

Test Report issued under the responsibility of:

**TEST REPORT****EN 62368-1****Audio/video, information and communication technology equipment****Part 1: Safety requirements****Report Number** ..... : RSE-EMIESS21-A192-RAP-1-A (00)

Date of issue ..... : 29/11/2021

Total number of pages ..... : 81

**Applicant's name** ..... : **RAPID SPACE**Address ..... : 17 Rue Pache  
75011 PARIS - FRANCE**Test specification:**

Standard ..... : EN 62368-1: 2014

Test procedure ..... : CE marking

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

**Test Report Form No.** ..... : IEC62368\_1B

Test Report Form(s) Originator ..... : UL(US) modified by EMITECH (2020-11)

Master TRF ..... : 2014-03

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The test results presented in this report relate only to the object tested.

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Test Item description .....	Open Radio Station	
Trade Mark .....	 Rapid.Space	
Manufacturer .....	Rapid.Space	
Model/Type reference .....	CASE-BJT1	
Ratings .....	50W by PoE, 24-50Vd.c	
Testing procedure and testing location:		
<input checked="" type="checkbox"/> Testing Laboratory:	<b>EMITECH Montigny le Bretonneux</b>	
Testing location/ address .....	30-32 Avenue des 3 Peuples 78180 MONTIGNY LE BRETONNEUX – France	
<input type="checkbox"/> Associated CB Testing Laboratory:		
Testing location/ address .....		
Tested by (name + signature).....:	<b>BOUGRAINVILLE L.</b> Safety technician	
	<b>LOPES E.</b> Safety manager	
Approved by (name + signature) .....		

<b>List of Attachments (including a total number of pages in each attachment):</b>	
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**Summary of compliance with National Differences:**

The following **European Group Differences** which have national deviations for **IEC 62368-1:2014**, in CB bulletin have been also checked:

**CENELEC (EN 62368-1:2014)**

- **Country members of CENELEC:**

Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

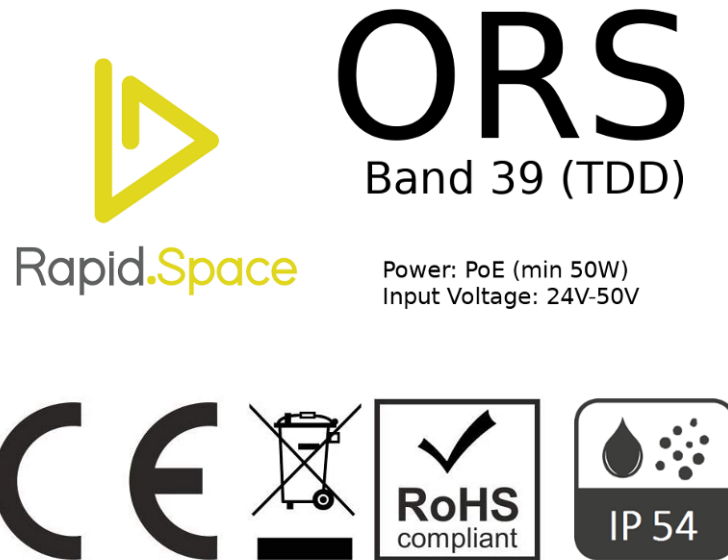
- **Country affiliates members of CENELEC:**

Albania, Belarus, Bosnia and Herzegovina, Georgia, Israel, Jordan, Libya, Montenegro, Serbia, Morocco, Tunisia, and Ukraine.

☒ **The product fulfils the requirements of EN 62368-1: 2014 + A11: 2017 standard, subject to the validity of documents provided**

**Copy of marking plate:**

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

**Marking plate**

TEST ITEM PARTICULARS:	
Classification of use by .....	<input type="checkbox"/> Ordinary person <input type="checkbox"/> Instructed person <input checked="" type="checkbox"/> Skilled person <input type="checkbox"/> Children likely to be present
Supply Connection.....	<input type="checkbox"/> AC Mains <input type="checkbox"/> DC Mains <input checked="" type="checkbox"/> External Circuit - not Mains connected - <input checked="" type="checkbox"/> ES1 <input type="checkbox"/> ES2 <input type="checkbox"/> ES3
Supply % Tolerance .....	<input type="checkbox"/> +10%/-10% <input type="checkbox"/> +20%/-15% <input checked="" type="checkbox"/> 50Vdc <input type="checkbox"/> None
Supply Connection – Type .....	<input type="checkbox"/> pluggable equipment type A - <input type="checkbox"/> non-detachable supply cord <input type="checkbox"/> appliance coupler <input type="checkbox"/> direct plug-in <input type="checkbox"/> mating connector <input type="checkbox"/> pluggable equipment type B - <input type="checkbox"/> non-detachable supply cord <input type="checkbox"/> appliance coupler <input type="checkbox"/> permanent connection <input type="checkbox"/> mating connector <input checked="" type="checkbox"/> other: Power supply by Ethernet cable
Considered current rating of protective device as part of building or equipment installation .....	<input checked="" type="checkbox"/> N/A <input type="checkbox"/> _____ A; Installation location: <input type="checkbox"/> building; <input checked="" type="checkbox"/> equipment
Equipment mobility .....	<input type="checkbox"/> movable <input type="checkbox"/> hand-held <input type="checkbox"/> transportable <input checked="" type="checkbox"/> stationary <input type="checkbox"/> for building-in <input type="checkbox"/> direct plug-in <input type="checkbox"/> rack-mounting <input type="checkbox"/> wall-mounted
Over voltage category (OVC) .....	<input type="checkbox"/> OVC I <input type="checkbox"/> OVC II <input type="checkbox"/> OVC III <input type="checkbox"/> OVC IV <input checked="" type="checkbox"/> other: Not directly connected to the mains (power supply Ethernet)
Class of equipment .....	<input type="checkbox"/> Class I <input type="checkbox"/> Class II <input checked="" type="checkbox"/> Class III
Access location .....	<input type="checkbox"/> restricted access location <input checked="" type="checkbox"/> N/A
Pollution degree (PD) .....	<input type="checkbox"/> PD 1 <input checked="" type="checkbox"/> PD 2 <input type="checkbox"/> PD 3
Manufacturer's specified maximum operating ambient.....	-25 to 55°C
IP protection class .....	<input type="checkbox"/> IPX0 <input checked="" type="checkbox"/> IP54 ( manufacturer declaration with manufacturer test report)
Power Systems .....	<input type="checkbox"/> TN <input type="checkbox"/> TT <input type="checkbox"/> IT - _____ V L-L
Altitude during operation (m) .....	<input type="checkbox"/> 2000 m or less <input checked="" type="checkbox"/> No special altitude (See General Product Information)
Altitude of test laboratory (m) .....	<input type="checkbox"/> 2000 m or less <input checked="" type="checkbox"/> 60 m
Mass of equipment (kg) .....	<input checked="" type="checkbox"/> 2 kg

<b>POSSIBLE TEST CASE VERDICTS:</b>	
- 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)
<b>TESTING:</b>	
Date of receipt of test item..... :	19/04/2021
Dates of performance of tests ..... :	19/04/2021 to 21/04/2021 and 05/08/2021 for document analysis
<b>GENERAL REMARKS:</b>	
<p>"(See Enclosure #)" refers to additional information appended to the report.          "(See appended table)" refers to a table appended to the report.</p> <p>Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.</p>	
<b>Manufacturer's Declaration per sub-clause 4.2.5 of IEC 60335-1:</b>	
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 ..... :	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable
<b>When differences exist; they shall be identified in the General product information section.</b>	
<b>Name and address of factory (ies) ..... :</b>	<b>RAPID SPACE</b> 17 Rue Pache 75011 PARIS – France

**GENERAL PRODUCT INFORMATION:****Product Description –**

The equipment under test is: an Open Radio Station is a 4G/5G LTE (Long Term Evolution) base station.  
The ORS come in a white metallic case (see picture) which includes an embedded computer and a PCB radio.  
This equipment is class III and use Power over Ethernet (PoE) to be powered on and antennas to emit/receive the RF signal.

**Characteristics:**

It weighs 2kg and measures 170x105x250mm

**Test conditions:**

Tested on table and connected to a switch to supply power to the equipment and carry out data exchanges with smartphone in 4G network

**Conditions of acceptability:**

Maximum ambient temperature: 55°C

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

Means of fixing on the post not been provided (installation is made by qualified personnel)

Outdoor installation (this report must be used with Report N° RSE-100-21-100199-2-A)

**Model Differences –**

No other model difference

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

No additional application consideration



**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)
Power supply Ethernet cable (50Vdc)	ES1

**Electrically-caused fire (Clause 6):**

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

Example: Battery pack (maximum 85 watts):

PS2

Source of power or PIS	Corresponding classification (PS)
Power supply Ethernet cable (50Vdc)	PS2

**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
Lithium coin battery on PC	See annex M

**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)
For the mass	MS1
For the sharp edge	MS1
For fixing on a pole (installation height between 5 and 7m)	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)
Metallic enclosure	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

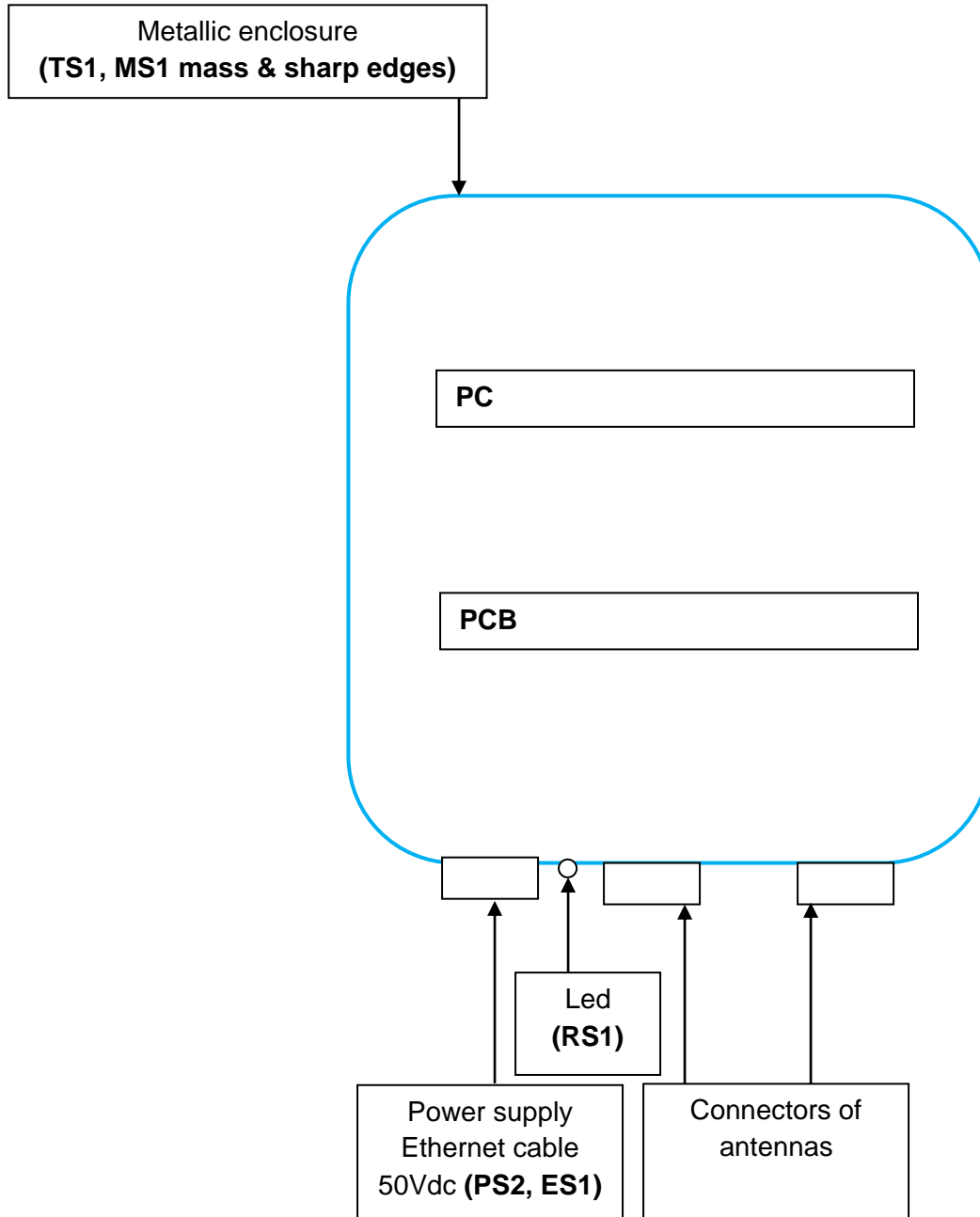
RS1

Type of radiation	Corresponding classification (RS)
Indicating led	RS1

### ENERGY SOURCE DIAGRAM

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

☒ ES    ☒ PS    ☒ MS    ☒ TS    ☒ RS



OVERVIEW OF EMPLOYED SAFEGUARDS				
Clause	Possible Hazard			
5.1	Electrically-caused injury			
Body Part (e.g. Ordinary)	Energy Source (ES3: Primary Filter circuit)	Safeguards		
		Basic	Supplementary	Reinforced (Enclosure)
Ordinary person	ES1 (50Vdc)	—	—	—
6.1	Electrically-caused fire			
Material part (e.g. mouse enclosure)	Energy Source (PS2: 100 Watt circuit)	Safeguards		
		Basic	Supplementary	Reinforced
Power supply Ethernet cable	PS2	No auto-ignition, heating test	Control of fire spread	—
7.1	Injury caused by hazardous substances			
Body Part (e.g., skilled)	Energy Source (hazardous material)	Safeguards		
		Basic	Supplementary	Reinforced
Skilled person	Coin battery (See annex M)	—	—	—
8.1	Mechanically-caused injury			
Body Part (e.g. Ordinary)	Energy Source (MS3:High Pressure Lamp)	Safeguards		
		Basic	Supplementary	Reinforced (Enclosure)
Ordinary person	MS1 : External enclosure (sharp edges)	—	—	—
Ordinary person	MS1 : Stability	—	—	—
9.1	Thermal Burn			
Body Part (e.g., Ordinary)	Energy Source (TS2)	Safeguards		
		Basic	Supplementary	Reinforced
Ordinary person	TS1 : External enclosure	—	—	—
10.1	Radiation			
Body Part (e.g., Ordinary)	Energy Source (Output from audio port)	Safeguards		
		Basic	Supplementary	Reinforced
Ordinary person	RS1: Indicating led	—	—	—
Supplementary Information:				
(1) See attached energy source diagram for additional details.				
(2) “N” – Normal Condition; “A” – Abnormal Condition; “S” Single Fault				

