



HERMON LABORATORIES



ELECTRICAL TESTING
839.01

Hermon Laboratories Ltd.
P.O.Box 23
Binyamina 30500, Israel
Tel.+ 972 4 628 8001
Fax.+ 972 4 628 8277
e-mail: mail@hermonlabs.com

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

Report Number..... : PARSAF_EN.36712_1
Date of issue..... : October 20, 2020
Total number of pages..... : 78

Applicant's name : Paradox Security Systems Ltd.
Address..... : 780 Industrial Blvd., Saint-Eustache, Quebec, J7R 5V3, Canada

Test specification:

Standard : EN 62368-1:2014+A11:2017
IEC 62368-1:2014 (Second Edition)
Non-standard test method : N/A

Test Report Form No. : IEC62368_1B (modified)
Test Report Form(s) Originator : UL(US)
Master TRF : 2014-03

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Test item description..... :	Outdoor wireless siren	
Trade Mark..... :	P ▲ R ▲ D O X™	
Manufacturer..... :	Paradox Security Systems Ltd.	
Model/Type reference..... :	1) SR230 2) SR250 3) CSR13 4) CSR15	
Ratings..... :	1, 3) 4.5Vdc / 8350mAh from 3 batteries connected at serial 2, 4) 4.5Vdc / 18000mAh from 3 batteries connected at serial or 8-16Vac or 9-20Vdc / 550mA from external power supply	
Testing procedure and testing location:		
☒	CB Testing Laboratory:	Hermon Laboratories Ltd
Testing location/ address..... :		HaTachana road, P. O. Box 23, Binyamina 30500, Israel
☐	Associated CB Testing Laboratory:	
Testing location/ address..... :		
Tested by (name, function, signature)..... :		Mr. Ilan Benihass Site Manager, Product Safety 
Reviewed by (name, function, signature).... :		Mr. Amos Maor Staff Engineer Product Safety 
Approved by (name, function, signature).... :		Mr. Michael Brun Product Safety Group Manger 
☐	Testing procedure: CTF Stage 1:	
Testing location/ address..... :		
Tested by (name + signature)..... :		
Approved by (name + signature)..... :		
☐	Testing procedure: CTF Stage 2:	
Testing location/ address..... :		
Tested by (name + signature)..... :		
Witnessed by (name + signature)..... :		
Approved by (name + signature)..... :		
☐	Testing procedure: CTF Stage 3	
☐	Testing procedure: CTF Stage 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 A – Equipment used for testing (2 page)

Appendix B – Photo Documentation (6 page)

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

Name of test:	Test clause:
Classification and limits of electrical energy sources	5.2
Clearance distance measurements	5.4.2.2
Electrical power sources (PS) measurements for classification	6.2.2
Fixing of the mounting means test	8.7.2
Abnormal operating condition tests	B.3
Simulated single fault conditions	B.4
Test for the permanence of markings	F.3.10
Circuits intended for interconnection with building wiring (LPS)	Q.1

Testing location:

Hermon Laboratories Ltd
HaTachana road, P. O. Box 23, Binyamina
30500, Israel

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

Austria (AT), Denmark (DK), Germany (DE), Finland (FI), United Kingdom (GB), Ireland (IE), Italy (IT), Norway (NO), Poland (PL), Sweden (SE).

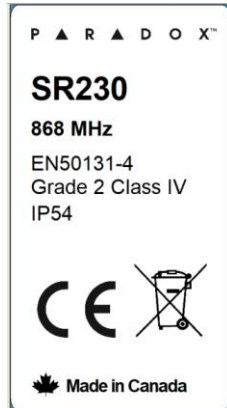
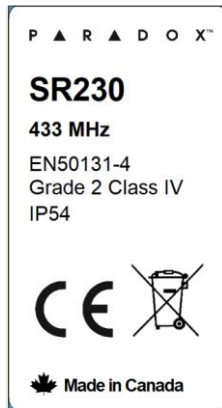
☒ The product fulfils the requirements of EN 62368-1:2014+A11:2017



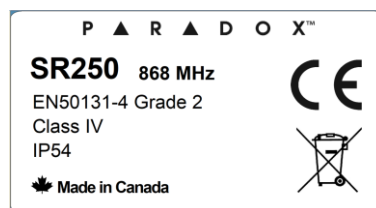
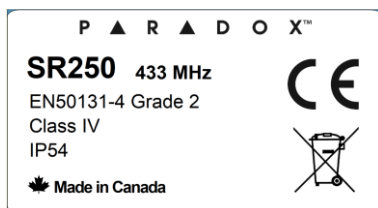
Copy of marking plates:

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.

1) SR230



2) SR250



3) CSR13



4) CSR15





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% ☐ +25%/-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: 1, 3) DC powered by batteries 2, 4) DC powered by batteries and/or external safety approved power supply
Considered current rating of protective device as part of building or equipment installation.....:	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: DC powered
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.....:	1, 3) 55°C 2, 4) 50°C
IP protection class.....:	☐ IPX0 ☒ IP54
Power Systems.....:	☐ TN ☐ TT ☐ IT - ____ V _{L-L}
Altitude during operation (m).....:	☐ 2000 m or less ☒ N/A
Altitude of test laboratory (m))	☒ 2000 m or less ☐ ____ m
Mass of equipment (kg)	☒ 1-4) Less than 1 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.....:	March 17, 2020
Date (s) of performance of tests.....:	March 19 – April 1, 2020
GENERAL REMARKS:	
"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report. Throughout this report a ☐ comma / ☒ point is used as the decimal separator.	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC60068-2-1:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided:	☐ Yes ☒ Not applicable
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies).....:	As applicant
GENERAL PRODUCT INFORMATION:	
Product Description – The EUTs, model SR230, SR250, CSR13 and CSR15 are wireless outdoor siren. SR230 and CSR13 are safety class III equipment powered by 4.5Vdc / 8350mAh from 3 Alkaline batteries (size C) connected at serial. SR250 and CSR15 are safety class III equipment powered by 4.5Vdc / 18000mAh from 3 Alkaline batteries (size D) connected at serial. In addition SR250 and CSR15 have option to be powered from external PS by one of two options: 1) 8-16Vac from external safety approved power supply 2) 9-20Vdc from external safety approved power supply The external power supply not provided with siren model SR250 / CSR15 and not evaluated under this report. The external power supply shall be safety approved according IEC/EN 60950-1 or 62368-1 with rated voltage of 8-16Vac or 9-20Vdc and rated current of 2A max (Appropriate warning provided at installation manual). The external power supply connected to the siren through 2 wire terminal block while the wiring between the PS and the siren is not outdoor exposed (Appropriate instruction provided at manual) and therefore not considered as external circuit (not subjected to overvoltages). The batteries are Alkaline non-rechargeable consumer grade which considered safe by inherently and not replace by user (Appropriate warning provided at user manual). The batteries and the external PS were evaluated and found to be complying with Limited Power Source (LPS) requirements according to Annex Q of this standard. Hazardous Voltage generated for piezo buzzer/sounder inside EUTs plastic enclosure and is not operator accessible. The sirens enclosed at a plastic enclosure that functions as UV resistant and intend for outdoor use up to 55°C (SR230 / CSR13) and 50°C (SR250 / CSR15), functions as mechanical protection and contains ES1 circuits only. The sirens were tested for IEC 60529 IP54 rating. For outdoor investigation, refer to the separate report PARENV_IEC.36712.	

**Product details:**

Model name	Serial number	Hardware version	Software release
SR230	Samples	331-6301-991	1.00
SR250	Samples	331-5502-991	1.00
CSR13	Samples	331-6301-991	V0.53
CSR15	Samples	331-5502-991	V0.53

Model Differences –

- Both models SR230 and CSR13 are similar by main hardware and plastic enclosure, and differ by different by new FW support RF protocol.
- Both models SR250 and CSR15 are similar by main hardware and plastic enclosure, and differ by different by new FW support RF protocol.

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

- The external power supply use for siren model SR250 and CSR15 not evaluated under this report and must be safety approved according to IEC/EN 60950-1 or 62368-1 with rated voltage of 8-16Vac or 9-20Vdc and rated current of 2A max.
- Internal batteries not replaceable by ordinary person. Servicing and batteries replacement should be done by qualified personnel only.



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)
SR230 / CSR13: Internal secondary circuits which powered by 4.5Vdc / 8350mAh from 3 Alkaline batteries (size C) connected at serial.	ES1
SR250 / CSR15: Internal secondary circuits which powered by 4.5Vdc / 18000mAh from 3 Alkaline batteries (size D) connected at serial.	ES1
SR250 / CSR15: Internal secondary circuits which powered by 8-16Vac or 9-20Vdc from external power adapter	ES1
SR230 / CSR13 / SR250 / CSR15: Internal piezo driver circuit (Hazardous Voltage generated for piezo buzzer/sounder inside EUTs plastic enclosure)	ES2
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)
SR230 / CSR13: Internal secondary circuits which powered by 4.5Vdc / 8350mAh from 3 Alkaline batteries (size C) connected at serial.	PS1
SR250 / CSR15: Internal secondary circuits which powered by 4.5Vdc / 18000mAh from 3 Alkaline batteries (size D) connected at serial.	PS1
SR250 / CSR15: Internal secondary circuits which powered by 8-16Vac or 9-20Vdc with rated current of 2A max from external power adapter	PS2
SR230 / CSR13 / SR250 / CSR15: Internal piezo driver circuit	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
1-4) Internal batteries	Alkaline
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)
1-4) Equipment mass (less than 7kg)	MS1



1-4) Wall mount unit (mounting at height > 2m)	MS3
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)
1-4) External surfaces that need not be touched to operate the equipment	TS1
Radiation (Clause 10) (Note: List the types of radiation present in the product and the corresponding energy source classification.) Example: DVD – Class 1 Laser Product RS1	
Type of radiation	Corresponding classification (RS)
1-4) LED indicators	RS1

ENERGY SOURCE DIAGRAM	
Indicate which energy sources are included in the energy source diagram. Insert diagram below	
X ES X PS X MS X TS X RS 1) <u>SR230 / CSR13</u> Plastic Enclosure wall mounted MS3, TS1, RS1 3 Alkaline batteries ES1, PS1 Piezo ES2, PS1 2) <u>SR250 / CSR15</u> External Power supply ES1, PS2 → Plastic Enclosure wall mounted MS3, TS1, RS1 3 Alkaline batteries ES1, PS1 Piezo ES2, PS1	



