Transformers with FIW wound on metal or ferrite core		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
G.5.3.4.5	Thermal cycling test and compliance		N/A
G.5.3.4.6	Partial discharge test		N/A
G.5.4	Motors		N/A
G.5.4.1	General requirements		N/A
G.5.4.2	Motor overload 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)		—
	Electric strength test.....	(See appended table 5.4.9)	N/A
G.5.4.5	Running overload test for DC motors		N/A
G.5.4.5.2	Tested in the unit		N/A
	Electric strength test.....	(See appended table 5.4.9)	N/A
G.5.4.5.3	Alternative method		N/A
	Electric strength test.....	(See appended table 5.4.9)	N/A
G.5.4.6	Locked-rotor overload test for DC motors		N/A
G.5.4.6.2	Tested in the unit		N/A
	Maximum Temperature (°C).....		N/A
	Electric strength test.....	(See appended table 5.4.9)	N/A
G.5.4.6.3	Alternative method		N/A
	Electric strength test.....	(See appended table 5.4.9)	N/A
G.5.4.7	Motors with capacitors		N/A
G.5.4.8	Three-phase motors		N/A
G.5.4.9	Series motors		N/A
	Operating voltage (V).....		—
G.6	Wire Insulation		N/A
G.6.1	General		N/A
G.6.2	Enamelled winding wire insulation		N/A
G.7	Mains power supply cords and interconnection cables		N/A
G.7.1	General requirements		N/A
	Type.....		—
G.7.2	Cross sectional area (mm ² or AWG).....		N/A
G.7.3	Cord anchorages and strain relief		N/A
G.7.3.2	Cord strain relief		N/A
G.7.3.2.1	Requirements		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Strain relief test force (N).....:		N/A
G.7.3.2.2	Strain relief mechanism failure		N/A
G.7.3.2.3	Cord sheath or jacket position, distance (mm).....:		N/A
G.7.3.2.4	Strain relief and cord anchorage material		N/A
G.7.4	Cord Entry		N/A
G.7.5	Non-detachable cord bend protection		N/A
G.7.5.1	Requirements		N/A
G.7.5.2	Test method and compliance criteria		N/A
	Overall diameter or minor overall dimension, D (mm).....:		—
	Radius of curvature after test (mm).....:		—
G.7.6	Supply wiring space		N/A
G.7.6.1	General requirements		N/A
G.7.6.2	Stranded wire		N/A
G.7.6.2.1	Requirements		N/A
G.7.6.2.2	Test with 8 mm strand		N/A
G.8	Varistors		
G.8.1	General requirements		N/A
G.8.2	Safeguards against fire		N/A
G.8.2.1	General		N/A
G.8.2.2	Varistor overload test		N/A
G.8.2.3	Temporary overvoltage test		N/A
G.9	Integrated circuit (IC) current limiters		N/A
G.9.1	Requirements		N/A
	IC limiter output current (max. 5A).....:		—
	Manufacturers' defined drift		—
G.9.2	Test Program		N/A
G.9.3	Compliance criteria		N/A
G.10	Resistors		
G.10.1	General		N/A
G.10.2	Conditioning		N/A
G.10.3	Resistor test		N/A
	Changes of resistance (%).....:		N/A
	Measured current with the lowest resistance value :		N/A
G.10.4	Voltage surge test		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Changes of resistance (%).....:		N/A
G.10.5	Impulse test		N/A
	Changes of resistance (%).....:		N/A
G.10.6	Overload test		N/A
	Changes of resistance (%).....:		N/A
G.11	Capacitors and RC units		N/A
G.11.1	General requirements		N/A
G.11.2	Conditioning of capacitors and RC units		N/A
G.11.3	Rules for selecting capacitors		N/A
G.12	Optocouplers		N/A
	Optocouplers comply with IEC 60747-5-5 with specifics		N/A
	Type test voltage $V_{ini,a}$:		—
	Routine test voltage, $V_{ini,b}$:		—
G.13	Printed boards		P
G.13.1	General requirements		P
G.13.2	Uncoated printed boards		N/A
G.13.3	Coated printed boards		N/A
G.13.4	Insulation between conductors on the same inner surface		N/A
G.13.5	Insulation between conductors on different surfaces		N/A
	Distance through insulation.....:		N/A
	Number of insulation layers (pcs)		—
G.13.6	Tests on coated printed boards		N/A
G.13.6.1	Sample preparation and preliminary inspection		N/A
G.13.6.2	Test method and compliance criteria		N/A
G.14	Coating on components terminals		N/A
G.14.1	Requirements	(See Clause G.13)	N/A
G.15	Pressurized liquid filled components or LFC assemblies		N/A
G.15.1	Requirements		N/A
G.15.2	Test methods and compliance criteria for self-contained LFC		N/A
G.15.2.1	Hydrostatic pressure test, applied test pressure.....:		N/A
G.15.2.2	Creep resistance test		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
G.15.2.3	Tubing and fittings compatibility test, the change of tensile strength (%)..... :		N/A
G.15.2.4	Vibration test		N/A
G.15.2.5	Thermal cycling test, test temperature (°C)..... :		N/A
G.15.2.6	Force test		N/A
G.15.2.7	Compliance criteria		N/A
G.15.3	Test methods and compliance for a modular LFC		N/A
G.15.3.2	Hydrostatic pressure test, applied test pressure..... :		N/A
G.15.3.3	Creep resistance test		N/A
G.15.3.4	Tubing and fittings compatibility test, the change of tensile strength (%)..... :		N/A
G.15.3.5	Thermal cycle test, test temperature (°C)..... :		N/A
G.15.3.6	Force test		N/A
G.15.3.7	Compliance criteria		N/A
G.16	IC including capacitor discharge function (ICX)		
G.16.1	Condition for fault tested is not required		N/A
	ICX with associated circuitry tested in equipment		N/A
	ICX tested separately		N/A
G.16.2	Tests		N/A
	Smallest capacitance and smallest resistance specified by ICX manufacturer for impulse test..... :		—
	Mains voltage that impulses to be superimposed on..... :		—
	Largest capacitance and smallest resistance for ICX tested by itself for 10000 cycles test..... :		—
G.16.3	Capacitor discharge test..... :	(See appended table 5.5.2.2)	N/A
H	CRITERIA FOR TELEPHONE RINGING SIGNALS		N/A
H.1	General		N/A
H.2	Method A		N/A
H.3	Method B		N/A
H.3.1	Ringing signal		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 condition current (mA)..... :		—
H.3.2	Tripping device and monitoring voltage		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
H.3.2.1	Conditions for use of a tripping device or a monitoring voltage		N/A
H.3.2.2	Tripping device		N/A
H.3.2.3	Monitoring voltage (V)..... :		N/A
J	INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION		N/A
J.1	General		N/A
	Winding wire insulation..... :		—
	Solid round winding wire, diameter (mm)..... :		N/A
	Solid square and rectangular (flatwise bending) winding wire, cross-sectional area (mm ²)..... :		N/A
J.2/J.3	Tests and Manufacturing	(See separate test report)	—
K	SAFETY INTERLOCKS		N/A
K.1	General requirements		N/A
	Instructional safeguard..... :		N/A
K.2	Components of safety interlock safeguard mechanism		N/A
K.3	Inadvertent change of operating mode		N/A
K.4	Interlock safeguard override		N/A
K.5	Fail-safe		N/A
K.5.1	Under single fault condition		N/A
K.6	Mechanically operated safety interlocks		N/A
K.6.1	Endurance requirement		N/A
K.7	Interlock circuit isolation		N/A
K.7.1	Separation distance for contact gaps & interlock circuit elements		N/A
	In circuit connected to mains, separation distance for contact gaps (mm)..... :		N/A
	In circuit isolated from mains, separation distance for contact gaps (mm)..... :		N/A
	Electric strength test before and after the test of K.7.2..... :	(See appended table 5.4.9)	N/A
K.7.2	Overload test, Current (A)..... :		N/A
K.7.3	Endurance test		N/A
K.7.4	Electric strength test	(See appended table 5.4.9)	N/A
L	DISCONNECT DEVICES		N/A
L.1	General requirements		N/A
L.2	Permanently connected equipment		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Instructions for permanently connected equipment		N/A
L.3	Parts that remain energized		N/A
L.4	Single-phase equipment		N/A
	Instructions for single pole disconnect device		N/A
L.5	Three-phase equipment		N/A
L.6	Switches as disconnect devices		N/A
L.7	Plugs as disconnect devices		N/A
	Instructions for pluggable equipment		—
L.8	Multiple power sources		N/A
	Instructional safeguard.....:		N/A
M	EQUIPMENT CONTAINING BATTERIES AND THEIR PROTECTION CIRCUITS		P
M.1	General requirements		P
M.2	Safety of batteries and their cells		P
M.2.1	Batteries and their cells comply with relevant IEC standards.....:	The Li-ion cell complied IEC 62133-2:2017.	P
M.3	Protection circuits for batteries provided within the equipment		P
M.3.1	Requirements		P
M.3.2	Test method		P
	Overcharging of a rechargeable battery	(See appended B.4)	P
	Excessive discharging	(See appended B.4)	P
	Unintentional charging of a non-rechargeable battery		N/A
	Reverse charging of a rechargeable battery		N/A
M.3.3	Compliance criteria	(See appended table M.3)	P
M.4	Additional safeguards for equipment containing a secondary lithium battery		P
M.4.1	General		P
	IEC 62133-2 batteries used for sub-system power powering application.....:		P
M.4.2	Charging safeguards		P
M.4.2.1	Requirements	(See appended table M.4.2)	P
M.4.2.2	Test	(See appended table M.4.2)	P
M.4.2.2.1	General	V-0 plastic enclosure used	P
M.4.2.2.2	Abnormal operating conditions		P
M.4.2.2.3	Single fault conditions		P
M.4.2.3	Compliance criteria.....:	(See appended table M.4.2)	P