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Clause	Requirement + Test	Result - Remark	Verdict
<b>4</b>	<b>GENERAL REQUIREMENTS</b>		
4.1.1	Acceptance of materials, components and subassemblies	No such sub-assemblies	N/A
4.1.2	Use of components	Certified components are used in accordance with their ratings, certifications and they comply with applicable parts of this standard. See appended table 4.1.2	P
4.1.3	Equipment design and construction	Equipment remains safe both in normal operation and single fault condition/abnormal operation, refer below for details	P
4.1.15	Markings and instructions.....:	(See Annex F)	P
4.4.4	Safeguard robustness	Refer below for test details	P
4.4.4.2	Steady force tests.....:	(See Annex T.3, T.5)	P
4.4.4.3	Drop tests .....	Equipment is not hand-held/direct plug-in/transportable/desk-top with cord connected handset	N/A
4.4.4.4	Impact tests .....	(See Annex T.6)	P
4.4.4.5	Internal accessible safeguard enclosure and barrier tests.....:	No internal accessible safeguard	N/A
4.4.4.6	Glass Impact tests .....	No glass	N/A
4.4.4.7	Thermoplastic material tests .....	Metal enclosure	N/A
4.4.4.8	Air comprising a safeguard.....:	No air comprising	N/A
4.4.4.9	Accessibility and safeguard effectiveness	After the tests, no class 3 energy sources accessible to ordinary person	P
4.5	Explosion	No explosive materials	N/A
4.6	Fixing of conductors	Only ES1 conductors	P
4.6.1	Fix conductors not to defeat a safeguard		N/A
4.6.2	10 N force test applied to .....	See Annex T.2	P
4.7	Equipment for direct insertion into mains socket - outlets	Not a direct plug-in equipment	N/A
4.7.2	Mains plug part complies with the relevant standard.....:	-	N/A
4.7.3	Torque (Nm) .....	-	N/A
4.8	Products containing coin/button cell batteries	Professional equipment	P
4.8.2	Instructional safeguard	Battery is not intended to be replaced	N/A
4.8.3	Battery Compartment Construction	No battery compartment cover	N/A
	Means to reduce the possibility of children removing the battery .....	-	—

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Clause	Requirement + Test	Result - Remark	Verdict
4.8.4	Battery Compartment Mechanical Tests .....	-	N/A
4.8.5	Battery Accessibility		N/A
4.9	Likelihood of fire or shock due to entry of conductive object.....	No openings	N/A

<b>5</b>	<b>ELECTRICALLY-CAUSED INJURY</b>		
5.2.1	Electrical energy source classifications.....	ES1 considered	P
5.2.2	ES1, ES2 and ES3 limits	Refer below	P
5.2.2.2	Steady-state voltage and current.....	(See appended table 5.2)	P
5.2.2.3	Capacitance limits .....	Not used	N/A
5.2.2.4	Single pulse limits .....	Not used	N/A
5.2.2.5	Limits for repetitive pulses .....	Not used	N/A
5.2.2.6	Ringing signals .....	No ringing signals	N/A
5.2.2.7	Audio signals .....	No 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	Equipment safeguard provided, parts accessible to ordinary person remains below ES1 limits in normal operation, ES2 limits in abnormal operation/single fault condition. See appended table 5.2	P
5.3.2.1	Accessibility to electrical energy sources and safeguards	Only ES1 circuits, no hazard	N/A
5.3.2.2	Contact requirements	No such construction	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 such terminals	N/A
5.4	Insulation materials and requirements		
5.4.1.2	Properties of insulating material	Class III equipment, no safety insulation	N/A
5.4.1.3	Humidity conditioning .....	-	N/A
5.4.1.4	Maximum operating temperature for insulating materials .....	-	N/A
5.4.1.5	Pollution degree .....	Pollution degree 2 considered	—
5.4.1.5.2	Test for pollution degree 1 environment and for an insulating compound	See above	N/A
5.4.1.5.3	Thermal cycling		N/A
5.4.1.6	Insulation in transformers with varying dimensions	No insulation with varying dimensions	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.4.1.7	Insulation in circuits generating starting pulses	No circuits generating starting pulses	N/A
5.4.1.8	Determination of working voltage		N/A
5.4.1.9	Insulating surfaces	No such construction	N/A
5.4.1.10	Thermoplastic parts on which conductive metallic parts are directly mounted	Certified components	N/A
5.4.1.10.2	Vicat softening temperature .....	This method is not used	N/A
5.4.1.10.3	Ball pressure .....	This method is not used	N/A
5.4.2	Clearances	All parts are already certified	N/A
5.4.2.2	Determining clearance using peak working voltage	This method is not used	N/A
5.4.2.3	Determining clearance using required withstand voltage .....	This method is not used	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	This method is not used	N/A
5.4.2.5	Multiplication factors for clearances and test voltages .....	"No special altitude condition" In documentation of equipment	N/A
5.4.3	Creepage distances .....	All parts already certified	N/A
5.4.3.1	General		N/A
5.4.3.3	Material Group .....	Material group IIIb considered	—
5.4.4	Solid insulation	No supplementary or reinforced insulation	N/A
5.4.4.2	Minimum distance through insulation .....	-	N/A
5.4.4.3	Insulation compound forming solid insulation	No insulation compound	N/A
5.4.4.4	Solid insulation in semiconductor devices	No semiconductors providing safety insulation	N/A
5.4.4.5	Cemented joints	No cemented joints	N/A
5.4.4.6	Thin sheet material	No thin sheet	N/A
5.4.4.6.1	General requirements	See above	N/A
5.4.4.6.2	Separable thin sheet material	See above	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 .....	No such construction	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.4.5	Antenna terminal insulation	No such antenna	N/A
5.4.5.1	General	Class III unit, no connection to mains	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.....:	-	N/A
5.4.7	Tests for semiconductor components and for cemented joints	No optocouplers	N/A
5.4.8	Humidity conditioning	Power supply is certified	N/A
	Relative humidity (%).....:	-	—
	Temperature (°C) .....	-	—
	Duration (h) .....	-	—
5.4.9	Electric strength test.....:	-	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	No 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 .....	This method is not used	N/A
5.4.10.2.3	Steady-state test.....:	This method is not used	N/A
5.4.11	Insulation between external circuits and earthed circuitry .....	No external circuits	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 $\Delta U_{sa}$ .....	-	—
	$U_{op} = U_{peak} + \Delta U_{sp} + \Delta U_{sa}$ .....	-	—
5.5	Components as safeguards		
5.5.1	General	Already certified internal parts. See appended table 4.1.2	N/A
5.5.2	Capacitors and RC units	No capacitors or RC units bridging safety insulation	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 transformer bridging safety insulation	N/A
5.5.4	Optocouplers	No optocouplers bridging safety insulation	N/A
5.5.5	Relays	No relays	N/A
5.5.6	Resistors	No resistors used as a safeguard or bridging safety insulation	N/A
5.5.7	SPD's	No SPDs	N/A
5.5.7.1	Use of an SPD connected to reliable earthing	See above	N/A
5.5.7.2	Use of an SPD between mains and protective earth	See above	N/A
5.5.8	Insulation between the mains and external circuit consisting of a coaxial cable.....:	No coaxial cable	N/A
5.6	Protective conductor		N/A
5.6.2	Requirement for protective conductors	No connection to protective earth	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		N/A
	Protective earthing conductor size (mm <sup>2</sup> ) .....:	-	—
5.6.4	Requirement for protective bonding conductors		N/A
5.6.4.1	Protective bonding conductors		N/A
	Protective bonding conductor size (mm <sup>2</sup> ). .....:	-	—
	Protective current rating (A) ..... :	-	—
5.6.4.3	Current limiting and overcurrent protective devices	No current limiting or overcurrent protective devices in parallel	N/A
5.6.5	Terminals for protective conductors		N/A
5.6.5.1	Requirement		N/A
	Conductor size (mm <sup>2</sup> ), nominal thread diameter (mm). .....:	-	N/A
	Corrosion	No risk of corrosion	N/A
	Resistance of the protective system		N/A
	Requirements		N/A
	Test Method Resistance (Ω).....:	-	N/A
	Reliable earthing	This method is not used	N/A
5.7	Prospective touch voltage, touch current and protective conductor current		N/A
5.7.2	Measuring devices and networks	Class III equipment	N/A
5.7.2.1	Measurement of touch current .....:	-	N/A



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Clause	Requirement + Test	Result - Remark	Verdict
5.7.2.2	Measurement of prospective touch voltage		N/A
5.7.3	Equipment set-up, supply connections and earth connections	No earth	N/A
	System of interconnected equipment (separate connections/single connection) .....	-	—
	Multiple connections to mains (one connection at a time/simultaneous connections) .....	No multiple connections to mains	—
5.7.4	Earthed conductive accessible parts .....	-	N/A
5.7.5	Protective conductor current		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	No external circuits	N/A
5.7.6.1	Touch current from coaxial cables	No coaxial cables	N/A
5.7.6.2	Prospective touch voltage and touch current to external circuits		N/A
5.7.7	Summation of touch currents from external circuits	No external circuits	N/A
	a) Equipment with earthed external circuits. Measured current (mA) .....	-	N/A
	b) Equipment whose external circuits are not referenced to earth. Measured current (mA) .....	-	N/A

<b>6</b>	<b>ELECTRICALLY- CAUSED FIRE</b>		
6.2	Classification of power sources (PS) and potential ignition sources (PIS)		P
6.2.2	Power source circuit classifications		P
6.2.2.1	General	PS2 considered	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 .....	-	N/A
6.2.2.5	PS2 .....	(See appended table 6.2.2)	P
6.2.2.6	PS3 .....		N/A
6.2.3	Classification of potential ignition sources	Refer below	P
6.2.3.1	Arcing PIS .....	-	N/A
6.2.3.2	Resistive PIS .....	(See appended table 6.2.3.2)	P
6.3	Safeguards against fire under normal operating and abnormal operating conditions		P
6.3.1 (a)	No ignition and attainable temperature value less than 90 % defined by ISO 871 or less than 300 °C for unknown materials .....	(See appended table 5.4.1.4, 6.3.2, 9.0, B.2.6)	P

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Clause	Requirement + Test	Result - Remark	Verdict
6.3.1 (b)	Combustible materials outside fire enclosure	No combustible materials outside fire enclosure	N/A
6.4	Safeguards against fire under single fault conditions		P
6.4.1	Safeguard Method	Method 2 (control of fire spread) is used	N/A
6.4.2	Reduction of the likelihood of ignition under single fault conditions in PS1 circuits	This method is not used	N/A
6.4.3	Reduction of the likelihood of ignition under single fault conditions in PS2 and PS3 circuits	This method is not used	N/A
6.4.3.1	General	Refer above	N/A
6.4.3.2	Supplementary Safeguards	Refer above	N/A
	Special conditions if conductors on printed boards are opened or peeled	Refer above	N/A
6.4.3.3	Single Fault Conditions..... :	See appended annex B.3 and B.4.	N/A
	Special conditions for temperature limited by fuse	No temperature limitation by fuse	N/A
6.4.4	Control of fire spread in PS1 circuits	This method is not used	N/A
6.4.5	Control of fire spread in PS2 circuits	Refer below	P
6.4.5.2	Supplementary safeguards ..... :	Components and plastic materials comply with the requirements, see appended table 4.1.2 and Annex G	P
6.4.6	Control of fire spread in PS3 circuit	No PS3 circuit	N/A
6.4.7	Separation of combustible materials from a PIS	Refer below	P
6.4.7.1	General..... :	(See tables 6.2.3.2)	P
6.4.7.2	Separation by distance	PWBs rated V-0.	P
6.4.7.3	Separation by a fire barrier	This method is not used, see 6.4.7.2	N/A
6.4.8	Fire enclosures and fire barriers	PS2 circuit only, Refer to details below	P
6.4.8.1	Fire enclosure and fire barrier material properties	Fire enclosure provided	P
6.4.8.2.1	Requirements for a fire barrier	No fire barrier	N/A
6.4.8.2.2	Requirements for a fire enclosure	Fire enclosure is made of metal	P
6.4.8.3	Constructional requirements for a fire enclosure and a fire barrier	No openings	N/A
6.4.8.3.1	Fire enclosure and fire barrier openings	Refer to 6.4.8.3.3 and 6.4.8.3.4	N/A
6.4.8.3.2	Fire barrier dimensions	No fire barrier	N/A
6.4.8.3.3	Top Openings in Fire Enclosure: dimensions (mm) ..... :	No top or side openings	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) ..... :	No bottom or side openings	N/A
	Flammability tests for the bottom of a fire enclosure ..... :	-	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
6.4.8.3.5	Integrity of the fire enclosure, condition met: a), b) or c) .....	Fire enclosure cannot be opened by an ordinary person	N/A
6.4.8.4	Separation of PIS from fire enclosure and fire barrier distance (mm) or flammability rating .....	At least 5 mm between resistive PIS and fire enclosure, which is metallic , see appended table 4.1.2	P
6.5	Internal and external wiring		P
6.5.1	Requirements	See below for details	P
6.5.2	Cross-sectional area (mm <sup>2</sup> ) .....	Wiring has appropriate flame ratings, see appended table 4.1.2	—
6.5.3	Requirements for interconnection to building wiring .....	No interconnection to building wiring	N/A
6.6	Safeguards against fire due to connection of additional equipment	No connection for additional equipment	N/A
	External port limited to PS2 or complies with Clause Q.1		N/A