OVERVIEW OF EMPLOYED SAFEGUARDS				
Clause	Possible Hazard			
5.1	Electrically-caused injury			
Body Part (e.g. Ordinary)	Energy Source (ES3: Primary Filter circuit)	Safeguards		
		Basic	Supplementary	Reinforced (Enclosure)
Ordinary person / Instructed person / Skilled person	<u>SR230 / CSR13:</u> ES1: Internal secondary circuits which powered by 4.5Vdc from 3 Alkaline batteries (size C) connected at serial	N/A	N/A	N/A
	<u>SR250 / CSR15:</u> ES1: Internal secondary circuits which powered by 4.5Vdc from 3 Alkaline batteries (size D) connected at serial	N/A	N/A	N/A
	<u>SR250 / CSR15:</u> ES1: Internal secondary circuits which powered by 8-16Vac or 9-20Vdc from external power adapter	N/A	N/A	N/A
	<u>SR230 / CSR13 /</u> <u>SR250 / CSR15:</u> ES2: Internal piezo driver circuit	Hazardous Voltage generated for piezo buzzer/sounder inside EUTs plastic enclosure and not accessible to ordinary persons	Instructional safeguard	-
6.1	Electrically-caused fire			
Material part (e.g. mouse enclosure)	Energy Source (PS2: 100 Watt circuit)	Safeguards		
		Basic	Supplementary	Reinforced
Components and materials within the enclosure	<u>SR230 / CSR13:</u> PS1: Internal secondary circuits which powered by 4.5Vdc / 8350mAh from 3 Alkaline batteries	N/A	N/A	N/A
	<u>SR250 / CSR15:</u> PS1: Internal secondary circuits which powered by 4.5Vdc / 18000mAh from 3 Alkaline batteries	N/A	N/A	N/A
	<u>SR250 / CSR15:</u> PS2: Internal secondary circuits which powered by 8-16Vac or 9-20Vdc with rated current of 2A max from external power	Normal temperatures below ignition temperatures	All components mounted on V-1 class material or better and not ignite during single fault	-



	adapter		conditions	
	<u>SR230 / CSR13 /</u> <u>SR250 / CSR15:</u> PS1: Internal piezo driver 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
Ordinary person / Instructed person / Skilled person	1-4) Internal batteries	Protection circuit	-	-
8.1	Mechanically-caused injury			
Body Part (e.g. Ordinary)	Energy Source (MS3:High Pressure Lamp)	Safeguards		
		Basic	Supplementary	Reinforced (Enclosure)
Ordinary person / Instructed person / Skilled person	1-4) MS3: Wall mount, without definition of height might be >2m	Equipment is attached to the wall by appropriate means	Instructional safeguards	N/A
9.1	Thermal Burn			
Body Part (e.g., Ordinary)	Energy Source (TS2)	Safeguards		
		Basic	Supplementary	Reinforced
Ordinary person / Instructed person / Skilled person	1-4) TS1: Accessible enclosure surfaces	N/A	N/A	N/A
10.1	Radiation			
Body Part (e.g., Ordinary)	Energy Source (Output from audio port)	Safeguards		
		Basic	Supplementary	Reinforced
Ordinary person / Instructed person / Skilled person	1-4)RS1: LED indicators	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 table 4.1.2	P
4.1.2	Use of components	All safety critical components are certified or were tested according to this standard. Certified components are used in accordance with their ratings, certifications and they comply with applicable parts of this standard.	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	1, 3) SR230 / CSR13 are safety class III equipment powered by 4.5Vdc / 8350mAh from 3 Alkaline batteries (size C) connected at serial. Evaluated as ES1/PS1. 2, 4) SR250 / CSR15 are safety class III equipment powered by 4.5Vdc / 18000mAh from 3 Alkaline batteries (size D) connected at serial or 8-16Vac or 9-20Vdc from external safety approved PS. Evaluated as ES1/PS2.	P
4.4.4.2	Steady force tests	See appended table T.5	P
4.4.4.3	Drop tests.....	Stationary equipment	N/A
4.4.4.4	Impact tests.....	Tested after the sirens spent time of 24 hours at environmental conditions of -30°C (Min operation temp that declared by manufacture). See appended table T.6.	P
4.4.4.5	Internal accessible safeguard enclosure and barrier tests	No such internal solid safeguard in use at the EUTs	N/A
4.4.4.6	Glass Impact tests	No such parts	N/A
4.4.4.7	Thermoplastic material tests	EUTs classified as class III equipment. Safety approved plastic cover is adequate for it's used – inspected by matreial datasheet.	P
4.4.4.8	Air comprising a safeguard	No such safeguard in use	N/A
4.4.4.9	Accessibility and safeguard effectiveness	All safeguards shall remain effective	P
4.5	Explosion	No explosion occurs during normal/abnormal operation and	P



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
		single fault conditions.	
4.6	Fixing of conductors	EUTs classified as class III equipment.. All the conductors are adequately terminated.	P
4.6.1	Fix conductors not to defeat a safeguard	Conductors cannot defeat safeguards	P
4.6.2	10 N force test applied to	Waived by engineering considerations	N/A
4.7	Equipment for direct insertion into mains socket - outlets	Not direct plug-in equipment	N/A
4.7.2	Mains plug part complies with the relevant standard	As above	N/A
4.7.3	Torque (Nm).....	As above	N/A
4.8	Products containing coin/button cell batteries	No coin or button cell batteries	N/A
4.8.2	Instructional safeguard	As above	N/A
4.8.3	Battery Compartment Construction	As above	N/A
	Means to reduce the possibility of children removing the battery		—
4.8.4	Battery Compartment Mechanical Tests.....	As above	N/A
4.8.5	Battery Accessibility	As above	N/A
4.9	Likelihood of fire or shock due to entry of conductive object	No openings	P

5	ELECTRICALLY-CAUSED INJURY		P
5.2.1	Electrical energy source classifications	1, 3) SR230 / CSR13 are safety class III equipment powered by 4.5Vdc / 8350mAh from 3 Alkaline batteries (size C) connected at serial. Evaluated as ES1. 2, 4) SR250 / CSR15 are safety class III equipment powered by 4.5Vdc / 18000mAh from 3 Alkaline batteries (size D) connected at serial or 8-16Vac or 9-20Vdc from external safety approved PS. Evaluated as ES1. 1-4) SR230 / CSR13 / SR250 / CSR15 include internal piezo driver circuit which generated Hazardous Voltages during piezo buzzer/sounder operation. Evaluated as ES2.	P
5.2.2	ES1, ES2 and ES3 limits	As above	P
5.2.2.2	Steady-state voltage and current	See appended table 5.2	P



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.2.2.3	Capacitance limits..... :	Electrical energy source is not a capacitor	N/A
5.2.2.4	Single pulse limits :	Electrical energy source is not a single pulse	N/A
5.2.2.5	Limits for repetitive pulses :	Electrical energy source is not a repetitive pulses	N/A
5.2.2.6	Ringling signals :	Electrical energy source is not an analogue telephone ringing signal	N/A
5.2.2.7	Audio signals :	Electrical energy source not comprised of audio signals	N/A
5.3	Protection against electrical energy sources		P
5.3.1	General Requirements for accessible parts to ordinary, instructed and skilled persons	No ES3 circuits. Internal piezo driver circuit which generated Hazardous Voltages during piezo buzzer/sounder operation and evaluated as ES2.	P
5.3.2.1	Accessibility to electrical energy sources and safeguards	The piezo circuit is internal and protected by plastic enclosure – not accessible to ordinary person.	P
5.3.2.2	Contact requirements	No ES3 circuits	N/A
	a) Test with test probe from Annex V..... :		N/A
	b) Electric strength test potential (V) :		N/A
	c) Air gap (mm) :		N/A
5.3.2.4	Terminals for connecting stripped wire	No terminals for ES2 or ES3 voltages.	N/A
5.4	Insulation materials and requirements		P
5.4.1.2	Properties of insulating material	Electrical energy source classified as ES1 – Safeguard not required. Internal piezo driver circuit which generated Hazardous Voltages during piezo buzzer/sounder operation and evaluated as ES2 Functional insulation only provided in EUT.	P
5.4.1.3	Humidity conditioning.....:	No Hygroscopic materials which used as insulation. Test not required	N/A
5.4.1.4	Maximum operating temperature for insulating materials :	No insulating materials in use	N/A
5.4.1.5	Pollution degree :	Pollution degree 2 applied	—
5.4.1.5.2	Test for pollution degree 1 environment and for an insulating compound	As above	N/A
5.4.1.5.3	Thermal cycling	As above	N/A
5.4.1.6	Insulation in transformers with varying dimensions	No such transformers	N/A



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.1.7	Insulation in circuits generating starting pulses	No such circuits	N/A
5.4.1.8	Determination of working voltage	1, 3) Max 4.5Vdc for batteries 2, 4) Max 4.5Vdc from batteries or 16Vac or 20Vdc from external PS 1-4) 60.8Vpk during piezo buzzer/sounder operation	P
5.4.1.9	Insulating surfaces	No insulating surfaces which accessible	N/A
5.4.1.10	Thermoplastic parts on which conductive metallic parts are directly mounted	No such parts	N/A
5.4.1.10.2	Vicat softening temperature	As above	N/A
5.4.1.10.3	Ball pressure	As above	N/A
5.4.2	Clearances	Electrical energy source classified as ES1 – Safeguards not required (No basic, supplementary or reinforced insulation) All circuits are secondary provided with functional insulation. No special requirements for clearances at functional insulation. However clearance distances were measure between piezo driver circuit (hazardous voltages) to internal battery circuit (for all products) and to DC input circuit (for SR250 / CSR15 only)	P
5.4.2.2	Determining clearance using peak working voltage	60.8Vpk during piezo buzzer/sounder operation. See appended table 5.4.2.2	P
5.4.2.3	Determining clearance using required withstand voltage	No such transient voltages from the mains or an external circuit	N/A
	a) a.c. mains transient voltage.....		—
	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	As above	N/A
5.4.2.5	Multiplication factors for clearances and test voltages	< 2000m	N/A



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.3	Creepage distances..... :	Electrical energy source classified as ES1 – Safeguards not required (No basic, supplementary or reinforced insulation) All circuits are secondary provided with functional insulation. No special requirements for clearances at functional insulation.	P
5.4.3.1	General		P
5.4.3.3	Material Group :	Material group IIb is assumed to be used.	—
5.4.4	Solid insulation	Electrical energy source classified as ES1 – Safeguards not required (No basic, supplementary or reinforced insulation) Functional insulation only provided in EUT.	N/A
5.4.4.2	Minimum distance through insulation :		N/A
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		N/A
5.4.4.6	Thin sheet material		N/A
5.4.4.6.1	General requirements		N/A
5.4.4.6.2	Separable thin sheet material		N/A
	Number of layers (pcs) :		N/A
5.4.4.6.3	Non-separable thin sheet material		N/A
5.4.4.6.4	Standard test procedure for non-separable thin sheet material :		N/A
5.4.4.6.5	Mandrel test		N/A
5.4.4.7	Solid insulation in wound components		N/A
5.4.4.9	Solid insulation at frequencies >30 kHz..... :		N/A
5.4.5	Antenna terminal insulation	The EUTs include internal antenna. No such antenna terminals.	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 supplementary safeguard in use.	N/A
5.4.7	Tests for semiconductor components and for cemented joints	No such devices or cemented joints.	N/A