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
M.4.3	Fire enclosure.....:	V-0 plastic enclosure used	P
M.4.4	Drop test of equipment containing a secondary lithium battery		P
M.4.4.2	Preparation and procedure for the drop test		P
M.4.4.3	Drop, Voltage on reference and dropped batteries (V); voltage difference during 24 h period (%):	The voltage differences not exceed 5%.	P
M.4.4.4	Check of the charge/discharge function	Still functioning.	P
M.4.4.5	Charge / discharge cycle test	Three complete discharge and charge cycles under normal operating condition.	P
M.4.4.6	Compliance criteria		P
M.5	Risk of burn due to short-circuit during carrying		N/A
M.5.1	Requirement		N/A
M.5.2	Test method and compliance criteria		N/A
M.6	Safeguards against short-circuits		P
M.6.1	External and internal faults	The Li-ion cell complied IEC 62133-2: 2017 which considered the forced external short circuit test. No such explosion or fire likely to result from short circuit.	P
M.6.2	Compliance criteria		P
M.7	Risk of explosion from lead acid and NiCd batteries		N/A
M.7.1	Ventilation preventing explosive gas concentration		N/A
	Calculated hydrogen generation rate.....:		N/A
M.7.2	Test method and compliance criteria		N/A
	Minimum air flow rate, Q (m ³ /h).....:		N/A
M.7.3	Ventilation tests		N/A
M.7.3.1	General		N/A
M.7.3.2	Ventilation test – alternative 1		N/A
	Hydrogen gas concentration (%)......:		N/A
M.7.3.3	Ventilation test – alternative 2		N/A
	Obtained hydrogen generation rate.....:		N/A
M.7.3.4	Ventilation test – alternative 3		N/A
	Hydrogen gas concentration (%)......:		N/A
M.7.4	Marking.....:		N/A
M.8	Protection against internal ignition from external spark sources of rechargeable batteries with aqueous electrolyte		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
M.8.1	General		N/A
M.8.2	Test method		N/A
M.8.2.1	General		N/A
M.8.2.2	Estimation of hypothetical volume V_z (m ³ /s)..... :		—
M.8.2.3	Correction factors.....:		—
M.8.2.4	Calculation of distance d (mm):		—
M.9	Preventing electrolyte spillage		N/A
M.9.1	Protection from electrolyte spillage		N/A
M.9.2	Tray for preventing electrolyte spillage		N/A
M.10	Instructions to prevent reasonably foreseeable misuse		P
	Instructional safeguard.....:		N/A
N	ELECTROCHEMICAL POTENTIALS		N/A
	Material(s) used.....:		—
O	MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES		N/A
	Value of X (mm).....:		—
P	SAFEGUARDS AGAINST CONDUCTIVE OBJECTS		N/A
P.1	General		N/A
P.2	Safeguards against entry or consequences of entry of a foreign object		N/A
P.2.1	General		N/A
	Location and Dimensions (mm):		—
P.2.2	Safeguard requirements		N/A
	The ES3 and PS3 keep-out volume in Figure P.4 not applicable to transportable equipment		N/A
	Transportable equipment with metalized plastic parts.....:		N/A
P.2.3	Consequence of entry test.....:		N/A
P.3	Safeguards against spillage of internal liquids		N/A
P.3.1	General		N/A
P.3.2	Determination of spillage consequences		N/A
P.3.3	Spillage safeguards		N/A
P.3.4	Compliance criteria		N/A
P.4	Metallized coatings and adhesives securing parts		N/A
P.4.1	General		N/A
P.4.2	Tests		N/A
	Conditioning, T_c (°C).....:		—