<b>7</b>	<b>INJURY CAUSED BY HAZARDOUS SUBSTANCES</b>		
7.2	Reduction of exposure to hazardous substances	Refer to 7.6 for battery	P
7.3	Ozone exposure	No ozone production	N/A
7.4	Use of personal safeguards (PPE)	No personal safeguard used	N/A
	Personal safeguards and instructions .....	-	—
7.5	Use of instructional safeguards and instructions	Hazardous substance not likely to cause an injury	N/A
	Instructional safeguard (ISO 7010) .....	-	—
7.6	Batteries .....	(See Annex M)	P

<b>8</b>	<b>MECHANICALLY-CAUSED INJURY</b>		
8.1	General		P
8.2	Mechanical energy source classifications	MS1 for sharp edges; MS1 for mass considered	P
8.3	Safeguards against mechanical energy sources	Only MS1 parts are accessible to skilled person	N/A
8.4	Safeguards against parts with sharp edges and corners		N/A
8.4.1	Safeguards	All edges are smooth and rounded	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	No such parts	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		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8.5.4.2	Equipment having electromechanical device for destruction of media		N/A
8.5.4.2.1	Safeguards and Safety Interlocks .....	-	N/A
8.5.4.2.2	Instructional safeguards against moving parts		N/A
	Instructional Safeguard .....	-	—
8.5.4.2.3	Disconnection from the supply		N/A
8.5.4.2.4	Probe type and force (N) .....	-	N/A
8.5.5	High Pressure Lamps	No high pressure lamps	N/A
8.5.5.1	Energy Source Classification		N/A
8.5.5.2	High Pressure Lamp Explosion Test .....	-	N/A
8.6	Stability		N/A
8.6.1	Product classification	Fixed equipment Equipment is considered MS1, no test needed	N/A
	Instructional Safeguard .....	Not a television	—
8.6.2	Static stability		N/A
8.6.2.2	Static stability test	Equipment is not MS3 or non-floor standing MS2	N/A
	Applied Force .....	-	—
8.6.2.3	Downward Force Test	Equipment is not floor-standing MS3	N/A
8.6.3	Relocation stability test	Equipment is not floor standing MS2/MS3	N/A
	Unit configuration during 10° tilt .....	-	—
8.6.4	Glass slide test	Not a MS2/MS3 equipment with controls or display	N/A
8.6.5	Horizontal force test (Applied Force) .....	Not a MS2/MS3 equipment with controls or display	N/A
	Position of feet or movable parts .....	-	—
8.7	Equipment mounted to wall or ceiling	Equipment is considered MS3, the means of fixing on the post has not been provided	N/A
8.7.1	Mounting Means (Length of screws (mm) and mounting surface) .....	Differents configurations to install this equipment. See §3.3 page 6 of documentation in annex	N/A
8.7.2	Direction and applied force .....	-	N/A
8.8	Handles strength	Only one handle	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

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Clause	Requirement + Test	Result - Remark	Verdict
8.9.2	Applied force .....	-	—
8.10	Carts, stands and similar carriers	No carts, stands or similar carriers	N/A
8.10.1	General		N/A
8.10.2	Marking and instructions		N/A
	Instructional Safeguard.....	-	—
8.10.3	Cart, stand or carrier loading test and compliance		N/A
	Applied force .....	-	—
8.10.4	Cart, stand or carrier impact test		N/A
8.10.5	Mechanical stability		N/A
	Applied horizontal force (N) .....	-	—
8.10.6	Thermoplastic temperature stability (°C).....	-	N/A
8.11	Mounting means for rack mounted equipment	Not a rack mounted equipment	N/A
8.11.1	General	Equipment is MS1, no test needed	N/A
8.11.2	Product Classification	See above	N/A
8.11.3	Mechanical strength test, variable N .....	-	N/A
8.11.4	Mechanical strength test 250 N, 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		
9.2	Thermal energy source classifications	TS1 considered	P
9.3	Safeguard against thermal energy sources	Equipment safeguard provided, parts accessible to ordinary person remains below TS1 limits in normal operation, TS2 limits in abnormal operation/single fault condition. See appended table 5.4.1.4, 6.3.2, 9.0, B.2.6; B.3 and B.4	P
9.4	Requirements for safeguards		N/A
9.4.1	Equipment safeguard	Metallic enclosure	N/A
9.4.2	Instructional safeguard .....	No instructional safeguard	N/A

10	RADIATION		
10.2	Radiation energy source classification		N/A
10.2.1	General classification	No radiations	N/A
10.3	Protection against laser radiation	No laser radiations	N/A
	Laser radiation that exists in equipment:		—

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Clause	Requirement + Test	Result - Remark	Verdict
	Normal, abnormal, single-fault .....	-	N/A
	Instructional safeguard .....	-	—
	Tool.....	-	—
10.4	Protection against visible, infrared, and UV radiation	No visible, infrared or UV radiations	N/A
10.4.1	General		N/A
10.4.1.a)	RS3 for Ordinary and instructed persons.....	-	N/A
10.4.1.b)	RS3 accessible to a skilled person.....	-	N/A
	Personal safeguard (PPE) instructional safeguard.....	-	—
10.4.1.c)	Equipment visible, IR, UV does not exceed RS1 . :	-	N/A
10.4.1.d)	Normal, abnormal, single-fault conditions .....	-	N/A
10.4.1.e)	Enclosure material employed as safeguard is opaque.....	-	N/A
10.4.1.f)	UV attenuation.....	-	N/A
10.4.1.g)	Materials resistant to degradation UV .....	-	N/A
10.4.1.h)	Enclosure containment of optical radiation.....	-	N/A
10.4.1.i)	Exempt Group under normal operating conditions .....	-	N/A
10.4.2	Instructional safeguard .....	-	N/A
10.5	Protection against x-radiation	No x-radiations	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	No acoustic sources	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.....	-	—

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Clause	Requirement + Test	Result - Remark	Verdict
	Means to actively inform user of increase sound pressure..... :	-	—
	Equipment safeguard prevent ordinary person to RS2..... :	-	—
10.6.5	Requirements for listening devices (headphones, earphones, etc.)		N/A
10.6.5.1	Corded passive listening devices with analog input		N/A
	Input voltage with 94 dB(A) $L_{Aeq}$ 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		
B.2	Normal Operating Conditions	Equipment tested in max. normal load condition	P
B.2.1	General requirements..... :	(See Test Item Particulars and appended test tables)	P
	Audio Amplifiers and equipment with audio amplifiers..... :	-	N/A
B.2.3	Supply voltage and tolerances	Equipment tested at 50Vdc	P
B.2.5	Input test..... :	(See appended table B.2.5)	P
B.3	Simulated abnormal operating conditions		N/A
B.3.1	General requirements..... :	-	N/A
B.3.2	Covering of ventilation openings	No openings	N/A
B.3.3	D.C. mains polarity test	DC equipment powered by PoE	N/A
B.3.4	Setting of voltage selector..... :	No voltage selector	N/A
B.3.5	Maximum load at output terminals..... :	Data only	N/A
B.3.6	Reverse battery polarity	Battery is not accessible to ordinary person	N/A
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		N/A
B.4	Simulated single fault conditions		P
B.4.2	Temperature controlling device open or short-circuited..... :	See appended table B.4	P
B.4.3	Motor tests		N/A
B.4.3.1	Motor blocked or rotor locked increasing the internal ambient temperature..... :	No fans	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
B.4.4	Short circuit of functional insulation	Class III equipment	N/A
B.4.4.1	Short circuit of clearances for functional insulation		N/A
B.4.4.2	Short circuit of creepage distances for functional insulation		N/A
B.4.4.3	Short circuit of functional insulation on coated printed boards		N/A
B.4.5	Short circuit and interruption of electrodes in tubes and semiconductors	No tubes or semiconductors likely to create a hazard	N/A
B.4.6	Short circuit or disconnect of passive components	No passive components likely to create a hazard	N/A
B.4.7	Continuous operation of components	No short-time operation components	N/A
B.4.8	Class 1 and Class 2 energy sources within limits during and after single fault conditions	Energy sources remain within their limits	N/A
B.4.9	Battery charging under single fault conditions ... :	See Annex M – Lithium coin battery	N/A
<b>C</b>	<b>UV RADIATION</b>		
C.1	Protection of materials in equipment from UV radiation	Equipment is for outdoor use, see separate test report per EN 60950-22. But the enclosure is metallic	N/A
C.1.2	Requirements	Refer to sub-clause C.1	N/A
C.1.3	Test method	Refer to sub-clause C.1	N/A
C.2	UV light conditioning test	Refer to sub-clause C.1	N/A
C.2.1	Test apparatus	Refer to sub-clause C.1	N/A
C.2.2	Mounting of test samples	Refer to sub-clause C.1	N/A
C.2.3	Carbon-arc light-exposure apparatus	Refer to sub-clause C.1	N/A
C.2.4	Xenon-arc light exposure apparatus	Refer to sub-clause C.1	N/A
<b>D</b>	<b>TEST GENERATORS</b>		
D.1	Impulse test generators	No external circuits	N/A
D.2	Antenna interface test generator	No antenna interface test generator	N/A
D.3	Electronic pulse generator	No electronic pulse generator	N/A
<b>E</b>	<b>TEST CONDITIONS FOR EQUIPMENT CONTAINING AUDIO AMPLIFIERS</b>		
E.1	Audio amplifier normal operating conditions	No audio amplifiers	N/A
	Audio signal voltage (V) ..... :	-	—
	Rated load impedance ( $\Omega$ ) ..... :	-	—
E.2	Audio amplifier abnormal operating conditions	See above	N/A
<b>F</b>	<b>EQUIPMENT MARKINGS, INSTRUCTIONS, AND INSTRUCTIONAL SAFEGUARDS</b>		
F.1	General requirements	See also annex 4	P
	Instructions – Language ..... :	Only English markings/instructions reviewed. See also General Product Information. The documentation “ORS – User Manual”	—



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Clause	Requirement + Test	Result - Remark	Verdict
F.2	Letter symbols and graphical symbols		P
F.2.1	Letter symbols according to IEC60027-1	Letter symbols comply with IEC 60027-1	P
F.2.2	Graphic symbols IEC, ISO or manufacturer specific	Graphic symbols comply with IEC 60417-1	P
F.3	Equipment markings		P
F.3.1	Equipment marking locations	Normative markings are easily visible on the equipment	P
F.3.2	Equipment identification markings		P
F.3.2.1	Manufacturer identification .....	RapidSpace	—
F.3.2.2	Model identification .....	CASE-BJT1	—
F.3.3	Equipment rating markings		P
F.3.3.1	Equipment with direct connection to mains	No direct connection to mains	N/A
F.3.3.2	Equipment without direct connection to mains	No direct connection to mains, but rated power is marked on the equipment, see below	P
F.3.3.3	Nature of supply voltage .....	Power over ethernet	—
F.3.3.4	Rated voltage .....	24-50 V	—
F.3.3.5	Rated frequency .....	DC equipment	—
F.3.3.6	Rated current or rated power .....	50W	—
F.3.3.7	Equipment with multiple supply connections	No multiple supply connections	N/A
F.3.4	Voltage setting device	No voltage setting device	N/A
F.3.5	Terminals and operating devices		N/A
F.3.5.1	Mains appliance outlet and socket-outlet markings.....	No power outlets	N/A
F.3.5.2	Switch position identification marking .....	No disconnect switch	N/A
F.3.5.3	Replacement fuse identification and rating markings.....	No fuses	N/A
F.3.5.4	Replacement battery identification marking .....	No batteries	N/A
F.3.5.5	Terminal marking location	No terminals	N/A
F.3.6	Equipment markings related to equipment classification		N/A
F.3.6.1	Class I Equipment	Not a class I equipment	N/A
F.3.6.1.1	Protective earthing conductor terminal	See above	N/A
F.3.6.1.2	Neutral conductor terminal	Unit is not permanently connected	N/A
F.3.6.1.3	Protective bonding conductor terminals	See above	N/A
F.3.6.2	Class II equipment (IEC60417-5172)	Not a class II equipment	N/A
F.3.6.2.1	Class II equipment with or without functional earth	See above	N/A
F.3.6.2.2	Class II equipment with functional earth terminal marking		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
F.3.7	Equipment IP rating marking .....	IP54 (test report checked) See documentation "ORS – temperature and water tightness tests" from Rapid.Space	—
F.3.8	External power supply output marking	Unit is not an external power supply	N/A
F.3.9	Durability, legibility and permanence of marking	The markings are durable and legible	P
F.3.10	Test for permanence of markings	Tested with water and hexane	P
F.4	Instructions		P
	a) Equipment for use in locations where children not likely to be present - marking		N/A
	b) Instructions given for installation or initial use	See annex 4 – in documentation page 4 §2 Overview	P
	c) Equipment intended to be fastened in place		N/A
	d) Equipment intended for use only in restricted access area		N/A
	e) Audio equipment terminals classified as ES3 and other equipment with terminals marked in accordance F.3.6.1		N/A
	f) Protective earthing employed as safeguard		N/A
	g) Protective earthing conductor current exceeding ES 2 limits		N/A
	h) Symbols used on equipment	Symbols explain into the documentation §1.1	P
	i) Permanently connected equipment not provided with all-pole mains switch		N/A
	j) Replaceable components or modules providing safeguard function		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	No instructional safeguard	P
<b>G</b>	<b>COMPONENTS</b>		
<b>G.1</b>	<b>Switches</b>		N/A
G.1.1	General requirements	No switches	N/A
G.1.2	Ratings, endurance, spacing, maximum load		N/A
<b>G.2</b>	<b>Relays</b>		N/A
G.2.1	General requirements	No relays	N/A
G.2.2	Overload test	See above	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
<b>G.3</b>	<b>Protection Devices</b>		N/A
G.3.1	Thermal cut-offs	Part of certified power supply	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.3.1.1a) &b)	Thermal cut-outs separately approved according to IEC 60730 with conditions indicated in a) & b)		N/A
G.3.1.1c)	Thermal cut-outs tested as part of the equipment as indicated in c)		N/A
G.3.1.2	Thermal cut-off connections maintained and secure		N/A
G.3.2	Thermal links		N/A
G.3.2.1a)	Thermal links separately tested with IEC 60691	No thermal links	N/A
G.3.2.1b)	Thermal links tested as part of the equipment		N/A
	Aging hours (H) .....	-	—
	Single Fault Condition .....	-	—
	Test Voltage (V) and Insulation Resistance (Ω) :	-	—
G.3.3	PTC Thermistors	No PTC thermistors	N/A
G.3.4	Overcurrent protection devices	No 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	No such components	N/A
G.3.5.2	Single faults conditions.....	-	N/A
<b>G.4</b>	<b>Connectors</b>		N/A
G.4.1	Spacings	Class III unit, ES1 connectors only	N/A
G.4.2	Mains connector configuration .....	No mains connectors	N/A
G.4.3	Plug is shaped that insertion into mains socket-outlets or appliance coupler is unlikely		N/A
<b>G.5</b>	<b>Wound Components</b>		N/A
G.5.1	Wire insulation in wound components.....	No motor or transformer	N/A
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	This method is not used	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
<b>G.5.3</b>	<b>Transformers</b>		N/A
G.5.3.1	Requirements applied (IEC61204-7, IEC61558-1/-2, and/or IEC62368-1) .....	Class III equipment, no safety insulation	N/A
	Position.....	-	—
	Method of protection .....	-	—
G.5.3.2	Insulation	-	N/A
	Protection from displacement of windings.....	-	—