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.8	Humidity conditioning	Hygroscopic materials are not used as insulation. Test not required.	N/A
	Relative humidity (%).....:		—
	Temperature (°C) :		—
	Duration (h):		—
5.4.9	Electric strength test.....:	Electrical energy source classified as ES1 – Safeguards not required (No basic, supplementary or reinforced insulation) Functional insulation only provided in EUT.	N/A
5.4.9.1	Test procedure for a solid insulation type test		N/A
5.4.9.2	Test procedure for routine tests		N/A
5.4.10	Protection against transient voltages between external circuit	EUT not connected to telecommunication networks (external circuits)	N/A
5.4.10.1	Parts and circuits separated from external circuits		N/A
5.4.10.2	Test methods		N/A
5.4.10.2.1	General		N/A
5.4.10.2.2	Impulse test.....:		N/A
5.4.10.2.3	Steady-state test.....:		N/A
5.4.11	Insulation between external circuits and earthed circuitry.....:		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	Electrical energy source classified as ES1 – Safeguards not required (No basic, supplementary or reinforced insulation) Components not used as safeguard	N/A
5.5.2	Capacitors and RC units	No such capacitors and RC units which used as safeguards	N/A
5.5.2.1	General requirement		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
5.5.2.2	Safeguards against capacitor discharge after disconnection of a connector		N/A
5.5.3	Transformers	No such transformers which used as safeguards	N/A
5.5.4	Optocouplers	No such components which used as safeguards	N/A
5.5.5	Relays	As above	N/A
5.5.6	Resistors	As above	N/A
5.5.7	SPD's	As above	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 external circuit consisting of a coaxial cable	N/A
5.6	Protective conductor		N/A
5.6.2	Requirement for protective conductors	No protective conductor in use as safeguard. Electrical energy source classified as ES1 – Safeguards not required	N/A
5.6.2.1	General requirements		N/A
5.6.2.2	Colour of insulation		N/A
5.6.3	Requirement for protective earthing conductors	Protective earthing conductors not required. Electrical energy source classified as ES1 – Safeguards not required. Np provision for earthing.	N/A
	Protective earthing conductor size (mm ²)		—
5.6.4	Requirement for protective bonding conductors	No Protective bonding conductors in use at EUT.	N/A
5.6.4.1	Protective bonding conductors		N/A
	Protective bonding conductor size (mm ²). :		—
	Protective current rating (A)		—
5.6.4.3	Current limiting and overcurrent protective devices	No such devices	N/A
5.6.5	Terminals for protective conductors	No Protective earthing terminals	N/A
5.6.5.1			N/A
	Conductor size (mm ²), nominal thread diameter (mm)..... :		N/A
5.6.5.2	Corrosion		N/A
5.6.6	Resistance of the protective system	No Protective earthing and bonding system	N/A



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Clause	Requirement + Test	Result - Remark	Verdict
5.6.6.1	Requirements		N/A
5.6.6.2	Test Method Resistance (Ω)..... :		N/A
5.6.7	Reliable earthing	No earthing requirement	N/A
5.7	Prospective touch voltage, touch current and protective conductor current		N/A
5.7.2	Measuring devices and networks	DC powered no connection to the mains supply, no earth connection and no connection to external circuits from coaxial cables.	N/A
5.7.2.1	Measurement of touch current..... :		N/A
5.7.2.2	Measurement of prospective touch voltage		N/A
5.7.3	Equipment set-up, supply connections and earth connections	As above	N/A
	System of interconnected equipment (separate connections/single connection)..... :		—
	Multiple connections to mains (one connection at a time/simultaneous connections) :		—
5.7.4	Earthed conductive accessible parts :	As above	N/A
5.7.5	Protective conductor current	As above	N/A
	Supply Voltage (V) :		—
	Measured current (mA) :		—
	Instructional Safeguard :		N/A
5.7.6	Prospective touch voltage and touch current due to external circuits	As above	N/A
5.7.6.1	Touch current from coaxial cables		N/A
5.7.6.2	Prospective touch voltage and touch current from external circuits		N/A
5.7.7	Summation of touch currents from external circuits	As above	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



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Clause	Requirement + Test	Result - Remark	Verdict
6.2.2	Power source circuit classifications	1, 3) SR230 / CSR13 are safety class III equipment powered by 4.5Vdc / 8350mAh from 3 Alkaline batteries (size C) connected at serial. Evaluated as ES1/PS1. 2, 4) SR250 / CSR15 are safety class III equipment powered by 4.5Vdc / 18000mAh from 3 Alkaline batteries (size D) connected at serial or 8-16Vac or 9-20Vdc from external safety approved PS. Evaluated as ES1/PS2. 1-4) SR230 / CSR13 / SR250 / CSR15 include internal piezo driver circuit which generated Hazardous Voltages during piezo buzzer/sounder operation – 60.8Vpk / 57mA. Evaluated as ES2/PS1.	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	1, 3) SR230 / CSR13 - Internal batteries power evaluated as not exceed 15W. 1-4) Internal piezo driver circuit.	N/A
6.2.2.5	PS2	2, 4) SR250 / CSR15 - Internal batteries power evaluated as not exceed 15W. External safety approved power supply considered as limited to 100W max (appropriate warning provided at user manual)	P
6.2.2.6	PS3	No PS3	N/A
6.2.3	Classification of potential ignition sources		P
6.2.3.1	Arcing PIS	- Internal batteries and external safety approved PS ensure voltages below 50V. - Internal piezo driver circuit: Vpk = 60.8Vpk / Irms = 57mA Vpk x Irms <15 No arcing PIS	N/A



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Clause	Requirement + Test	Result - Remark	Verdict
6.2.3.2	Resistive PIS	1, 3) SR230 / CSR13 - The components in secondary circuits dissipate <15W under normal and single fault conditions. No resistive PIS. 2, 4) SR250 / CSR15 - While powered by batteries only, the components in secondary circuits dissipate less than 15W under normal and single fault conditions. No resistive PIS. While powered by external PS, the components in secondary circuits may dissipate more than 15W under normal and single fault conditions and considered as resistive PIS.	P
6.3	Safeguards against fire under normal operating and abnormal operating conditions		N/A
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.....:	1-4) Available power is less than 15VA under normal and abnormal condition.	N/A
6.3.1 (b)	Combustible materials outside fire enclosure	No such parts	N/A
6.4	Safeguards against fire under single fault conditions		P
6.4.1	Safeguard Method	Control fire spread method was used	P
6.4.2	Reduction of the likelihood of ignition under single fault conditions in PS1 circuits	This method not used	N/A
6.4.3	Reduction of the likelihood of ignition under single fault conditions in PS2 and PS3 circuits	As above	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	1, 3) SR230 / CSR13 - Internal batteries power evaluated as not exceed 15W - No supplementary safeguards are needed.	P
6.4.5	Control of fire spread in PS2 circuits	2, 4) SR250 / CSR15 - Assumed as PS2 under fault condition while powered by external PS.	P



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Clause	Requirement + Test	Result - Remark	Verdict
6.4.5.2	Supplementary safeguards	2, 4) All components in the PS2 circuit mounted on V-1 class material or better and not ignite during single fault conditions. See appended table B.4	P
6.4.6	Control of fire spread in PS3 circuit	No PS3 circuits	N/A
6.4.7	Separation of combustible materials from a PIS	Combustible materials not ignite during single fault conditions.	N/A
6.4.7.1	General		N/A
6.4.7.2	Separation by distance		N/A
6.4.7.3	Separation by a fire barrier		N/A
6.4.8	Fire enclosures and fire barriers	1, 3) EUT powered from source which considered as PS1. Fire enclosure is not required 2, 4) EUT powered from source which considered as PS2. No fire ignite during single faults conditions - Fire enclosure is not required.	N/A
6.4.8.2	Fire enclosure and fire barrier material properties		N/A
6.4.8.2.1	Requirements for a fire barrier		N/A
6.4.8.2.2	Requirements for a fire enclosure		N/A
6.4.8.3	Constructional requirements for a fire enclosure and a fire barrier		N/A
6.4.8.3.1	Fire enclosure and fire barrier openings		N/A
6.4.8.3.2	Fire barrier dimensions		N/A
6.4.8.3.3	Top Openings in Fire Enclosure: dimensions (mm)		N/A
	Needle Flame test		N/A
6.4.8.3.4	Bottom Openings in Fire Enclosure, condition met a), b) and/or c) dimensions (mm)		N/A
	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).....		N/A
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	All internal wiring considered adequate for their application use	P
6.5.2	Cross-sectional area (mm ²)		—



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Clause	Requirement + Test	Result - Remark	Verdict
6.5.3	Requirements for interconnection to building wiring.....:	EUT not intended to provide power to other equipment.	N/A
6.6	Safeguards against fire due to connection to additional equipment	No unknown equipment that can be connected.	N/A
	External port limited to PS2 or complies with Clause Q.1	No external ports	N/A

7	INJURY CAUSED BY HAZARDOUS SUBSTANCES		P
7.2	Reduction of exposure to hazardous substances	No hazardous substances, except internal consumer grade Alkaline batteries which considered as safe inherently.	P
7.3	Ozone exposure	No produced ozone by EUT	N/A
7.4	Use of personal safeguards (PPE)	Not required	N/A
	Personal safeguards and instructions		—
7.5	Use of instructional safeguards and instructions	Not required	N/A
	Instructional safeguard (ISO 7010).....:		—
7.6	Batteries.....:	Comply, see Annex M	P

8	MECHANICALLY-CAUSED INJURY		P
8.1	General	Considered	P
8.2	Mechanical energy source classifications	EUT mass less than 7 kg, but is wall mounted which can be mounted above 2m. Classified as MS3	P
8.3	Safeguards against mechanical energy sources	Appropriate instructions for wall mounting installation provided in the installation manual.	P
8.4	Safeguards against parts with sharp edges and corners	All edges and corners are judged to be well rounded and do not present any hazard.	P
8.4.1	Safeguards	Sharp edges and corners classified as MS1, safeguards not required.	N/A
8.5	Safeguards against moving parts	No moving parts	N/A
8.5.1	MS2 or MS3 part required to be accessible for the function of the equipment		N/A
8.5.2	Instructional Safeguard.....:		—
8.5.4	Special categories of equipment comprising moving parts	No such equipment	N/A
8.5.4.1	Large data storage equipment	As above	N/A
8.5.4.2	Equipment having electromechanical device for destruction of media	As above	N/A