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Duration (weeks).....:		—
Q	CIRCUITS INTENDED FOR INTERCONNECTION WITH BUILDING WIRING		P
Q.1	Limited power sources		P
Q.1.1	Requirements		P
	a) Inherently limited output		N/A
	b) Impedance limited output		N/A
	c) Regulating network limited output		P
	d) Overcurrent protective device limited output		N/A
	e) IC current limiter complying with G.9		N/A
Q.1.2	Test method and compliance criteria.....:	(See appended table Q.1)	P
	Current rating of overcurrent protective device (A) :		N/A
Q.2	Test for external circuits – paired conductor cable		N/A
	Maximum output current (A)		N/A
	Current limiting method.....:		—
R	LIMITED SHORT CIRCUIT TEST		N/A
R.1	General		N/A
R.2	Test setup		N/A
	Overcurrent protective device for test.....:		—
R.3	Test method		N/A
	Cord/cable used for test.....:		—
R.4	Compliance criteria		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).....:		—

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Conditioning (°C).....:		—
	- Material did not show any additional holes for combustible materials		N/A
	- Cheesecloth did not ignite for top openings		N/A
S.3	Flammability test for the bottom of a fire enclosure		N/A
S.3.1	Mounting of samples		N/A
S.3.2	Test method and compliance criteria		N/A
	Mounting of samples		—
	Wall thickness (mm).....:		—
	Cheesecloth did not ignite		N/A
S.4	Flammability classification of materials		N/A
S.5	Flammability test for fire enclosure materials of equipment with a steady state power exceeding 4 000 W		N/A
	Samples, material.....:		—
	Wall thickness (mm).....:		—
	Conditioning (°C).....:		—
S.6	Grille covering material, cloth, and reticulated foam		N/A
	Samples, material.....:		—
	Measured distance from the centre of the fuel tablet (mm).....:		N/A
T	MECHANICAL STRENGTH TESTS		P
T.1	General		P
T.2	Steady force test, 10 N	(See appended table T.2, T.3, T.4, T.5)	N/A
T.3	Steady force test, 30 N	(See appended table T.2, T.3, T.4, T.5)	N/A
T.4	Steady force test, 100 N	(See appended table T.2, T.3, T.4, T.5)	P
T.5	Steady force test, 250 N	(See appended table T.2, T.3, T.4, T.5)	N/A
T.6	Enclosure impact test	(See appended table T.6, T.9)	N/A
	Fall test		N/A
	Swing test		N/A
T.7	Drop test	(See appended table T.7)	P
T.8	Stress relief test.....	(See appended table T.8)	P
T.9	Glass Impact Test.....	(See appended table T.6, T.9)	N/A
T.10	Glass fragmentation test		N/A

RED Laboratories Inc.

Add: Room 101, Building A, Zhengtailai Hi-Tech Innovation Park, Yintian Creative Park, Yantian Community, Xixiang Subdistrict, Bao'an District, Shenzhen, Guangdong, China

Hot line: +86-0755-23080724

E-mail: Cherry@red-test.com

Website: <https://www.red-test.com/>

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Number of particles counted.....:		N/A
T.11	Test for telescoping or rod antennas		N/A
	Torque value (Nm)		N/A
U	MECHANICAL STRENGTH OF CATHODE RAY TUBES (CRT) AND PROTECTION AGAINST THE EFFECTS OF IMPLOSION		N/A
U.1	General		N/A
	Instructional safeguard.....:		N/A
U.2	Test method and compliance for non-intrinsically protected CRTs		N/A
U.3	Protective screen		N/A
V	DETERMINATION OF ACCESSIBLE PARTS		N/A
V.1	Accessible parts of equipment		N/A
V.1.1	General		N/A
V.1.2	Surfaces and openings tested with jointed test probes		N/A
V.1.3	Openings tested with straight unjointed test probes		N/A
V.1.4	Plugs, jacks, connectors tested with blunt probe		N/A
V.1.5	Slot openings tested with wedge probe		N/A
V.1.6	Terminals tested with rigid test wire		N/A
V.2	Accessible part criterion		N/A
X	ALTERNATIVE METHOD FOR DETERMINING CLEARANCES FOR INSULATION IN CIRCUITS CONNECTED TO AN AC MAINS NOT EXCEEDING 420 V PEAK (300 V RMS)		N/A
	Clearance.....: (See appended table X)		N/A
Y	CONSTRUCTION REQUIREMENTS FOR OUTDOOR ENCLOSURES		N/A
Y.1	General		N/A
Y.2	Resistance to UV radiation		N/A
Y.3	Resistance to corrosion		N/A
Y.3.1	Metallic parts of outdoor enclosures are resistant to effects of water-borne contaminants by.....:		N/A
Y.3.2	Test apparatus		N/A
Y.3.3	Water – saturated sulphur dioxide atmosphere		N/A
Y.3.4	Test procedure.....:		N/A
Y.3.5	Compliance criteria		N/A
Y.4	Gaskets		N/A
Y.4.1	General		N/A
Y.4.2	Gasket tests		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
Y.4.3	Tensile strength and elongation tests, changes of tensile strength and elongation..... :		N/A
	Alternative test methods..... :		N/A
Y.4.4	Compression test		N/A
Y.4.5	Oil resistance, change of swell / shrink (%)..... :		N/A
Y.4.6	Securing means	(See Clause P.4)	N/A
Y.5	Protection of equipment within an outdoor enclosure		N/A
Y.5.1	General		N/A
Y.5.2	Protection from moisture		N/A
	Relevant tests of IEC 60529 or Y.5.3..... :		N/A
Y.5.3	Water spray test		N/A
Y.5.4	Protection from plants and vermin		N/A
Y.5.5	Protection from excessive dust		N/A
Y.5.5.1	General		N/A
	Relevant tests of IEC 60529 or Y.5.5.2 or Y.5.5.3... :		N/A
Y.5.5.2	IP5X equipment		N/A
Y.5.5.3	IP6X equipment		N/A
Y.6	Mechanical strength of enclosures		
Y.6.1	General		N/A
Y.6.2	Impact test..... :	(See appended table T.6, T.9)	N/A