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Clause	Requirement + Test	Result - Remark	Verdict
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
<b>G.5.4</b>	<b>Motors</b>		N/A
G.5.4.1	General requirements	Refer above	—
	Position .....		N/A
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	Refer above	—
	Test duration (days) .....		N/A
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	Refer above	—
	Electric strength test (V) .....		N/A
G.5.4.5.3	Tested on the Bench - Alternative test method; test time (h) .....	Refer above	—
	Electric strength test (V) .....		N/A
G.5.4.6	Locked-rotor overload test for d.c. motors in secondary circuits		N/A
G.5.4.6.2	Tested in the unit	-	N/A
	Maximum Temperature .....	-	N/A
	Electric strength test (V) .....	-	N/A
G.5.4.6.3	Tested on the bench - Alternative test method; test time (h) .....	-	N/A
	Electric strength test (V) .....	No phase-shifting capacitors	N/A
G.5.4.7	Motors with capacitors	No three-phase motors	N/A
G.5.4.8	Three-phase motors	No series motors	N/A
G.5.4.9	Series motors	-	—
	Operating voltage .....	Refer above	—
<b>G.6</b>	<b>Wire Insulation</b>		N/A
G.6.1	General	Class III unit, no safety insulation	N/A
G.6.2	Solvent-based enamel wiring insulation	No such wiring	N/A
<b>G.7</b>	<b>Mains supply cords</b>		N/A
G.7.1	General requirements	No PS3 circuits	N/A
	Type.....	-	—
	Rated current (A) .....	-	—
	Cross-sectional area (mm <sup>2</sup> ), (AWG) .....	-	—
G.7.2	Compliance and test method		N/A
G.7.3	Cord anchorages and strain relief for non-detachable power supply cords	No ES2, ES3 or PS3 circuits	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
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 ..... :	No ES2, ES3 or PS3 circuits	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.7.6.1	General requirements		N/A
G.7.6.2	Stranded wire		N/A
G.7.6.2.1	Requirements		N/A
G.7.6.2.2	Test method and compliance criteria		N/A
<b>G.8</b>	<b>Varistors</b>		N/A
G.8.1	General requirements	Class III unit	N/A
G.8.2	Safeguard against shock		N/A
G.8.3	Safeguard against fire		N/A
G.8.3.2	Varistor overload test ..... :	-	N/A
G.8.3.3	Temporary overvoltage ..... :	-	N/A
<b>G.9</b>	<b>Integrated Circuit (IC) Current Limiters</b>		N/A
G.9.1 a)	Manufacturer defines limit at max. 5A.	No IC current limiter	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
<b>G.10</b>	<b>Resistors</b>		N/A
G.10.1	General requirements	Class III unit, no safety insulation	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

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Clause	Requirement + Test	Result - Remark	Verdict
G.10.3.3	Impulse test		N/A
<b>G.11</b>	<b>Capacitor and RC units</b>		N/A
G.11.1	General requirements	Class III unit, no safety insulation	N/A
G.11.2	Conditioning of capacitors and RC units		N/A
G.11.3	Rules for selecting capacitors		N/A
<b>G.12</b>	<b>Optocouplers</b>		N/A
	Optocouplers comply with IEC 60747-5-5:2007 Spacing or Electric Strength Test (specify option and test results).....:	Class III unit, no safety insulation	N/A
	Type test voltage Vini .....	-	—
	Routine test voltage, Vini,b .....	-	—
<b>G.13</b>	<b>Printed boards</b>		N/A
G.13.1	General requirements	Class III unit, no safety insulation	N/A
G.13.2	Uncoated printed boards	No uncoated PWBs	N/A
G.13.3	Coated printed boards	No coated PWBs	N/A
G.13.4	Insulation between conductors on the same inner surface	No multilayer PWB	N/A
	Compliance with cemented joint requirements (Specify construction).....:	-	—
G.13.5	Insulation between conductors on different surfaces	No multilayer PWB	N/A
	Distance through insulation.....:	-	N/A
	Number of insulation layers (pcs) .....		—
G.13.6	Tests on coated printed boards	No coated PWBs	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
<b>G.14</b>	<b>Coating on components terminals</b>		N/A
G.14.1	Requirements .....	No coating on components terminals	N/A
<b>G.15</b>	<b>Liquid filled components</b>		N/A
G.15.1	General requirements	No LFC	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

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Clause	Requirement + Test	Result - Remark	Verdict
<b>G.16</b>	<b>IC including capacitor discharge function (ICX)</b>		N/A
a)	Humidity treatment in accordance with sc5.4.8 – 120 hours	No ICX	N/A
b)	Impulse test using circuit 2 with $U_c =$ to transient voltage .....	-	N/A
C1)	Application of ac voltage at 110% of rated voltage for 2.5 minutes		N/A
C2)	Test voltage .....	-	—
D1)	10,000 cycles on and off using capacitor with smallest capacitance resistor with largest resistance specified by manufacturer		N/A
D2)	Capacitance .....	-	—
D3)	Resistance .....		—
<b>H</b>	<b>CRITERIA FOR TELEPHONE RINGING SIGNALS</b>		
H.1	General	No ringing signals	N/A
H.2	Method A	See above	N/A
H.3	Method B	See above	N/A
H.3.1	Ringing signal	See above	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 .....	See above	N/A
H.3.2.1	Conditions for use of a tripping device or a monitoring voltage complied with	See above	N/A
H.3.2.2	Tripping device	See above	N/A
H.3.2.3	Monitoring voltage (V) .....		—
<b>J</b>	<b>INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION</b>		
	General requirements		N/A
<b>K</b>	<b>SAFETY INTERLOCKS</b>		
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	No safety interlock override	N/A
K.5	Fail-safe	No access to hazardous parts in case of single fault condition	N/A
	Compliance .....	-	N/A
K.6	Mechanically operated safety interlocks		N/A
K.6.1	Endurance requirement	No moving mechanical parts	N/A
K.6.2	Compliance and Test method .....	-	N/A
K.7	Interlock circuit isolation	Refer above	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
K.7.1	Separation distance for contact gaps & interlock circuit elements (type and circuit location) .....	Refer above	N/A
K.7.2	Overload test, Current (A) .....	Refer above	N/A
K.7.3	Endurance test	Refer above	N/A
K.7.4	Electric strength test .....	Refer above	N/A
<b>L</b>	<b>DISCONNECT DEVICES</b>		
L.1	General requirements	Class III equipment, no disconnect device required	N/A
L.2	Permanently connected equipment	Equipment is not permanently connected	N/A
L.3	Parts that remain energized	No parts remain energized after the disconnect device is switched off.	N/A
L.4	Single phase equipment	No single phase equipment	N/A
L.5	Three-phase equipment	No three phase equipment	N/A
L.6	Switches as disconnect devices	No switches provided	N/A
L.7	Plugs as disconnect devices	No plug provided	N/A
L.8	Multiple power sources	Only one power source	N/A
<b>M</b>	<b>EQUIPMENT CONTAINING BATTERIES AND THEIR PROTECTION CIRCUITS</b>		
M.1	General requirements	Battery is considered non replaceable by an ordinary person	N/A
M.2	Safety of batteries and their cells		P
M.2.1	Requirements	Button battery is certified	P
M.2.2	Compliance and test method (identify method) .. :		P
M.3	Protection circuits	Scheme of circuit protection against inverse current provided	P
M.3.1	Requirements		N/A
M.3.2	Tests		N/A
	- Overcharging of a rechargeable battery	Not a rechargeable battery	N/A
	- Unintentional charging of a non-rechargeable battery	Not a non-rechargeable battery	N/A
	- Reverse charging of a rechargeable battery	Not a rechargeable battery	N/A
	- Excessive discharging rate for any battery		N/A
M.3.3	Compliance .....	(See appended Tables and Annex M)	P
M.4	Additional safeguards for equipment containing secondary lithium battery	No secondary lithium battery	N/A
M.4.1	General		N/A
M.4.2	Charging safeguards		N/A
M.4.2.1	Charging operating limits		N/A
M.4.2.2a)	Charging voltage, current and temperature .....	-	—
M.4.2.2 b)	Single faults in charging circuitry .....	-	—
M.4.3	Fire Enclosure		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
M.4.4	Drop test 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	Battery is not accessible to ordinary person	N/A
M.5.1	Requirement		N/A
M.5.2	Compliance and Test Method (Test of P.2.3)		N/A
M.6	Prevention of short circuits and protection from other effects of electric current		N/A
M.6.1	Short circuits		N/A
M.6.1.1	General requirements		N/A
M.6.1.2	Test method to simulate an internal fault		N/A
	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	No NiCd battery	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	No such battery	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 <sup>3</sup> /s).....	-	—
M.8.2.3	Correction factors.....	-	—
M.8.2.4	Calculation of distance $d$ (mm) .....	-	—
M.9	Preventing electrolyte spillage	No such battery	N/A
M.9.1	Protection from electrolyte spillage		N/A
M.9.2	Tray for preventing electrolyte spillage		N/A
M.10	Instructions to prevent reasonably foreseeable misuse (Determination of compliance: inspection, data review; or abnormal testing) .....	Battery is not accessible an ordinary person	N/A
<b>N</b>	<b>ELECTROCHEMICAL POTENTIALS</b>		
	Metal(s) used .....	Class III equipment	—

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Clause	Requirement + Test	Result - Remark	Verdict
<b>O</b>	<b>MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES</b>		
	Figures O.1 to O.20 of this Annex applied..... :	Class III equipment, no safety insulation	—
<b>P</b>	<b>SAFEGUARDS AGAINST ENTRY OF FOREIGN OBJECTS AND SPILLAGE OF INTERNAL LIQUIDS</b>		
P.1	General requirements	No openings, no internal liquids, no metalized coatings or adhesive securing parts	N/A
P.2.2	Safeguards against entry of foreign object		N/A
	Location and Dimensions (mm) ..... :	-	—
P.2.3	Safeguard against the consequences of entry of foreign object		N/A
P.2.3.1	Safeguards against the entry of a foreign object		N/A
	Openings in transportable equipment	Not a transportable equipment	N/A
	Transportable equipment with metalized plastic parts ..... :	Not a transportable equipment	N/A
P.2.3.2	Openings in transportable equipment in relation to metalized parts of a barrier or enclosure (identification of supplementary safeguard) ..... :	-	N/A
P.3	Safeguards against spillage of internal liquids	No 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	Metalized coatings and adhesive securing parts	No metalized coatings or 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
<b>Q</b>	<b>CIRCUITS INTENDED FOR INTERCONNECTION WITH BUILDING WIRING</b>		
Q.1	Limited power sources	No such circuit	N/A
Q.1.1 a)	Inherently limited output		N/A
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
Q.2	Test for external circuits – paired conductor cable	No external circuits	N/A
	Maximum output current (A) ..... :	-	—

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Clause	Requirement + Test	Result - Remark	Verdict
	Current limiting method..... :	-	—
<b>R</b>	<b>LIMITED SHORT CIRCUIT TEST</b>		
R.1	General requirements	Test not used	N/A
R.2	Determination of the overcurrent protective device and circuit	Refer to sub-clause R.1	N/A
R.3	Test method Supply voltage (V) and short-circuit current (A)). ..... :	Refer to sub-clause R.1	N/A
<b>S</b>	<b>TESTS FOR RESISTANCE TO HEAT AND FIRE</b>		
S.1	Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power does not exceed 4 000 W	Appropriate proofs of conformity provided, see appended table 4.1.2	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)..... :	-	—
	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