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Clause	Requirement + Test	Result - Remark	Verdict
8.5.4.2.1	Safeguards and Safety Interlocks		N/A
8.5.4.2.2	Instructional safeguards against moving parts		N/A
	Instructional Safeguard.....		—
8.5.4.2.3	Disconnection from the supply		N/A
8.5.4.2.4	Probe type and force (N)		N/A
8.5.5	High Pressure Lamps	No such 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	Equipment is stabilized by fixed mount	N/A
8.6.1	Product classification	No stability requirements	N/A
	Instructional Safeguard.....		—
8.6.2	Static stability		N/A
8.6.2.2	Static stability test		N/A
	Applied Force		—
8.6.2.3	Downward Force Test		N/A
8.6.3	Relocation stability test		N/A
	Unit configuration during 10° tilt		—
8.6.4	Glass slide test		N/A
8.6.5	Horizontal force test (Applied Force)		N/A
	Position of feet or movable parts.....		—
8.7	Equipment mounted to wall or ceiling	1-4) Wall mounted equipment	P
8.7.1	Mounting Means (Length of screws (mm) and mounting surface)	According to installation manual guidance	P
8.7.2	Direction and applied force.....	1-4) 30 N downwards	P
8.8	Handles strength	Unit not intended to be carried by handles	N/A
8.8.1	Classification		N/A
8.8.2	Applied Force		N/A
8.9	Wheels or casters attachment requirements	No wheels or casters	N/A
8.9.1	Classification		N/A
8.9.2	Applied force		—
8.10	Carts, stands and similar carriers	No carts, stands and similar carriers	N/A
8.10.1	General		N/A
8.10.2	Marking and instructions		N/A
	Instructional Safeguard.....		—



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

9	THERMAL BURN INJURY		P
9.2	Thermal energy source classifications	1-4) Classified as TS1 for external surfaces that need not be touched to operate the equipment.	P
9.3	Safeguard against thermal energy sources	1-4) External enclosure surface classified as TS1. Safeguards not required for TS1	N/A
9.4	Requirements for safeguards		N/A
9.4.1	Equipment safeguard	As above	N/A
9.4.2	Instructional safeguard		N/A

10	RADIATION		P
10.2	Radiation energy source classification	1-4) EUTs do not include laser, visible, infra-red, ultraviolet, x-ray, and acoustic energies. LEDs used for indicating only	P
10.2.1	General classification	Classified as RS1	P
10.3	Protection against laser radiation	No Lasers	N/A
	Laser radiation that exists equipment:		—
	Normal, abnormal, single-fault		N/A
	Instructional safeguard.....		—
	Tool		—
10.4	Protection against visible, infrared, and UV	No visible, infrared, and UV	N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	radiation	radiation	
10.4.1	General		N/A
10.4.1.a)	RS3 for Ordinary and instructed persons.....:		N/A
10.4.1.b)	RS3 accessible to a skilled person.....:		N/A
	Personal safeguard (PPE) instructional safeguard		—
10.4.1.c)	Equipment visible, IR, UV does not exceed RS1..		N/A
10.4.1.d)	Normal, abnormal, single-fault conditions		N/A
10.4.1.e)	Enclosure material employed as safeguard is opaque.....:		N/A
10.4.1.f)	UV attenuation.....:		N/A
10.4.1.g)	Materials resistant to degradation UV		N/A
10.4.1.h)	Enclosure containment of optical radiation.....:		N/A
10.4.1.i)	Exempt Group under normal operating conditions.....:		N/A
10.4.2	Instructional safeguard.....:		N/A
10.5	Protection against x-radiation	No x-radiation	N/A
10.5.1	X- radiation energy source that exists equipment:		N/A
	Normal, abnormal, single fault conditions		N/A
	Equipment safeguards		N/A
	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	EUTs not defined as personal music player closely coupled to the ear or as earphones and headphones intended for use with personal music players	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		—



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Clause	Requirement + Test	Result - Remark	Verdict
	pressure.....:		
	Equipment safeguard prevent ordinary person to RS2.....:		—
10.6.5	Requirements for listening devices (headphones, earphones, etc.)		N/A
10.6.5.1	Corded passive listening devices with analog input		N/A
	Input voltage with 94 dB(A) 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		P
B.2.1	General requirements	See Test Item particulars and appended test tables	P
	Audio Amplifiers and equipment with audio amplifiers.....:	No audio amplifiers in use at EUTs	N/A
B.2.3	Supply voltage and tolerances	Considered	P
B.2.5	Input test	Not connected to the mains, test is not required.	N/A
B.3	Simulated abnormal operating conditions		P
B.3.1	General requirements	Not relevant for EUTs	N/A
B.3.2	Covering of ventilation openings	As above	N/A
B.3.3	D.C. mains polarity test	Not connected to DC mains	N/A
B.3.4	Setting of voltage selector	As above	N/A
B.3.5	Maximum load at output terminals.....:	No output terminals	N/A
B.3.6	Reverse battery polarity	1-4) See appended table B.3	P
B.3.7	Abnormal operating conditions as specified in Clause E.2.	No audio amplifier	N/A
B.3.8	Safeguards functional during and after abnormal operating conditions	Comply	P
B.4	Simulated single fault conditions		N/A
B.4.2	Temperature controlling device open or short-circuited.....:	No such device	N/A
B.4.3	Motor tests	No motors	N/A



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Clause	Requirement + Test	Result - Remark	Verdict
B.4.3.1	Motor blocked or rotor locked increasing the internal ambient temperature		N/A
B.4.4	Short circuit of functional insulation	1-4) See appended table B.4	P
B.4.4.1	Short circuit of clearances for functional insulation		P
B.4.4.2	Short circuit of creepage distances for functional insulation		P
B.4.4.3	Short circuit of functional insulation on coated printed boards	Uncoated	N/A
B.4.5	Short circuit and interruption of electrodes in tubes and semiconductors	No such components	N/A
B.4.6	Short circuit or disconnect of passive components	1-4) See appended table B.4	P
B.4.7	Continuous operation of components	No such parts	N/A
B.4.8	Class 1 and Class 2 energy sources within limits during and after single fault conditions	Accessible parts do not exceed their energy source class. No hazards or flames were noted during the tests	P
B.4.9	Battery charging under single fault conditions.....	Comply, see Annex M	P

C	UV RADIATION		N/A
C.1	Protection of materials in equipment from UV radiation	EUTs not produce UV radiation	N/A
C.1.2	Requirements		N/A
C.1.3	Test method		N/A
C.2	UV light conditioning test		N/A
C.2.1	Test apparatus		N/A
C.2.2	Mounting of test samples		N/A
C.2.3	Carbon-arc light-exposure apparatus		N/A
C.2.4	Xenon-arc light exposure apparatus		N/A

D	TEST GENERATORS		N/A
D.1	Impulse test generators	Not required to test	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 amplifiers in EUTs	N/A
	Audio signal voltage (V).....		—



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Clause	Requirement + Test	Result - Remark	Verdict

	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	—
F.2	Letter symbols and graphical symbols		P
F.2.1	Letter symbols according to IEC60027-1	Not relevant	N/A
F.2.2	Graphic symbols IEC, ISO or manufacturer specific	Comply	P
F.3	Equipment markings		P
F.3.1	Equipment marking locations	Marking on equipment enclosure	P
F.3.2	Equipment identification markings	Provided	P
F.3.2.1	Manufacturer identification	Paradox	—
F.3.2.2	Model identification	1) SR230 2) SR250 3) CSR13 4) CSR15	—
F.3.3	Equipment rating markings	See below	P
F.3.3.1	Equipment with direct connection to mains	No connection to AC or DC mains, no power rating label is required	N/A
F.3.3.2	Equipment without direct connection to mains	1-4) No power rating label	N/A
F.3.3.3	Nature of supply voltage		—
F.3.3.4	Rated voltage		—
F.3.3.4	Rated frequency		—
F.3.3.6	Rated current or rated power		—
F.3.3.7	Equipment with multiple supply connections	Single connection	N/A
F.3.4	Voltage setting device	No voltage setting device	N/A
F.3.5	Terminals and operating devices	No mains terminals or operating devices	N/A
F.3.5.1	Mains appliance outlet and socket-outlet markings	No appliance outlet and socket-outlet	N/A
F.3.5.2	Switch position identification marking	No such switches	N/A
F.3.5.3	Replacement fuse identification and rating markings	No fuses that located at operator access area	N/A
F.3.5.4	Replacement battery identification marking	Internal batteries not replaceable by ordinary person. Servicing and batteries replacement should be done by qualified personnel only.	N/A



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Clause	Requirement + Test	Result - Remark	Verdict
F.3.5.5	Terminal marking location	No terminals for mains supply	N/A
F.3.6	Equipment markings related to equipment classification	Class III equipment	N/A
F.3.6.1	Class I Equipment	As above	N/A
F.3.6.1.1	Protective earthing conductor terminal		N/A
F.3.6.1.2	Neutral conductor terminal		N/A
F.3.6.1.3	Protective bonding conductor terminals		N/A
F.3.6.2	Class II equipment (IEC60417-5172)	As above	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 :	IP54	—
F.3.8	External power supply output marking	Not such outputs	N/A
F.3.9	Durability, legibility and permanence of marking	Inspected	P
F.3.10	Test for permanence of markings	Tested	P
F.4	Instructions		P
	a) Equipment for use in locations where children not likely to be present - marking	No such locations Statement not required	N/A
	b) Instructions given for installation or initial use	Provided	P
	c) Equipment intended to be fastened in place	Provided	P
	d) Equipment intended for use only in restricted access area	Not intended for restricted access area	N/A
	e) Audio equipment terminals classified as ES3 and other equipment with terminals marked in accordance F.3.6.1	No such ES3 parts	N/A
	f) Protective earthing employed as safeguard	Class III equipment – no earth	N/A
	g) Protective earthing conductor current exceeding ES2 limits	As above	N/A
	h) Symbols used on equipment	No effected safety	N/A
	i) Permanently connected equipment not provided with all-pole mains switch	No such parts	N/A
	j) Replaceable components or modules providing safeguard function	No such parts	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	Provided as Caution at the user manual.	P



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
G	COMPONENTS		P
G.1	Switches		N/A
G.1.1	General requirements	No switches	N/A
G.1.2	Ratings, endurance, spacing, maximum load		N/A
G.2	Relays		N/A
G.2.1	General requirements	No relays	N/A
G.2.2	Overload test		N/A
G.2.3	Relay controlling connectors supply power		N/A
G.2.4	Mains relay, modified as stated in G.2		N/A
G.3	Protection Devices		N/A
G.3.1	Thermal cut-offs	No such parts	N/A
G.3.1.1a) &b)	Thermal cut-outs separately approved according to IEC 60730 with conditions indicated in a) & b)		N/A
G.3.1.1c)	Thermal cut-outs tested as part of the equipment as indicated in c)		N/A
G.3.1.2	Thermal cut-off connections maintained and secure		N/A
G.3.2	Thermal links		N/A
G.3.2.1a)	Thermal links separately tested with IEC 60691		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		N/A
G.3.4	Overcurrent protection devices		N/A
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	Classified as ES1 No such connectors	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		N/A
G.5	Wound Components		N/A
G.5.1	Wire insulation in wound components :	No such components	N/A



