EN IEC 62368-1:2020/A11:2020
BS EN IEC 62368-1:2020+A11:2020

Test Report

For

Etherdyne Technologies, Inc.

2933 Bunker Hill Lane, STE210
Santa Clara, CA 95054, USA

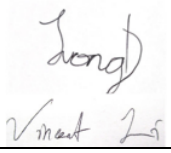
Model: EVK AA001-NESS4.2-OTO

Report Type: Original Report		**Product Type:** Wire-free PowerZone
Prepared By:	David Luong Test Engineer	
Report Number:	R2508154-62368	
Report Date:	2025-10-13	
Reviewed By:	Esteban Rubio Project Engineer	
Bay Area Compliance Laboratories Corp. 1274 Anvilwood Ave Sunnyvale, CA 94089, USA Tel: (408) 732-9162, Fax: (408) 732-9164		

ACCREDITED
CERTIFICATE #3297.02

Document Revision History

Revision Number	Report Number	Description of Revision	Date of Revision
0	R2508154-62368	Original Report	2025-10-13

Test item description .....:	Wire-free PowerZone	
Trade Mark(s) .....:	ETI™ | ETHERDYNE TECHNOLOGIES, INC	
Manufacturer .....:	Etherdyne Technologies, Inc.	
Model/Type reference.....:	EVK AA001-NESS4.2-OTO	
Ratings.....:	48Vdc, 2A	
Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
☒ **CB Testing Laboratory:**	Bay Area Compliance Laboratories Corp. (BACL)	
Testing location/ address.....:	1274 Anvilwood Avenue, Sunnyvale, CA 94089, United States of America	
Tested by (name, function, signature) .....:	David Luong Test Engineer Vincent Li Test Engineer	
Approved by (name, function, signature) .....:	Esteban Rubio Project Engineer	
☐ **Testing procedure: CTF Stage 1:**		
Testing location/ address.....:		
Tested by (name, function, signature) .....:		
Approved by (name, function, signature) .....:		
☐ **Testing procedure: CTF Stage 2:**		
Testing location/ address.....:		
Tested by (name, function, signature)		
Witnessed by (name, function, signature).....:		
Approved by (name, function, signature) .....:		
☐ **Testing procedure: CTF Stage 3:**		
☐ **Testing procedure: CTF Stage 4:**		
Testing location/ address.....:		
Tested by (name, function, signature) .....:		
Witnessed by (name, function, signature).....:		
Approved by (name, function, signature) .....:		
Supervised by (name, function, signature) .....:		

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

Attachment 1: European Group Differences and National Differences (20 pages)

Attachment 2: EUT Photos (2 pages)

Attachment 3: User Manual Partial (safety relevant pages, 3 pages)

Total Pages: 75

Summary of testing:

Tests performed (name of test and test clause):

The following tests were conducted under this report:

Name of Test	Clause
Steady-State Voltage and Current Limits	Cl. 5.2.2.2
Maximum Operating Temperature for Materials, Components, and Systems	Cl. 5.4.1.4
Power Source Circuit Classifications	Cl. 6.2.2
Equipment Mounted to a Wall, Ceiling, or Other Structure	Cl. 8.7
Requirements for Wireless Power Transmission	Cl. 9.6
Input Test	Annex B.2.5
Abnormal Operation	Annex B.3
Test for Permanence of Markings	Annex F.3.10
Mechanical Strength	Annex T.4,T.5
Impact Test	Annex T.6
Stress Relief Test	Annex T.8

Testing location:

Bay Area Compliance Laboratories Corp. (BACL)

1274 Anvilwood Avenue, Sunnyvale, CA 94089, United States of America

Summary of compliance with National Differences (List of countries addressed): EU and UK

CENELEC Group Countries which consist of: Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, North Macedonia, Norway, Poland, Portugal, Romania, Serbia, Spain, Slovenia, Sweden, Switzerland, Turkey and the United Kingdom.

☒ **The product fulfils the requirements of EN IEC 62368-1:2020/A11:2020 AUDIO/VIDEO, INFORMATION AND COMMUNICATION TECHNOLOGY EQUIPMENT – PART 1: SAFETY REQUIREMENTS – Edition 3.0**

☒ **The product fulfils the requirements of BS EN IEC 62368-1:2020+A11:2020 AUDIO/VIDEO, INFORMATION AND COMMUNICATION TECHNOLOGY EQUIPMENT – PART 1: SAFETY REQUIREMENTS – Edition 3**

Use of uncertainty of measurement for decisions on conformity (decision rule):

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

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

Information on uncertainty of measurement:
The uncertainties of measurement are calculated by the laboratory based on application of criteria given by OD-5014 for test equipment and application of test methods, decision sheets and operational procedures of IECEE.
IEC Guide 115 provides guidance on the application of measurement uncertainty principles and applying the decision rule when reporting test results within IECEE scheme, noting that the reporting of the measurement uncertainty for measurements is not necessary unless required by the test standard or customer.

Calculations leading to the reported values are on file with the NCB and testing laboratory that conducted the testing.

Copy of marking plate:

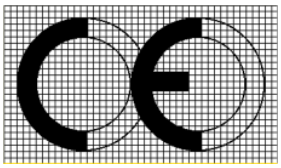
The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

ETI™ | ETHERDYNE TECHNOLOGIES, INC

Model No.: EVK AA001-NESS4.2-OTO
Input: 48V ⎓ 2A
Patents: https://www.etherdyne.net/patents
This device complies with Part 18 of the FCC Rules
FCC ID: 2BP49-ETI0001

Proposed CE marking label:

The CE conformity marking must consist of the initials 'CE' taking the following form:



If the CE marking is reduced or enlarged, the proportions given in the above graduated drawing must be respected.

The CE marking must have a height of at least 5 mm except where this is not possible on account of the nature of the apparatus.

The CE marking must be affixed to the product or to its data plate. Additionally, it must be affixed to the packaging, if any, and to the accompanying documents.

The CE marking must be affixed visibly, legibly, and indelibly.

The equipment class identifier must take a form to be decided by the Commission in accordance with the procedure laid down in Article 14.

Specifications: Text is black on yellow/white background or is white on black background and is justified. Labels are printed in indelible ink on permanent adhesive backing or silk-screened and are affixed at conspicuous locations on the EUT.

Proposed UKCA marking Label:

The UKCA symbol needs to be at least 5mm in height (unless a different size is required in specific regulation), and can't be distorted or used in different proportions. There are two design options - filled block letters, or an outline version.

Test item particulars:	
Product group ..... :	☒ end product ☐ built-in component
Classification of use by ..... :	☒ Ordinary person ☐ Children likely present ☐ Instructed person ☐ Skilled person
Supply connection ..... :	☐ AC mains ☐ DC mains ☒ not mains connected: ☒ ES1 ☐ ES2 ☐ ES3
Supply tolerance ..... :	☐ +10%/-10% ☐ +20%/-15% ☐ + %/ - % ☒ None
Supply connection – type ..... :	☐ pluggable equipment type A - ☐ non-detachable supply cord ☐ appliance coupler ☐ direct plug-in ☐ pluggable equipment type B - ☐ non-detachable supply cord ☐ appliance coupler ☐ permanent connection ☐ mating connector ☒ other: Not directly connected to mains
Considered current rating of protective device ..... :	☐ A Location: ☐ building ☐ equipment ☒ N/A
Equipment mobility ..... :	☐ movable ☐ hand-held ☐ transportable ☐ direct plug-in ☒ stationary ☐ for building-in ☒ wall/ceiling-mounted ☐ SRME/rack-mounted ☐ other:
Overvoltage category (OVC) ..... :	☐ OVC I ☐ OVC II ☐ OVC III ☐ OVC IV ☒ other: Not directly connected to mains
Class of equipment ..... :	☐ Class I ☐ Class II ☐ Class III ☒ Not classified ☐
Special installation location ..... :	☒ N/A ☐ restricted access area ☐ outdoor location ☐
Pollution degree (PD) ..... :	☐ PD 1 ☒ PD 2 ☐ PD 3
Manufacturer's specified T_{ma} ..... :	60 °C ☐ Outdoor: minimum °C °C ☐ IDU
IP protection class ..... :	☒ IPX0 ☐ IPXX
Power systems ..... :	☐ TN ☐ TT ☐ IT - V_{L-L} ☒ not AC mains
Altitude during operation (m) ..... :	☒ 2000 m or less ☐ m
Altitude of test laboratory (m) ..... :	☒ 2000 m or less ☐ m
Mass of equipment (kg) ..... :	0.479 kg

Possible test case verdicts:	
- test case does not apply to the test object.....:	N/A
- test object does meet the requirement.....:	P (Pass)
- test object does not meet the requirement.....:	F (Fail)
Testing:	
Date of receipt of test item.....:	8/21/2025
Date (s) of performance of tests.....:	8/28/2025 – 9/08/2025

General remarks:

"(See Enclosure #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.

Throughout this report a ☐ comma / ☒ point is used as the decimal separator.

☐ **This Test Report Form contains requirements according to IEC/ISO ….. Standard dated ….. and includes** Corrigendum dated …….
(Note: The above text maybe removed if not applicable)

Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided.....:	☐ **Yes** ☒ **Not applicable**

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

Name and address of factory (ies).....:	No.47, Xianghe Rd., Tanzi Dist., Taichung City 42741, Taiwan.

General product information and other remarks:

The EUT is a magnetic resonant wireless power transfer transmitter and power receivers for lighting. The EUT is sold in an "Evaluation Kit" that includes the transmitter, power supply, test probes, and various receivers. The EUT allows users to transfer electrical power to multiple receivers within a volume of space called the "power zone."

Maximum Operating Temperature (Tma): 60ºC

Maximum Normal Load (MNL) –
Place the EUT on a non-metallic table. Arrange the wire loop neatly into a rectangular shape and ensure the wire lies flat and is untangled. Connect the EUT to the provided power supply. Using the provided test probes, ensure the area in between the wire is producing power which is identified by a green LED. The transmitter is now operating at maximum normal load.

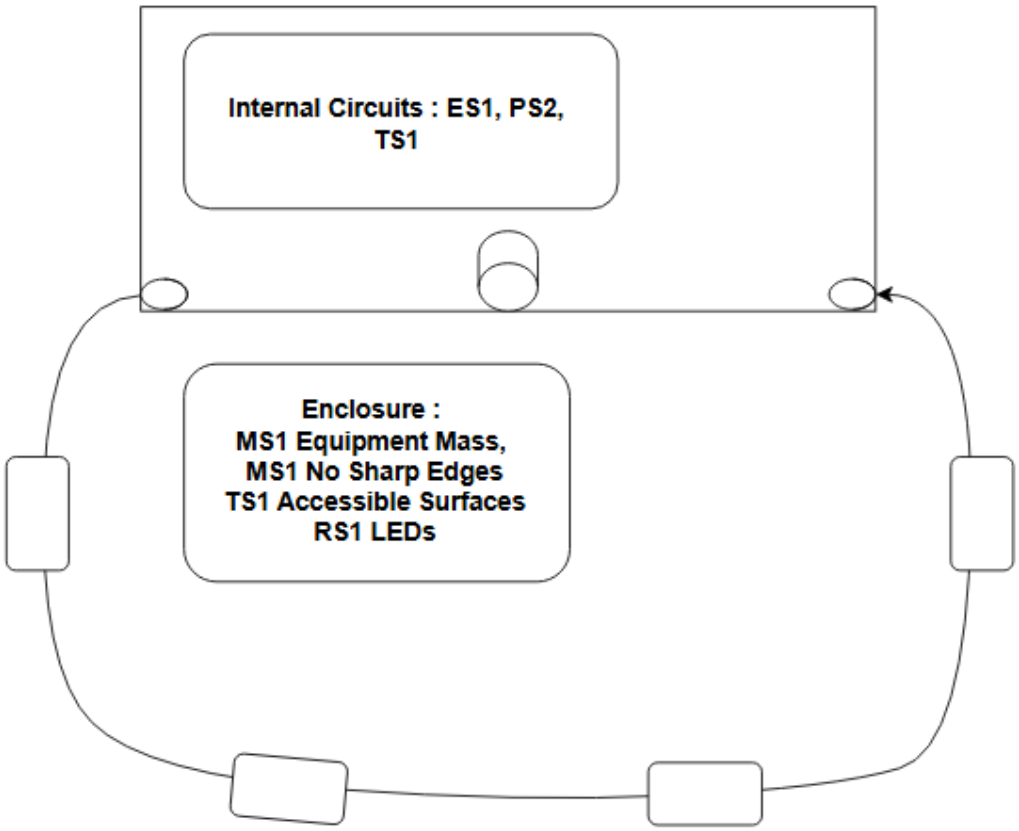
OVERVIEW OF ENERGY SOURCES AND SAFEGUARDS				
Clause	**Possible Hazard**			
5	**Electrically-caused injury**			
Class and Energy Source (e.g. ES3: Primary circuit)	**Body Part (e.g. Ordinary)**	**Safeguards**		
		B	**S**	**R**
ES1: All circuits	Ordinary	N/A	N/A	N/A
6	**Electrically-caused fire**			
Class and Energy Source (e.g. PS2: 100 Watt circuit)	**Material part (e.g. Printed board)**	**Safeguards**		
		B	**1st S**	**2nd S**
PS2: < 100 W	All circuits	See 6.3.1	N/A	N/A
7	**Injury caused by hazardous substances**			
Class and Energy Source (e.g. Ozone)	**Body Part (e.g., Skilled)**	**Safeguards**		
		B	**S**	**R**
N/A	N/A	N/A	N/A	N/A
8	**Mechanically-caused injury**			
Class and Energy Source (e.g. MS3: Plastic fan blades)	**Body Part (e.g. Ordinary)**	**Safeguards**		
		B	**S**	**R**
MS1: Equipment mass less than 7 kg	Ordinary	N/A	N/A	N/A
MS1: No Sharp edges and corners	Ordinary	N/A	N/A	N/A
9	**Thermal burn**			
Class and Energy Source (e.g. TS1: Keyboard caps)	**Body Part (e.g., Ordinary)**	**Safeguards**		
		B	**S**	**R**
TS1: All internal circuits	Ordinary	N/A	N/A	N/A
TS1: Accessible Surface	Ordinary	N/A	N/A	N/A
10	**Radiation**			
Class and Energy Source (e.g. RS1: PMP sound output)	**Body Part (e.g., Ordinary)**	**Safeguards**		
		B	**S**	**R**
RS1: LEDs (Exempt Group)	Ordinary	N/A	N/A	N/A
Supplementary Information: "B" – Basic Safeguard; "S" – Supplementary Safeguard; "R" – Reinforced Safeguard				