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Clause	Requirement + Test	Result - Remark	Verdict
	After every test specimen was not consumed completely		N/A
	After fifth flame application, flame extinguished within 1 min		N/A
<b>T</b>	<b>MECHANICAL STRENGTH TESTS</b>		
T.1	General requirements	Refer below, see also 4.4.4	P
T.2	Steady force test, 10 N .....	(See appended table T.2)	P
T.3	Steady force test, 30 N .....	(See appended table T.3)	P
T.4	Steady force test, 100 N .....	-	N/A
T.5	Steady force test, 250 N .....	(See appended table T.5)	P
T.6	Enclosure impact test	Refer below	P
	Fall test	(See appended table T.6)	P
	Swing test		N/A
T.7	Drop test .....	-	N/A
T.8	Stress relief test .....	-	N/A
T.9	Impact Test (glass)	No 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) .....	-	—
<b>U</b>	<b>MECHANICAL STRENGTH OF CATHODE RAY TUBES (CRT) AND PROTECTION AGAINST THE EFFECTS OF IMPLOSION</b>		
U.1	General requirements	No CRT	N/A
U.2	Compliance and test method for non-intrinsically protected CRTs	Refer to sub-clause U.1	N/A
U.3	Protective Screen.....	Refer to sub-clause U.1	N/A
<b>V</b>	<b>DETERMINATION OF ACCESSIBLE PARTS (FINGERS, PROBES AND WEDGES)</b>		
V.1	Accessible parts of equipment	No hazardous circuits	N/A
V.2	Accessible part criterion	No accessible hazardous parts	N/A

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Clause	Requirement + Test	Result - Remark	Verdict

4.1.2	TABLE: List of critical components					P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity <sup>1</sup>	
Internal equipment						
Connector PWR POE	CNLINKO	DH-24-RJ45- P01	- 40 to 80°C, V-0, 26-24AWG	UL 94	Datasheet provided	
Antenna connector	AMPHENOL CONNEX	242163	- 65 to 165°C, metallic housing	-	Datasheet provided	
GPS connector	Molex	MCX 073415- 1692	Metallic housing	Tested in appliance	Datasheet	
Ethernet grey cable	Seki Lan	-	PVC	-	-	
Ethernet port (J3y)	Wurth Electronics	634008137521	- 40 to 85°C, V-0, 1.5A, 120Vac	UL 94	Datasheet provided UL file n°E324776	
Ethernet port (J2y)	AMP-TE CONNECTIVITY	5406721-1	V-0, 150Vac, 1.5A, - 40 to 70°C	UL 94	Datasheet provided UL file n°E81956 CSA file n° LR7189A	
PCB	Promistel	RapidSpace custom	V-0, 130°C	UL 94 UL 796	Certificate of compliance of hi-tech corporation n°CF210112 UL file n°E174311	
Transformer (T1y)	BOURNS	SM51625L	1.2A, -40 to 85°C	-	Datasheet provided	
Inductor (L9y)	WE	7443551730	7.3µH, 13A, - 40 to 155°C	-	Datasheet provided	
Inductor (L10y)	WE	744363300	- 40 to 125°C, 33µH, 12A	-	Datasheet provided	
Flat flexible in copper	FLEXCONN	MCD36-200-6- G13S5K	85°C	UL 758	Datasheet provided UL file n°E301427	
Red/black cables PWR_PC	ALPHA WIRE	Red: 2845/7 RD005 Black: 2845/7 BK005	PTFE, - 60 to 200°C, 250Vrms	-	Datasheet provided	

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Clause	Requirement + Test			Result - Remark	Verdict
PC ↓	Commell ↓	LE-37GXIT5 ↓	9 to 30Vdc, 0 to 60°C ↓	↓	Datasheet ↓
Green connector on PCB	Anytek technology corp	YO 02	9-30V, 115°C, nylon	UL 1059	UL file n°E202113
PCB	Yuan Circuit technology Co	Multi-PWB	105°C, V-0	UL 94	UL file n°E243739
Lithium coin battery	Panasonic	CR2032	5V, 225mAh, - 30 to 85°C	UL 1642 IEC 60086-1	Datasheet provided
External equipment					
Metallic enclosure	Lenolink	RapidSpace custom	Thickness 6mm max	-	-
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 <a href="#">When certified only per IEC, UL or CAN/CSA standards, components listed above are also considered to comply with the EN standard requirements.</a> <a href="#">Information declared by the manufacturer and under his responsibility.</a>					

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Clause	Requirement + Test	Result - Remark	Verdict

4.8.4, 4.8.5	TABLE: Lithium coin/button cell batteries mechanical tests			N/A
(The following mechanical tests are conducted in the sequence noted.)				
4.8.4.2	TABLE: Stress Relief test			—
Part		Material	Oven Temperature (°C)	Comments
4.8.4.3	TABLE: Battery replacement test			—
Battery part no. ....:				—
Battery Installation/withdrawal		Battery Installation/Removal Cycle		Comments
		1		
		2		
		3		
		4		
		5		
		6		
		8		
		9		
		10		
4.8.4.4	TABLE: Drop test			—
Impact Area		Drop Distance	Drop No.	Observations
			1	
			2	
			3	
4.8.4.5	TABLE: Impact			—
Impacts per surface		Surface tested	Impact energy (Nm)	Comments
4.8.4.6	TABLE: Crush test			—
Test position		Surface tested	Crushing Force (N)	Duration force applied (s)
Supplementary information:				

TESTED BY :	_____	DATE:	__/__/__	TEST EQUIPMENT LIST ITEM:	_____, _____, _____
ADDITIONAL INFORMATION:					

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Clause	Requirement + Test	Result - Remark	Verdict

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

TESTED BY :	_____	DATE:	__/__/__	TEST EQUIPMENT LIST ITEM:	_____, _____, _____
ADDITIONAL 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	50Vdc	Power supply Ethernet cable (POE)	Normal	50Vdc	240mA	dc	ES1
			Abnormal	-	-	-	
			Single fault – SC/OC s/c Ethernet port (inside equipment)	50Vdc	400mA	dc	
			Normal				
			Abnormal				
			Single fault – SC/OC s/c capacitor C1				
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	—	—		



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Clause	Requirement + Test	Result - Remark	Verdict

5.2.2.4 - Single Pulses							
No.	Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters			ES Class
				Duration (ms)	Upk (V)	Ipk (mA)	
—	—	—	Normal	—	—	—	—
			Abnormal	—	—	—	
			Single fault – SC/OC	—	—	—	
5.2.2.5 - Repetitive Pulses							
No.	Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters			ES Class
				Off time (ms)	Upk (V)	Ipk (mA)	
—	—	—	Normal	—	—	—	—
			Abnormal	—	—	—	
			Single fault – SC/OC	—	—	—	
Test Conditions: Normal – Abnormal - Supplementary information: SC=Short Circuit, OC=Short Circuit							

TESTED BY :	_____	DATE:	__/__/__	TEST EQUIPMENT LIST ITEM:	_____, _____, _____
ADDITIONAL INFORMATION:					

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Clause	Requirement + Test	Result - Remark	Verdict

5.4.1.4, 6.3.2, 9.0, B.2.6	TABLE: Temperature measurements						P	
	Supply voltage (V) ..... :	50Vdc					—	
	Ambient T <sub>min</sub> (°C) ..... :	22.8					—	
	Ambient T <sub>max</sub> (°C) ..... :	23.2					—	
	Tma (°C) ..... :	55					—	
Maximum measured temperature T of part/at:		T (°C)					Allowed T <sub>max</sub> (°C)	
POE PWR connector		73.6					80 (1)	
Ethernet cable		76.0					90 (1)	
PCB		79.3					130 (1)	
Port ethernet on PCB		77.5					85 (1)	
Component WE 744363300		80.0					125 (1)	
Component WE 7443551730		77.1					155 (1)	
PCB PC		76.2					105 (1)	
Coin lithium		77.6					85 (1)	
USB port (on PC)		77.9					105 (1)	
USB1 port (on PC)		77.3					105 (1)	
Ethernet port (on PC)		78.5					105 (1)	
Com port (on PC)		77.3					105 (1)	
Internal ambient		76.5					-	
Metallic enclosure Top		40.6					70 (2)	
Metallic enclosure left side		40.5					70 (2)	
Supplementary information:								
Temperature T of winding:		t <sub>1</sub> (°C)	R <sub>1</sub> (Ω)	t <sub>2</sub> (°C)	R <sub>2</sub> (Ω)	T (°C)	Allowed T <sub>max</sub> (°C)	Insulation class
—		—	—	—	—	—	—	—
Supplementary information:								
Max. normal load								
Note 1: Tma should be considered as directed by applicable requirement								
Note 2: Tma is not included in assessment of Touch Temperatures (Clause 9)								

TESTED BY :	L. BOUGRAINVILLE	DATE:	19/04/2021	TEST EQUIPMENT LIST ITEM:	1943, 5448, 11673
ADDITIONAL INFORMATION:					

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

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:			

TESTED BY :	_____	DATE:	__/__/__	TEST EQUIPMENT LIST ITEM:	____, ____, ____
ADDITIONAL 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:				

TESTED BY :	_____	DATE:	__/__/__	TEST EQUIPMENT LIST ITEM:	____, ____, ____
ADDITIONAL INFORMATION:					

<b>5.4.2.2, 5.4.2.4 and 5.4.3</b>	<b>TABLE: Minimum Clearances/Creepage distance</b>						<b>N/A</b>
Clearance (cl) and creepage distance (cr) at/of/between:	Up (V)	U r.m.s. (V)	Frequency (kHz) <sup>1</sup>	Required cl (mm)	cl (mm) <sup>2</sup>	Required <sup>3</sup> cr (mm)	cr (mm)
Supplementary information:							
Note 1: Only for frequency above 30 kHz							
Note 2: See table 5.4.2.4 if this is based on electric strength test							
Note 3: Provide Material Group							

TESTED BY :	_____	DATE:	__/__/__	TEST EQUIPMENT LIST ITEM:	____, ____, ____
ADDITIONAL INFORMATION:					

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

5.4.2.3	TABLE: Minimum Clearances distances using required withstand voltage				N/A
	Overvoltage Category (OV):				
	Pollution Degree:				
Clearance distanced between:		Required withstand voltage	Required cl (mm)	Measured cl (mm)	
Supplementary information:					

TESTED BY :	_____	DATE:	__/__/__	TEST EQUIPMENT LIST ITEM:	____, ____, ____
ADDITIONAL 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:				

TESTED BY :	_____	DATE:	__/__/__	TEST EQUIPMENT LIST ITEM:	____, ____, ____
ADDITIONAL 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:						

TESTED BY :	_____	DATE:	__/__/__	TEST EQUIPMENT LIST ITEM:	____, ____, ____
ADDITIONAL INFORMATION:					

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

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

TESTED BY : _____	DATE: ____/____/____	TEST EQUIPMENT LIST ITEM: _____, _____, _____
ADDITIONAL INFORMATION:		

5.5.2.2	TABLE: Stored discharge on capacitors					N/A
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

TESTED BY : _____	DATE: ____/____/____	TEST EQUIPMENT LIST ITEM: _____, _____, _____
ADDITIONAL INFORMATION:		

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

<b>5.6.6.2</b>	<b>TABLE: Resistance of protective conductors and terminations</b>				<b>N/A</b>
Accessible part	Test current (A)	Duration (min)	Voltage drop (V)	Resistance ( $\Omega$ )	
Supplementary information:					

TESTED BY :	_____	DATE:	__/__/__	TEST EQUIPMENT LIST ITEM:	____, ____, ____
ADDITIONAL 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 (mA)	
	-		
	1		
	1		
	2*		
	3		
	4		
	5		
	6		
	8		
Supplementary Information: Notes: [1] Supply voltage is the anticipated maximum Touch Voltage [2] Earthed neutral conductor [Voltage differences less than 1% or more] [3] Specify method used for measurement as described in IEC 60990 sub-clause 4.3 [4] IEC60990, sub-clause 6.2.2.7, Fault 7 not applicable. [5] (*) IEC60990, sub-clause 6.2.2.2 is not applicable if switch or disconnect device (e.g., appliance coupler) provided.			

TESTED BY :	_____	DATE:	__/__/__	TEST EQUIPMENT LIST ITEM:	____, ____, ____
ADDITIONAL INFORMATION:					

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

6.2.2	Table: Electrical power sources (PS) measurements for classification				P
Source	Description	Measurement	Max Power after 3 s	Max Power after 5 s <sup>*)</sup>	PS Classification
A	Power supply Ethernet cable (50Vdc)	Power (W) :	< 100W	< 100W	PS2
		V <sub>A</sub> (V) :	50Vdc	50Vdc	
		I <sub>A</sub> (A) :	-	-	
		Power (W) :			
		V <sub>A</sub> (V) :			
		I <sub>A</sub> (A) :			
Supplementary Information:					
(*) Measurement taken only when limits at 3 seconds exceed PS1 limits					

TESTED BY :	L.BOUGRAINVILLE	DATE:	19/04/2021	TEST EQUIPMENT LIST ITEM:	1943, 5448, 11673
ADDITIONAL INFORMATION:					

6.2.3.1	Table: Determination of Potential Ignition Sources (Arcing PIS)				N/A
Location	Open circuit voltage After 3 s (V <sub>p</sub> )	Measured r.m.s current (I <sub>rms</sub> )	Calculated value (V <sub>p</sub> x I <sub>rms</sub> )	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 <sub>p</sub> ) and normal operating condition rms current (I <sub>rms</sub> ) is greater than 15.					