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
G.5.1.2 a)	Two wires in contact inside wound component, angle between 45° and 90°		N/A
G.5.1.2 b)	Construction subject to routine testing		N/A
G.5.2	Endurance test on wound components		N/A
G.5.2.1	General test requirements		N/A
G.5.2.2	Heat run test		N/A
	Time (s)		—
	Temperature (°C)		—
G.5.2.3	Wound Components supplied by mains		N/A
G.5.3	Transformers		N/A
G.5.3.1	Requirements applied (IEC61204-7, IEC61558-1/-2, and/or IEC62368-1)	No such transformers	N/A
	Position		—
	Method of protection		—
G.5.3.2	Insulation		N/A
	Protection from displacement of windings		—
G.5.3.3	Overload test.....		N/A
G.5.3.3.1	Test conditions		N/A
G.5.3.3.2	Winding Temperatures testing in the unit		N/A
G.5.3.3.3	Winding Temperatures - Alternative test method		N/A
G.5.4	Motors		N/A
G.5.4.1	General requirements	No motors	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



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Clause	Requirement + Test	Result - Remark	Verdict
	Maximum Temperature		N/A
	Electric strength test (V)		N/A
G.5.4.6.3	Tested on the bench - Alternative test method; test time (h)		N/A
	Electric strength test (V)		N/A
G.5.4.7	Motors with capacitors		N/A
G.5.4.8	Three-phase motors		N/A
G.5.4.9	Series motors		N/A
	Operating voltage		—
G.6	Wire Insulation		N/A
G.6.1	General	No such wires	N/A
G.6.2	Solvent-based enamel wiring insulation		N/A
G.7	Mains supply cords		N/A
G.7.1	General requirements	No such power cords for mains	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



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
G.8.1	General requirements	No such varistors which used as safeguards	N/A
G.8.2	Safeguard against shock		N/A
G.8.3	Safeguard against fire		
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.	Not current limited circuits	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		N/A
G.10.1	General requirements	No such resistors used as safeguards	N/A
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		N/A
G.11.1	General requirements	No capacitors or RC units that used as safeguards	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 60747-5-5:2007 Spacing or Electric Strength Test (specify option and test results) :	No optocouplers	N/A
	Type test voltage Vini :		—
	Routine test voltage, Vini,b :		—
G.13	Printed boards		N/A



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
G.13.1	General requirements	Electrical energy source classified as ES1 – Safeguards not required (No basic, supplementary or reinforced insulation) Functional insulation only provided in EUT.	N/A
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
	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	No such components	N/A
G.15	Liquid filled components		N/A
G.15.1	General requirements	No such components	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 components	N/A
b)	Impulse test using circuit 2 with Uc = to transient voltage		N/A



IEC 62368-1			
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 telephone ringing signals	N/A
H.2	Method A		N/A
H.3	Method B		N/A
H.3.1	Ringing signal		N/A
H.3.1.1	Frequency (Hz)		—
H.3.1.2	Voltage (V)		—
H.3.1.3	Cadence; time (s) and voltage (V)		—
H.3.1.4	Single fault current (mA):		—
H.3.2	Tripping device and monitoring voltage		N/A
H.3.2.1	Conditions for use of a tripping device or a monitoring voltage complied with		N/A
H.3.2.2	Tripping device		N/A
H.3.2.3	Monitoring voltage (V)		—

J	INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION		N/A
	General requirements	No such windings wires	N/A

K	SAFETY INTERLOCKS		N/A
K.1	General requirements	No safety interlocks	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



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

K.6.2	Compliance and Test method..... :		N/A
K.7	Interlock circuit isolation		N/A
K.7.1	Separation distance for contact gaps & interlock circuit elements (type and circuit location) :		N/A
K.7.2	Overload test, Current (A) :		N/A
K.7.3	Endurance test		N/A
K.7.4	Electric strength test :		N/A

L	DISCONNECT DEVICES		N/A
L.1	General requirements	1, 3) SR230 / CSR13 are safety class III equipment powered by 4.5Vdc / 8350mAh from 3 Alkaline batteries (size C) connected at serial. Evaluated as ES1/PS1. 2, 4) SR250 / CSR15 are safety class III equipment powered by 4.5Vdc / 18000mAh from 3 Alkaline batteries (size D) connected at serial or 8-16Vac or 9-20Vdc from external safety approved PS. Evaluated as ES1/PS2. Safeguards and disconnect device are not required	N/A
L.2	Permanently connected equipment		N/A
L.3	Parts that remain energized		N/A
L.4	Single phase equipment		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
L.8	Multiple power sources		N/A

M	EQUIPMENT CONTAINING BATTERIES AND THEIR PROTECTION CIRCUITS		P
M.1	General requirements	Internal batteries not replaceable by ordinary person. Servicing and batteries replacement should be done by qualified personnel only.	P
M.2	Safety of batteries and their cells		P
M.2.1	Requirements	Battery is safety approved	P
M.2.2	Compliance and test method (identify method) ...:	Inspected. See appended table 4.1.2	P



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
M.3	Protection circuits		P
M.3.1	Requirements	Comply	P
M.3.2	Tests	See appended table B.4	P
	- Overcharging of a rechargeable battery	Not rechargeable	N/A
	- Unintentional charging of a non-rechargeable battery	1, 3) Primary battery, unintentional charging not possible. 2, 4) Tested - Impossible	P
	- Reverse charging of a rechargeable battery	Not rechargeable	N/A
	- Excessive discharging rate for any battery	Tested	P
M.3.3	Compliance	No chemical leaks, explosion or emission of flame of molten metal. See appended Table B.4	P
M.4	Additional safeguards for equipment containing secondary lithium battery	Batteries and EUTs are not considered as movable	N/A
M.4.1	General		N/A
M.4.2	Charging safeguards		N/A
M.4.2.1	Charging operating limits		N/A
M.4.2.2a)	Charging voltage, current and temperature..... :		—
M.4.2.2 b)	Single faults in charging circuitry		—
M.4.3	Fire Enclosure		N/A
M.4.4	Endurance of equipment containing a secondary lithium battery		N/A
M.4.4.2	Preparation		N/A
M.4.4.3	Drop and charge/discharge function tests		N/A
	Drop		N/A
	Charge		N/A
	Discharge		N/A
M.4.4.4	Charge-discharge cycle test		N/A
M.4.4.5	Result of charge-discharge cycle test		N/A
M.5	Risk of burn due to short circuit during carrying	EUTs not intend for 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		P
M.6.1	Short circuits		P
M.6.1.1	General requirements	Batteries connections constructed so that a short-circuit is not likely to occur	P



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Clause	Requirement + Test	Result - Remark	Verdict
M.6.1.2	Test method to simulate an internal fault	Batteries tested for short circuit as part of LPS test – see appended table Q1	P
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	Alkaline batteries. No 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	As above	N/A
M.8.1	General requirements		N/A
M.8.2	Test method		N/A
M.8.2.1	General requirements		N/A
M.8.2.2	Estimation of hypothetical volume V_z (m ³ /s)		—
M.8.2.3	Correction factors		—
M.8.2.4	Calculation of distance d (mm)		—
M.9	Preventing electrolyte spillage		P
M.9.1	Protection from electrolyte spillage	Inspected	P
M.9.2	Tray for preventing electrolyte spillage	Leakage of the electrolyte from the battery is unlikely	N/A
M.10	Instructions to prevent reasonably foreseeable misuse (Determination of compliance: inspection, data review; or abnormal testing)	Instructional safeguards provided as part of installation instructions	P
N	ELECTROCHEMICAL POTENTIALS		N/A
	Metal(s) used	Plastic enclosure, no relevant	—
O	MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES		N/A
	Figures O.1 to O.20 of this Annex applied	Not required	—
P	SAFEGUARDS AGAINST ENTRY OF FOREIGN OBJECTS AND SPILLAGE OF INTERNAL LIQUIDS		N/A
P.1	General requirements	No openings. No ES2 or ES3 circuits	N/A
P.2.2	Safeguards against entry of foreign object		N/A
	Location and Dimensions (mm)		—



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
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		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		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
	Tc (°C)		—
	Tr (°C)		—
	Ta (°C)		—
P.4.2 b)	Abrasion testing		N/A
P.4.2 c)	Mechanical strength testing.....		N/A

Q	CIRCUITS INTENDED FOR INTERCONNECTION WITH BUILDING WIRING		P
Q.1	Limited power sources	EUTs are wireless equipment that not interconnects with building wiring. Internal batteries evaluated as LPS. For SR250 / CSR15 external safety approved PS considered Limited Power Source (LPS) up to 100W. Appropriate warning provided at manual	P
Q.1.1 a)	Inherently limited output	See appended table Q.1	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		N/A



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
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	No such circuits	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	1, 3) SR230 / CSR13 classified as PS1 2, 4) SR250 / CSR15 classified as PS2. No fire enclosure. Approved materials used.	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)		—
	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)		—



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Clause	Requirement + Test	Result - Remark	Verdict
	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	1, 3) SR230 / CSR13 are safety class III equipment powered by 4.5Vdc / 8350mAh from 3 Alkaline batteries (size C) connected at serial. Evaluated as ES1/PS1. 2, 4) SR250 / CSR15 are safety class III equipment powered by 4.5Vdc / 18000mAh from 3 Alkaline batteries (size D) connected at serial or 8-16Vac or 9-20Vdc from external safety approved PS. Evaluated as ES1/PS2. Robustness tests were waived by engineering considerations.	P
T.2	Steady force test, 10 N		N/A
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		N/A
T.6	Enclosure impact test	Tested after the sirens spent time of 24 hours at environmental conditions of -30°C (Min operation temp that declared by manufacture).	P
	Fall test	See appended table T.6	P
	Swing test	No required	N/A
T.7	Drop test		N/A



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
T.8	Stress relief test..... :		N/A
T.9	Impact Test (glass)		N/A
T.9.1	General requirements		N/A
T.9.2	Impact test and compliance		N/A
	Impact energy (J)..... :		—
	Height (m) :		—
T.10	Glass fragmentation test :		N/A
T.11	Test for telescoping or rod antennas		N/A
	Torque value (Nm) :		—

U	MECHANICAL STRENGTH OF CATHODE RAY TUBES (CRT) AND PROTECTION AGAINST THE EFFECTS OF IMPLOSION		N/A
U.1	General requirements	No CRT	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)		N/A
V.1	Accessible parts of equipment	No openings	N/A
V.2	Accessible part criterion	As above	N/A