ENERGY SOURCE DIAGRAM

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

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

☒ ES ☒ PS ☒ MS ☒ TS ☒ RS



EN IEC / BS EN IEC 62368-1			
Clause	**Requirement + Test**	**Result - Remark**	**Verdict**
4	**GENERAL REQUIREMENTS**		P
4.1.1	Acceptance of materials, components and subassemblies	Components comply with the requirements of this standard or, where specified in, a requirements clause, with the safety aspects of the relevant IEC component standards.	P
4.1.2	Use of components	All components are used within their ratings or as noted in the specific clause.	P
4.1.3	Equipment design and construction	Equipment complies with the standard.	P
4.1.4	Specified ambient temperature for outdoor use (ºC) .....:	Not for outdoor use	N/A
4.1.5	Constructions and components not specifically covered		N/A
4.1.8	Liquids and liquid filled components (LFC)	No such components	N/A
4.1.15	Markings and instructions	See Annex F	P
4.4.3	Safeguard robustness		P
4.4.3.1	General		P
4.4.3.2	Steady force tests	See Annex T.4, T.5	P
4.4.3.3	Drop tests		N/A
4.4.3.4	Impact tests	See Annex T.6	P
4.4.3.5	Internal accessible safeguard tests	EUT is ES1 only	N/A
4.4.3.6	Glass impact tests	No parts made of glass on device	N/A
4.4.3.7	Glass fixation tests		N/A
	Glass impact test (1J)		N/A
	Push/pull test (10 N)		N/A
4.4.3.8	Thermoplastic material tests		N/A
4.4.3.9	Air comprising a safeguard	No safeguards comprised of air	N/A
4.4.3.10	Accessibility, glass, safeguard effectiveness	All safeguards remained effective after testing	P
4.4.4	Displacement of a safeguard by an insulating liquid	No such liquids	N/A
4.4.5	Safety interlocks		N/A
4.5	**Explosion**		P
4.5.1	General		P
4.5.2	No explosion during normal/abnormal operating condition		P
	No harm by explosion during single fault conditions		N/A
4.6	**Fixing of conductors**		N/A

EN IEC / BS EN IEC 62368-1			
Clause	**Requirement + Test**	**Result - Remark**	**Verdict**
	Fix conductors not to defeat a safeguard		N/A
	Compliance is checked by test ..... :		N/A
4.7	**Equipment for direct insertion into mains socket–outlets**		N/A
4.7.2	Mains plug part complies with relevant standard ..... :	Not for direct insertion into mains socket-outlets	N/A
4.7.3	Torque (Nm) ..... :		N/A
4.8	**Equipment containing coin/button cell batteries**		N/A
4.8.1	General	Not such an EUT	N/A
4.8.2	Instructional safeguard ..... :		N/A
4.8.3	Battery compartment door/cover construction		N/A
	Open torque test		N/A
4.8.4.2	Stress relief test		N/A
4.8.4.3	Battery replacement test		N/A
4.8.4.4	Drop test		N/A
4.8.4.5	Impact test		N/A
4.8.4.6	Crush test		N/A
4.8.5	Compliance		N/A
	30N force test with test probe		N/A
	20N force test with test hook		N/A
4.9	**Likelihood of fire or shock due to entry of conductive object**		N/A
4.10	**Component requirements**		N/A
4.10.1	Disconnect Device	No such disconnect devices	N/A
4.10.2	Switches and relays	No switches or relays	N/A

5	**ELECTRICALLY-CAUSED INJURY**		P
5.2	**Classification and limits of electrical energy sources**		P
5.2.2	ES1, ES2 and ES3 limits	ES1 only	P
5.2.2.2	Steady-state voltage and current limits ..... :	See table 5.2.2.2	P
5.2.2.3	Capacitance limits ..... :	No such capacitive sources	N/A
5.2.2.4	Single pulse limits ..... :	No such pulse sources	N/A
5.2.2.5	Limits for repetitive pulses ..... :		N/A
5.2.2.6	Ringing signals	No such ringing signals	N/A
5.2.2.7	Audio signals	No such audio signals	N/A
5.3	**Protection against electrical energy sources**		N/A
5.3.1	General Requirements for accessible parts to ordinary, instructed and skilled persons	ES1 only	N/A

EN IEC / BS EN IEC 62368-1			
Clause	**Requirement + Test**	**Result - Remark**	**Verdict**
5.3.1 a)	Accessible ES1/ES2 derived from ES2/ES3 circuits		N/A
5.3.1 b)	Skilled persons not unintentional contact ES3 bare conductors		N/A
5.3.2.1	Accessibility to electrical energy sources and safeguards		N/A
	Accessibility to outdoor equipment bare parts		N/A
5.3.2.2	Contact requirements		N/A
	Test with test probe from Annex V		—
5.3.2.2 a)	Air gap – electric strength test potential (V)..... :		N/A
5.3.2.2 b)	Air gap – distance (mm) ..... :		N/A
5.3.2.3	Compliance		N/A
5.3.2.4	Terminals for connecting stripped wire		N/A
5.4	**Insulation materials and requirements**		P
5.4.1.2	Properties of insulating material		N/A
5.4.1.3	Material is non-hygroscopic		N/A
5.4.1.4	Maximum operating temperature for insulating materials ..... :	See appended table 5.4.1.4	P
5.4.1.5	Pollution degrees ..... :	PD2	—
5.4.1.5.2	Test for pollution degree 1 environment and for an insulating compound	PD2	N/A
5.4.1.5.3	Thermal cycling test		N/A
5.4.1.6	Insulation in transformers with varying dimensions		N/A
5.4.1.7	Insulation in circuits generating starting pulses		N/A
5.4.1.8	Determination of working voltage ..... :		N/A
5.4.1.9	Insulating surfaces		N/A
5.4.1.10	Thermoplastic parts on which conductive metallic parts are directly mounted		N/A
5.4.1.10.2	Vicat test ..... :	ES1 only	N/A
5.4.1.10.3	Ball pressure test..... :	ES1 only	N/A
5.4.2	Clearances	ES1 only	N/A
5.4.2.1	General requirements		N/A
	Clearances in circuits connected to AC Mains, Alternative method		N/A
5.4.2.2	Procedure 1 for determining clearance		N/A
	Temporary overvoltage ..... :		—
5.4.2.3	Procedure 2 for determining clearance		N/A
5.4.2.3.2.2	a.c. mains transient voltage..... :		—
5.4.2.3.2.3	d.c. mains transient voltage ..... :		—

EN IEC / BS EN IEC 62368-1			
Clause	**Requirement + Test**	**Result - Remark**	**Verdict**
5.4.2.3.2.4	External circuit transient voltage ..... :		—
5.4.2.3.2.5	Transient voltage determined by measurement ..... :		—
5.4.2.4	Determining the adequacy of a clearance using an electric strength test ..... :		N/A
5.4.2.5	Multiplication factors for clearances and test voltages .... :		N/A
5.4.2.6	Clearance measurement ..... :	ES1 only	N/A
5.4.3	Creepage distances		N/A
5.4.3.1	General		N/A
5.4.3.3	Material group ..... :		—
5.4.3.4	Creepage distances measurement ..... :	ES1 only	N/A
5.4.4	Solid insulation		N/A
5.4.4.1	General requirements		N/A
5.4.4.2	Minimum distance through insulation ..... :		N/A
5.4.4.3	Insulating compound forming solid insulation		N/A
5.4.4.4	Solid insulation in semiconductor devices		N/A
5.4.4.5	Insulating compound forming cemented joints	No such components	N/A
5.4.4.6	Thin sheet material	No such components	N/A
5.4.4.6.1	General requirements		N/A
5.4.4.6.2	Separable thin sheet material		N/A
	Number of layers (pcs) ..... :		N/A
5.4.4.6.3	Non-separable thin sheet material		N/A
	Number of layers (pcs) ..... :		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	No such components	N/A
5.4.4.9	Solid insulation at frequencies >30 kHz, E_P, K_R, d, V_{PW} (V) ..... :		N/A
	Alternative by electric strength test, tested voltage (V), K_R ..... :		N/A
5.4.5	Antenna terminal insulation	No such components	N/A
5.4.5.1	General		N/A
5.4.5.2	Voltage surge test		N/A
5.4.5.3	Insulation resistance (MΩ) ..... :		N/A
	Electric strength test ..... :		N/A
5.4.6	Insulation of internal wire as part of supplementary safeguard	No such components	N/A

EN IEC / BS EN IEC 62368-1			
Clause	**Requirement + Test**	**Result - Remark**	**Verdict**
5.4.7	Tests for semiconductor components and for cemented joints	No such components	N/A
5.4.8	Humidity conditioning		N/A
	Relative humidity (%), temperature (°C), duration (h).. :		—
5.4.9	Electric strength test	Evaluated within Certified Power Supply	N/A
5.4.9.1	Test procedure for type test of solid insulation ..... :		N/A
5.4.9.2	Test procedure for routine test		N/A
5.4.10	Safeguards against transient voltages from external circuits	Evaluated within Certified Power Supply	N/A
5.4.10.1	Parts and circuits separated from external circuits		N/A
5.4.10.2	Test methods		N/A
5.4.10.2.1	General		N/A
5.4.10.2.2	Impulse test..... :		N/A
5.4.10.2.3	Steady-state test ..... :		N/A
5.4.10.3	Verification for insulation breakdown for impulse test. :		N/A
5.4.11	Separation between external circuits and earth	Evaluated within Certified Power Supply	N/A
5.4.11.1	Exceptions to separation between external circuits and earth		N/A
5.4.11.2	Requirements		N/A
	SPDs bridge separation between external circuit and earth		N/A
	Rated operating voltage U_{op} (V) ..... :		—
	Nominal voltage U_{peak} (V) ..... :		—
	Max increase due to variation ΔU_{sp} ..... :		—
	Max increase due to ageing ΔU_{sa} ..... :		—
5.4.11.3	Test method and compliance..... :		N/A
5.4.12	Insulating liquid	No such insulating liquids	N/A
5.4.12.1	General requirements		N/A
5.4.12.2	Electric strength of an insulating liquid ..... :		N/A
5.4.12.3	Compatibility of an insulating liquid ..... :		N/A
5.4.12.4	Container for insulating liquid ..... :		N/A
5.5	**Components as safeguards**		N/A
5.5.1	General	No such components relied upon as a safeguard	N/A
5.5.2	Capacitors and RC units		N/A
5.5.2.1	General requirement		N/A

EN IEC / BS EN IEC 62368-1			
Clause	**Requirement + Test**	**Result - Remark**	**Verdict**
5.5.2.2	Safeguards against capacitor discharge after disconnection of a connector..... :		N/A
5.5.3	Transformers	No such components relied upon as a safeguard	N/A
5.5.4	Optocouplers	No such components relied upon as a safeguard	N/A
5.5.5	Relays	No such components relied upon as a safeguard	N/A
5.5.6	Resistors	No such components relied upon as a safeguard	N/A
5.5.7	SPDs	No such components relied upon as a safeguard	N/A
5.5.8	Insulation between the mains and an external circuit consisting of a coaxial cable..... :		N/A
5.5.9	Safeguards for socket-outlets in outdoor equipment		N/A
	RCD rated residual operating current (mA)..... :		—
5.6	**Protective conductor**		N/A
5.6.2	**Requirement for protective conductors**		N/A
5.6.2.1	General requirements	Evaluated within Certified Power Supply	N/A
5.6.2.2	Colour of insulation		N/A
5.6.3	Requirement for protective earthing conductors	Evaluated within Certified Power Supply	N/A
	Protective earthing conductor size (mm^2) ..... :		—
	Protective earthing conductor serving as a reinforced safeguard		N/A
	Protective earthing conductor serving as a double safeguard		N/A
5.6.4	Requirements for protective bonding conductors	Evaluated within Certified Power Supply	N/A
5.6.4.1	Protective bonding conductors		N/A
	Protective bonding conductor size (mm^2). ..... :		—
5.6.4.2	Protective current rating (A)..... :		N/A
5.6.5	Terminals for protective conductors	Evaluated within Certified Power Supply	N/A
5.6.5.1	Terminal size for connecting protective earthing conductors (mm)..... :		N/A
	Terminal size for connecting protective bonding conductors (mm)..... :		N/A
5.6.5.2	Corrosion		N/A

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Clause	**Requirement + Test**	**Result - Remark**	**Verdict**
5.6.6	Resistance of the protective bonding system	Evaluated within Certified Power Supply	N/A
5.6.6.1	Requirements		N/A
5.6.6.2	Test Method ..... :		N/A
5.6.6.3	Resistance (Ω) or voltage drop..... :		N/A
5.6.7	Reliable connection of a protective earthing conductor	Not permanently connected equipment	N/A
5.6.8	Functional earthing		N/A
	Conductor size (mm^2)..... :		N/A
	Class II with functional earthing marking ..... :		N/A
	Appliance inlet cl & cr (mm) ..... :		N/A
5.7	**Prospective touch voltage, touch current and protective conductor current**		N/A
5.7.2	**Measuring devices and networks**		N/A
5.7.2.1	Measurement of touch current	Evaluated within Certified Power Supply	N/A
5.7.2.2	Measurement of voltage		N/A
5.7.3	Equipment set-up, supply connections and earth connections		N/A
5.7.4	Unearthed accessible parts ..... :	No such components	N/A
5.7.5	Earthed accessible conductive parts..... :		N/A
5.7.6	Requirements when touch current exceeds ES2 limits		N/A
	Protective conductor current (mA)..... :		N/A
	Instructional Safeguard..... :		N/A
5.7.7	Prospective touch voltage and touch current associated with external circuits	No such components	N/A
5.7.7.1	Touch current from coaxial cables		N/A
5.7.7.2	Prospective touch voltage and touch current associated with paired conductor cables		N/A
5.7.8	Summation of touch currents from external circuits		N/A
	a) Equipment connected to earthed external circuits, current (mA) ..... :		N/A
	b) Equipment connected to unearthed external circuits, current (mA) ..... :		N/A
5.8	**Backfeed safeguard in battery backed up supplies**		N/A
	Mains terminal ES..... :	No such batteries	N/A
	Air gap (mm) ..... :		N/A

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Clause	**Requirement + Test**	**Result - Remark**	**Verdict**
6	**ELECTRICALLY- CAUSED FIRE**		P
6.2	**Classification of PS and PIS**		P
6.2.2	Power source circuit classifications ..... :	See table 6.2.2	P
6.2.3	Classification of potential ignition sources		N/A
6.2.3.1	Arcing PIS ..... :	No such arcing PIS	N/A
6.2.3.2	Resistive PIS ..... :	No such resistive PIS	N/A
6.3	**Safeguards against fire under normal operating and abnormal operating conditions**		P
6.3.1	No ignition and attainable temperature value less than 90% defined by ISO 871 or less than 300°C for unknown materials..... :	See appended table 5.4.1.4	P
	Combustible materials outside fire enclosure..... :	No such materials	N/A
6.4	**Safeguards against fire under single fault conditions**		P
6.4.1	Safeguard method		P
6.4.2	Reduction of the likelihood of ignition under single fault conditions in PS1 circuits	No safeguards required	P
6.4.3	Reduction of the likelihood of ignition under single fault conditions in PS2 and PS3 circuits	Evaluated within Certified Power Supply	N/A
6.4.3.1	Supplementary safeguards		N/A
6.4.3.2	Single Fault Conditions..... :		N/A
	Special conditions for temperature limited by fuse		N/A
6.4.4	Control of fire spread in PS1 circuits	No safeguards required	P
6.4.5	Control of fire spread in PS2 circuits	Evaluated within Certified Power Supply	N/A
6.4.5.2	Supplementary safeguards		N/A
6.4.6	Control of fire spread in PS3 circuits	PS2 only	N/A
6.4.7	Separation of combustible materials from a PIS		N/A
6.4.7.2	Separation by distance		N/A
6.4.7.3	Separation by a fire barrier		N/A
6.4.8	Fire enclosures and fire barriers		N/A
6.4.8.2	Fire enclosure and fire barrier material properties	No fire enclosure required	N/A
6.4.8.2.1	Requirements for a fire barrier	No fire barriers required	N/A
6.4.8.2.2	Requirements for a fire enclosure		N/A
6.4.8.3	Constructional requirements for a fire enclosure and a fire barrier		N/A
6.4.8.3.1	Fire enclosure and fire barrier openings		N/A
6.4.8.3.2	Fire barrier dimensions		N/A
6.4.8.3.3	Top openings and properties	PS2 only	N/A