TESTED BY :	___	DATE:	__/__/__	TEST EQUIPMENT LIST ITEM:	___, ___, ___
ADDITIONAL INFORMATION:					

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

6.2.3.2	Table: Determination of Potential Ignition Sources (Resistive PIS)				P
Circuit Location (x-y)	Operating Condition (Normal / Describe Single Fault)	Measured wattage or VA During first 30 s (W / VA)	Measured wattage or VA After 30 s (W / VA)	Protective Circuit, Regulator, or PTC Operated? Yes / No (Comment)	Resistive PIS? Yes/No
Power supply Ethernet cable	Single fault	> 15W to < 100 W	> 15W to < 100 W	No	Yes
<p>Supplementary Information:</p> <p>A combination of voltmeter, VA and ammeter IA may be used instead of a wattmeter.</p> <p>If a separate voltmeter and ammeter are used, the product of (VA x IA) is used to determine Resistive PIS classification.</p> <p>A Resistive PIS: (a) dissipates more than 15 W, measured after 30 s of normal operation, <u>or</u> (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.</p>					

TESTED BY :	L.BOUGRAINVILLE	DATE:	19/04/2021	TEST EQUIPMENT LIST ITEM:	1943, 5448, 11673
ADDITIONAL INFORMATION:					

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:			

TESTED BY :	___	DATE:	__/__/__	TEST EQUIPMENT LIST ITEM:	___, ___, ___
ADDITIONAL INFORMATION:					



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

B.2.5	TABLE: Input test						P
U (V)	I (A)	I rated (A)	P (W)	P rated (W)	Fuse No	I fuse (A)	Condition/status
50Vdc	0.240	-	12W	50W	-	-	Normal condition Communication with smartphone (power supply cable)
Supplementary information: Max. normal load Equipment may have rated current or rated power or both. Both should be measured							

TESTED BY :	L.BOUGRAINVILLE	DATE:	19/04/2021	TEST EQUIPMENT LIST ITEM:	1943, 5448, 11673, 17388
ADDITIONAL INFORMATION:					

B.3	TABLE: Abnormal operating condition tests							N/A
Ambient temperature (°C) .....							—	
Power source for EUT: Manufacturer, model/type, output rating ..							—	
Component No.	Abnormal Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
								See below
Observations:								
								See below
Observations:								
Supplementary information:								

TESTED BY :	___	DATE:	__/__/__	TEST EQUIPMENT LIST ITEM:	___, ___, ___
ADDITIONAL INFORMATION:					

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

<b>B.4</b>	<b>TABLE: Fault condition tests</b>							<b>P</b>
Ambient temperature (°C) .....					23		—	
Power source for EUT: Manufacturer, model/type, output rating .:					-		—	
Component No.	Fault Condition	Supply voltage, (V)	Test time (00:00:00 )	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
Connector Antenna n°1	Short circuit	50Vdc	00:54:15	-	-	106	48	See below
Observations: No high temperature								
GPS Connector	Short circuit	50Vdc	00:14:05	-	-	106	50	See below
Observations: No hazardous								
Connector Antenna n°2	Short circuit	50Vdc	00:20:25	-	-	106	50.6	See below
Observations: No hazardous								
USB port	Short circuit	50Vdc	00:18:40	-	-	106	48.5	See below
Observations: No high temperature								
Ethernet port	Short circuit	50Vdc	00:12:20	-	-	-	-	See below
Observations: No high temperature								
Connector DB9 COM	Short circuit	50Vdc	00:14:20	-	-	104	46.7	See below
Observations:								
Supplementary information:								

TESTED BY :	L.BOUGRAINVILLE	DATE:	19/04/2021	TEST EQUIPMENT LIST ITEM:	1943, 5448, 11673, 17388
ADDITIONAL INFORMATION:					

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

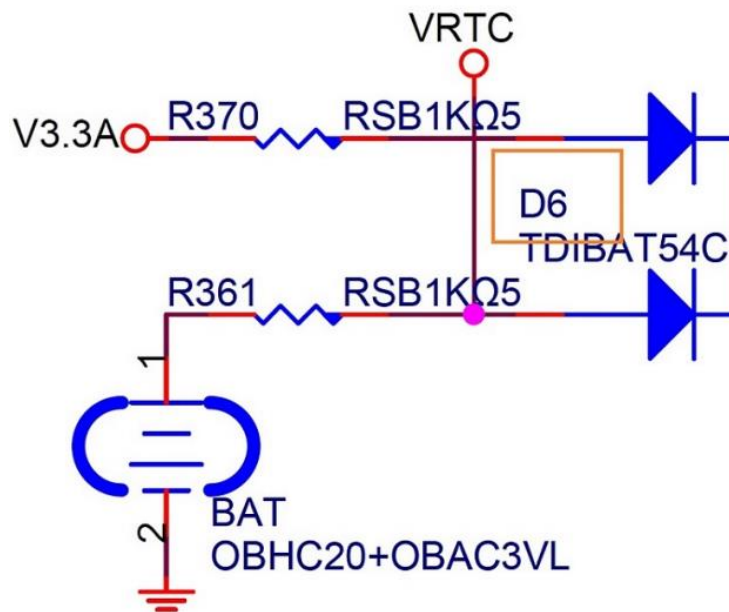
Annex M	TABLE: Batteries								P
The tests of Annex M are applicable only when appropriate battery data is not available									P
Is it possible to install the battery in a reverse polarity position?..... :							No		N/A
	Non-rechargeable batteries			Rechargeable batteries					
	Discharging		Un-intentional 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 chemical leak				N/A
- Explosion of the battery					No explosion of the battery				N/A
- Emission of flame or expulsion of molten metal					No emission of flame or expulsion of molten metal				N/A
- Electric strength tests of equipment after completion of tests					No breakdown				N/A

EN 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									P
Is it possible to install the battery in a reverse polarity position?..... :							No		N/A
	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.

Supplementary information:

Schematic protection circuit of battery



TESTED BY :	L.BOUGRAINVILLE	DATE:	21/04/2021	TEST EQUIPMENT LIST ITEM:	____, ____, ____
ADDITIONAL INFORMATION:					

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

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

TESTED BY : _____	DATE: ____/____/____	TEST EQUIPMENT LIST ITEM: _____, _____, _____
ADDITIONAL INFORMATION:		

Annex Q.1	TABLE: Circuits intended for interconnection with building wiring (LPS)					N/A
Note: Measured UOC (V) with all load circuits disconnected:						
Output Circuit	Components	U <sub>oc</sub> (V)	I <sub>sc</sub> (A)		S (VA)	
			Meas.	Limit	Meas.	Limit
Supplementary Information: SC=Short circuit, OC=Open circuit						

TESTED BY : _____	DATE: ____/____/____	TEST EQUIPMENT LIST ITEM: _____, _____, _____
ADDITIONAL INFORMATION:		

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

T.2, T.3, T.4, T.5	TABLE: Steady force test					P
Part/Location	Material	Thickness (mm)	Force (N)	Test Duration (sec)	Observation	
Internal cables	Plastic	-	10	-	No damage	
Enclosure	Metallic	3.73	30	5		
Enclosure	Metallic	3.73	250	5		
Supplementary information:						

TESTED BY :	L. BOUGRAINVILLE	DATE:	19/04/2021	TEST EQUIPMENT LIST ITEM:	7632, 0776, 7653, 2675
ADDITIONAL INFORMATION:					

T.6, T.9	TABLE: Impact tests				P
Part/Location	Material	Thickness (mm)	Vertical distance (mm)	Observation	
Enclosure	Metallic	3.73	410	No damage	
Supplementary information:					

TESTED BY :	L. BOUGRAINVILLE	DATE:	19/04/2021	TEST EQUIPMENT LIST ITEM:	7632, 0776, 7653, 2675
ADDITIONAL INFORMATION:					

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

TESTED BY :	_____	DATE:	__/__/__	TEST EQUIPMENT LIST ITEM:	_____, _____, _____
ADDITIONAL INFORMATION:					

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

<b>T.8</b>	<b>TABLE: Stress relief test</b>				<b>N/A</b>
Part/Location	Material	Thickness (mm)	Oven Temperature (°C)	Duration (h)	Observation
Supplementary information:					

TESTED BY : _____	DATE: ____/____/____	TEST EQUIPMENT LIST ITEM: _____, _____, _____
ADDITIONAL INFORMATION:		

**« □□□ End of report - 4 annexes to be forwarded □□□ »**

## **ANNEX 1:**

### **Attachment To Test Report IEC 62368-1 - European Group Differences And National Differences**



**ANNEX 1 : 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
<b>Copyright © 2017 IEC System of Conformity Assessment Schemes for Electrotechnical Equipment and Components (IECEE)</b>	

	<b>CENELEC COMMON MODIFICATIONS (EN)</b>					
	Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 62368-1:2014 are prefixed "Z".					
CONTENTS	<b>Add</b> 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					
	<b>Delete</b> all the "country" notes in the reference document (IEC 62368-1:2014) according to the following list:					
	0.2.1	Note	1	Note 3	4.1.15	Note
	4.7.3	Note 1 and 2	5.2.2.2	Note	5.4.2.3.2.2 Table 13	Note c
	5.4.2.3.2.4	Note 1 and 3	5.4.2.5	Note 2	5.4.5.1	Note
	5.5.2.1	Note	5.5.6	Note	5.6.4.2.1	Note 2 and 3
	5.7.5	Note	5.7.6.1	Note 1 and 2	10.2.1 Table 39	Note 2, 3 and 4
	10.5.3	Note 2	10.6.2.1	Note 3	F.3.3.6	Note 3
	For special national conditions, see Annex ZB.					P
1	<b>Add</b> the following note: NOTE Z1 The use of certain substances in electrical and electronic equipment is restricted within the EU: see Directive 2011/65/EU.			Considered		P

4.Z1	<p><b>Add</b> the following new subclause after 4.9:</p> <p>To protect against excessive current, short-circuits and earth faults in circuits connected to an a.c. <b>mains</b>, 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):</p> <p>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;</p> <p>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;</p> <p>c) it is permitted for <b>pluggable equipment type B</b> or <b>permanently connected equipment</b>, 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.</p> <p>If reliance is placed on protection in the building installation, the installation instructions shall so state, except that for <b>pluggable equipment type A</b> the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet.</p>	No connection to mains	N/A
5.4.2.3.2.4	<p><b>Add</b> the following to the end of this subclause:</p> <p>The requirement for interconnection with <b>external circuit</b> is in addition given in EN 50491-3:2009.</p>		N/A
10.2.1	<p>Add the following to <sup>c)</sup> and <sup>d)</sup> in table 39:</p> <p>For additional requirements, see 10.5.1.</p>	No X-rays	N/A

10.5.1	<p><b>Add</b> the following after the first paragraph:  <i>For RS 1 compliance is checked by measurement under the following conditions:</i></p> <p><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></p> <p>NOTE Z1 Soldered joints and paint lockings are examples of adequate locking.</p> <p><i>The dose-rate is determined by means of a radiation monitor with an effective area of 10 cm<sup>2</sup>, at any point 10 cm from the outer surface of the apparatus.</i></p> <p><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></p> <p><i>For RS1, the dose-rate shall not exceed 1 µSv/h taking account of the background level.</i></p> <p>NOTE Z2 These values appear in Directive 96/29/Euratom of 13 May 1996.</p>	No X-rays	N/A
10.6.1	<p><b>Add</b> the following paragraph to the end of the subclause:  EN 71-1:2011, 4.20 and the related tests methods and measurement distances apply.</p>	Not a personal music player	N/A
10.Z1	<p><b>Add</b> the following new subclause after 10.6.5.  <b>10.Z1 Non-ionizing radiation from radio frequencies in the range 0 to 300 GHz</b></p> <p>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).</p> <p>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</p>		N/A
G.7.1	<p><b>Add</b> the following note:  NOTE Z1 The harmonized code designations corresponding to the IEC cord types are given in Annex ZD.</p>	No power supply cord	N/A

Bibliography	<p><b>Add</b> the following standards:</p> <p><b>Add</b> the following notes for the standards indicated:</p> <p>IEC 60130-9 NOTE Harmonized as EN 60130-9.</p> <p>IEC 60269-2 NOTE Harmonized as HD 60269-2.</p> <p>IEC 60309-1 NOTE Harmonized as EN 60309-1.</p> <p>IEC 60364 NOTE some parts harmonized in HD 384/HD 60364 series.</p> <p>IEC 60601-2-4 NOTE Harmonized as EN 60601-2-4.</p> <p>IEC 60664-5 NOTE Harmonized as EN 60664-5.</p> <p>IEC 61032:1997 NOTE Harmonized as EN 61032:1998 (not modified).</p> <p>IEC 61508-1 NOTE Harmonized as EN 61508-1.</p> <p>IEC 61558-2-1 NOTE Harmonized as EN 61558-2-1.</p> <p>IEC 61558-2-4 NOTE Harmonized as EN 61558-2-4.</p> <p>IEC 61558-2-6 NOTE Harmonized as EN 61558-2-6.</p> <p>IEC 61643-1 NOTE Harmonized as EN 61643-1.</p> <p>IEC 61643-21 NOTE Harmonized as EN 61643-21.</p> <p>IEC 61643-311 NOTE Harmonized as EN 61643-311.</p> <p>IEC 61643-321 NOTE Harmonized as EN 61643-321.</p> <p>IEC 61643-331 NOTE Harmonized as EN 61643-331.</p>		
<b>ZB</b>	<b>ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)</b>		N/A
4.1.15	<p><b>Denmark, Finland, Norway and Sweden</b></p> <p>To the end of the subclause the following is added:</p> <p><b>Class I pluggable equipment type A</b> 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 <b>accessible</b> parts, have a marking stating that the equipment shall be connected to an earthed <b>mains</b> socket-outlet.</p> <p>The marking text in the applicable countries shall be as follows:</p> <p>In <b>Denmark</b>: "Apparatets stikprop skal tilsluttes en stikkontakt med jord som giver forbindelse til stikproppens jord."</p> <p>In <b>Finland</b>: "Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan"</p> <p>In <b>Norway</b>: "Apparatet må tilkoples jordet stikkontakt"</p> <p>In <b>Sweden</b>: "Apparaten skall anslutas till jordat uttag"</p>	Not a class I pluggable type A equipment	N/A
4.7.3	<p><b>United Kingdom</b></p> <p>To the end of the subclause the following is added:</p> <p>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</p>	Not a direct plug-in equipment	N/A
5.2.2.2	<p><b>Denmark</b></p> <p>After the 2nd paragraph add the following:</p> <p>A warning (marking <b>safeguard</b>) for high <b>touch current</b> is required if the <b>touch current</b> exceeds the limits of 3,5 mA a.c. or 10 mA d.c.</p>	Class III equipment	N/A