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

Summary of Group & National Differences

List of Countries:	Group Differences	National Differences	List of Countries:	Group Differences	National Differences
AU=Australia	--	--	IL=Israel	--	--
AT=Austria	--	YES1)	IS=Iceland	--	--
BE=Belgium	--	--	IT=Italy	--	YES7)
BG=Bulgaria	--	--	JP=Japan	--	--
CA=Canada	--	--	KR=Korea, Republic	--	--
CH=Switzerland	--	--	LT=Lithuania	--	--
CN=China	--	--	LU=Luxembourg	--	--
CZ=Czech Republic	--	--	LV=Latvia	--	--
DK=Denmark	--	YES2)	MT=Malta	--	--
DE=Germany	--	YES3)	NL=The Netherlands	--	--
EE=Estonia	--	--	NO=Norway	--	YES8)
ES=Spain	--	--	NZ=New Zealand	--	--
FI=Finland	--	YES4)	PL=Poland	--	YES9)
FR=France	--	--	PT=Portugal	--	--
GB=United Kingdom	--	YES5)	RO=Romania	--	--
GR=Greece	--	--	SE=Sweden	--	YES10)
HU=Hungary	--	--	SK=Slovakia	--	--
HR=Croatia	--	--	SI=Slovenia	--	--
IE=Ireland	--	YES6)	US=United States	--	--

Notes:

- 1) Shown on IECEE website as national difference. Austria national standard (EN 62368-1:2014)
- 2) National differences from latest attachment to test report. Denmark national standard (DS/EN 62368-1:2014)
- 3) National differences from latest attachment to test report. Germany national standard (EN 62368-1:2014)
- 4) National differences from latest attachment to test report. Finland national standard (EN 62368-1:2014)
- 5) National differences from latest attachment to test report. United Kingdom national standard (EN 62368-1:2014)
- 6) National differences from latest attachment to test report. Ireland national standard (EN 62368-1:2014)
- 7) National differences from latest attachment to test report. Italy national standard (CEI EN 62368-1:2016)
- 8) Shown on IECEE website as national difference. Norway national standard (IEC 62368-1(ed.2))
- 9) Shown on IECEE website as national difference. Poland national standard (PN-EN 62368-1:2015-03/A11:2017-09 (EN 62368-1:2014/A11:2017 [IDT]) PN-EN 62368-1:2015-03 (EN 62368-1:2014 [IDT], IEC 62368-1:2014 [MOD]))
- 10) National differences from latest attachment to test report. Sweden national standard (SS-EN 62368-1:2014 + AC1:2015 + AC2:2017 + A11:2017)



IEC 62368-1			
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)					P																																				
	Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 62368-1:2014 are prefixed “Z”.					P																																				
CONTENTS	Add the following annexes: Annex ZA (normative) Normative references to international publications with their corresponding European publications Annex ZB (normative) Special national conditions Annex ZC (informative) A-deviations Annex ZD (informative) IEC and CENELEC code designations for flexible cords					P																																				
	Delete all the “country” notes in the reference document (IEC 62368-1:2014) according to the following list: <table><tr><td>0.2.1</td><td>Note</td><td>1</td><td>Note 3</td><td>4.1.15</td><td>Note</td></tr><tr><td>4.7.3</td><td>Note 1 and 2</td><td>5.2.2.2</td><td>Note</td><td>5.4.2.3.2.2 Table 13</td><td>Note c</td></tr><tr><td>5.4.2.3.2.4</td><td>Note 1 and 3</td><td>5.4.2.5</td><td>Note 2</td><td>5.4.5.1</td><td>Note</td></tr><tr><td>5.5.2.1</td><td>Note</td><td>5.5.6</td><td>Note</td><td>5.6.4.2.1</td><td>Note 2 and 3</td></tr><tr><td>5.7.5</td><td>Note</td><td>5.7.6.1</td><td>Note 1 and 2</td><td>10.2.1 Table 39</td><td>Note 2, 3 and 4</td></tr><tr><td>10.5.3</td><td>Note 2</td><td>10.6.2.1</td><td>Note 3</td><td>F.3.3.6</td><td>Note 3</td></tr></table>					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	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.					P																																				
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.			Added		P																																				



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
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.	Class III equipment	N/A
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.	Considered	P
10.2.1	Add the following to ^{c)} and ^{d)} in table 39: For additional requirements, see 10.5.1.	Added	P



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
10.5.1	Add the following after the first paragraph: <i>For RS 1 compliance is checked by measurement under the following conditions:</i> <i>In addition to the normal operating conditions, all controls adjustable from the outside by hand, by any object such as a tool or a coin, and those internal adjustments or presets which are not locked in a reliable manner, are adjusted so as to give maximum radiation whilst maintaining an intelligible picture for 1 h, at the end of which the measurement is made.</i> NOTE Z1 Soldered joints and paint lockings are examples of adequate locking. <i>The dose-rate is determined by means of a radiation monitor with an effective area of 10 cm², at any point 10 cm from the outer surface of the apparatus.</i> <i>Moreover, the measurement shall be made under fault conditions causing an increase of the high-voltage, provided an intelligible picture is maintained for 1 h, at the end of which the measurement is made.</i> <i>For RS1, the dose-rate shall not exceed 1 µSv/h taking account of the background level.</i> NOTE Z2 These values appear in Directive 96/29/Euratom of 13 May 1996.	No such radiation	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.	No acoustic energy sources	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	No such non-ionizing radiation energies	N/A
G.7.1	Add the following note: NOTE Z1 The harmonized code designations corresponding to the IEC cord types are given in Annex ZD.	Added	P



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
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.		P
ZB	ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)		N/A
4.1.15	Denmark, Finland, Norway and Sweden To the end of the subclause the following is added: Class I pluggable equipment type A intended for connection to other equipment or a network shall, if safety relies on connection to reliable earthing or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment shall be connected to an earthed mains socket-outlet. The marking text in the applicable countries shall be as follows: In Denmark: "Apparatets stikprop skal tilsluttes en stikkontakt med jord som giver forbindelse til 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"	Class III equipment	N/A



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.7.3	United Kingdom To the end of the subclause the following is added: The torque test is performed using a socket-outlet complying with BS 1363, and the plug part shall be assessed to the relevant clauses of BS 1363. Also see Annex G.4.2 of this annex	Not direct 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.	DC powered Class III equipment	N/A



IEC 62368-1			
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.	No connected to telecommunication networks Class III equipment.	N/A
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).	Class III equipment	N/A



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
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 resistors	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.	Class III equipment No socket-outlets	N/A
5.6.4.2.1	Ireland and United Kingdom After the indent for pluggable equipment type A, the following is added: – the protective current rating is taken to be 13 A, this being the largest rating of fuse used in the mains plug.	DC powered Class III equipment	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 mm² to 1,5 mm² in cross-sectional area.	As above	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.	DC powered Class III equipment	N/A



IEC 62368-1			
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.”	Not such equipment	N/A



IEC 62368-1			
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 .	Class III equipment	N/A
B.3.1 and B.4	Ireland and United Kingdom The following is applicable: To protect against excessive currents and short-circuits in the primary circuit of direct plug-in equipment, tests according to Annexes B.3.1 and B.4 shall be conducted using an external miniature circuit breaker complying with EN 60898-1, Type B, rated 32A. If the equipment does not pass these tests, suitable protective devices shall be included as an integral part of the direct plug-in equipment, until the requirements of Annexes B.3.1 and B.4 are met	Not direct plug-in equipment	N/A
G.4.2	Denmark To the end of the subclause the following is added: Supply cords of single phase appliances having a rated current not exceeding 13 A shall be provided with a plug according to DS 60884-2-D1:2011. CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a. If a single-phase equipment having a RATED CURRENT exceeding 13 A or if a 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	Class III equipment No mains socket-outlets	N/A



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
G.4.2	United Kingdom To the end of the subclause the following is added: The plug part of direct plug-in equipment shall be assessed to BS 1363: Part 1, 12.1, 12.2, 12.3, 12.9, 12.11, 12.12, 12.13, 12.16, and 12.17, except that the test of 12.17 is performed at not less than 125 °C. Where the metal earth pin is replaced by an Insulated Shutter Opening Device (ISOD), the requirements of clauses 22.2 and 23 also apply.	Not direct plug-in equipment	N/A
G.7.1	United Kingdom To the first paragraph the following is added: Equipment which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord shall be fitted with a 'standard plug' in accordance with the Plugs and Sockets etc (Safety) Regulations 1994, Statutory Instrument 1994 No. 1768, unless exempted by those regulations. NOTE "Standard plug" is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.	Class III equipment No power cords	N/A
G.7.1	Ireland To the first paragraph the following is added: Apparatus which is fitted with a flexible cable or cord shall be provided with a plug in accordance with Statutory Instrument 525: 1997, "13 A Plugs and Conversion Adapters for Domestic Use Regulations: 1997. S.I. 525 provides for the recognition of a standard of another Member State which is equivalent to the relevant Irish Standard	As above	N/A
G.7.2	Ireland and United Kingdom To the first paragraph the following is added: A power supply cord with a conductor of 1,25 mm ² is allowed for equipment which is rated over 10 A and up to and including 13 A.	As above	N/A



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
ZC	ANNEX ZC, NATIONAL DEVIATIONS (EN)		N/A
10.5.2	Germany The following requirement applies: For the operation of any cathode ray tube intended for the display of visual images operating at an acceleration voltage exceeding 40 kV, authorization is required, or application of type approval (Bauartzulassung) and marking. <i>Justification:</i> German ministerial decree against ionizing radiation (Röntgenverordnung), in force since 2002-07-01, implementing the European Directive 96/29/EURATOM. NOTE Contact address: Physikalisch-Technische Bundesanstalt, Bundesallee 100, D-38116 Braunschweig, Tel.: Int +49-531-592-6320, Internet: http://www.ptb.de	No cathode ray tube	N/A



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

ATTACHMENT TO TEST REPORT IEC 62368-1 ITALY NATIONAL DIFFERENCES

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

Differences according to	CEI EN 62368-1:2016
Attachment Form No.	IT_ND_IEC62368_1B
Attachment Originator	IMQ S.p.A.
Master Attachment	Date 2020-01-31
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	National Differences		
F.1	Italy The following requirements shall be fulfilled: • The power consumption in Watts (W) shall be indicated on TV receivers and in their instruction for use (Measurement according to EN 60555-2). Note: EN 60555-2 has since been replaced by IEC 60107-1:1997. • TV receivers shall be provided with an instruction for use, schematic diagrams and adjustments procedure in Italian language. • Marking for controls and terminals shall be in Italian language. Abbreviation and international symbols are allowed provided that they are explained in the instruction for use. • The ECC manufacturers are bound to issue a conformity declaration according to the above requirements in the instruction manual. The correct statement for conformity to be written in the instruction manual, shall be: <i>Questo apparecchio è fabbricato nella CEE nel rispetto delle disposizioni del D.M. marzo 1992 ed è in particolare conforme alle prescrizioni dell'art. 1 dello stesso D.M.</i> • The first importers of TV receivers manufactured outside EEC are bound to submit the TV receivers for previous conformity certification to the Italian Post Ministry (PP.TT). The TV receivers shall have on the backcover the certification number in the following form: D.M. 26/03/1992 xxxxx/xxxxx/S or T or pT S for stereo T for Teletext pT for retrofittable teletext Justification: Ministerial Decree of 26 March 1992 : National rules for television receivers trade. NOTE/: Ministerial decree above contains additional, but not safety relevant requirements	No such TV set equipment	N/A