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Clause	**Requirement + Test**	**Result - Remark**	**Verdict**
	Openings dimensions (mm)..... :		N/A
6.4.8.3.4	Bottom openings and properties	PS2 only	N/A
	Openings dimensions (mm)..... :		N/A
	Flammability tests for the bottom of a fire enclosure		N/A
	Instructional Safeguard ..... :		N/A
6.4.8.3.5	Side openings and properties		N/A
	Openings dimensions (mm)..... :		N/A
6.4.8.3.6	Integrity of a fire enclosure, condition met: a), b) or c) :		N/A
6.4.8.4	Separation of a PIS from a fire enclosure and a fire barrier distance (mm) or flammability rating..... :		N/A
6.4.9	Flammability of insulating liquid..... :	No such liquids within EUT	N/A
6.5	**Internal and external wiring**		N/A
6.5.1	General requirements	Evaluated within Certified Wiring	N/A
6.5.2	Requirements for interconnection to building wiring.... :		N/A
6.5.3	Internal wiring size (mm^2) for socket-outlets ..... :		N/A
6.6	**Safeguards against fire due to the connection to additional equipment**		N/A

7	**INJURY CAUSED BY HAZARDOUS SUBSTANCES**		N/A
7.2	**Reduction of exposure to hazardous substances**		N/A
7.3	**Ozone exposure**		N/A
7.4	**Use of personal safeguards or personal protective equipment (PPE)**		N/A
	Personal safeguards and instructions ..... :	No PPE needed for EUT	—
7.5	**Use of instructional safeguards and instructions**		N/A
	Instructional safeguard (ISO 7010)..... :	No safeguards required	—
7.6	**Batteries and their protection circuits**		N/A

8	**MECHANICALLY-CAUSED INJURY**		P
8.2	**Mechanical energy source classifications**		P
8.3	**Safeguards against mechanical energy sources**		P
8.4	**Safeguards against parts with sharp edges and corners**		NA
8.4.1	Safeguards	MS1	NA
	Instructional Safeguard ..... :		N/A
8.4.2	Sharp edges or corners	MS1: No sharp edges or corners	NA
8.5	**Safeguards against moving parts**		N/A
8.5.1	Fingers, jewellery, clothing, hair, etc., contact with MS2 or MS3 parts	No such moving parts	N/A

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Clause	**Requirement + Test**	**Result - Remark**	**Verdict**
	MS2 or MS3 part required to be accessible for the function of the equipment		N/A
	Moving MS3 parts only accessible to skilled person		N/A
8.5.2	Instructional safeguard..... :		N/A
8.5.4	Special categories of equipment containing moving parts		N/A
8.5.4.1	General		N/A
8.5.4.2	Equipment containing work cells with MS3 parts	MS1 only	N/A
8.5.4.2.1	Protection of persons in the work cell		N/A
8.5.4.2.2	Access protection override		N/A
8.5.4.2.2.1	Override system		N/A
8.5.4.2.2.2	Visual indicator		N/A
8.5.4.2.3	Emergency stop system	No such components	N/A
	Maximum stopping distance from the point of activation (m) ..... :		N/A
	Space between end point and nearest fixed mechanical part (mm) ..... :		N/A
8.5.4.2.4	Endurance requirements		N/A
	Mechanical system subjected to 100,000 cycles of operation		N/A
	- Mechanical function check and visual inspection		N/A
	- Cable assembly ..... :		N/A
8.5.4.3	Equipment having electromechanical device for destruction of media	No such components	N/A
8.5.4.3.1	Equipment safeguards		N/A
8.5.4.3.2	Instructional safeguards against moving parts..... :		N/A
8.5.4.3.3	Disconnection from the supply		N/A
8.5.4.3.4	Cut type and test force (N)..... :		N/A
8.5.4.3.5	Compliance		N/A
8.5.5	High pressure lamps	No such components	N/A
	Explosion test ..... :		N/A
8.5.5.3	Glass particles dimensions (mm) ..... :		N/A
8.6	**Stability of equipment**		N/A
8.6.1	General	MS1 only	N/A
	Instructional safeguard..... :		N/A
8.6.2	Static stability		N/A
8.6.2.2	Static stability test..... :		N/A

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Clause	**Requirement + Test**	**Result - Remark**	**Verdict**
8.6.2.3	Downward force test		N/A
8.6.3	Relocation stability		N/A
	Wheels diameter (mm)..... :		—
	Tilt test		N/A
8.6.4	Glass slide test		N/A
8.6.5	Horizontal force test..... :		N/A
8.7	**Equipment mounted to wall, ceiling or other structure**		P
8.7.1	Mount means type..... :	Mounting means not defined	P
8.7.2	Test methods	Test 2	P
	Test 1, additional downwards force (N) ..... :		N/A
	Test 2, number of attachment points and test force (N)... :	4 attachment points, 4.7 N	P
	Test 3 Nominal diameter (mm) and applied torque (Nm):		N/A
8.8	**Handles strength**		N/A
8.8.1	General	No such handles	N/A
8.8.2	Handle strength test		N/A
	Number of handles ..... :		—
	Force applied (N)..... :		—
8.9	**Wheels or casters attachment requirements**		N/A
8.9.2	Pull test	No such wheels or casters	N/A
8.10	**Carts, stands and similar carriers**		N/A
8.10.1	General	No such carts, stands, and similar	N/A
8.10.2	Marking and instructions ..... :		N/A
8.10.3	Cart, stand or carrier loading test		N/A
	Loading force applied (N)..... :		N/A
8.10.4	Cart, stand or carrier impact test		N/A
8.10.5	Mechanical stability		N/A
	Force applied (N)..... :		—
8.10.6	Thermoplastic temperature stability		N/A
8.11	**Mounting means for slide-rail mounted equipment (SRME)**		N/A
8.11.1	General	EUT is not SRME	N/A
8.11.2	Requirements for slide rails		N/A
	Instructional Safeguard ..... :		N/A
8.11.3	Mechanical strength test		N/A
8.11.3.1	Downward force test, force (N) applied ..... :		N/A
8.11.3.2	Lateral push force test		N/A

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Clause	**Requirement + Test**	**Result - Remark**	**Verdict**
8.11.3.3	Integrity of slide rail end stops		N/A
8.11.4	Compliance		N/A
8.12	**Telescoping or rod antennas**		N/A
	Button/ball diameter (mm) ..... :	No such antennas	—

9	**THERMAL BURN INJURY**		P
9.2	**Thermal energy source classifications**		P
9.3	**Touch temperature limits**		P
9.3.1	Touch temperatures of accessible parts ..... :	See appended table 5.4.1.4	P
9.3.2	Test method and compliance		P
9.4	**Safeguards against thermal energy sources**		N/A
9.5	**Requirements for safeguards**		N/A
9.5.1	Equipment safeguard	TS1 only	N/A
9.5.2	Instructional safeguard..... :		N/A
9.6	**Requirements for wireless power transmitters**		P
9.6.1	General	See table 9.6	P
9.6.2	Specification of the foreign objects		N/A
9.6.3	Test method and compliance ..... :		N/A

10	**RADIATION**		P
10.2	**Radiation energy source classification**		P
10.2.1	General classification	RS1 LED - Exempt group	P
	Lasers ..... :	No such laser source	—
	Lamps and lamp systems..... :	No such lamp systems	—
	Image projectors ..... :	No such image projectors	—
	X-Ray..... :	No such X-radiation sources	—
	Personal music player..... :	EUT is not a personal music player	—
10.3	**Safeguards against laser radiation**		N/A
	The standard(s) equipment containing laser(s) comply... :	No such laser radiation	N/A
10.4	**Safeguards against optical radiation from lamps and lamp systems (including LED types)**		N/A
10.4.1	General requirements	No such lamp systems	N/A
	Instructional safeguard provided for accessible radiation level needs to exceed		N/A
	Risk group marking and location ..... :		N/A

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Clause	**Requirement + Test**	**Result - Remark**	**Verdict**
	Information for safe operation and installation		N/A
10.4.2	Requirements for enclosures		N/A
	UV radiation exposure ..... :		N/A
10.4.3	Instructional safeguard ..... :		N/A
10.5	**Safeguards against X-radiation**		N/A
10.5.1	Requirements	No such X-radiation sources	N/A
	Instructional safeguard for skilled persons ..... :		—
10.5.3	Maximum radiation (pA/kg) ..... :		—
10.6	**Safeguards against acoustic energy sources**		N/A
10.6.1	General	No such acoustic energy sources	N/A
10.6.2	Classification		N/A
	Acoustic output $L_{Aeq,T}$, dB(A)..... :		N/A
	Unweighted RMS output voltage (mV)..... :		N/A
	Digital output signal (dBFS)..... :		N/A
10.6.3	Requirements for dose-based systems		N/A
10.6.3.1	General requirements		N/A
10.6.3.2	Dose-based warning and automatic decrease		N/A
10.6.3.3	Exposure-based warning and requirements		N/A
	30 s integrated exposure level (MEL30)..... :		N/A
	Warning for MEL ≥ 100 dB(A) ..... :		N/A
10.6.4	Measurement methods		N/A
10.6.5	Protection of persons		N/A
	Instructional safeguards..... :		N/A
10.6.6	Requirements for listening devices (headphones, earphones, etc.)	EUT is not a listening device	N/A
10.6.6.1	Corded listening devices with analogue input		N/A
	Listening device input voltage (mV)..... :		N/A
10.6.6.2	Corded listening devices with digital input		N/A
	Max. acoustic output $L_{Aeq,T}$, dB(A) ..... :		N/A
10.6.6.3	Cordless listening devices		N/A
	Max. acoustic output $L_{Aeq,T}$, dB(A) ..... :		—

B	**NORMAL OPERATING CONDITION TESTS, ABNORMAL OPERATING CONDITION TESTS AND SINGLE FAULT CONDITION TESTS**		P
B.1	**General**		P
B.1.5	Temperature measurement conditions		P

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Clause	**Requirement + Test**	**Result - Remark**	**Verdict**
B.2	**Normal operating conditions**		P
B.2.1	General requirements..... :		P
	Audio Amplifiers and equipment with audio amplifiers:	No such audio amplifiers	N/A
B.2.3	Supply voltage and tolerances	48 Vdc	P
B.2.5	Input test ..... :	See table B.2.5	P
B.3	**Simulated abnormal operating conditions**		P
B.3.1	General	see appended table B.3	P
B.3.2	Covering of ventilation openings	see appended table B.3	P
	Instructional safeguard ..... :		N/A
B.3.3	DC mains polarity test	No such components	N/A
B.3.4	Setting of voltage selector	No such components	N/A
B.3.5	Maximum load at output terminals	No such components	N/A
B.3.6	Reverse battery polarity	No such components	N/A
B.3.7	Audio amplifier abnormal operating conditions	No such components	N/A
B.3.8	Safeguards functional during and after abnormal operating conditions ..... :		N/A
B.4	**Simulated single fault conditions**		N/A
B.4.1	General		N/A
B.4.2	Temperature controlling device	No such controlling devices	N/A
B.4.3	Blocked motor test	No such motors	N/A
B.4.4	Functional insulation	Evaluated within Certified Power Supply	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 such components	N/A
B.4.6	Short circuit or disconnection of passive components	No such components	N/A
B.4.7	Continuous operation of components	No such components	N/A
B.4.8	Compliance during and after single fault conditions..... :		N/A
B.4.9	Battery charging and discharging under single fault conditions	No such rechargeable batteries	N/A
C	**UV RADIATION**		N/A
C.1	**Protection of materials in equipment from UV radiation**		N/A
C.1.2	Requirements	No such UV radiation	N/A

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Clause	**Requirement + Test**	**Result - Remark**	**Verdict**
C.1.3	Test method		N/A
C.2	**UV light conditioning test**		N/A
C.2.1	Test apparatus ..... :		N/A
C.2.2	Mounting of test samples		N/A
C.2.3	Carbon-arc light-exposure test		N/A
C.2.4	Xenon-arc light-exposure test		N/A
D	**TEST GENERATORS**		N/A
D.1	**Impulse test generators**		N/A
D.2	**Antenna interface test generator**		N/A
D.3	**Electronic pulse generator**		N/A
E	**TEST CONDITIONS FOR EQUIPMENT CONTAINING AUDIO AMPLIFIERS**		N/A
E.1	**Electrical energy source classification for audio signals**		N/A
	Maximum non-clipped output power (W) ..... :	EUT does not contain Audio Amplifiers	—
	Rated load impedance (Ω) ..... :		—
	Open-circuit output voltage (V) ..... :		—
	Instructional safeguard ..... :		—
E.2	**Audio amplifier normal operating conditions**		N/A
	Audio signal source type ..... :		—
	Audio output power (W) ..... :		—
	Audio output voltage (V)..... :		—
	Rated load impedance (Ω) ..... :		—
	Requirements for temperature measurement		N/A
E.3	Audio amplifier abnormal operating conditions		N/A
F	**EQUIPMENT MARKINGS, INSTRUCTIONS, AND INSTRUCTIONAL SAFEGUARDS**		P
F.1	**General**		P
	Language ..... :	English	—
F.2	**Letter symbols and graphical symbols**		N/A
F.2.1	Letter symbols according to IEC60027-1		N/A
F.2.2	Graphic symbols according to IEC, ISO or manufacturer specific		N/A
F.3	**Equipment markings**		P
F.3.1	Equipment marking locations		N/A
F.3.2	Equipment identification markings	See copy of nameplate marking	P

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Clause	**Requirement + Test**	**Result - Remark**	**Verdict**
F.3.2.1	Manufacturer identification ..... :	See copy of nameplate marking	P
F.3.2.2	Model identification ..... :	See copy of nameplate marking	P
F.3.3	Equipment rating markings		N/A
F.3.3.1	Equipment with direct connection to mains		N/A
F.3.3.2	Equipment without direct connection to mains		N/A
F.3.3.3	Nature of the supply voltage ..... :	DC	—
F.3.3.4	Rated voltage ..... :	48 Vdc	—
F.3.3.5	Rated frequency ..... :	DC voltage only	—
F.3.3.6	Rated current or rated power ..... :	2.0 A,	—
F.3.3.7	Equipment with multiple supply connections		N/A
F.3.4	Voltage setting device	No such voltage selection devices	N/A
F.3.5	Terminals and operating devices		N/A
F.3.5.1	Mains appliance outlet and socket-outlet markings..... :	No such outlets	N/A
F.3.5.2	Switch position identification marking ..... :	No such switches	N/A
F.3.5.3	Replacement fuse identification and rating markings.... :	No such fuses	N/A
	Instructional safeguards for neutral fuse ..... :		N/A
F.3.5.4	Replacement battery identification marking ..... :	No such batteries	N/A
F.3.5.5	Neutral conductor terminal	EUT is not permanently connected	N/A
F.3.5.6	Terminal marking location		N/A
F.3.6	Equipment markings related to equipment classification		N/A
F.3.6.1	Class I equipment		N/A
F.3.6.1.1	Protective earthing conductor terminal ..... :		N/A
F.3.6.1.2	Protective bonding conductor terminals ..... :		N/A
F.3.6.2	Equipment class marking ..... :		N/A
F.3.6.3	Functional earthing terminal marking ..... :		N/A
F.3.7	Equipment IP rating marking ..... :		N/A
F.3.8	External power supply output marking ..... :		N/A
F.3.9	Durability, legibility and permanence of marking		P
F.3.10	Test for permanence of markings	Rubbed the marking by hand without appreciable force for 15 s with a piece of cloth soaked with petroleum spirit. After the test, markings were durable and legible. The labels were not easily removed and did not show curling.	P
F.4	**Instructions**		P
	Information prior to installation and initial use	See user manual	P