5.2	TABLE: Classification of electrical energy sources						P
Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters				ES Class
			U (V)	I (mA)	Type ¹⁾	Additional Info ²⁾	
24VDC	Input circuit	Normal	24.05V DC	--	SS	--	ES1
		Abnormal	--	--	SS	--	
		Single fault – SC/OC	--	--	SS	--	
Fully battery	Output “+” and “-”	Normal	23.25Vd _c	--	SS	--	ES1
Full battery	5V USB-C Output	Normal	24.08Vd _c	--	SS	--	ES1
		Abnormal: output overload	24.08Vd _c	--	SS	--	ES1
		Single fault: U1 pin 14-18 SC	24.08Vd _c	--	SS	--	ES1
Supplementary information:							
1) Type: Steady state (SS), Capacitance (CP), Single pulse (SP), Repetitive pulses (RP), etc.							
2) Additional Info: Frequency, Pulse duration, Pulse off time, Capacitance value, etc.							

5.4.1.8	TABLE: Working voltage measurement				N/A
Location		Peak voltage (V)	RMS voltage (V)	Frequency (Hz)	Comments
--		--	--	--	--
--		--	--	--	--
Supplementary information:					

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

5.4.1.10.3 TABLE: Ball pressure test of thermoplastics					N/A
Allowed impression diameter (mm).....: $\leq 2 \text{ mm}$					—
Object/Part No./Material	Manufacturer/trademark	Thickness (mm)	Test temperature (°C)	Impression diameter (mm)	
--	--	--	--	--	
--	--	--	--	--	
Supplementary information:					

5.4.2, 5.4.3 TABLE: Minimum Clearances/Creepage distance								N/A
Clearance (cl) and creepage distance (cr) at/of/between:	U_p (V)	U_{rms} (V)	Freq ¹⁾ (Hz)	Required cl (mm)	cl (mm)	E.S. ²⁾ (V)	Required cr (mm)	cr (mm)
--	--	--	--	--	--	--	--	--
Supplementary information:								
1) Only for frequency above 30 kHz								
2) Complete Electric Strength voltage (E.S. (V) when 5.4.2.4 applied)								

5.4.4.2 TABLE: Minimum distance through insulation					N/A
Distance through insulation (DTI) at/of	Peak voltage (V)	Insulation	Required DTI (mm)	Measured DTI (mm)	
--	--	--	--	--	
Supplementary information:					

5.4.4.9 TABLE: Solid insulation at frequencies >30 kHz							N/A
Insulation material	E_P	Frequency (kHz)	K_R	Thickness d (mm)	Insulation	V_{PW} (Vpk)	
--	--	--	--	--	--	--	
Supplementary information:							

5.4.9 TABLE: Electric strength tests				N/A
Test voltage applied between:	Voltage shape (Surge, Impulse, AC, DC, etc.)	Test voltage (V)	Breakdown Yes / No	
--	--	--	--	
--	--	--	--	
Supplementary information:				

5.5.2.2	TABLE: Stored discharge on capacitors					N/A
Location	Supply voltage (V)	Operating and fault condition ¹⁾	Switch position	Measured voltage (V _{pk})	ES Class	
--	--	--	--	--	--	
Supplementary information:						
X-capacitors installed for testing:						
[] bleeding resistor rating:						
[] ICX:						
1) Normal operating condition (e.g., normal operation), SC= short circuit, OC= open circuit						

5.6.6	TABLE: Resistance of protective conductors and terminations					N/A
Location	Test current (A)	Duration (min)	Voltage drop (V)	Resistance (Ω)		
--	--	--	--	--	--	
Supplementary information:						

5.7.4	TABLE: Unearthed accessible parts					N/A
Location	Operating and fault conditions	Supply Voltage (V)	Parameters			ES class
			Voltage (V _{rms} or V _{pk})	Current (A _{rms} or A _{pk})	Freq. (Hz)	
--	--	--	--	--	--	--
Supplementary information:						
Abbreviation: SC= short circuit; OC= open circuit						

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

5.8	TABLE: Backfeed safeguard in battery backed up supplies					N/A
Location	Supply voltage (V)	Operating and fault condition	Time (s)	Open-circuit voltage (V)	Touch current (A)	ES Class
--	--	--	--	--	--	--
Supplementary information:						
Abbreviation: SC= short circuit, OC= open circuit						

6.2.2	TABLE: Power source circuit classifications					P
Location	Operating and fault condition	Voltage (V)	Current (A)	Max. Power ¹⁾ (W)	Time (S)	PS class
Input circuits	Normal operation	--	--	--	>5	PS2 (declared)
Battery Cell	Normal operation	2.67	48.0	128.6	>5	PS3
USB-C port (5V)	Normal operation	4.41	3.50	15.44	>5	PS2
Type-C cable port (5V)	Normal operation	3.16	5.50	17.38	>5	PS2
Supplementary information:						
Abbreviation: SC= short circuit; OC= open circuit						
1) Measured after 3 s for PS1 and measured after 5 s for PS2 and PS3.						
Single fault result refer to appended table Annex Q.1.						

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

6.2.3.2	TABLE: Determination of resistive PIS			P
Location		Operating and fault condition	Dissipate power (W)	Resistive PIS? Yes / No
Input/ internal circuits/ output circuit		--	>15	Yes
Supplementary information:				
Abbreviation: SC= short circuit; OC= open circuit				