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

4.1.2	TABLE: List of critical components					P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹	
- Description ²⁾ :	1, 3) SR230 / CSR13					
Plastic Enclosure	LG CHEM LTD	LG CHEM LTD	Thickness 3.2 mm Flammability HB Suitable for outdoor use with respect to exposure to ultraviolet light, water exposure and immersion	UL 94 UL 1694 UL 746	UL (E67171)	
PCB	Various	Various	Flammability rating V-1 or better, 105°C	UL 94	UL or equivalent	
Batteries (3 provided)	Energizer or equivalent	E93 or equivalent	Consumer non-rechargeable Alkaline size C 1.5Vdc, 8350mAh Operation temp: -18 to 55°C	UL 1642 or equivalent	UL or equivalent	
- Description ²⁾ :	2, 4) SR230 / CSR13					
Plastic Enclosure	LG CHEM LTD	LG CHEM LTD	Thickness 3.2 mm Flammability HB Suitable for outdoor use with respect to exposure to ultraviolet light, water exposure and immersion	UL 94 UL 1694 UL 746	UL (E67171)	
PCB	Various	Various	Flammability rating V-1 or better, 105°C	UL 94	UL or equivalent	
Batteries (3 provided)	Energizer or equivalent	E95 or equivalent	Consumer non-rechargeable Alkaline size D 1.5Vdc, 18000mAh Operation temp: -18 to 55°C	UL 1642 or equivalent	UL or equivalent	
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						



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	
4.8.4.4	TABLE: Drop test			—
Impact Area		Drop Distance	Drop No.	Observations
			1	
			2	
			3	
4.8.4.5	TABLE: Impact			—
Impacts per surface		Surface tested	Impact energy (Nm)	Comments
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
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IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
Test position	Surface tested	Force (N)	Duration force applied (s)
Supplementary information:			

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, 3) SR230 / CSR13	4.5Vdc	Internal secondary circuits	Normal	4.5Vdc	-	-	ES1
			Abnormal	4.5Vdc	-	-	
			Single fault – SC/OC	4.5Vdc	-	-	
2, 4) SR250 / CSR15	4.5Vdc	Internal secondary circuits	Normal	4.5Vdc	-	-	ES1
			Abnormal	4.5Vdc	-	-	
			Single fault – SC/OC	4.5Vdc	-	-	
2, 4) SR250 / CSR15	8-16Vac or 9-20Vdc	Internal secondary circuits	Normal	16 Vac or 20Vdc	-	-	ES1
			Abnormal	16 Vac or 20Vdc	-	-	
			Single fault – SC/OC	16 Vac or 20Vdc	-	-	
1-4) SR230 / CSR13 / SR250 / CSR15	60.8Vpk	Internal piezo driver circuit	Normal	60.8Vpk	57mA	-	ES1
			Abnormal	60.8Vpk	57mA	-	
			Single fault – SC/OC	60.8Vpk	57mA	-	
5.2.2.3 - Capacitance Limits							
No.	Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters		ES Class	
				Capacitance, nF	Upk (V)		
-	-	-	Normal	-	-	-	
			Abnormal	-	-		
			Single fault – SC/OC	-	-		
5.2.2.4 - Single Pulses							



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

No.	Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters			ES Class
				Duration (ms)	Upk (V)	Ipk (mA)	
-	-	-	Normal	-	-	-	-
			Abnormal	-	-	-	
			Single fault – SC/OC	-	-	-	

5.2.2.5 - Repetitive Pulses

No.	Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters			ES Class
				Off time (ms)	Upk (V)	Ipk (mA)	
-	-	-	Normal	-	-	-	-
			Abnormal	-	-	-	
			Single fault – SC/OC	-	-	-	

Test Conditions:

Normal –

Abnormal -

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

5.4.1.4, 6.3.2, 9.0, B.2.6	TABLE: Temperature measurements						N/A
	Supply voltage (V)						—
	Ambient T _{min} (°C)						—
	Ambient T _{max} (°C)						—
	T _{ma} (°C)						—
Maximum measured temperature T of part/at:		T (°C)					Allowed T _{max} (°C)
Supplementary information:							
Temperature T of winding:	t ₁ (°C)	R ₁ (Ω)	t ₂ (°C)	R ₂ (Ω)	T (°C)	Allowed T _{max} (°C)	Insulation class



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Clause	Requirement + Test	Result - Remark	Verdict

Supplementary information:

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:				

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

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)
2, 4) SR250 / CSR15							
Piezo traces to V_BATT traces (battery circuit)	60.8Vpk	-	-	0.2	1.1	-	-
Piezo traces to VIN traces (DC input circuit)	60.8Vpk	-	-	0.2	0.6	-	-
Supplementary information:							
Models <u>SR230 / CSR13</u> : There is adequate separation between piezo circuit and battery circuit.							
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							

5.4.2.3	TABLE: Minimum Clearances distances using required withstand voltage			N/A
Overvoltage Category (OV)				



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Clause	Requirement + Test	Result - Remark	Verdict

	Pollution Degree		
Clearance distanced between:	Required withstand voltage	Required cl (mm)	Measured cl (mm)
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					N/A
Distance through insulation di at/of:	Peak voltage (V)	Frequency (kHz)	Material	Required DTI (mm)	DTI (mm)	
Supplementary information:						

5.4.9	TABLE: Electric strength tests				N/A
Test voltage applied between:	Voltage shape (AC, DC)	Test voltage (V)	Breakdown Yes / No		
Functional:					
Basic/supplementary:					
Reinforced:					
Routine Tests:					
Supplementary information:					

5.5.2.2	TABLE: Stored discharge on capacitors	N/A
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Clause	Requirement + Test	Result - Remark	Verdict

Supply Voltage (V), Hz	Test Location	Operating Condition (N, S)	Switch position On or off	Measured Voltage (after 2 seconds)	ES Classification

Supplementary information:

X-capacitors installed for testing are:

☐ bleeding resistor rating:

☐ ICX:

Notes:

A. Test Location:

Phase to Neutral; Phase to Phase; Phase to Earth; and/or Neutral to Earth

B. Operating condition abbreviations:

N – Normal operating condition (e.g., normal operation, or open fuse); S –Single fault condition

5.6.6.2	TABLE: Resistance of protective conductors and terminations				N/A
Accessible part	Test current (A)	Duration (min)	Voltage drop (V)	Resistance (Ω)	

Supplementary information:

5.7.2.2, 5.7.4	TABLE: Earthed accessible conductive part		N/A
Supply voltage.....:		—	
Location	Test conditions specified in 6.1 of IEC 60990 or Fault Condition No in IEC 60990 clause 6.2.2.1 through 6.2.2.8, except for 6.2.2.7	Touch current (µA)	
	1		
	2*		
	3		
	4		
	5		
	6		
	8		
Supplementary Information:			
Notes:			



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

- [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.

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	
1, 3) SR230 / CSR13						
A Internal batteries		Power (W):	6.3W	-	PS1	
		V _A (Vdc).....:	2.1Vdc	-		
		I _A (A):	3A	-		
2, 4) SR250 / CSR15						
A Internal batteries		Power (W):	4.334W	-	PS1	
		V _A (Vdc).....:	2.2Vdc	-		
		I _A (A):	1.97A	-		
B External power supply **		Power (W):	<100W	<100W	PS2	
		V _A (Vdc).....:	8-16Vac or 9-20Vdc	8-16Vac or 9-20Vdc		
		I _A (A):	2A max	2A max		
Supplementary Information: (*) Measurement taken only when limits at 3 seconds exceed PS1 limits ** The external power supply use for siren model SR250 not evaluated under this report and must be safety approved according to IEC/EN/UL 60950-1 or 62368-1 with rated voltage of 8-16Vac or 9-20Vdc and rated current of 2A max (appropriate warning provided at the manual).						

6.2.3.1	TABLE: Determination of Potential Ignition Sources (Arcing PIS)				N/A
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	
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.					

6.2.3.2	TABLE: Determination of Potential Ignition Sources (Resistive PIS)				P
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IEC 62368-1					
Clause	Requirement + Test			Result - Remark	Verdict
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
SR230 / CSR13 - The components in secondary circuits dissipate <15W under normal and single fault conditions					No
SR250 / CSR15 - While powered by batteries only, the components in secondary circuits dissipate less than 15W under normal and single fault conditions					No
SR250 / CSR15 - While powered by external PS, the components in secondary circuits may dissipate more than 15W single fault					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:			

B.2.5	TABLE: Input test						N/A
U (V)	I (A)	I rated (A)	P (W)	P rated (W)	Fuse No	I fuse (A)	Condition/status



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

Supplementary information:							

B.3	TABLE: Abnormal operating condition tests							P
Ambient temperature (°C)					21			—
Power source for EUT: Manufacturer, model/type, output rating . :					3 Alkaline batteries, 4.5Vdc			—
Component No.	Abnormal Condition	Supply voltage, (V)	Test time (h)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
<u>SR230 / CSR13</u> Alkaline battery size C	Reverse battery polarity	4.5Vdc	5 min	-	-	-	-	No hazards No overheat
<u>SR250 / CSR15</u> Alkaline battery size D	Reverse battery polarity	4.5Vdc	5 min	-	-	-	-	No hazards No overheat
<u>SR250 / CSR15</u> Terminal block P1	Reverse DC input polarity	20Vac	1h	-	-	-	-	No hazards No overheat
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.								