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Clause	**Requirement + Test**	**Result - Remark**	**Verdict**
	Equipment for use in locations where children not likely to be present		N/A
	Instructions for installation and interconnection	See user manual	P
	Equipment intended for use only in restricted access area		N/A
	Equipment intended to be fastened in place	See user manual	P
	Instructions for audio equipment terminals	No such components	N/A
	Protective earthing used as a safeguard	No such components	N/A
	Protective conductor current exceeding ES2 limits	No such components	N/A
	Graphic symbols used on equipment		N/A
	Permanently connected equipment not provided with all-pole mains switch	Not permanently connected equipment	N/A
	Replaceable components or modules providing safeguard function	No replaceable components or modules provided	N/A
	Equipment containing insulating liquid	No such insulating liquids	N/A
	Installation instructions for outdoor equipment	Not use for outdoors	N/A
F.5	**Instructional safeguards**		N/A
G	**COMPONENTS**		N/A
G.1	**Switches**		N/A
G.1.1	General	No such components relied upon for safety	N/A
G.1.2	Ratings, endurance, spacing, maximum load		N/A
G.1.3	Test method and compliance		N/A
G.2	**Relays**		N/A
G.2.1	Requirements	No such components relied upon for safety	N/A
G.2.2	Overload test		N/A
G.2.3	Relay controlling connectors supplying power to other equipment		N/A
G.2.4	Test method and compliance		N/A
G.3	**Protective devices**		N/A
G.3.1	Thermal cut-offs	No such components relied upon for safety	N/A
	Thermal cut-outs separately approved according to IEC 60730 with conditions indicated in a) & b)		N/A
	Thermal cut-outs tested as part of the equipment as indicated in c)		N/A
G.3.1.2	Test method and compliance		N/A
G.3.2	Thermal links		N/A

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Clause	**Requirement + Test**	**Result - Remark**	**Verdict**
G.3.2.1	a) Thermal links tested separately according to IEC 60691 with specifics		N/A
	b) Thermal links tested as part of the equipment		N/A
G.3.2.2	Test method and compliance		N/A
G.3.3	PTC thermistors		N/A
G.3.4	Overcurrent protection devices		N/A
G.3.5	Safeguards components not mentioned in G.3.1 to G.3.4		N/A
G.3.5.1	Non-resettable devices suitably rated and marking provided		N/A
G.3.5.2	Single faults conditions ..... :		N/A
G.4	**Connectors**		N/A
G.4.1	Spacings	No such components relied upon for safety	N/A
G.4.2	Mains connector configuration..... :		N/A
G.4.3	Plug is shaped that insertion into mains socket-outlets or appliance coupler is unlikely		N/A
G.5	**Wound components**		N/A
G.5.1	Wire insulation in wound components	No such components relied upon for safety	N/A
G.5.1.2	Protection against mechanical stress		N/A
G.5.2	Endurance test		N/A
G.5.2.1	General test requirements		N/A
G.5.2.2	Heat run test		N/A
	Test time (days per cycle)..... :		—
	Test temperature (°C) ..... :		—
G.5.2.3	Wound components supplied from the mains		N/A
G.5.2.4	No insulation breakdown		N/A
G.5.3	Transformers		N/A
G.5.3.1	Compliance method..... :		N/A
	Position ..... :		N/A
	Method of protection ..... :		N/A
G.5.3.2	Insulation		N/A
	Protection from displacement of windings ..... :		—
G.5.3.3	Transformer overload tests		N/A
G.5.3.3.1	Test conditions		N/A
G.5.3.3.2	Winding temperatures		N/A
G.5.3.3.3	Winding temperatures - alternative test method		N/A

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Clause	**Requirement + Test**	**Result - Remark**	**Verdict**
G.5.3.4	Transformers using FIW		N/A
G.5.3.4.1	General		N/A
	FIW wire nominal diameter ..... :		—
G.5.3.4.2	Transformers with basic insulation only		N/A
G.5.3.4.3	Transformers with double insulation or reinforced insulation..... :		N/A
G.5.3.4.4	Transformers with FIW wound on metal or ferrite core		N/A
G.5.3.4.5	Thermal cycling test and compliance		N/A
G.5.3.4.6	Partial discharge test		N/A
G.5.3.4.7	Routine test		N/A
G.5.4	Motors		N/A
G.5.4.1	General requirements		N/A
G.5.4.2	Motor overload test conditions		N/A
G.5.4.3	Running overload test		N/A
G.5.4.4.2	Locked-rotor overload test		N/A
	Test duration (days) ..... :		—
G.5.4.5	Running overload test for DC motors		N/A
G.5.4.5.2	Tested in the unit		N/A
G.5.4.5.3	Alternative method		N/A
G.5.4.6	Locked-rotor overload test for DC motors		N/A
G.5.4.6.2	Tested in the unit		N/A
	Maximum Temperature ..... :		N/A
G.5.4.6.3	Alternative method		N/A
G.5.4.7	Motors with capacitors		N/A
G.5.4.8	Three-phase motors		N/A
G.5.4.9	Series motors		N/A
	Operating voltage ..... :		—
G.6	**Wire Insulation**		N/A
G.6.1	General	No such components relied upon for safety	N/A
G.6.2	Enamelled winding wire insulation		N/A
G.7	**Mains supply cords**		N/A
G.7.1	General requirements	No such components relied upon for safety	N/A
	Type ..... :		—
G.7.2	Cross sectional area (mm^2 or AWG)..... :		N/A

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Clause	**Requirement + Test**	**Result - Remark**	**Verdict**
G.7.3	Cord anchorages and strain relief for non-detachable power supply cords		N/A
G.7.3.2	Cord strain relief		N/A
G.7.3.2.1	Requirements		N/A
	Strain relief test force (N)..... :		N/A
G.7.3.2.2	Strain relief mechanism failure		N/A
G.7.3.2.3	Cord sheath or jacket position, distance (mm)..... :		N/A
G.7.3.2.4	Strain relief and cord anchorage material		N/A
G.7.4	Cord Entry		N/A
G.7.5	Non-detachable cord bend protection		N/A
G.7.5.1	Requirements		N/A
G.7.5.2	Test method and compliance		N/A
	Overall diameter or minor overall dimension, *D* (mm) :		—
	Radius of curvature after test (mm)..... :		—
G.7.6	Supply wiring space		N/A
G.7.6.1	General requirements		N/A
G.7.6.2	Stranded wire		N/A
G.7.6.2.1	Requirements		N/A
G.7.6.2.2	Test with 8 mm strand		N/A
G.8	**Varistors**		N/A
G.8.1	General requirements	No such components relied upon for safety	N/A
G.8.2	Safeguards against fire		N/A
G.8.2.1	General		N/A
G.8.2.2	Varistor overload test		N/A
G.8.2.3	Temporary overvoltage test		N/A
G.9	**Integrated circuit (IC) current limiters**		N/A
G.9.1	Requirements	No such components relied upon for safety	N/A
	IC limiter output current (max. 5A) ..... :		—
	Manufacturers' defined drift ..... :		—
G.9.2	Test Program		N/A
G.9.3	Compliance		N/A
G.10	**Resistors**		N/A
G.10.1	General	No such components relied upon for safety	N/A
G.10.2	Conditioning		N/A

EN IEC / BS EN IEC 62368-1			
Clause	**Requirement + Test**	**Result - Remark**	**Verdict**
G.10.3	Resistor test		N/A
G.10.4	Voltage surge test		N/A
G.10.5	Impulse test		N/A
G.10.6	Overload test		N/A
G.11	**Capacitors and RC units**		N/A
G.11.1	General requirements	No such components relied upon for safety	N/A
G.11.2	Conditioning of capacitors and RC units		N/A
G.11.3	Rules for selecting capacitors		N/A
G.12	**Optocouplers**		N/A
	Optocouplers comply with IEC 60747-5-5 with specifics	No such components relied upon for safety	N/A
	Type test voltage $V_{ini,a}$ ..... :		—
	Routine test voltage, $V_{ini,b}$ ..... :		—
G.13	**Printed boards**	PWBs are for functional insulation only	N/A
G.13.1	General requirements		N/A
G.13.2	Uncoated printed boards		N/A
G.13.3	Coated printed boards		N/A
G.13.4	Insulation between conductors on the same inner surface		N/A
G.13.5	Insulation between conductors on different surfaces		N/A
	Distance through insulation..... :		N/A
	Number of insulation layers (pcs) ..... :		—
G.13.6	Tests on coated printed boards		N/A
G.13.6.1	Sample preparation and preliminary inspection		N/A
G.13.6.2	Test method and compliance		N/A
G.14	**Coating on components terminals**		N/A
G.14.1	Requirements ..... :	No such components relied upon for safety	N/A
G.15	**Pressurized liquid filled components**		N/A
G.15.1	Requirements	No such components relied upon for safety	N/A
G.15.2	Test methods and compliance		N/A
G.15.2.1	Hydrostatic pressure test		N/A
G.15.2.2	Creep resistance test		N/A
G.15.2.3	Tubing and fittings compatibility test		N/A
G.15.2.4	Vibration test		N/A

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Clause	**Requirement + Test**	**Result - Remark**	**Verdict**
G.15.2.5	Thermal cycling test		N/A
G.15.2.6	Force test		N/A
G.15.3	Compliance		N/A
G.16	**IC including capacitor discharge function (ICX)**		N/A
G.16.1	Condition for fault tested is not required	No such components relied upon for safety	N/A
	ICX with associated circuitry tested in equipment		N/A
	ICX tested separately		N/A
G.16.2	Tests		N/A
	Smallest capacitance and smallest resistance specified by ICX manufacturer for impulse test..... :		—
	Mains voltage that impulses to be superimposed on ..... :		—
	Largest capacitance and smallest resistance for ICX tested by itself for 10,000 cycles test ..... :		—
G.16.3	Capacitor discharge test..... :		N/A
H	**CRITERIA FOR TELEPHONE RINGING SIGNALS**		N/A
H.1	**General**		N/A
H.2	**Method A**		N/A
H.3	**Method B**		N/A
H.3.1	Ringing signal	No such ringing signals within the EUT	N/A
H.3.1.1	Frequency (Hz) ..... :		—
H.3.1.2	Voltage (V) ..... :		—
H.3.1.3	Cadence; time (s) and voltage (V) ..... :		—
H.3.1.4	Single fault current (mA): ..... :		—
H.3.2	Tripping device and monitoring voltage		N/A
H.3.2.1	Conditions for use of a tripping device or a monitoring voltage		N/A
H.3.2.2	Tripping device		N/A
H.3.2.3	Monitoring voltage (V)..... :		N/A
J	**INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION**		N/A
J.1	**General**		N/A
	Winding wire insulation ..... :	No transformers within the EUT	—
	Solid round winding wire, diameter (mm)..... :		N/A
	Solid square and rectangular (flatwise bending) winding wire, cross-sectional area (mm^2) ..... :		N/A

EN IEC / BS EN IEC 62368-1			
Clause	**Requirement + Test**	**Result - Remark**	**Verdict**
J.2/J.3	Tests and Manufacturing		—
K	**SAFETY INTERLOCKS**		N/A
K.1	**General requirements**		N/A
	Instructional safeguard ..... :	No such interlocks	N/A
K.2	**Components of safety interlock safeguard mechanism**		N/A
K.3	**Inadvertent change of operating mode**		N/A
K.4	**Interlock safeguard override**		N/A
K.5	**Fail-safe**		N/A
K.5.1	Under single fault condition		N/A
K.6	**Mechanically operated safety interlocks**		N/A
K.6.1	Endurance requirement		N/A
K.6.2	Test method and compliance..... :		N/A
K.7	**Interlock circuit isolation**		N/A
K.7.1	Separation distance for contact gaps & interlock circuit elements		N/A
	In circuit connected to mains, separation distance for contact gaps (mm) ..... :		N/A
	In circuit isolated from mains, separation distance for contact gaps (mm) ..... :		N/A
	Electric strength test before and after the test of K.7.2 . :		N/A
K.7.2	Overload test, Current (A)..... :		N/A
K.7.3	Endurance test		N/A
K.7.4	Electric strength test		N/A
L	**DISCONNECT DEVICES**		N/A
L.1	**General requirements**	ES1 only	N/A
L.2	**Permanently connected equipment**		N/A
L.3	**Parts that remain energized**		N/A
L.4	**Single-phase equipment**		N/A
L.5	**Three-phase equipment**		N/A
L.6	**Switches as disconnect devices**		N/A
L.7	**Plugs as disconnect devices**		N/A
L.8	**Multiple power sources**		N/A
	Instructional safeguard ..... :		N/A
M	**EQUIPMENT CONTAINING BATTERIES AND THEIR PROTECTION CIRCUITS**		N/A
M.1	**General requirements**		N/A

EN IEC / BS EN IEC 62368-1			
Clause	**Requirement + Test**	**Result - Remark**	**Verdict**
M.2	**Safety of batteries and their cells**		N/A
M.2.1	Batteries and their cells comply with relevant IEC standards ..... :	No such batteries	N/A
M.3	**Protection circuits for batteries provided within the equipment**		N/A
M.3.1	Requirements		N/A
M.3.2	Test method		N/A
	Overcharging of a rechargeable battery		N/A
	Excessive discharging		N/A
	Unintentional charging of a non-rechargeable battery	No such batteries	N/A
	Reverse charging of a rechargeable battery		N/A
M.3.3	Compliance		N/A
M.4	**Additional safeguards for equipment containing a portable secondary lithium battery**		N/A
M.4.1	General	No such batteries	N/A
M.4.2	Charging safeguards		N/A
M.4.2.1	Requirements		N/A
M.4.2.2	Compliance ..... :		N/A
M.4.3	Fire enclosure..... :		N/A
M.4.4	Drop test of equipment containing a secondary lithium battery		N/A
M.4.4.2	Preparation and procedure for the drop test		N/A
M.4.4.3	Drop, Voltage on reference and dropped batteries (V); voltage difference during 24 h period (%): ..... :		N/A
M.4.4.4	Check of the charge/discharge function		N/A
M.4.4.5	Charge / discharge cycle test		N/A
M.4.4.6	Compliance		N/A
M.5	**Risk of burn due to short-circuit during carrying**		N/A
M.5.1	Requirement		N/A
M.5.2	Test method and compliance		N/A
M.6	**Safeguards against short-circuits**		N/A
M.6.1	External and internal faults		N/A
M.6.2	Compliance		N/A
M.7	**Risk of explosion from lead acid and NiCd batteries**		N/A
M.7.1	Ventilation preventing explosive gas concentration	No such batteries	N/A
	Calculated hydrogen generation rate..... :		N/A
M.7.2	Test method and compliance		N/A
	Minimum air flow rate, Q (m^3/h) ..... :		N/A