5.4.11.1 and Annex G	<p><b>Finland and Sweden</b></p> <p>To the end of the subclause the following is added:</p> <p>For separation of the telecommunication network from earth the following is applicable:</p> <p>If this insulation is solid, including insulation forming part of a component, it shall at least consist of either</p> <ul style="list-style-type: none"> <li>• two layers of thin sheet material, each of which shall pass the electric strength test below, or</li> <li>• one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below.</li> </ul> <p>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</p> <ul style="list-style-type: none"> <li>• 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</li> <li>• is subject to routine testing for electric strength during manufacturing, using a test voltage of 1,5kV.</li> </ul> <p>It is permitted to bridge this insulation with a capacitor complying with EN 60384-14:2005, subclass Y2.</p> <p>A capacitor classified Y3 according to EN 60384-14:2005, may bridge this insulation under the following conditions:</p> <ul style="list-style-type: none"> <li>• 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;</li> <li>• the additional testing shall be performed on all the test specimens as described in EN 60384-14;</li> </ul> <p>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.</p>		N/A
5.5.2.1	<p><b>Norway</b></p> <p>After the 3rd paragraph the following is added:</p> <p>Due to the IT power system used, capacitors are required to be rated for the applicable line-to-line voltage (230 V).</p>	Not evaluated for IT	N/A
5.5.6	<p><b>Finland, Norway and Sweden</b></p> <p>To the end of the subclause the following is added:</p> <p>Resistors used as <b>basic safeguard</b> or bridging <b>basic insulation</b> in <b>class I pluggable equipment type A</b> shall comply with G.10.1 and the test of G.10.2.</p>	No resistors used as safeguards	N/A

5.6.1	<b>Denmark</b> <b>Add</b> 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.	Not a pluggable equipment type A	N/A
5.6.4.2.1	<b>Ireland and United Kingdom</b> After the indent for <b>pluggable equipment type A</b> , the following is added: – the <b>protective current rating</b> is taken to be 13 A, this being the largest rating of fuse used in the <b>mains</b> plug.	Not a pluggable equipment type A	N/A
5.6.5.1	To the second paragraph the following is added: The range of conductor sizes of flexible cords to be accepted by terminals for equipment with a rated current over 10 A and up to and including 13 A is: 1,25 mm <sup>2</sup> to 1,5 mm <sup>2</sup> in cross-sectional area.	Not for permanent connection	N/A
5.7.5	<b>Denmark</b> To the end of the subclause the following is added: The installation instruction shall be affixed to the equipment if the <b>protective conductor current</b> exceeds the limits of 3,5 mA a.c. or 10 mA d.c.	Class III equipment	N/A

5.7.6.1	<p><b>Norway and Sweden</b></p> <p>To the end of the subclause the following is added:</p> <p>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.</p> <p>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.</p> <p>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:</p> <p>“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)”</p> <p>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.</p> <p>Translation to Norwegian (the Swedish text will also be accepted in Norway):</p> <p>“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.”</p> <p>Translation to Swedish:</p> <p>“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.”</p>	No connection to television distribution system	N/A
5.7.6.2	<p><b>Denmark</b></p> <p>To the end of the subclause the following is added:</p> <p>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 .</p>	Class III equipment	N/A

B.3.1 and B.4	<p><b>Ireland and United Kingdom</b></p> <p>The following is applicable:</p> <p>To protect against excessive currents and short-circuits in the primary circuit of <b>direct plug-in equipment</b>, 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 <b>direct plug-in equipment</b>, until the requirements of Annexes B.3.1 and B.4 are met</p>	Not a direct plug-in equipment	N/A
G.4.2	<p><b>Denmark</b></p> <p>To the end of the subclause the following is added:</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>Other current rating socket outlets shall be in compliance with Standard Sheet DKA 1-3a or DKA 1-1c.</p> <p>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</p> <p><i>Justification:</i> Heavy Current Regulations, Section 6c</p>	Class III equipment	N/A
G.4.2	<p><b>United Kingdom</b></p> <p>To the end of the subclause the following is added:</p> <p>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.</p>	Not a direct plug-in equipment	N/A



G.7.1	<b>United Kingdom</b> 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	N/A
G.7.1	<b>Ireland</b> 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	Class III equipment	N/A
G.7.2	<b>Ireland and United Kingdom</b> To the first paragraph the following is added: A power supply cord with a conductor of 1,25 mm <sup>2</sup> is allowed for equipment which is rated over 10 A and up to and including 13 A.	Class III equipment	N/A
ZC	<b>ANNEX ZC, NATIONAL DEVIATIONS (EN)</b>		<b>N/A</b>
10.5.2	<b>Germany</b> 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. <b>NOTE</b> Contact address: Physikalisch-Technische Bundesanstalt, Bundesallee 100, D-38116 Braunschweig, Tel.: Int +49-531-592-6320, Internet: <a href="http://www.ptb.de">http://www.ptb.de</a>	Not a CRT television	N/A

## **ANNEX 2:**

### **Uncertainty of measurements and List of equipment used**

To declare, or not, the compliance with the specifications, it was not explicitly taken into account of uncertainty associated with the result(s)	
<b>Table of Uncertainty of Measurement in Electrical Safety Area (Maximum Values)</b>	
Heating measured with thermocouple from 0 to 100°C	4.2 K
Heating measured with thermocouple from 100 to 250°C (at 100°C)	4.9 K
Temperature measurement with thermocouple from 0 to 100°C	3.5°C
Temperature measurement with thermocouple from 100 to 250°C (at 100°C)	4.3°C
Heating measurement of transformer by variation of resistance	1.64%
Measurement with vernier caliper	0.15 mm
Measurement with micrometer	37.4 µm
Measurement with optical system USB Paralux	0.095 mm
Measurement with magnifying glass	0.14 mm
Measurement with numeric camera	0.47 mm
Direct voltage measurement	0.72%
Alternative voltage measurement	3.5%
Direct current measurement ( $I < 5A$ )	1.8%
Alternative current measurement ( $I < 5A$ )	4.1%
Direct current measurement (with current probe $I > 5A$ )	2.9%
Alternative current measurement (with current probe $I > 5A$ )	2.9%
Resistance measurement (2 wires – 100 Ω to 1 MΩ)	3.5%
Resistance measurement (2 wires – 1 MΩ to 100 MΩ)	5.8%
Resistance measurement (4 wires – 100 mΩ to 100 Ω)	1.2%
Power measurement	3.5%
Torque test (0.25 Nm)	0.07 Nm
Torque test (0.5 Nm)	0.13 Nm
Torque test (1 Nm)	0.16 Nm
Pull/Compression test (10 N à 20 N)	8.3%
Pull/Compression test (20 N à 60 N)	8.3%
Pull/Compression test (20 N à 250 N)	9.8%
Mass measurement (0-100 g)	1.2%
Mass measurement (100 g-1 kg)	2.3%
Mass measurement (1 kg-5 kg)	2.3%
Mass measurement (5 kg-60 kg)	5.8%
Mass measurement (60 kg-200 kg)	5.8%

<b>Table of Uncertainty of Measurement in Electrical Safety Area (Maximum Values)</b>	
Touch current measurement (60601-1) rms	6.6%
Touch current measurement (60950-1/61010-1) peak	9%
Touch current measurement (60950-1/61010-1) rms	8.9%
Touch current measurement (61010-1 wet locations) peak	6.6%
Touch current measurement (61010-1 wet locations) rms	6.6%
Measurement of additional torque applied to the socket-outlet (60950-1, 60335-1, ...)	(5% + 0.004) Nm
Dielectric test 0 to 5 kVac or dc	4.9%
Earth resistance measurement (SEFELEC SMG 500)	5.7%
Earth resistance measurement from a dc power supply	9.4%
Stability test-static	23.1%
Stability test-slip test	23.4%
Stability test-application of force	11.6%
Walking uphill test or walk downhill passing door frame or threshold	31.3%
Test of propulsion force	29.8%
Fatigue test-application of repetitive strength from 0 to 200 N	13.6%
Fatigue test-application of repetitive strength from 200 to 5000 N	7.8%
Measuring a voltage with an oscilloscope, directly or with a probe, of a signal to the upper half of the screen. Without High voltage probe	2.6%
Measuring a voltage with an oscilloscope, directly or with a probe, of a signal to the upper half of the screen. With High voltage probe	4.3%
Discharge capacity test	4.4%
Tensile test on a cable (30-100 N)-method of the mass applied vertically	37.3%
Measurement of leakage current HIOKI	6.2%
Measures of functional characteristics in accordance with §201.12 of IEC 60601-2-10(2012) by cursor. Measurement of voltage by step of 1 V	3.7%
Measures of functional characteristics in accordance with §201.12 of IEC 60601-2-10(2012) by cursor. Measurement of current (=Voltage/Resistance)	3.8%
Measuring a duration or period to the oscilloscope cursors	2.5%

**List of test equipment used:**

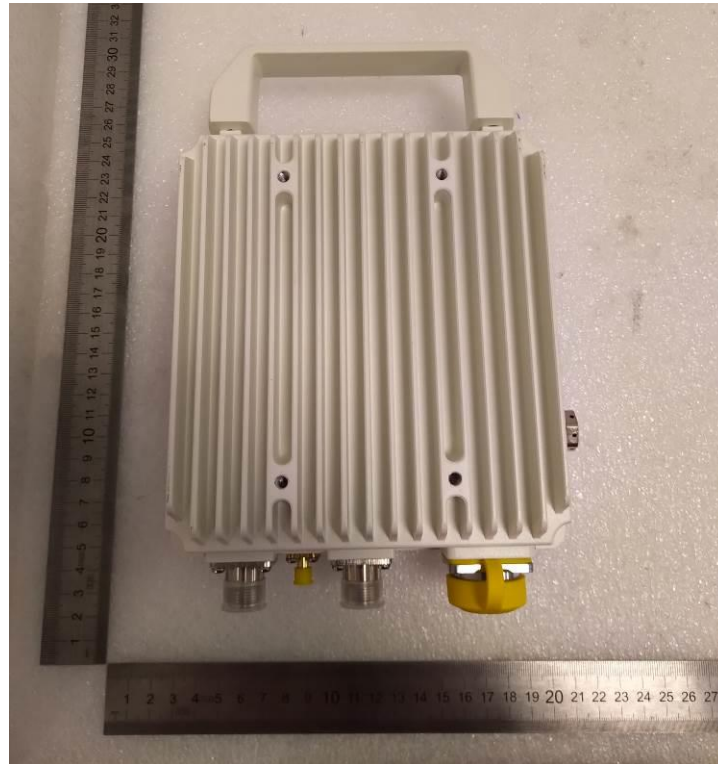
Order Nr	Category	Manufacturer	Type	Last validity date	Next validity date
11673	-	TC	Type K	24/07/2020	24/09/2021
07632	Bille d'acier	Emitech	500 g	31/08/2020	31/10/2024
02620	Chronometer	Novo	57900	09/03/2021	09/05/2023
17388	Current probe	Hioki	CM4371	30/09/2020	30/11/2022
05448	Data recording card	Agilent Technologies	34908A	24/07/2020	24/09/2021
04067	Dynamometer	Chatillon	DFE 250N	25/02/2020	25/04/2022
14634	Liquid matters	Merck	n-Hexane	---	---
01943	Measure exchange	Hewlett Packard	34970 A	24/07/2020	24/09/2021
07653	Réglet	Manutan	123M175	---	---
00776	Tube pour essai	Emitech	CEI 950	---	---
02675	Vernier Caliper	Mitutoyo	CD-15CP	16/03/2020	16/05/2021
04033	Weight	/	25kg	17/04/2020	17/06/2023