B.4	TABLE: Fault condition tests							P
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IEC 62368-1								
Clause	Requirement + Test				Result - Remark			Verdict
Ambient temperature (°C) :					23			—
Power source for EUT: Manufacturer, model/type, output rating . :					1) 4.5Vdc / 8350mAh from 3 Alkelaine batteries connected at serial 2) 4.5Vdc / 18000mAh from 3 batteries connected at serial and 20Vdc / 2A from external power supply			—
Component No.	Fault Condition	Supply voltage, (V)	Test time (h)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
1, 3) SR230 / CSR13								
C201	Short	4.5Vdc	1h	-	-	Batteries	59.3	Fault current 2.3A. No hazards
XFO1	Short pins 1 and 3	-	-	-	-	-	-	No hazards No overheat
2, 4) SR250 / CSR15								
C201	Short	4.5Vdc	1h	-	-	Batteries	51.3	Fault current 2.2A. No hazards
XFO1	Short pins 1 and 3	-	-	-	-	-	-	No hazards No overheat
MOV1	Short	20Vdc	1h	-	-	-		No hazards No overheat
D200	Short	20Vdc	1h	-	-	-		No battery unintentional charging. No hazards. No overheat.
Supplementary information:								
1, 3) SR230 / CSR13: There is is adequate separation between piezo circuit and battery circuit.								
2, 4) SR250 / CSR15: There is is adequate separation between piezo circuit and battery circuit / DO input circuit (complies with clearance for basic insulation as specified in 5.4.2)								



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

Annex M	TABLE: Batteries								P
The tests of Annex M are applicable only when appropriate battery data is not available									Yes
Is it possible to install the battery in a reverse polarity position?:							Tested. No hazards		No
	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								No	
- Explosion of the battery								No	
- Emission of flame or expulsion of molten metal								No	
- Electric strength tests of equipment after completion of tests								N/A	
Supplementary information:									

Annex M.4	TABLE: Additional safeguards for equipment containing secondary lithium batteries					N/A
Battery/Cell No.	Test conditions	Measurements			Observation	
		U	I (A)	Temp (C)		
	Normal					
	Abnormal					
	Single fault –SC/OC					
	Normal					
	Abnormal					
	Single fault – SC/OC					
Supplementary information:						
Battery identification	Charging at T _{lowest} (°C)	Observation	Charging at T _{highest} (°C)	Observation		



IEC 62368-1				
Clause	Requirement + Test	Result - Remark		Verdict
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
	<u>SR230 / CSR13</u> Alkaline battery size C	4.62Vdc	6.45A	8A		100VA
	<u>SR250 / CSR15</u> Alkaline battery size C	4.78Vdc	4.1A	8A		100VA
	<u>SR250 / CSR15</u> External PS	8-16Vac or 9-20Vdc	2A max*	8A	< 100VA	100VA
Supplementary Information: *Measured after 5 sec SC=Short circuit, OC=Open circuit						
* The external power supply use for siren model SR250 not evaluated under this report and must be safety approved according to IEC/EN/UL 60950-1 or 62368-1 with rated voltage of 8-16Vac or 9-20Vdc and rated current of 2A max (appropriate warning provided at the manual).						

T.2, T.3, T.4, T.5	TABLE: Steady force test					P
Part/Location	Material	Thickness (mm)	Force (N)	Test Duration (sec)	Observation	
Front cover of SR230/CSR13	Plastic	3.2	250N	5sec	No damage. All safeguards shall remain effective	
Front cover of SR250/CSR15	Plastic	3.8	250N	5sec	No damage. All safeguards shall remain effective	
Supplementary information:						

T.6, T.9	TABLE: Impact tests				P
Part/Location	Material	Thickness (mm)	Vertical distance (mm)	Observation	
Front cover of SR230/CSR13	Plastic	3.2	1.3mm	No damage. All safeguards shall remain effective	
Front cover of SR250/CSR15	Plastic	3.8	1.3mm	No damage. All safeguards shall remain effective	
Supplementary information:					



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					N/A
Part/Location	Material	Thickness (mm)	Oven Temperature (°C)	Duration (h)	Observation	
Supplementary information:						

Appendix A – Equipment used for testing

Equipment calibration

Hermon Laboratories is accredited by A2LA for calibration according to present requirements of ISO/IEC 17025 and NCSL Z540-1. The accreditation is granted to perform calibration of parameters that are listed in the Scope of Hermon Laboratories Accreditation. Hermon Laboratories calibrates its reference and transfer standards by calibration laboratories accredited to ISO/IEC 17025 by a mutually recognized Accreditation Body or by a recognized national metrology institute. All reference and transfer standards used in the calibration system are traceable to national or international standards.

In-house calibration of all test and measurement equipment is performed on a regular basis according to Hermon Laboratories calibration procedures, manufacturer calibration/verification procedures or procedures defined in the relevant standards. The Hermon Laboratories test and measurement equipment is calibrated within the tolerances specified by the manufacturers and/or by the relevant standards.

HL No	Equipment description	Manufacturer	Model	Ser. No.	Last Cal./Chk.	Next Cal./Chk.
2774	HygroThermometer, Min/Max Memory	Delta TRAK	13301	NA	11-Aug-19	11-Aug-20
3460	Precision Barometer, 870 - 1050 hPa	LUFFT Mess- und Regeltechnik GmbH	DKD-K-26701	100469	05-Jun-18	05-Jun-20
629	Steel Ball, IEC 60950-1	Ergonomics	TB-1	629	02-Oct-18	02-Oct-21
3827	Directed vertical drop device for impact test , 1.3 m	Hermon Laboratories	DVD-1	NA	13-Aug-17	13-Aug-20
4599	Data Logger Hydra	Fluke	2620A	8719005	16-Jan-20	16-Jan-21
1415	Multimeter	Fluke	73 III	76080133	21-Jul-19	21-Jul-20
5201	Multimeter, TRUE RMS	Fluke	Fluke 287	33500022	02-May-19	02-May-20
5413	Digital Stopwatch	Shenzhen Huibo Industrial & Trading Co. Ltd.	PC396	NA	19-Aug-19	19-Aug-20

Measurement uncertainty

Expanded uncertainty at 95% confidence in Hermon Labs safety measurements

Test description	Expanded uncertainty
1. Heating test (TC method)	Option 1 $\pm 1.04\%$ Option 2 $\pm 1.87\%$
2. Leakage current	For Options 1, 2 $\pm 6.2\%$
3. Input test	AC Input test uncertainty: $\pm 3.02\%$ DC Input test uncertainty: $\pm 1.99\%$
4. Bonding impedance (Ground continuity) test	Option 1 test uncertainty: $\pm 2.81\%$ Option 1 test uncertainty: $\pm 1.99\%$
5. Dielectric strength	HYPOTPLUS II, AC/DC Withstand Voltage Tester expanded uncertainty: $\pm 3.55\%$ Electrical Safety Compliance Analyzer expanded uncertainty: $\pm 2.49\%$
6. Cord Test	$\pm 0.98\%$
7. Voltage limitation	$\pm 1.68\%$
8. Transformer abnormal test	Voltage/Current method $\pm 3.9\%$ Temperature (TC method) $\pm 2.6\%$ Temperature (Resistance method) $\pm 1.93\%$
9. Material used in high voltages	Option I uncertainty $\pm 0.98\%$ Option II uncertainty $\pm 0.03\%$
10. Limited Current Circuit	Option 1 $\pm 2.44\%$ Option 2 $\pm 3.31\%$
11. Energy hazard test	Option I uncertainty $\pm 1.82\%$ Option II uncertainty $\pm 0.97\%$
12. Limited power source (2.5)	$\pm 3.9\%$
13. Telecom Steady state test (6.2.2.2)	$\pm 2.8\%$
14. Telecom Impulse test (6.2.2.1)	$\pm 3.75\%$
15. TNV separation from earth (6.1.2)	$\pm 2.8\%$
16. TNV & SELV reliability	$\pm 3.30\%$
17. Ringing signal criteria	Normal test $\pm 1.68\%$ Leakage test $\pm 6.2\%$
18. Component failure	Voltage/ current method $\pm 3.9\%$ Temperature method $\pm 2.6\%$
19. Cable distribution impulses	High voltage impulses expanded uncertainty using 4Kv generator $\pm 3.75\%$. High voltage impulses expanded uncertainty using 10Kv generator $\pm 5\%$

Note: Pass/Fail decision was based on nominal values

Appendix B - Photo Documentation

Photograph №1, 2
SR230 / CSR13 General view

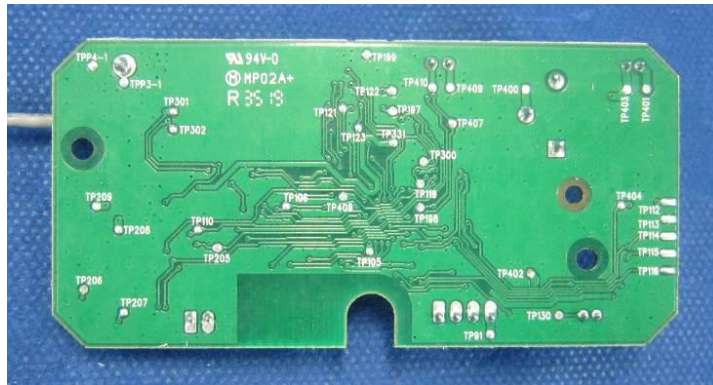


Photograph №3
SR230 / CSR13 Rear view



Photograph №4
SR230 / CSR13 Internal view





Photograph №7, 8
SR250 / CSR15 General view



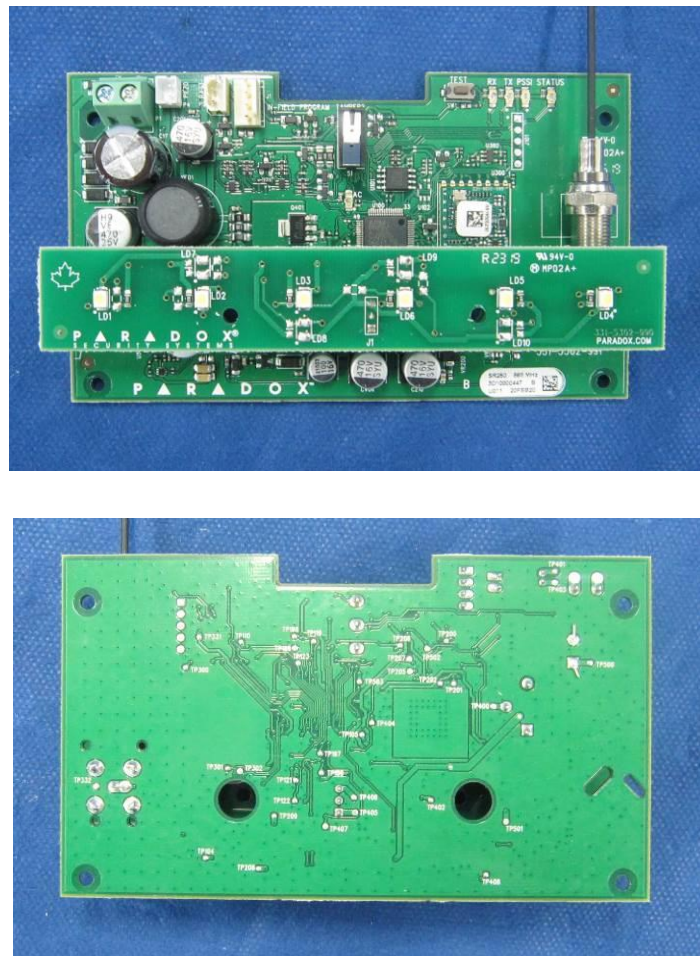
Photograph №9
SR250 / CSR15 Rear view



Photograph №10
SR250 / CSR15 Internal view



Photograph №11, 12
SR250 / CSR15 PCB view



End of Test Report