EN IEC / BS EN IEC 62368-1			
Clause	**Requirement + Test**	**Result - Remark**	**Verdict**
M.7.3	Ventilation tests		N/A
M.7.3.1	General		N/A
M.7.3.2	Ventilation test – alternative 1		N/A
	Hydrogen gas concentration (%) ..... :		N/A
M.7.3.3	Ventilation test – alternative 2		N/A
	Obtained hydrogen generation rate ..... :		N/A
M.7.3.4	Ventilation test – alternative 3		N/A
	Hydrogen gas concentration (%) ..... :		N/A
M.7.4	Marking ..... :		N/A
M.8	**Protection against internal ignition from external spark sources of batteries with aqueous electrolyte**		N/A
M.8.1	General	No such batteries	N/A
M.8.2	Test method		N/A
M.8.2.1	General		N/A
M.8.2.2	Estimation of hypothetical volume V_Z (m^3/s) ..... :		—
M.8.2.3	Correction factors ..... :		—
M.8.2.4	Calculation of distance *d* (mm) ..... :		—
M.9	**Preventing electrolyte spillage**		N/A
M.9.1	Protection from electrolyte spillage		N/A
M.9.2	Tray for preventing electrolyte spillage		N/A
M.10	**Instructions to prevent reasonably foreseeable misuse**		N/A
	Instructional safeguard ..... :		N/A
N	**ELECTROCHEMICAL POTENTIALS**		N/A
	Material(s) used ..... :		—
O	**MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES**		N/A
	Value of *X* (mm) ..... :		—
P	**SAFEGUARDS AGAINST CONDUCTIVE OBJECTS**		N/A
P.1	**General**		N/A
P.2	**Safeguards against entry or consequences of entry of a foreign object**		N/A
P.2.1	General	ES1 only	N/A
P.2.2	Safeguards against entry of a foreign object		N/A
	Location and Dimensions (mm) ..... :		—
P.2.3	Safeguards against the consequences of entry of a foreign object		N/A
P.2.3.1	Safeguard requirements		N/A

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Clause	**Requirement + Test**	**Result - Remark**	**Verdict**
	The ES3 and PS3 keep-out volume in Figure P.3 not applicable to transportable equipment		N/A
	Transportable equipment with metalized plastic parts .. :		N/A
P.2.3.2	Consequence of entry test..... :		N/A
P.3	**Safeguards against spillage of internal liquids**		N/A
P.3.1	General	No such internal liquids	N/A
P.3.2	Determination of spillage consequences		N/A
P.3.3	Spillage safeguards		N/A
P.3.4	Compliance		N/A
P.4	**Metallized coatings and adhesives securing parts**		N/A
P.4.1	General	No such parts	N/A
P.4.2	Tests		N/A
	Conditioning, T_C (°C)..... :		—
	Duration (weeks) ..... :		—
Q	**CIRCUITS INTENDED FOR INTERCONNECTION WITH BUILDING WIRING**		N/A
Q.1	**Limited power sources**	Not intended for connection with building wiring	N/A
Q.1.1	Requirements		N/A
	a) Inherently limited output		N/A
	b) Impedance limited output		N/A
	c) Regulating network limited output		N/A
	d) Overcurrent protective device limited output		N/A
	e) IC current limiter complying with G.9		N/A
Q.1.2	Test method and compliance..... :		N/A
	Current rating of overcurrent protective device (A) ..... :		N/A
Q.2	**Test for external circuits – paired conductor cable**		N/A
	Maximum output current (A) ..... :		N/A
	Current limiting method ..... :		—
R	**LIMITED SHORT CIRCUIT TEST**		N/A
R.1	**General**	No such components	N/A
R.2	**Test setup**		N/A
	Overcurrent protective device for test..... :		—
R.3	**Test method**		N/A
	Cord/cable used for test ..... :		—
R.4	**Compliance**		N/A

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Clause	**Requirement + Test**	**Result - Remark**	**Verdict**
S	**TESTS FOR RESISTANCE TO HEAT AND FIRE**		N/A
S.1	**Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power does not exceed 4,000 W**		N/A
	Samples, material..... :	PWB is rated V-0	—
	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) ..... :		—
S.3	**Flammability test for the bottom of a fire enclosure**		N/A
S.3.1	Mounting of samples		N/A
S.3.2	Test method and compliance		N/A
	Mounting of samples ..... :		—
	Wall thickness (mm)..... :		—
S.4	**Flammability classification of materials**		N/A
S.5	**Flammability test for fire enclosure materials of equipment with a steady state power exceeding 4,000 W**		N/A
	Samples, material..... :		—
	Wall thickness (mm)..... :		—
	Conditioning (°C) ..... :		—
T	**MECHANICAL STRENGTH TESTS**		P
T.1	**General**		P
T.2	**Steady force test, 10 N ..... :**		N/A
T.3	**Steady force test, 30 N ..... :**		N/A
T.4	**Steady force test, 100 N ..... :**	See appended table T.4	P
T.5	**Steady force test, 250 N ..... :**	See appended table T.5	P
T.6	**Enclosure impact test**	See appended table T.6	P
	Fall test		P
	Swing test		N/A

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Clause	**Requirement + Test**	**Result - Remark**	**Verdict**
T.7	**Drop test ..... :**		N/A
T.8	**Stress relief test ..... :**	See appended table T.8	P
T.9	**Glass Impact Test ..... :**	No such glass within EUT	N/A
T.10	**Glass fragmentation test**		N/A
	Number of particles counted..... :		N/A
T.11	**Test for telescoping or rod antennas**		N/A
	Torque value (Nm) ..... :	No such antennas within EUT	N/A
U	**MECHANICAL STRENGTH OF CATHODE RAY TUBES (CRT) AND PROTECTION AGAINST THE EFFECTS OF IMPLOSION**		N/A
U.1	**General**		N/A
	Instructional safeguard:	No CRTs within EUT	N/A
U.2	**Test method and compliance for non-intrinsically protected CRTs**		N/A
U.3	**Protective screen**		N/A
V	**DETERMINATION OF ACCESSIBLE PARTS**		N/A
V.1	**Accessible parts of equipment**		N/A
V.1.1	General	ES1 only	N/A
V.1.2	Surfaces and openings tested with jointed test probes		N/A
V.1.3	Openings tested with straight unjointed test probes		N/A
V.1.4	Plugs, jacks, connectors tested with blunt probe		N/A
V.1.5	Slot openings tested with wedge probe		N/A
V.1.6	Terminals tested with rigid test wire		N/A
V.2	**Accessible part criterion**		N/A
X	**ALTERNATIVE METHOD FOR DETERMINING CLEARANCES FOR INSULATION IN CIRCUITS CONNECTED TO AN AC MAINS NOT EXCEEDING 420 V PEAK (300 V RMS)**		N/A
	Clearance..... :		N/A
Y	**CONSTRUCTION REQUIREMENTS FOR OUTDOOR ENCLOSURES**		N/A
Y.1	**General**	EUT is not for use outdoors	N/A
Y.2	**Resistance to UV radiation**		N/A
Y.3	**Resistance to corrosion**		N/A
Y.3	**Resistance to corrosion**		N/A
Y.3.1	Metallic parts of outdoor enclosures are resistant to effects of water-borne contaminants by ..... :		N/A
Y.3.2	Test apparatus		N/A
Y.3.3	Water – saturated sulphur dioxide atmosphere		N/A
Y.3.4	Test procedure ..... :		N/A

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Clause	**Requirement + Test**	**Result - Remark**	**Verdict**
Y.3.5	Compliance		N/A
Y.4	**Gaskets**		N/A
Y.4.1	General	No such components	N/A
Y.4.2	Gasket tests		N/A
Y.4.3	Tensile strength and elongation tests		N/A
	Alternative test methods ..... :		N/A
Y.4.4	Compression test		N/A
Y.4.5	Oil resistance		N/A
Y.4.6	Securing means		N/A
Y.5	**Protection of equipment within an outdoor enclosure**		N/A
Y.5.1	General	EUT is not for use outdoors	N/A
Y.5.2	Protection from moisture		N/A
	Relevant tests of IEC 60529 or Y.5.3 ..... :		N/A
Y.5.3	Water spray test		N/A
Y.5.4	Protection from plants and vermin		N/A
Y.5.5	Protection from excessive dust		N/A
Y.5.5.1	General		N/A
Y.5.5.2	IP5X equipment		N/A
Y.5.5.3	IP6X equipment		N/A
Y.6	**Mechanical strength of enclosures**		N/A
Y.6.1	General		N/A
Y.6.2	Impact test..... :		N/A

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Clause	**Requirement + Test**	**Result - Remark**	**Verdict**

5.2	**TABLE: Classification of electrical energy sources**						P
Supply Voltage	**Location (e.g. circuit designation)**	**Test conditions**	**Parameters**				**ES Class**
			U (V)	**I (mA)**	**Type[1)]**	**Additional Info [2)]**	
48Vdc	Input Cable	MNL	48.3Vdc	200mA	SS	--	ES1
Supplementary information:							
1) Type: Steady state (SS), Capacitance (CP), Single pulse (SP), Repetitive pulses (RP), etc. 2) Additional Info: Frequency, Pulse duration, Pulse off time, Capacitance value, etc.							

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

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

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

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Clause	**Requirement + Test**	**Result - Remark**	**Verdict**

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

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

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

5.4.9	**TABLE: Electric strength tests**			N/A
Test voltage applied between:	**Voltage shape (Surge, Impulse, AC, DC, etc.)**	**Test voltage (V)**	**Breakdown Yes / No**	
Supplementary information: : 1,500 Vrms one minutes primary to secondary isolation claimed by manufacture on their datasheet. Test on component only Planar transformer PL300-100L.				

EN IEC / BS EN IEC 62368-1			
Clause	**Requirement + Test**	**Result - Remark**	**Verdict**

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

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

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

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

EN IEC / BS EN IEC 62368-1			
Clause	**Requirement + Test**	**Result - Remark**	**Verdict**

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

6.2.2	**TABLE: Power source circuit classifications**					P
Location	**Operating and fault condition**	**Voltage (V)**	**Current (A)**	**Max. Power[1] (W)**	**Time (S)**	**PS class**
Input Cable	MNL	48.3Vdc	0.2A	9.66W	5	PS1
Supplementary information: Refer to Input Test, Table B.2..5 for test results						
Abbreviation: SC= short circuit; OC= open circuit 1) Measured after 3 s for PS1 and measured after 5 s for PS2 and PS3.						

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

6.2.3.2	**TABLE: Determination of resistive PIS**			N/A
Location	**Operating and fault condition**	**Dissipate power (W)**	**Arcing PIS? Yes / No**	
Supplementary information:				
Abbreviation: SC= short circuit; OC= open circuit				

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Clause	**Requirement + Test**	**Result - Remark**	**Verdict**

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

9.6	**TABLE: Temperature measurements for wireless power transmitters**							N/A
Supply voltage (V) ..... :	48 Vdc							—
Max. transmit power of transmitter (W)..... :	90 W							—
Foreign objects	**w/o receiver and direct contact**		**with receiver and direct contact**		**with receiver and at distance of 2 mm**		**with receiver and at distance of 5 mm**	
	Object (ºC)	**Ambient (ºC)**	**Object (ºC)**	**Ambient (ºC)**	**Object (ºC)**	**Ambient (ºC)**	**Object (ºC)**	**Ambient (ºC)**
Aluminum foil	29.6	22.4	29.7	22.5	29.7	22.5	29.7	22.4
Aluminum ring	29.6	22.5	29.7	22.5	29.7	22.5	29.7	22.6
Steel disc	29.8	22.6	29.7	22.6	29.7	22.7	29.7	22.6
Supplementary information:								

EN IEC / BS EN IEC 62368-1			
Clause	**Requirement + Test**	**Result - Remark**	**Verdict**

5.4.1.4, 9.3, B.1.5, B.2.6	**TABLE: Maximum temperatures**			P
	Test Voltage (V):	48Vdc		—
	T_{amb1} (°C):	23.0		—
	T_{amb2} (°C):	23.1		—
maximum temperature T of part/at::		**T (°C)**		**allowed T_{max} (°C)**
Internal to EUT:		--	Shifted to Tma 60°C	
Corner of PCB		26.1	63.0	130
Input connector		25.6	62.5	85
Bottom of PCB		26.3	63.2	130
Accessible Surfaces:			Shifted to 25°C	
Wire (plastic, touched >1s and <10s)		23.5	25.4	77
Wire plastic outputs (plastic, touched >1s and <10s)		23.6	25.5	77
Top enclosure (plastic, touched >1s and <10s)		24.9	26.8	77
Bottom enclosure (plastic, touched >1s and <10s)		26.4	28.3	77

Supplementary Information:

For Maximum Normal Load (MNL), Place the EUT on a non-metallic table. Arrange the wire loop neatly into a rectangular shape and ensure the wire lies flat and is untangled. Connect the EUT to the provided power supply. Using the provided test probes, ensure the area in between the wire is producing power which is identified by a green LED. The transmitter is now operating at maximum normal load.

B.2.5		**TABLE: Input test**						P
U (V)	**Hz**	**I (A)**	**I rated (A)**	**P (W)**	**P rated (W)**	**Fuse No**	**I fuse (A)**	**Condition/status**
48Vdc	--	0.20A	3A	9.66W	--	--	--	MNL

EN IEC / BS EN IEC 62368-1			
Clause	**Requirement + Test**	**Result - Remark**	**Verdict**

B.3, B.4	**TABLE: Abnormal operating and fault condition tests**					P
Ambient temperature T_{amb} (°C) .....:				23.4		—
Power source for EUT: Manufacturer, model/type, outputrating.....:				Meanwell, GST90A48, 48Vdc, 1.87A, 90W		—
Component No.	**Condition**	**Supply voltage (V)**	**Test time**	**Fuse no.**	**Fuse current (A)**	**Observation**
Ventilation	Blocked	48Vdc	2 h	--	--	NB, NC, NT, Test terminated after 2 hr as no secondary faults were evident. PCB max temp. 27.0°C
Supplementary information:						

M.3	**TABLE: Protection circuits for batteries provided within the equipment**						N/A
Is it possible to install the battery in a reverse polarity position?.....:				No			—
Equipment Specification	**Charging**						
	Voltage (V)			**Current (A)**			
Manufacturer/type	**Battery specification**						
	Non-rechargeable batteries		**Rechargeable batteries**				
	Discharging current (A)	**Unintentional charging current (A)**	**Charging**		**Discharging current (A)**	**Reverse charging current (A)**	
			Voltage (V)	**Current (A)**			
Note: The tests of M.3.2 are applicable only when above appropriate data is not available.							
Specified battery temperature (ºC) .....:							

Component No.	**Fault condition**	**Charge/ discharge mode**	**Test time**	**Temp. (ºC)**	**Current (A)**	**Voltage (V)**	**Observation**
Supplementary information:							
Abbreviation: SC= short circuit; OC= open circuit NL= no chemical leakage; NS= no spillage of liquid; NE= no explosion; NF= no emission of flame or expulsion of molten metal.							