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

9.6	TABLE: Temperature measurements for wireless power transmitters								N/A
Supply voltage (V).....:									—
Max. transmitting power (W).....:									—
Part A ¹⁾									
Foreign objects	w/o receiver and direct contact		with receiver and direct contact		with receiver and at distance of 2 mm		with receiver and at distance of 5 mm		
	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)	
Steel disc	--	--	--	--	--	--	--	--	
Aluminium ring	--	--	--	--	--	--	--	--	
Aluminium foil	--	--	--	--	--	--	--	--	
Measurement temperature T of part/at:	w/o receiver and direct contact		with receiver and direct contact		with receiver and at distance of 2 mm		with receiver and at distance of 5 mm		
	T (°C)	Ambient (°C)	T (°C)	Ambient (°C)	T (°C)	Ambient (°C)	T (°C)	Ambient (°C)	
	--	--	--	--	--	--	--	--	
	--	--	--	--	--	--	--	--	
Part B ²⁾									
Foreign objects	w/o receiver and direct contact		with receiver and direct contact		with receiver and at distance of 2 mm		with receiver and at distance of 5 mm		
	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)	
Steel disc	--	--	--	--	--	--	--	--	
Aluminium ring	--	--	--	--	--	--	--	--	
Aluminium foil	--	--	--	--	--	--	--	--	
Measurement temperature T of part/at:	w/o receiver and direct contact		with receiver and direct contact		with receiver and at distance of 2 mm		with receiver and at distance of 5 mm		
	T (°C)	Ambient (°C)	T (°C)	Ambient (°C)	T (°C)	Ambient (°C)	T (°C)	Ambient (°C)	
	--	--	--	--	--	--	--	--	
	--	--	--	--	--	--	--	--	
Supplementary information:									
1) The test is performed by powering up the transmitter and then placing each of the foreign objects specified in 9.6.2 in direct contact with the transmitter.									
2) The test is performed by first placing each of the foreign objects specified in 9.6.2 in direct contact with the transmitter and then powering up transmitter.									

5.4.1.4, 9.3, B.1.5, B.2.6		TABLE: Temperature measurements					P	
Supply voltage (V).....:			A	B	C	D	—	
Ambient temperature during test T_{amb} (°C).....:			See below	See below	See below	See below	—	
Maximum measured temperature T of part/at:			T (°C)				Allowed T_{max} (°C)	
PCB near U2			64.2	70.8	74.7	91.4	130	
PCB near U1			68.5	76.5	81.2	104.0	130	
PCB near L1			63.7	70.4	75.9	87.1	130	
PCB near D1			67.2	74.6	80.0	98.5	130	
Battery surface			54.1	55.2	58.2	53.4	Ref.	
Plastic enclosure inside near PCB			56.0	59.4	62.3	58.1	Ref.	
Ambient			40.0#	40.0#	40.0#	40.0@	--	
Accessible parts								
Plastic enclosure outside near PCB			38.0	36.8	39.1	41.0	48	
Button			36.1	37.8	39.4	45.2	48	
LED panel			37.7	25.1	41.6	44.1	48	
Type-C output wire			27.4	25.7	26.8	33.0	48	
Ambient			25.0	25.0	25.0	25.0	--	
Supply voltage (V) :			E	F	G	H		
PCB near U2			103.6	105.9	75.3	116.0	130	
PCB near U1			113.1	115.6	80.3	124.9	130	
PCB near L1			102.3	106.2	74.4	108.6	130	
PCB near D1			110.7	113.6	78.7	120.0	130	
Battery surface			69.5	72.6	58.8	73.4	Ref.	
Plastic enclosure inside near PCB			79.2	81.6	61.9	84.3	Ref.	
Ambient			40.0#	40.0#	40.0#	40.0#	--	
Accessible parts								
Plastic enclosure outside near PCB			43.3	45.6	38.9	42.4	48	
Button			45.7	46.8	39.3	46.1	48	
LED panel			45.7	46.9	39.6	45.6	48	
Type-C output wire			26.9	27.0	32.7	27.7	48	
Ambient			25.0	25.0	25.0	25.0	--	
Temperature T of winding:		Active (°C)	R_1 (Ω)	t_2 (°C)	R_2 (Ω)	T (°C)	Allowed T_{max} (°C)	Insulation class

--	--	--	--	--	--	--
Supplementary information:						
* The winding is measured by thermocouple, allowed value is reduced by 10K. # The temperature was tested at 25°C and then converted to 40°C. @ Only ambient temperature at 40°C. Note 1: The apparatus was submitted and evaluated for maximum manufacturer's recommended ambient (Tma) of 40°C. Note 2: The temperatures were measured under the worse case normal mode defined in clause B.2.1. Note 3: The USB-C terminal does not support simultaneous charging and discharging. A: Input 5Vdc supply only charge (output no load with empty battery). B: Full battery discharge. Type-C cable output load: 12V9.4A						

B.2.5		TABLE: Input test						
U (V)	Hz	I (A)	I rated (A)	P (W)	P rated (W)	Fuse No	I fuse (A)	Condition/status
24	--	1.4	1.5	33.6	--	--	--	Only charge mode: output no load with empty battery Battery: 1A
Supplementary information:								
The USB-C terminal can not support simultaneous charging and discharging. Equipment may be have rated current or rated power or both. Both should be measured.								

B.2.5, E.3.1		TABLE: Input test for equipment containing audio amplifiers										N/A	
Operation Condition:		Signal type		Frequency (Hz)		Output loads (Ω)		Load setup					
A1		Sine wave input		1000				All channels driven, (maximum) non-clipped output power					
A2		Peak response frequency						All channels driven, (maximum) non-clipped output power					
B1		Sine wave input		1000				All channels driven, 1/8 non-clipped output power					
B2		Peak response frequency						All channels driven, 1/8 non-clipped output power					
C		Band-limited pink noise signal		N/A				All channels driven, 1/8 non-clipped output power					
D													
Input									Amplifier Output				
Cond.	U (V)	Hz	I (A)	I rated (A)	P (W)	P rated (W)	Fuse No	I fuse (A)	Ch.	U (V)	P (W)	Load (Ω)	
--	--	--	--	--	--	--	--	--	--	--	--	--	
Supplementary information:													

B.3, B.4		TABLE: Abnormal operating and fault condition tests						P
Ambient temperature T _{amb} (°C)..... :				25°C, if not specified			—	
Power source for EUT: Manufacturer, model/type, output rating.... :				See below			—	
Component No.	Condition	Supply voltage (V)	Test time	Fuse no.	Fuse current (A)	Observation		
Full battery discharge. USB-C output load: 24Vdc1.4A								
USB-C output	OL	23.212Vdc	1h58mins	--	--	Output overload to 2.35 A and unit shutdown at 2.36 A, Recoverable when fault removed and no hazard observed, all safeguards remained effective during and after abnormal condition. Measured max. temperature: Battery surface:58.3°C Plastic enclosure outside near PCB: 50.7°C Button: 52.1°C LED panel: 53.2°C		