## **ANNEX 3:**

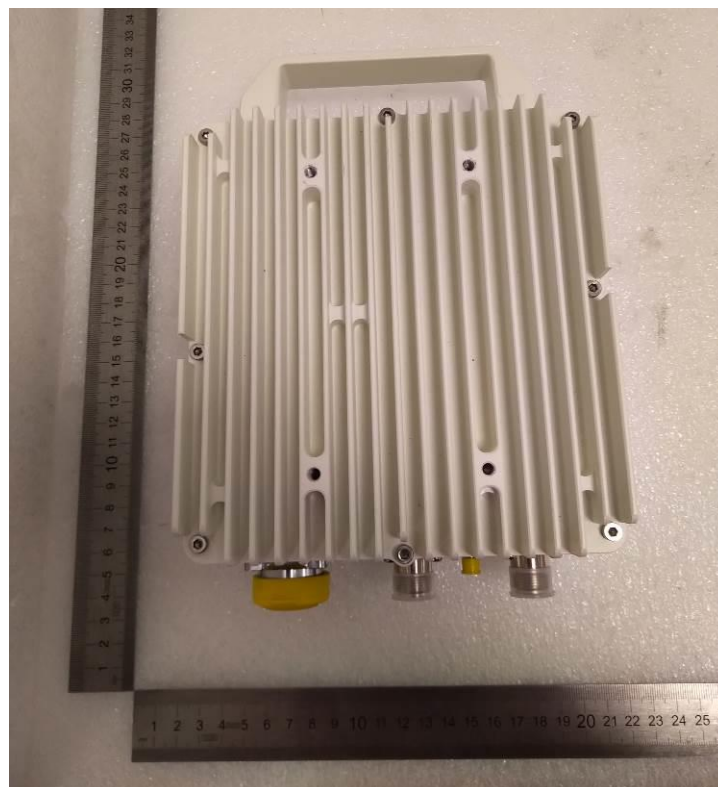
### **Photos of equipment**

## External views

### Top view



### Bottom view



Front view



Rear view





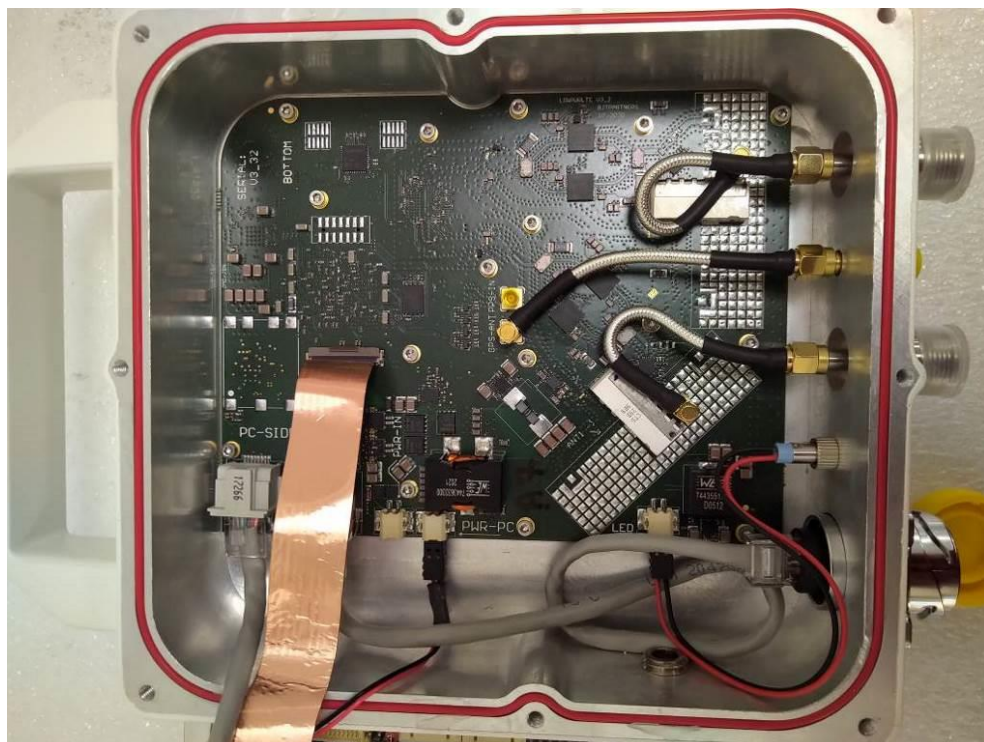
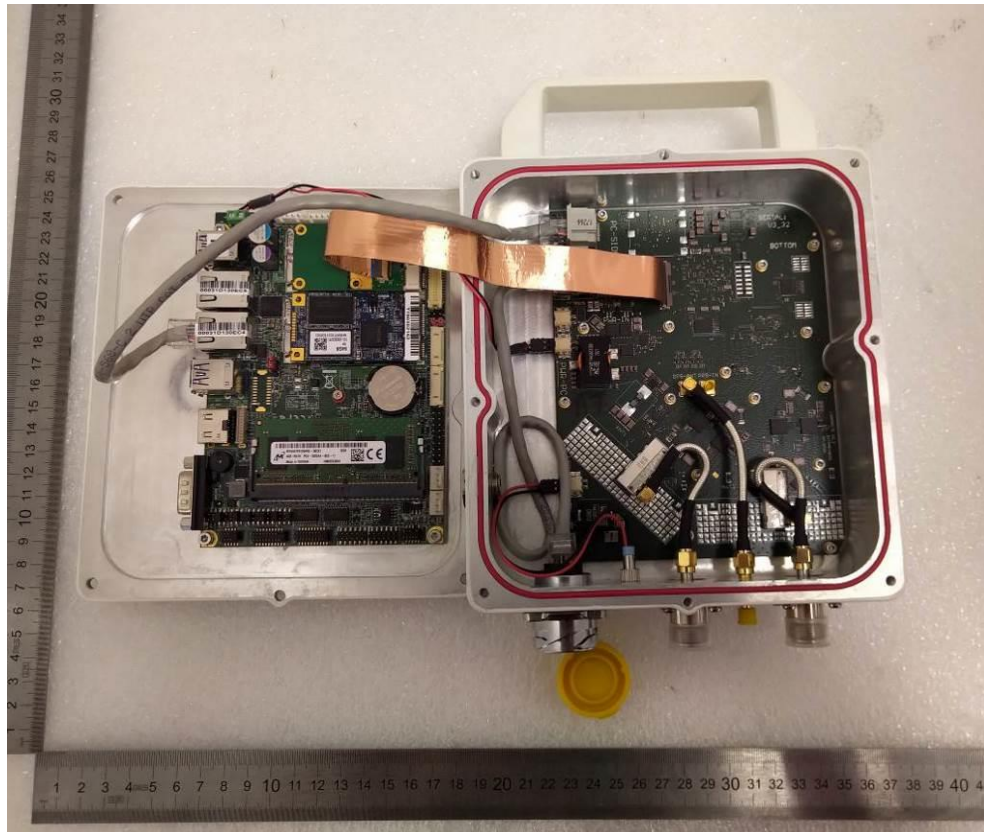
Right view



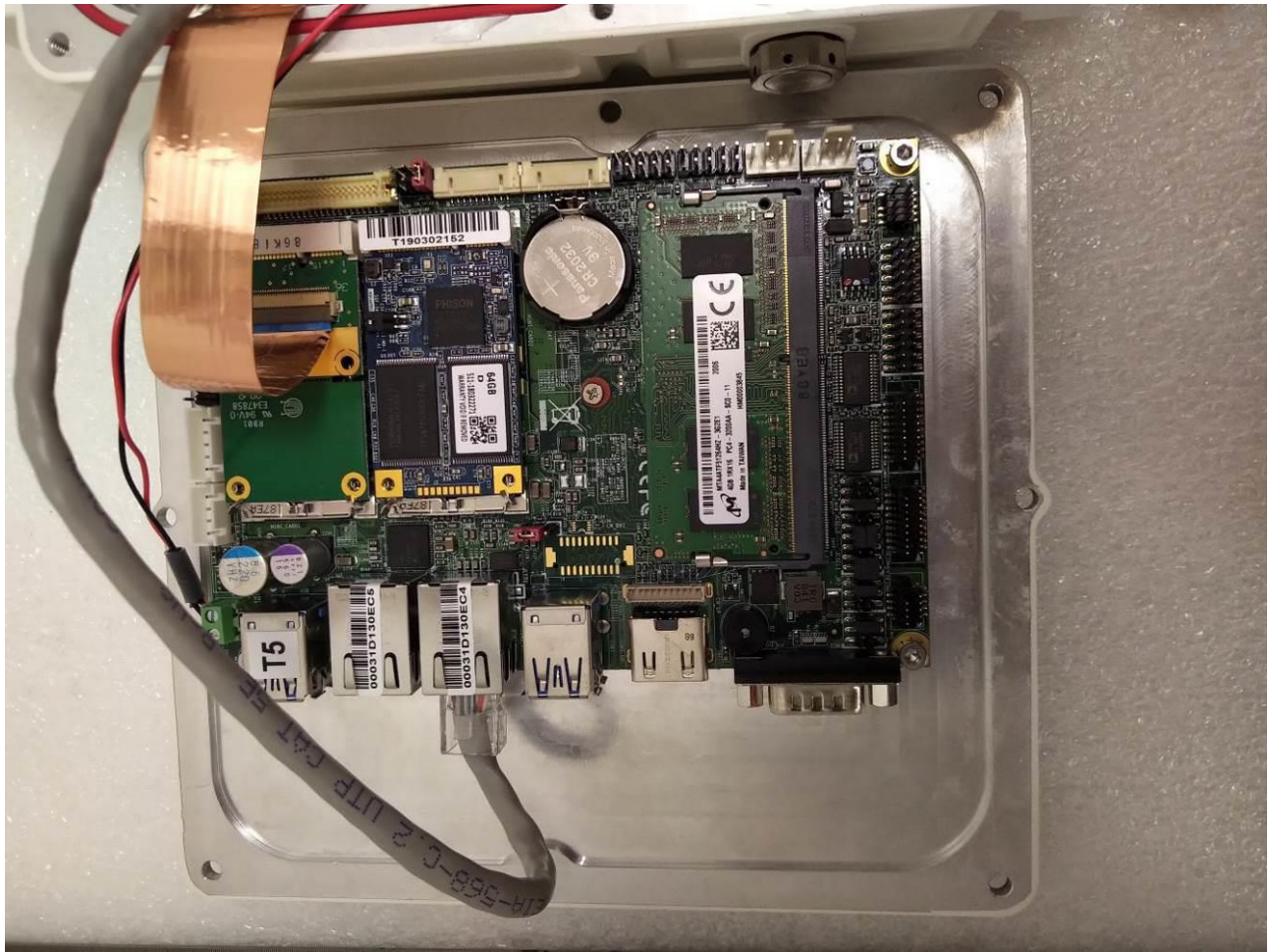
Left view



## Internal views







# **ANNEX 4:**

## **Instructions (Extracts)**

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## 1. Introduction

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This User Manual (UM) provides the information necessary for Telecom operators to effectively use the Open Radio Station (ORS).

The ORS is a 4G/5G LTE (Long Term Evolution) base station.

The ORS come in a white metallic case (see picture) which includes an embedded computer and a PCB radio. The ORS use Power over Ethernet (PoE) to be powered on and antennas to emit/receive the RF signal. Note that this User Manual only applies to the ORS itself, not to the power system (Power injector, cable) nor the antennas.

Each ORS is designed to work on a given LTE band (the band can be TDD or FDD): the radio PCB is mounted with filters specific to the desired band.

The band is specified on the sticker on the ORS side.

This User Manual applies to all ORS no matter the band.

ORS is IP54 ([https://en.wikipedia.org/wiki/IP\\_Code](https://en.wikipedia.org/wiki/IP_Code)) under normal condition of usage (warning: see 2.2 Cautions & Warnings).

## 1. Overview

---



The ORS is intended to provide 4G/5G network in specific location. The client must install the ORS at his own convenience where it best suits its need. The client needs to check that he has the right to operate a LTE network at this location and the right to operate with LTE band used by the ORS. (warning: see 2.2 Cautions & Warnings).


### 1.1 Conventions

Many information are available online (notably in <https://handbook.rapid.space>). In this case, the link is an hyperlink in blue.

Logos on the stickers:

-  **CE marking** is an administrative marking with which the manufacturer or importer affirms its conformity with European health, safety, and environmental protection standards for products sold within the European Economic Area (EEA). It is not a quality indicator or a certification mark. The CE marking is also found on products sold outside the EEA that have been manufactured to EEA standards. This makes the CE marking recognizable worldwide even to people who are not familiar with the European Economic Area. It is in that sense like the FCC Declaration of Conformity used for selling certain electronic devices in the United States.

The CE marking is the manufacturer's declaration that the product meets EU standards for health, safety, and environmental protection. The CE mark indicates that the product may be sold freely in any part of the European Economic Area, regardless of its country of origin.

-  The **Waste Electrical and Electronic Equipment Directive (WEEE Directive)** is the European Community Directive 2012/19/EU on waste electrical and electronic equipment (WEEE) which, together with the RoHS Directive 2011/65/EU, became European Law in February 2003. The WEEE Directive set collection, recycling and recovery targets for all types of electrical goods, with a minimum rate of 4 kilograms (9 lb) per head of population *per annum* recovered for recycling by 2009.

## 1.2 Cautions & Warnings

### LTE bands

The usage of LTE frequency bands is strictly regulated in many countries. The user needs to make sure he complies with all existing rules in the country where the ORS is run.

### Water

The ORS is waterproof ONLY IF all the following cables have been properly mounted:

- 1 ethernet cable at least cat 6
- 2 antenna cables
- 1 GPS antenna cable

Regarding the ethernet cable, it must be mounted using the special connector sent with the box. RapidSpace declines all responsibility in the event of damage resulting of water if the connector was not properly mounted.

## 1.3 Condition of usage

### Altitude :

No special altitude condition

### Operating temperatures:

The ORS could be use up to 55 ° Celsius in a very ventilated place in the shade as in the sun

The ORS cannot be started at external temperatures less than 0 ° Celsius however once started the outside temperature can drop down to -25 ° Celsius



### **3. Getting Started**

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#### **3.1 Material needed to use the ORS**

Here is the list what you need to use the ORS :

- Poe Injector 50/60W max 50V
- Category 6 ethernet cable or higher
- two antennas with short and efficient cables
- any UE or modem compatible with the ORS' band

#### **3.2 LTE band licence considerations**

Warning: you need to be make sure you have the right to use the ORS band in the location you start it (see Cautions & Warnings).

#### **3.3 Power on the ORS**

See <https://handbook.rapid.space/user/rapidspace-How.To.Power.On.Your.ORS>.

#### **3.4 Do a first test**

See <https://handbook.rapid.space/user/rapidspace-How.To.Test.Your.ORS>.

#### **3.5 Poweroff the ORS**

In order to poweroff the ORS, you can simply unplug the power cable from the ORS.