EN IEC / BS EN IEC 62368-1			
Clause	**Requirement + Test**	**Result - Remark**	**Verdict**

M.4.2	**TABLE: Charging safeguards for equipment containing a secondary lithium battery**				N/A
Maximum specified charging voltage (V).....:					—
Maximum specified charging current (A) .....:					—
Highest specified charging temperature (°C) .....:					
Lowest specified charging temperature (°C) .....:					
Battery manufacturer/type	**Operating and fault condition**	**Measurement**			**Observation**
		Charging voltage (V)	**Charging current (A)**	**Temp. (°C)**	
Supplementary information:					
Abbreviation: SC= short circuit; OC= open circuit; MSCV= maximum specified charging voltage; MSCC= maximum specified charging current; HSCT= highest specified charging temperature; LSCT= lowest specified charging temperature					

Q.1	**TABLE: Circuits intended for interconnection with building wiring (LPS)**						N/A
Output Circuit	**Condition**	**U_{oc} (V)**	**Time (s)**	**I_{sc} (A)**		**S (VA)**	
				Meas.	**Limit**	**Meas.**	**Limit**
Supplementary Information:							

EN IEC / BS EN IEC 62368-1			
Clause	**Requirement + Test**	**Result - Remark**	**Verdict**

T.2, T.3, T.4, T.5	**TABLE: Steady force test**	P

Location/Part	**Material**	**Thickness (mm)**	**Probe**	**Force (N)**	**Test Duration (s)**	**Observation**
Top Enclosure	Plastic	2.519	30 mm	250	5	No damage that could lead to exposure of hazardous live components
Top Enclosure	Plastic	2.519	30 mm	100	5	No damage that could lead to exposure of hazardous live components

Supplementary information:

T.6, T.9	**TABLE: Impact test**	P

Location/Part	**Material**	**Thickness (mm)**	**Height (mm)**	**Observation**
Top	Plastic	2.519	1300	No damage that could lead to exposure of hazardous live components
Side	Plastic	2.505	1300	No damage that could lead to exposure of hazardous live components

Supplementary information:

EN IEC / BS EN IEC 62368-1			
Clause	**Requirement + Test**	**Result - Remark**	**Verdict**

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

T.8	**TABLE: Stress relief test**					P
Location/Part	**Material**	**Thickness (mm)**	**Oven Temperature (°C)**	**Duration (h)**	**Observation**	
Complete Enclosure	Plastic	2.519	96.4	7	No damage that could lead to exposure of hazardous live components	
Supplementary information:						

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

EN IEC / BS EN IEC 62368-1			
Clause	**Requirement + Test**	**Result - Remark**	**Verdict**

4.1.2	**TABLE: Critical components information**				P
Object / part No.	**Manufacturer/ trademark**	**Type / model**	**Technical data**	**Standard**	**Mark(s) of conformity[1)]**
Enclosure	Formosa Chemicals	PC Alloy Resin	Max Temp. 150°C, Max Gravity 1.14, Insoluble	--	Evaluated with EUT
PCB	Wellcircuit Technic Co LTD	008V0	Min. Thickness: 0.05 mm, Max Operating Temperature: 130°C. 94V-0	UL 796 UL 796F UL 94	UL (E194558)
Wiring	Echu Special Wire & Cable (Kunshan) Co LTD	1015	14AWG, VW-1, 105°C, 600V	UL 758	UL (E312831)
Input connector	Same Sky	PJ-057A	24Vdc, 2.5A, 85°C, UL94V-0	--	Evaluated with EUT
Power Supply	Mean Well Enterprises Co., LTD.	GST90A48-P1M	Input: 100-240Vac, 50/60Hz, 1.3A Output: 48Vdc, 1.87A, 90W	UL 1310 UL 60950-1	UL (E183223)
Marking Label	Guang Gong Zhong Guan Xin Cai Liao Ke Ji Co., LTD	50# Transparent Dragon	Colorless transparent adhesive file, Applied surface: metal	--	Evaluated with EUT
Supplementary information:					
1) Provided evidence ensures the agreed level of compliance. See OD-CB2039.					

Attachment 1: European Group Differences and National Differences

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
ATTACHMENT TO TEST REPORT **IEC 62368-1** **EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES** (AUDIO/VIDEO, INFORMATION AND COMMUNICATION TECHNOLOGY EQUIPMENT - PART 1: SAFETY REQUIREMENTS)			
Differences according to.....: EN IEC 62368-1:2020+A11:2020			
Attachment Form No.....: EU_GD_IEC62368_1E **Attachment Originator**.....: UL(Demko) **Master Attachment**.....: 2021-02-04			
Copyright © 2021 IEC System for Conformity Testing and Certification of Electrical Equipment (IECEE), Geneva, Switzerland. All rights reserved.			
	CENELEC COMMON MODIFICATIONS (EN)		P
	Clause numbers in the cells that are shaded light grey are clause references in EN IEC 62368-1:2020+A11:2020. All other clause numbers in that column, except for those in the paragraph below, refers to IEC 62368-1:2018. Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 62368-1:2018 are prefixed “Z”.		P
	Add the following annexes: Annex ZA (normative) Normative references to international publications with their corresponding European publications Annex ZB (normative) Special national conditions Annex ZC (informative) A-deviations Annex ZD (informative) IEC and CENELEC code designations for flexible cords		P
1	**Modification to Clause 3 .**		N/A
3.3.19	**Sound exposure** *Replace 3.3.19 of IEC 62368-1 with the following definitions:*		N/A
3.3.19.1	**momentary exposure level, MEL** metric for estimating 1 s sound exposure level from the HD 483-1 S2 test signal applied to both channels, based on EN 50332-1:2013, 4.2. Note 1 to entry: MEL is measured as A-weighted levels in dB. Note 2 to entry: See B.3 of EN 50332-3:2017 for additional information.	EUT does not produce sound	N/A

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
3.3.19.3	**sound exposure, *E*** A-weighted sound pressure (p) squared and integrated over a stated period of time, T Note 1 to entry: The SI unit is Pa^2 s. $E = \int_0^T p(t)^2 \, dt$		N/A
3.3.19.4	**sound exposure level, *SEL*** logarithmic measure of sound exposure relative to a reference value, E_0, typically the 1 kHz threshold of hearing in humans. Note 1 to entry: *SEL* is measured as A-weighted levels in dB. $SEL = 10 \lg\left(\frac{E}{E_0}\right)$ dB Note 2 to entry: See B.4 of EN 50332-3:2017 for additional information.		N/A
3.3.19.5	**digital signal level relative to full scale, dBFS** levels reported in dBFS are always r.m.s. Full scale level, 0 dBFS, is the level of a dc-free 997-Hz sine wave whose undithered positive peak value is positive digital full scale, leaving the code corresponding to negative digital full scale unused Note 1 to entry: It is invalid to use dBFS for non-r.m.s. levels. Because the definition of full scale is based on a sine wave, the level of signals with a crest factor lower than that of a sine wave may exceed 0 dBFS. In particular, square wave signals may reach +3,01 dBFS.		N/A
2	**Modification to Clause 10**		N/A
10.6	**Safeguards against acoustic energy sources** Replace 10.6 of IEC 62368-1 with the following:		N/A
10.6.1.1	**Introduction** **Safeguard** requirements for protection against long-term exposure to excessive sound pressure levels from personal music players closely coupled to the ear are specified below. Requirements for earphones and headphones intended for use with personal music players are also covered. A personal music player is a portable equipment intended for use by an **ordinary person**, that: – is designed to allow the user to listen to audio or audiovisual content / material; and – uses a listening device, such as headphones or earphones that can be worn in or on or	Not acoustic energy sources	N/A

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	around the ears; and – has a player that can be body worn (of a size suitable to be carried in a clothing pocket) and is intended for the user to walk around with while in continuous use (for example, on a street, in a subway, at an airport, etc.). EXAMPLES Portable CD players, MP3 audio players, mobile phones with MP3 type features, PDAs or similar equipment. Personal music players shall comply with the requirements of either 10.6.2 or 10.6.3. NOTE 1 Protection against acoustic energy sources from telecom applications is referenced to ITU-T P.360. NOTE 2 It is the intention of the Committee to allow the alternative methods for now, but to only use the dose measurement method as given in 10.6.5 in future. Therefore, manufacturers are encouraged to implement 10.6.5 as soon as possible. Listening devices sold separately shall comply with the requirements of 10.6.6. These requirements are valid for music or video mode only. The requirements do not apply to: – professional equipment; NOTE 3 Professional equipment is equipment sold through special sales channels. All products sold through normal electronics stores are considered not to be professional equipment. – hearing aid equipment and other devices for assistive listening; – the following type of analogue personal music players: • long distance radio receiver (for example, a multiband radio receiver or world band radio receiver, an AM radio receiver), and • cassette player/recorder; NOTE 4 This exemption has been allowed because this technology is falling out of use and it is expected that within a few years it will no longer exist. This exemption will not be extended to other technologies. – a player while connected to an external amplifier that does not allow the user to walk around while in use. For equipment that is clearly designed or intended primarily for use by children, the limits of the relevant toy standards may apply. The relevant requirements are given in EN 71-1:2011, 4.20 and the related tests methods and measurement distances apply.		
10.6.1.2	**Non-ionizing radiation from radio frequencies in the range 0 to 300 GHz**		N/A

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	The amount of non-ionizing radiation is regulated by European Council Recommendation 1999/519/EC of 12 July 1999 on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz). For intentional radiators, ICNIRP guidelines should be taken into account for Limiting Exposure to Time-Varying Electric, Magnetic, and Electromagnetic Fields (up to 300 GHz). For hand-held and body mounted devices, attention is drawn to EN 50360 and EN 50566.		
10.6.2	**Classification of devices without the capacity to estimate sound dose**		N/A
10.6.2.1	**General** This standard is transitioning from short-term based (30 s) requirements to long-term based (40 hour) requirements. These clauses remain in effect only for devices that do not comply with sound dose estimation as stipulated in EN 50332-3. For classifying the acoustic output $L_{Aeq,T}$, measurements are based on the A-weighted equivalent sound pressure level over a 30 s period. For music where the average sound pressure (long term $L_{Aeq,T}$) measured over the duration of the song is lower than the average produced by the programme simulation noise, measurements may be done over the duration of the complete song. In this case, T becomes the duration of the song. NOTE Classical music, acoustic music and broadcast typically has an average sound pressure (long term $L_{Aeq,T}$) which is much lower than the average programme simulation noise. Therefore, if the player is capable to analyse the content and compare it with the programme simulation noise, the warning does not need to be given as long as the average sound pressure of the song does not exceed the required limit. For example, if the player is set with the programme simulation noise to 85 dB, but the average music level of the song is only 65 dB, there is no need to give a warning or ask an acknowledgement as long as the average sound level of the song is not above the basic limit of 85 dB.	Not an acoustic energy source	N/A
10.6.2.2	**RS1 limits (to be superseded, see 10.6.3.2)** RS1 is a class 1 acoustic energy source that does not exceed the following: – for equipment provided as a package (player with its listening device), and with a proprietary connector between the player and its listening device, or where the combination of player and listening device is known by other means such as setting or automatic detection, the $L_{Aeq,T}$ acoustic output shall be ≤ 85 dB when playing the fixed "programme simulation noise" described in EN 50332-1. – for equipment provided with a standardized	Not an acoustic energy source	N/A

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	connector (for example, a 3,5 phone jack) that allows connection to a listening device for general use, the unweighted r.m.s. output voltage shall be ≤ 27 mV (analogue interface) or -25 dBFS (digital interface) when playing the fixed “programme simulation noise” described in EN 50332-1. – The RS1 limits will be updated for all devices as per 10.6.3.2.		
10.6.2.3	**RS2 limits (to be superseded, see 10.6.3.3)** RS2 is a class 2 acoustic energy source that does not exceed the following: – for equipment provided as a package (player with its listening device), and with a proprietary connector between the player and its listening device, or when the combination of player and listening device is known by other means such as setting or automatic 130 detection, the $L_{Aeq,T}$ acoustic output shall be ≤ 100 dB(A) when playing the fixed “programme simulation noise” as described in EN 50332-1. – for equipment provided with a standardized connector (for example, a 3,5 phone jack) that allows connection to a listening device for general use, the unweighted r.m.s. output voltage shall be ≤ 150 mV (analogue interface) or -10 dBFS (digital interface) when playing the fixed “programme simulation noise” as described in EN 50332-1.		N/A
10.6.2.4	**RS3 limits** RS3 is a class 3 acoustic energy source that exceeds RS2 limits.		N/A
10.6.3	**Classification of devices (new)**		N/A
10.6.3.1	**General** Previous limits (10.6.2) created abundant false negative and false positive PMP sound level warnings. New limits, compliant with The Commission Decision of 23 June 2009, are given below.	Not a class 1 acoustic energy source	N/A
10.6.3.2	**RS1 limits (new)** RS1 is a class 1 acoustic energy source that does not exceed the following: – for equipment provided as a package (player with its listening device), and with a proprietary connector between the player and its listening device, or where the combination of player and listening device is known by other means such as setting or automatic detection, the $L_{Aeq,T}$ acoustic output shall be ≤ 80 dB when playing the fixed “programme simulation noise” described in EN 50332-1. – for equipment provided with a standardized connector (for example, a 3,5 phone jack) that		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	allows connection to a listening device for general use, the unweighted r.m.s. output voltage shall be ≤ 15 mV (analogue interface) or -30 dBFS (digital interface) when playing the fixed “programme simulation noise” described in EN 50332-1.		
10.6.3.3	**RS2 limits (new)** RS2 is a class 2 acoustic energy source that does not exceed the following: – for equipment provided as a package (player with its listening device), and with a proprietary connector between the player and its listening device, or where the combination of player and listening device is known by other means such as setting or automatic detection, the weekly sound exposure level, as described in EN 50332-3, shall be ≤ 80 dB when playing the fixed "programme simulation noise" described in EN 50332-1. – for equipment provided with a standardized connector (for example, a 3,5 phone jack) that allows connection to a listening device for general use, the unweighted r.m.s. output level, integrated over one week, as described in EN50332-3, shall be ≤ 15 mV (analogue interface) or -30 dBFS (digital interface) when playing the fixed “programme simulation noise” described in EN 50332-1.		N/A
10.6.4	**Requirements for maximum sound exposure**		N/A
10.6.4.1	**Measurement methods** All volume controls shall be turned to maximum during tests. Measurements shall be made in accordance with EN 50332-1 or EN 50332-2 as applicable.		N/A
10.6.4.2	**Protection of persons** Except as given below, protection requirements for parts **accessible** to **ordinary persons**, **instructed persons** and **skilled persons** are given in 4.3. NOTE 1 Volume control is not considered a **safeguard.** Between RS2 and an **ordinary person**, the **basic safeguard** may be replaced by an **instructional safeguard** in accordance with Clause F.5, except that the **instructional safeguard** shall be placed on the equipment, or on the packaging, or in the instruction manual. Alternatively, the **instructional safeguard** may be given through the equipment display during use. The elements of the **instructional safeguard** shall be as follows: – element 1a: the symbol  , IEC 60417-6044 (2011-01)	No protection of persons necessary	N/A

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	– element 2: “High sound pressure” or equivalent wording – element 3: “Hearing damage risk” or equivalent wording – element 4: “Do not listen at high volume levels for long periods.” or equivalent wording An **equipment safeguard** shall prevent exposure of an **ordinary person** to an RS2 source without intentional physical action from the **ordinary person** and shall automatically return to an output level not exceeding what is specified for an RS1 source when the power is switched off. The equipment shall provide a means to actively inform the user of the increased sound level when the equipment is operated with an output exceeding RS1. Any means used shall be acknowledged by the user before activating a mode of operation which allows for an output exceeding RS1. The acknowledgement does not need to be repeated more than once every 20 h of cumulative listening time. NOTE 2 Examples of means include visual or audible signals. Action from the user is always needed. NOTE 3 The 20 h listening time is the accumulative listening time, independent of how often and how long the personal music player has been switched off. A **skilled person** shall not be unintentionally exposed to RS3.		
10.6.5	**Requirements for dose-based systems**		N/A
10.6.5.1	**General requirements** Personal music players shall give the warnings as provided below when tested according to EN 50332-3, using the limits from this clause. The manufacturer may offer optional settings to allow the users to modify when and how they wish to receive the notifications and warnings to promote a better user experience without defeating the safeguards. This allows the users to be informed in a method that best meets their physical capabilities and device usage needs. If such optional settings are offered, an administrator (for example, parental restrictions, business/educational administrators, etc.) shall be able to lock any optional settings into a specific configuration. The personal music player shall be supplied with easy to understand explanation to the user of the dose management system, the risks involved, and how to use the system safely. The user shall be made aware that other sources may significantly	Device is not a personal music player	N/A