						Type-C output wire: 36.1°C Ambient: 25.0°C Battery cell discharge current: 5.81A
Full battery discharge. USB-C output load: 24Vdc1.4A						
USB-C output	OL	23.25Vdc	3h17mins	--	--	Output overload to 1.75 A and unit shutdown at 1.85 A, Recoverable when fault removed and no hazard observed, all safeguards remained effective during and after abnormal condition. Measured max. temperature: Battery surface: 59.2°C Plastic enclosure outside near PCB: 51.4°C Button: 53.3°C LED panel: 55.5°C Type-C output wire: 36.5°C Ambient: 25.0°C Battery cell discharge current: 5.85A
Full battery discharge. USB-A output load: 24Vdc1.4A						
U1 pin 18-37	SC	23.25V	10mins	--	--	Battery normal discharge, no hazard. Battery cell discharge current: 4.53A
U1 pin 7-18	SC	23.25V	10mins	--	--	Battery normal discharge, no hazard. Battery cell discharge current: 6.54A
U2 pin 1-8	SC	23.25V	10mins	--	--	Battery normal discharge, no hazard. Battery cell discharge current: 6.54A
PTC (F1)	SC	23.25V	10mins	--	--	Battery normal discharge, no hazard. Battery cell discharge current: 6.54A
Full battery discharge. USB-C output load: 24Vdc1.4A						
U1 pin 14-18	SC	23.25V	10mins	--	--	Unit shut down immediately, no hazard. Battery cell charge current: 0.001A
U1 pin 7-18	SC	23.25V	10mins	--	--	Battery normal discharge, no hazard. Battery cell discharge current: 6.48A
U2 pin 1-8	SC	23.25V	10mins	--	--	Battery normal discharge, no hazard. Battery cell discharge current: 6.48A

PTC (F1)	SC	23.25V	10mins	--	--	Battery normal discharge, no hazard. Battery cell discharge current: 6.48A
----------	----	--------	--------	----	----	---

Supplementary information:

Test table is provided to record abnormal and fault conditions for all applicable energy sources including Thermal burn injury. Column "Abnormal/Fault." Specify if test condition by indicating "Abnormal" then the condition for a Clause B.3 test or "Single Fault" then the condition for Clause B.4.

1) OL: Overloaded, SC: Short-circuited.

2) The test result shown all safeguards remained effective and didn't lead to a single fault condition during abnormal operating condition; In addition all safeguards complied with applicable requirements in this standard after restoration of normal operating conditions.

3) The test result showed no Class 1 or 2 energy source become Class 3 level during and after single fault condition.

M.3	TABLE: Protection circuits for batteries provided within the equipment						P
Is it possible to install the battery in a reverse polarity position?.....:				No		—	
Equipment Specification	Charging						
	Voltage (V)			Current (A)			
	12			0.94			
Manufacturer/type	Battery specification						
	Non-rechargeable batteries		Rechargeable batteries				
	Discharging current (A)	Unintentional charging current (A)	Charging		Discharging current (A)	Reverse charging current (A)	
			Voltage (V)	Current (A)			
See appended table 4.1.2	--	--	23.25*	10	10	--	
Note: The tests of M.3.2 are applicable only when above appropriate data is not available.							
Remark: * The two cells are connected in series.							
Specified battery temperature (°C).....:				Charge: 0-45 Discharge: -20-60			
Component No.	Fault condition	Charge/ discharge mode	Test time	Temp. (°C)	Current (A)	Voltage (V)	Observation
Unit	Normal Charge	Charge mode	4h15min s	Cell: 40.2°C Ambient : 25.0°C	4.25	4.12	Battery normal charging. NL, NS, NE, NF.
U1 pin 14-18	SC	Charge mode	10mins	--	0	0	Unit shut down immediately, no hazard. NL, NS, NE, NF
U1 pin 14-8	SC	Charge mode	10mins	--	0	0	Unit shut down immediately, no hazard. NL, NS, NE, NF
U1 pin 7-18	SC	Charge mode	7h	Cell: 41.4°C Ambient : 25.0°C	4.25	4.12	Battery normal charging. NL, NS, NE, NF.
U2 pin 1-8	SC	Charge mode	7h	Cell: 41.9°C Ambient : 25.0°C	4.25	4.12	Battery normal charging. NL, NS, NE, NF.
NTC	SC	Charge mode	10mins	--	0	0	Unit shut down immediately, no hazard. NL, NS, NE, NF
Full battery discharge. USB-A output load: 5Vdc9.4A							
Unit	Normal Discharge	Discharge mode	4h46min s	Cell: 58.4 °C	6.54	4.12	Battery normal discharge. NL, NS,

				Ambient : 25°C			NE, NF.
U1 pin 18-37	SC	Discharge mode	10mins	Cell: 43.8°C Ambient : 25.0°C	4.53	4.12	Battery normal discharge. NL, NS, NE, NF.
U1 pin 7-18	SC	Discharge mode	4h46min s	Cell: 58.4 °C Ambient : 25.0°C	6.54	4.12	Battery normal discharge. NL, NS, NE, NF.
U2 pin1-8	SC	Discharge mode	4h46min s	Cell: 58.4 °C Ambient : 25.0°C	6.54	4.12	Battery normal discharging. NL, NS, NE, NF.
Full battery discharge. USB-C output load: 5Vdc9.4A							
Unit	Normal Discharge	Discharge mode	4h44min s	Cell: 57.4°C Ambient : 25.0°C	6.48	4.12	Battery normal discharging. NL, NS, NE, NF.
U1 pin 14-18	SC	Discharge mode	10mins	--	0	0	Unit shut down immediately, no hazard. NL, NS, NE, NF
U1 pin 7-18	SC	Discharge mode	4h44min s	Cell: 57.4°C Ambient : 25.0°C	6.48	4.12	Battery normal discharging. NL, NS, NE, NF.
U2 pin1-8	SC	Discharge mode	4h44min s	Cell: 57.4°C Ambient : 25.0°C	6.48	4.12	Battery normal discharging. NL, NS, NE, NF.
Supplementary information:							
Abbreviation: SC= short circuit; OC= open circuit NL= no chemical leakage; NS= no spillage of liquid; NE= no explosion; NF= no emission of flame or expulsion of molten metal.							

M.4.2	TABLE: Charging safeguards for equipment containing a secondary lithium battery					P
Maximum specified charging voltage (V)..... :					24	—
Maximum specified charging current (A)					1(6S1P)	—
Highest specified charging temperature (°C)					45	
Lowest specified charging temperature (°C)					0	
Battery manufacturer/type	Operating and fault condition	Measurement			Observation	
		Charging voltage (V)	Charging current (A)	Temp. (°C)		
See appended table	Normal	23.25	4.24	Cell: 43.9°C	Battery normal charging, when cell temperature up to	

RED Laboratories Inc.