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	contribute to their sound exposure, for example work, transportation, concerts, clubs, cinema, car races, etc.		
10.6.5.2	**Dose-based warning and requirements** When a dose of 100 % *CSD* is reached, and at least at every 100 % further increase of *CSD*, the device shall warn the user and require an acknowledgement. In case the user does not acknowledge, the output level shall automatically decrease to compliance with class RS1. The warning shall at least clearly indicate that listening above 100 % *CSD* leads to the risk of hearing damage or loss.		N/A
10.6.5.3	**Exposure-based requirements** With only dose-based requirements, cause and effect could be far separated in time, defying the purpose of educating users about safe listening practice. In addition to dose-based requirements, a PMP shall therefore also put a limit to the short-term sound level a user can listen at. The exposure-based limiter (EL) shall automatically reduce the sound level not to exceed 100 dB(A) or 150 mV integrated over the past 180 s, based on methodology defined in EN 50332-3. The EL settling time (time from starting level reduction to reaching target output) shall be 10 s or faster. Test of EL functionality is conducted according to EN 50332-3, using the limits from this clause. For equipment provided as a package (player with its listening device), the level integrated over 180 s shall be 100 dB or lower. For equipment provided with a standardized connector, the unweighted level integrated over 180 s shall be no more than 150 mV for an analogue interface and no more than -10 dBFS for a digital interface. NOTE In case the source is known not to be music (or test signal), the EL may be disabled.		N/A
10.6.6	**Requirements for listening devices (headphones, earphones, etc.)**		N/A
10.6.6.1	**Corded listening devices with analogue input** With 94 dB L_{Aeq} acoustic pressure output of the listening device, and with the volume and sound settings in the listening device (for example, built-in volume level control, additional sound features like equalization, etc.) set to the combination of positions that maximize the measured acoustic output, the input voltage of the listening device when playing the fixed “programme simulation noise” as described in EN 50332-1 shall be ≥ 75 mV.	Device is not a headphones, earphones, etc.	N/A

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	NOTE The values of 94 dB and 75 mV correspond with 85 dB and 27 mV or 100 dB and 150 mV.		
10.6.6.2	**Corded listening devices with digital input** With any playing device playing the fixed "programme simulation noise" described in EN 50332-1, and with the volume and sound settings in the listening device (for example, built-in volume level control, additional sound features like equalization, etc.) set to the combination of positions that maximize the measured acoustic output, the $L_{Aeq,T}$ acoustic output of the listening device shall be ≤ 100 dB with an input signal of -10 dBFS.		N/A
10.6.6.3	**Cordless listening devices** In cordless mode, – with any playing and transmitting device playing the fixed programme simulation noise described in EN 50332-1; and – respecting the cordless transmission standards, where an air interface standard exists that specifies the equivalent acoustic level; and – with volume and sound settings in the receiving device (for example, built-in volume level control, additional sound features like equalization, etc.) set to the combination of positions that maximize the measured acoustic output for the above mentioned programme simulation noise, the $L_{Aeq,T}$ acoustic output of the listening device shall be ≤ 100 dB with an input signal of -10 dBFS.		N/A
10.6.6.4	**Measurement method** *Measurements shall be made in accordance with EN 50332-2 as applicable.*		N/A
3	**Modification to the whole document**		N/A

<table>
<tr><th colspan="4">IEC62368_1E - ATTACHMENT</th></tr>
<tr><td>Clause</td><td>Requirement + Test</td><td>Result - Remark</td><td>Verdict</td></tr>
<tr><td></td><td>Delete all the “country” notes in the reference document according to the following list:
<table>
<tr><td>0.2.1</td><td>Note 1 and 2</td><td>1</td><td>Note 4 and 5</td><td>3.3.8.1</td><td>Note 2</td></tr>
<tr><td>3.3.8.3</td><td>Note 1</td><td>4.1.15</td><td>Note</td><td>4.7.3</td><td>Note 1 and 2</td></tr>
<tr><td>5.2.2.2</td><td>Note</td><td>5.4.2.3.2.2 Table 12</td><td>Note c</td><td>5.4.2.3.2.4</td><td>Note 1 and 3</td></tr>
<tr><td>5.4.2.3.2.4 Table 13</td><td>Note 2</td><td>5.4.2.5</td><td>Note 2</td><td>5.4.5.1</td><td>Note</td></tr>
<tr><td>5.4.10.2.1</td><td>Note</td><td>5.4.10.2.2</td><td>Note</td><td>5.4.10.2.3</td><td>Note</td></tr>
<tr><td>5.5.2.1</td><td>Note</td><td>5.5.6</td><td>Note</td><td>5.6.4.2.1</td><td>Note 2 and 3 and 4</td></tr>
<tr><td>5.6.8</td><td>Note 2</td><td>5.7.6</td><td>Note</td><td>5.7.7.1</td><td>Note 1 and Note 2</td></tr>
<tr><td>8.5.4.2.3</td><td>Note</td><td>10.2.1 Table 39</td><td>Note 3 and 4 and 5</td><td>10.5.3</td><td>Note 2</td></tr>
<tr><td><s>10.6.1</s></td><td>Note 3</td><td>F.3.3.6</td><td>Note 3</td><td>Y.4.1</td><td>Note</td></tr>
<tr><td>Y.4.5</td><td>Note</td><td></td><td></td><td></td><td></td></tr>
</table></td><td></td><td>N/A</td></tr>
<tr><td>4</td><td colspan="2">Modification to Clause 1</td><td>N/A</td></tr>
<tr><td>1</td><td>Add the following note:

NOTE Z1 The use of certain substances in electrical and electronic equipment is restricted within the EU: see Directive 2011/65/EU.</td><td></td><td>N/A</td></tr>
<tr><td>5</td><td colspan="2">Modification to 4.Z1</td><td>N/A</td></tr>
</table>

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
4.Z1	***Add*** *the following new subclause after 4.9:* To protect against excessive current, short-circuits and earth faults in circuits connected to an a.c. **mains**, protective devices shall be included either as integral parts of the equipment or as parts of the building installation, subject to the following, a), b) and c): a) except as detailed in b) and c), protective devices necessary to comply with the requirements of B.3.1 and B.4 shall be included as parts of the equipment; b) for components in series with the mains input to the equipment such as the supply cord, appliance coupler, r.f.i. filter and switch, short-circuit and earth fault protection may be provided by protective devices in the building installation; c) it is permitted for **pluggable equipment type B** or **permanently connected equipment**, to rely on dedicated overcurrent and short-circuit protection in the building installation, provided that the means of protection, e.g. fuses or circuit breakers, is fully specified in the installation instructions. If reliance is placed on protection in the building installation, the installation instructions shall so state, except that for **pluggable equipment type A** the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet.	Not a pluggable equipment type B or permanently connected equipment	N/A
6	**Modification to 5.4.2.3.2.4**		N/A
5.4.2.3.2.4	***Add*** *the following to the end of this subclause:* The requirement for interconnection with **external circuit** is in addition given in EN 50491-3:2009.	No interconnection with external circuit	N/A
7	**Modification to 10.2.1**		N/A
10.2.1	Add the following to [c)] and [d)] in table 39: For additional requirements, see 10.5.1.		N/A
8	**Modification to 10.5.1**		N/A

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
10.5.1	***Add** the following after the first paragraph:* For RS 1 compliance is checked by measurement under the following conditions: 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 pre-sets 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. NOTE Z1 Soldered joints and paint lockings are examples of adequate locking. The dose-rate is determined by means of a radiation monitor with an effective area of 10 cm², at any point 10 cm from the outer surface of the apparatus. 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. For RS1, the dose-rate shall not exceed 1 µSv/h taking account of the background level. NOTE Z2 These values appear in Directive 96/29/Euratom of 13 May 1996.		N/A
9	**Modification to G.7.1**		N/A
G.7.1	***Add** the following note:* NOTE Z1 The harmonized code designations corresponding to the IEC cord types are given in Annex ZD.		N/A
10	**Modification to Bibliography**		N/A

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	Add the following notes for the standards indicated: IEC 60130-9 NOTE Harmonized as EN 60130-9. IEC 60269-2 NOTE Harmonized as HD 60269-2. IEC 60309-1 NOTE Harmonized as EN 60309-1. IEC 60364 NOTE some parts harmonized in HD 384/HD 60364 series. IEC 60601-2-4 NOTE Harmonized as EN 60601-2-4. IEC 60664-5 NOTE Harmonized as EN 60664-5. IEC 61032:1997 NOTE Harmonized as EN 61032:1998 (not modified). IEC 61508-1 NOTE Harmonized as EN 61508-1. IEC 61558-2-1 NOTE Harmonized as EN 61558-2-1. IEC 61558-2-4 NOTE Harmonized as EN 61558-2-4. IEC 61558-2-6 NOTE Harmonized as EN 61558-2-6. IEC 61643-1 NOTE Harmonized as EN 61643-1. IEC 61643-21 NOTE Harmonized as EN 61643-21. IEC 61643-311 NOTE Harmonized as EN 61643-311. IEC 61643-321 NOTE Harmonized as EN 61643-321. IEC 61643-331 NOTE Harmonized as EN 61643-331.		N/A
11	**ADDITION OF ANNEXES**		N/A
ZB	**ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)**		N/A
4.1.15	**Denmark, Finland, Norway** and **Sweden** To the end of the subclause the following is added: **Class I pluggable equipment type A** intended for connection to other equipment or a network shall, if safety relies on connection to reliable earthing or if surge suppressors are connected between the network terminals and **accessible** parts, have a marking stating that the equipment shall be connected to an earthed **mains** socket-outlet. The marking text in the applicable countries shall be as follows: In **Denmark**: “Apparatets stikprop skal tilsluttes en stikkontakt med jord som giver forbindelse til stikproppens jord.” In **Finland**: "Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan" In **Norway**: “Apparatet må tilkoples jordet stikkontakt” In **Sweden**: “Apparaten skall anslutas till jordat uttag”	Not class 1 pluggable equipment type A	N/A
4.7.3	**United Kingdom** To the end of the subclause the following is added: The torque test is performed using a socket-outlet complying with BS 1363, and the plug part shall be assessed to the relevant clauses of BS 1363. Also see Annex G.4.2 of this annex	No socket-outlet provided	N/A

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
5.2.2.2	**Denmark** After the 2nd paragraph add the following: A warning (marking safeguard) for high touch current is required if the touch current exceeds the limits of 3,5 mA a.c. or 10 mA d.c.	No such warning required	N/A
5.4.11.1 and Annex G	**Finland and Sweden** To the end of the subclause the following is added: For separation of the telecommunication network from earth the following is applicable: If this insulation is solid, including insulation forming part of a component, it shall at least consist of either • two layers of thin sheet material, each of which shall pass the electric strength test below, or • one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below. If this insulation forms part of a semiconductor component (e.g. an optocoupler), there is no distance through insulation requirement for the insulation consisting of an insulating compound completely filling the casing, so that clearances and creepage distances do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition • passes the tests and inspection criteria of 5.4.8 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 5.4.9 shall be performed using 1,5 kV), and • is subject to routine testing for electric strength during manufacturing, using a test voltage of 1,5 kV. It is permitted to bridge this insulation with a capacitor complying with EN 60384-14:2005, subclass Y2. A capacitor classified Y3 according to EN 60384-14:2005, may bridge this insulation under the following conditions: • the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 60384-14, which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in 5.4.11;		N/A

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	• the additional testing shall be performed on all the test specimens as described in EN 60384-14; the impulse test of 2,5 kV is to be performed before the endurance test in EN 60384-14, in the sequence of tests as described in EN 60384-14.		
5.5.2.1	**Norway** After the 3rd paragraph the following is added: Due to the IT power system used, capacitors are required to be rated for the applicable line-to-line voltage (230 V).	No capacitors used	N/A
5.5.6	**Finland, Norway** and **Sweden** To the end of the subclause the following is added: Resistors used as **basic safeguard** or bridging **basic insulation** in **class I pluggable equipment type A** shall comply with G.10.1 and the test of G.10.2.	Not class I pluggable equipment type A	N/A
5.6.1	**Denmark** **Add** to the end of the subclause Due to many existing installations where the socket-outlets can be protected with fuses with higher rating than the rating of the socket-outlets the protection for pluggable equipment type A shall be an integral part of the equipment. *Justification:* In Denmark an existing 13 A socket outlet can be protected by a 20 A fuse.	No socket-outlets provided	N/A
5.6.4.2.1	**Ireland and United Kingdom** After the indent for **pluggable equipment type A**, the following is added: – the **protective current rating** is taken to be 13 A, this being the largest rating of fuse used in the **mains** plug.	Not a pluggable equipment type A	N/A
5.6.4.2.1	**France** After the indent for **pluggable equipment type A**, the following is added: – in certain cases, the **protective current rating** of the circuit supplied from the mains is taken as 20 A instead of 16 A.	Same as above	N/A
5.6.5.1	To the second paragraph the following is added: The range of conductor sizes of flexible cords to be accepted by terminals for equipment with a rated current over 10 A and up to and including 13 A is: 1,25 mm^2 to 1,5 mm^2 in cross-sectional area.		N/A

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
5.6.8	**Norway** To the end of the subclause the following is added: Equipment connected with an earthed mains plug is classified as **class I equipment**. See the Norway marking requirement in 4.1.15. The symbol IEC 60417-6092, as specified in F.3.6.2, is accepted.		N/A
5.7.6	**Denmark** To the end of the subclause the following is added: The installation instruction shall be affixed to the equipment if the **protective conductor current** exceeds the limits of 3,5 mA a.c. or 10 mA d.c.		N/A
5.7.6.2	**Denmark** To the end of the subclause the following is added: The warning (marking safeguard) for high touch current is required if the touch current or the protective current exceed the limits of 3,5 mA .		N/A
5.7.7.1	**Norway and Sweden** To the end of the subclause the following is added: The screen of the television distribution system is normally not earthed at the entrance of the building and there is normally no equipotential bonding system within the building. Therefore the protective earthing of the building installation needs to be isolated from the screen of a cable distribution system. It is however accepted to provide the insulation external to the equipment by an adapter or an interconnection cable with galvanic isolator, which may be provided by a retailer, for example. The user manual shall then have the following or similar information in Norwegian and Swedish language respectively, depending on in what country the equipment is intended to be used in: “Apparatus connected to the protective earthing of the building installation through the mains connection or through other apparatus with a connection to protective earthing – and to a television distribution system using coaxial cable, may in some circumstances create a fire hazard. Connection to a television distribution system therefore has to be provided through a device providing electrical isolation below a certain frequency range (galvanic isolator, see EN 60728-11)” NOTE In Norway, due to regulation for CATV-installations, and in Sweden, a galvanic isolator shall provide electrical insulation below 5 MHz. The insulation shall withstand a dielectric strength of 1,5 kV r.m.s., 50 Hz or 60 Hz, for 1 min.	Not applicable	N/A