Add: Room 101, Building A, Zhengtailai Hi-Tech Innovation Park, Yintian Creative Park, Yantian Community, Xixiang Subdistrict, Bao'an District, Shenzhen, Guangdong, China

Hot line: +86-0755-23080724

E-mail: Cherry@red-test.com

Website: <https://www.red-test.com/>

4.1.2				Ambient: 38.9°C	43.9°C, unit stop charging. HSCT. MSCC
	U1 pin14-18 SC	0	0	--	Unit shut down immediately, no hazard. MSCV.
	U2 pin8-1	23.25	4.23	Cell: 44.3°C Ambient: 40.6°C	Battery normal charging, when cell temperature up to 44.3°C, unit stop charging. HSCT. MSCC
	Normal	23.25	4.20	Cell: 2.2°C Ambient: 0°C	Battery normal charging, when ambient below 2.2°C, unit shutdown, no charging. LSCT. MSCV.
	U1 pin14-18 SC	0	0	--	Unit shut down immediately, no hazard. MSCV.
	U2 pin8-1	23.25	4.20	Cell: 2.3°C Ambient: 0°C	Battery normal charging, when ambient below 2.3°C, unit shutdown, no charging. LSCT. MSCV.

Supplementary information:

Abbreviation: SC= short circuit; OC= open circuit; MSCV= maximum specified charging voltage; MSCC= maximum specified charging current; HSCT= highest specified charging temperature; LSCT= lowest specified charging temperature

Q.1	TABLE: Circuits intended for interconnection with building wiring (LPS)							P
Output Circuit	Condition	U _{oc} (V)	Time (s)	I _{sc} (A)		S (VA)		
				Meas.	Limit	Meas.	Limit	
5V Type-C Output	Normal operation	5.12	>5	5.50	8	17.38	100	
	Single fault: (U1 pin18-34 SC)	5.12	>5	5.50	8	17.38	100	
	Single fault: (U2 pin8-1 SC)	5.12	>5	5.50	8	17.38	100	
5V USB-C Output	Normal operation	5.12	>5	3.50	8	15.44	100	
	Single fault: (U1 pin14-18 SC)	5.12	>5	3.50	8	15.44	100	
	Single fault: (U2 pin8-1 SC)	5.12	>5	3.50	8	15.44	100	
5V USB-A Output	Normal operation	5.10	>5	5.50	8	21.45	100	
	Single fault: (U1 pin18-37SC)	5.10	>5	5.50	8	21.45	100	
	Single fault: (U2 pin8-1 SC)	5.10	>5	5.50	8	21.45	100	
Supplementary Information:								
SC=Short circuit; OC=Open circuit.								

T.2, T.3, T.4, T.5	TABLE: Steady force test						P
Location/Part	Material	Thickness (mm)	Probe	Force (N)	Test Duration (s)	Observation	
Enclosure top (T.4)	Plastic*	See table 4.1.2	--	100	5	Enclosure remained intact, no crack/ opening developed. Internal TS3 was not accessible after test.	
Enclosure side (T.4)	Plastic*	See table 4.1.2	--	100	5	Enclosure remained intact, no crack/ opening developed. Internal TS3 was not accessible after test.	

Enclosure bottom (T.4)	Plastic*	See table 4.1.2	--	100	5	Enclosure remained intact, no crack/ opening developed. Internal TS3 was not accessible after test.
Supplementary information:						
*Tests were performed on product with each source listed in table 4.1.2.						

T.6, T.9	TABLE: Impact test				N/A
Location/Part	Material	Thickness (mm)	Height (mm)	Observation	
--	--	--	--	--	
Supplementary information:					

T.7	TABLE: Drop test				P
Location/Part	Material	Thickness (mm)	Height (mm)	Observation	
Enclosure top	Plastic*	See table 4.1.2	1000	After the drop test, enclosure remained intact, no cracking/opening developed in the enclosure joint. Internal TS3 was not accessible after test.	
Enclosure side	Plastic*	See table 4.1.2	1000	After the drop test, enclosure remained intact, no cracking/opening developed in the enclosure joint. Internal TS3 was not accessible after test.	
Enclosure bottom	Plastic*	See table 4.1.2	1000	After the drop test, enclosure remained intact, no cracking/opening developed in the enclosure joint. Internal TS3 was not accessible after test.	
Supplementary information:					
*Tests were performed on product with each source listed in table 4.1.2.					

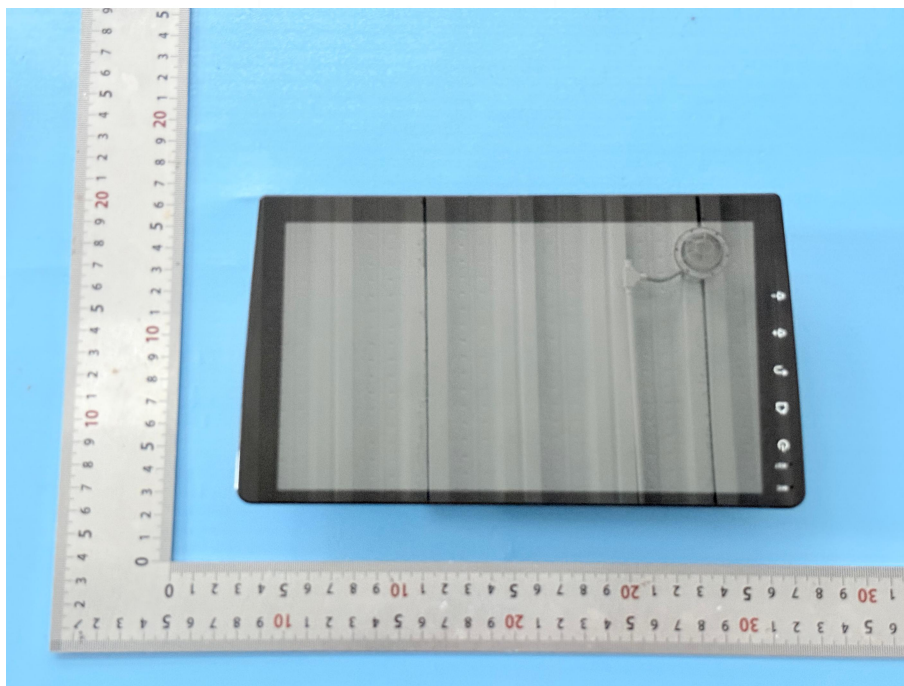
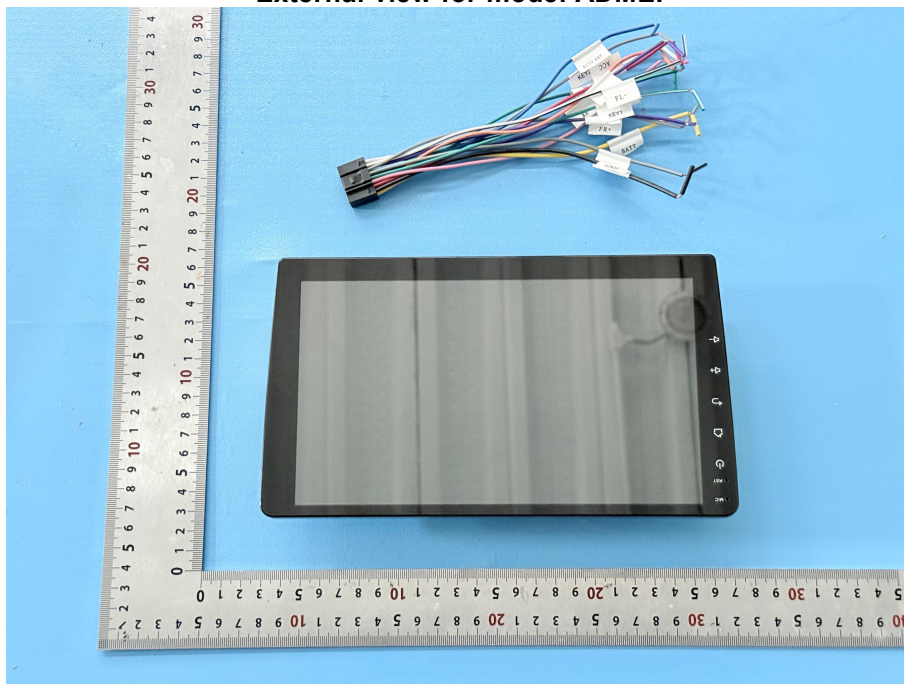
T.8	TABLE: Stress relief test					P
Location/Part	Material	Thickness (mm)	Oven Temperature (°C)	Duration (h)	Observation	
Enclosure	Plastic*	See table 4.1.2	94	7	Enclosure remained intact, no cracking/opening developed in the enclosure joint. Internal TS3 was not accessible after test.	
Supplementary information:						
*Tests were performed on product with each source listed in table 4.1.2.						

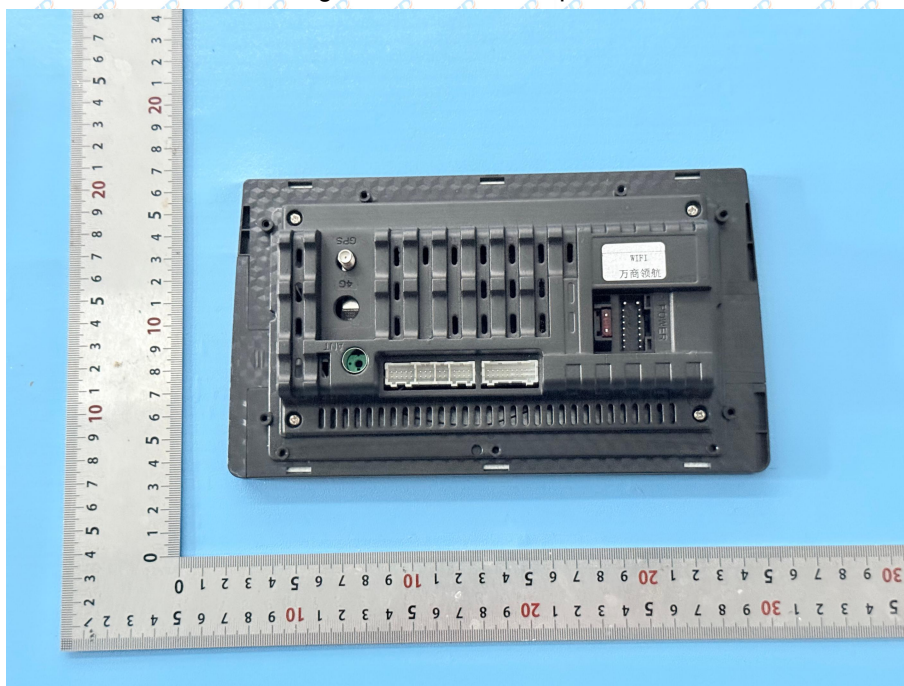
X	TABLE: Alternative method for determining minimum clearances distances				N/A
Clearance distanced between:	Peak of working voltage (V)	Required cl (mm)	Measured cl (mm)		
--	--	--	--		
Supplementary information:					

4.1.2		TABLE: Critical components information			
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹⁾
Li-ion Cell	ADMEI Technology Pte Ltd	M6	3.7V, 1000mAh, 3.7Wh	IEC 62133-2: 2017	UL CB report no.: CESC2001 04019 CB cert. no. DK-94321-UL
Plastic Enclosure	SABIC INNOVATIVE PLASTICS B V	AC310(+)	PC/ABS, V-0, 85°C, min. thickness 1.5mm	UL 94, UL 746	UL
Internal PCB fixing material	FORMOSA CHEMICALS & FIBRE CORP PLASTICS DIV	AC310(+)	V-2, min. thickness 0.8mm	UL 94, UL 796	UL
(Alternative)	Interchangeable	Interchangeable	Min. V-2	IEC 62368-1: 2018 UL 94, UL 796	UL
PCB	KINGBOARD LAMINATES HOLDINGS LTD	KB-6165	V-0, 130°C	IEC 62368-1: 2018 UL 94, UL 796	UL
(Alternative)	Interchangeable	Interchangeable	V-0, 130°C	UL 94, UL 796	UL
Thermistor (NTC)	SHENZHENSHI KEMIN SENSOR CO LTD	MF5210K	R: 10K ohm (T=25°C) Tmoa: 120°C	UL 1434	UL
PTC (F1)	LITTELFUSE INC	RSD450	Vmax: 6V, Ih: 4.5A, It: 14.5A, Tmoa: 85°C	UL 1434	UL
Supplementary information: ¹⁾ Provided evidence ensures the agreed level of compliance. See OD-2039.					

ATTACHMENT 1: PHOTO DOCUMENTATION

External view for model ADMEI





***** END OF REPORT *****