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	Translation to Norwegian (the Swedish text will also be accepted in Norway): “Apparater som er koplet til beskyttelsesjord via nettplugg og/eller via annet jordtilkoplet utstyr – og er tilkoplet et koaksialbasert kabel-TV nett, kan forårsake brannfare. For å unngå dette skal det ved tilkopling av apparater til kabel-TV nett installeres en galvanisk isolator mellom apparatet og kabel-TV nettet.” Translation to Swedish: ”Apparater som är kopplad till skyddsjord via jordat vägguttag och/eller via annan utrustning och samtidigt är kopplad till kabel-TV nät kan i vissa fall medföra risk för brand. För att undvika detta skall vid anslutning av apparaten till kabel-TV nät galvanisk isolator finnas mellan apparaten och kabel-TV nätet.”.		
8.5.4.2.3	**United Kingdom** Add the following after the 2nd dash bullet in 3rd paragraph: An emergency stop system complying with the requirements of IEC 60204-1 and ISO 13850 is required where there is a risk of personal injury.	No emergency stop system provided	N/A
B.3.1 and B.4	**Ireland and United Kingdom** The following is applicable: To protect against excessive currents and short-circuits in the primary circuit of **direct plug-in equipment**, tests according to Annexes B.3.1 and B.4 shall be conducted using an external miniature circuit breaker complying with EN 60898-1, Type B, rated 32A. If the equipment does not pass these tests, suitable protective devices shall be included as an integral part of the **direct plug-in equipment**, until the requirements of Annexes B.3.1 and B.4 are met	Not a direct plug-in equipment	N/A
G.4.2	**Denmark** To the end of the subclause the following is added: Supply cords of single phase appliances having a rated current not exceeding 13 A shall be provided with a plug according to DS 60884-2-D1:2011. CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a.	Not a class I equipment	N/A

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	If a single-phase equipment having a RATED CURRENT exceeding 13 A or if a polyphase equipment is provided with a supply cord with a plug, this plug shall be in accordance with the standard sheets DK 6-1a in DS 60884-2-D1 or EN 60309-2. Mains socket outlets intended for providing power to Class II apparatus with a rated current of 2,5 A shall be in accordance DS 60884-2-D1:2011 standard sheet DKA 1-4a. Other current rating socket outlets shall be in compliance with Standard Sheet DKA 1-3a or DKA 1-1c. Mains socket-outlets with earth shall be in compliance with DS 60884-2-D1:2011 Standard Sheet DK 1-3a, DK 1-1c, DK1-1d, DK 1-5a or DK 1-7a *Justification:* Heavy Current Regulations, Section 6c		
G.4.2	**United Kingdom** To the end of the subclause the following is added: The plug part of direct plug-in equipment shall be assessed to BS 1363: Part 1, 12.1, 12.2, 12.3, 12.9, 12.11, 12.12, 12.13, 12.16, and 12.17, except that the test of 12.17 is performed at not less than 125 °C. Where the metal earth pin is replaced by an Insulated Shutter Opening Device (ISOD), the requirements of clauses 22.2 and 23 also apply.	Not a direct plug-in equipment	N/A
G.7.1	**United Kingdom** To the first paragraph the following is added: Equipment which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord shall be fitted with a 'standard plug' in accordance with the Plugs and Sockets etc. (Safety) Regulations 1994, Statutory Instrument 1994 No. 1768, unless exempted by those regulations. NOTE "Standard plug" is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.	Not a mains socket	N/A

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
G.7.1	**Ireland** To the first paragraph the following is added: Apparatus which is fitted with a flexible cable or cord shall be provided with a plug in accordance with Statutory Instrument 525: 1997, "13 A Plugs and Conversion Adapters for Domestic Use Regulations: 1997. S.I. 525 provides for the recognition of a standard of another Member State which is equivalent to the relevant Irish Standard		N/A
G.7.2	**Ireland and United Kingdom** To the first paragraph the following is added: A power supply cord with a conductor of 1,25 mm^2 is allowed for equipment which is rated over 10 A and up to and including 13 A.		N/A
ZC	**ANNEX ZC, NATIONAL DEVIATIONS (EN)**		N/A
10.5.2	**Germany** The following requirement applies: For the operation of any cathode ray tube intended for the display of visual images operating at an acceleration voltage exceeding 40 kV, authorization is required, or application of type approval (Bauartzulassung) and marking. *Justification*: German ministerial decree against ionizing radiation (Röntgenverordnung), in force since 2002-07-01, implementing the European Directive 96/29/EURATOM. **NOTE** Contact address: Physikalisch-Technische Bundesanstalt, Bundesallee 100, D-38116 Braunschweig, Tel.: Int+49-531-592-6320, Internet: http://www.ptb.de		N/A
ZD	**IEC and CENELEC CODE DESIGNATIONS FOR FLEXIBLE CORDS (EN)**		N/A

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
			N/A

Type of flexible cord	Code designations	
	IEC	CENELEC
PVC insulated cords		
Flat twin tinsel cord	60227 IEC 41	H03VH-Y
Light polyvinyl chloride sheathed flexible cord	60227 IEC 52	H03VV-F H03VVH2-F
Ordinary polyvinyl chloride sheathed flexible cord	60227 IEC 53	H05VV-F H05VVH2-F
Rubber insulated cords		
Braided cord	60245 IEC 51	H03RT-F
Ordinary tough rubber sheathed flexible cord	60245 IEC 53	H05RR-F
Ordinary polychloroprene sheathed flexible cord	60245 IEC 57	H05RN-F
Heavy polychloroprene sheathed flexible cord	60245 IEC 66	H07RN-F
Cords having high flexibility		
Rubber insulated and sheathed cord	60245 IEC 86	H03RR-H
Rubber insulated, crosslinked PVC sheathed cord	60245 IEC 87	H03RV4-H
Crosslinked PVC insulated and sheathed cord	60245 IEC 88	H03V4V4-H
Cords insulated and sheathed with halogen-free thermoplastic compounds		
Light halogen-free thermoplastic insulated and sheathed flexible cords		H03Z1Z1-F H03Z1Z1H2-F
Ordinary halogen-free thermoplastic insulated and sheathed flexible cords		H05Z1Z1-F H05Z1Z1H2-F

Attachment 2: EUT Photos

Figure 1: Top of EUT

Figure 2: Bottom of EUT

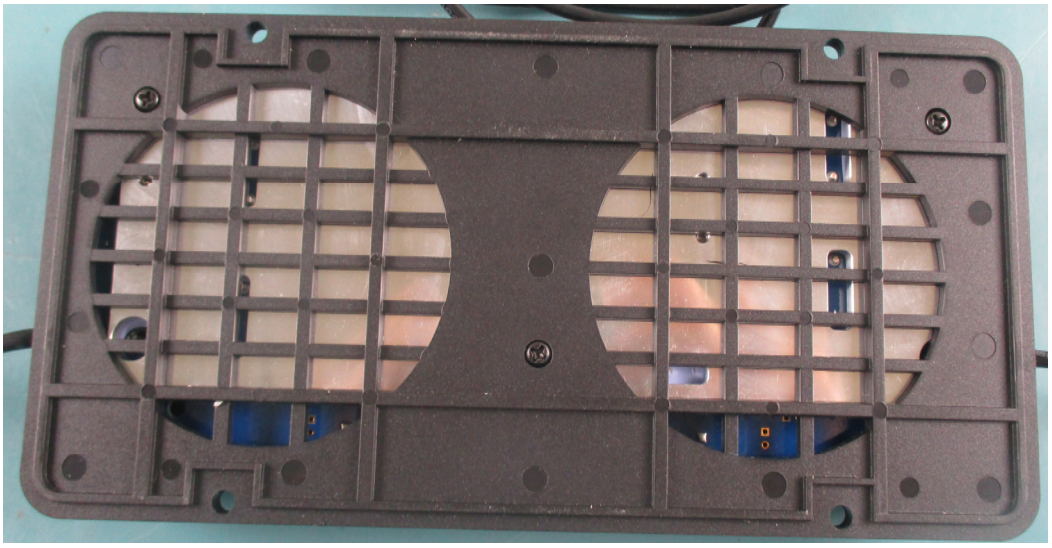


Figure 3: Internal of EUT

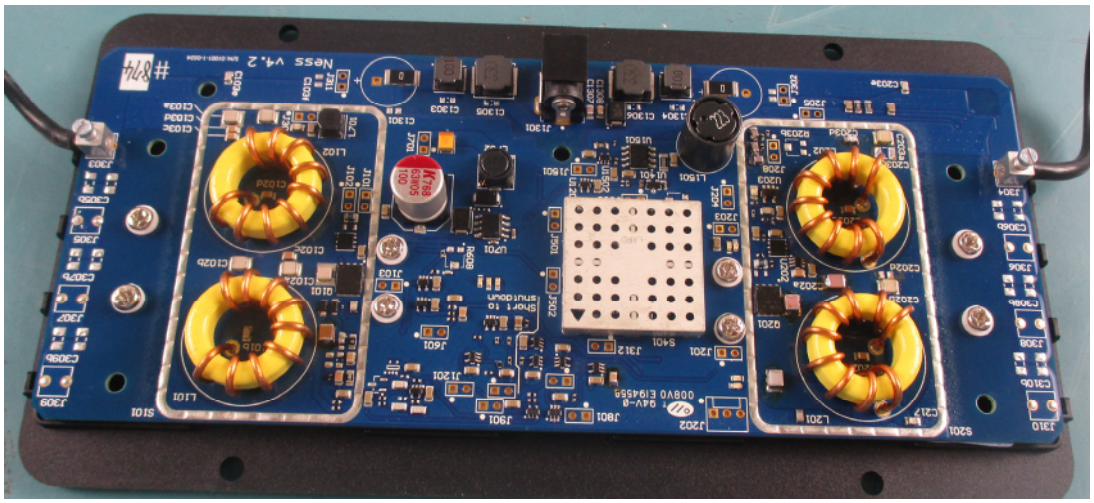
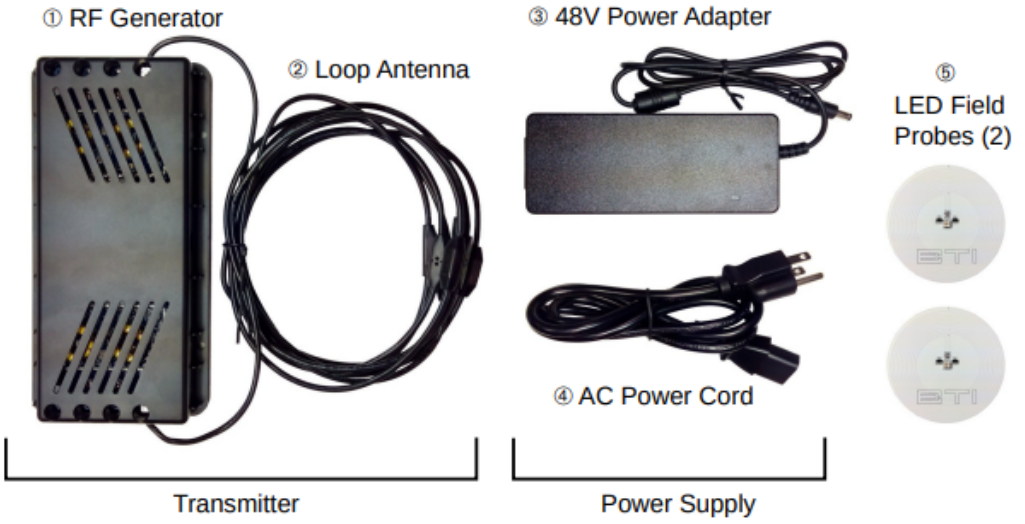


Figure 4: Power Supply Provided with EUT

Attachment 3: User Manual Partial

Evaluation Kit Contents

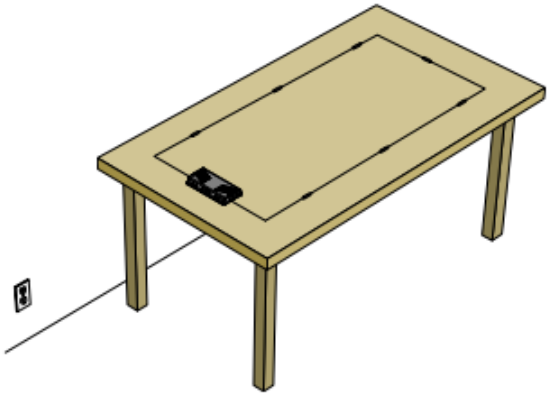


Item #	Item Name	Qty.	Description
1	RF Generator	1	48VDC input. 6.78MHz, 4.3A constant current RF output.
2	Loop Antenna	1	Resonant Magnetic Loop Antenna. 333cm total length.
3	48V power adapter	1	120/240VAC, 50/60Hz input. 48VDC, 2.2A output. 2.5mm barrel.
4	AC power cord	1	North American three prong AC power cord.
5	LED Field Probes	2	Wireless LED for testing system and probing power zone.

Getting Started

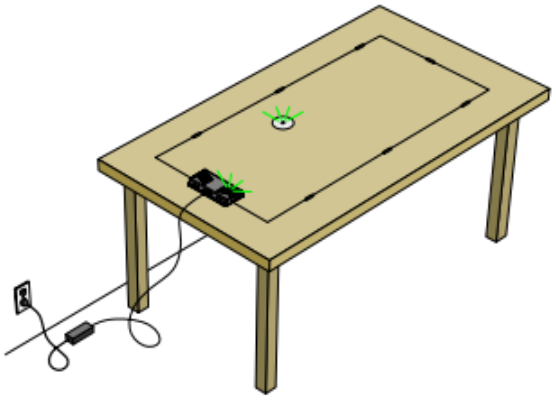
Step 1:

Place the transmitter on a non-metallic table. (Check under the table to ensure the table edge does not have a metal frame.) Arrange the wire loop neatly into a rectangular shape. Ensure the wire lies flat and is not tangled.



Step 2:

Plug the power supply into an AC outlet and connect the power cable to the transmitter. The Status Light inside the RF Generator should glow continuous green. (See pg. 12, Fig. 16.) If not, or if the Status Light glows red see Troubleshooting (pg. 12). Place a Field Probe on the table inside the Loop Antenna. The LED on the Field Probe should glow continuously. If the Field Probe LED doesn't light, or if it flashes, see Troubleshooting (pg. 12).



Contact Information

Mailing Address

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contact@etherdyne.net

Discord

https://discord.gg/f2UGU4Vzkt

LinkedIn

https://www.linkedin.com/company/etherdyne

YouTube

https://www.youtube.com/@wirefree-power

References

1: R. A. Moffatt and G. Popović, Load-Independent ZVS Class-E Inverters and Active Rectifiers Using Möbius Transform Filters, 2025 IEEE Wireless Power Technology Conference and Expo (WPTCE), 2025, doi: 10.1109/WPTCE62521.2025.11062138
2: R. A. Moffatt, T. Howarth, C. Gafner, J. J. Yen, F. -K. Chen and J. Yu, A Distributed, Phase-locked, Class-E, RF Generator with Automatic Zero-Voltage Switching, IEEE Wireless Power Transfer Conference (WPTC), 2019, doi: 10.1109/WPTC45513.2019.9055602
3: R. A. Moffatt, Continuously Variable Active Reactance, 2020 IEEE Wireless Power Transfer Conference (WPTC), 2020, doi: 10.1109/WPTC48563.2020.9295561
4: R. A. Moffatt and G. Popovic, A Modular Wireless Power Source Consisting of Injection-Locked RF Generators, 2023 IEEE Wireless Power Technology Conference and Expo (WPTCE), 2023, doi: 10.1109/WPTCE56855.2023.10216192
5: R. A. Moffatt, Geometric Quantities Characterizing Wireless Power Transfer Between a Resonator and Resonant Dipoles, IEEE Wireless Power Transfer Conference (WPTC), 2019, doi: 10.1109/WPTC45513.2019.9055581

Patents

For a list of ETI's patents, please visit: https://www.etherdyne.net/patents.

--- END OF REPORT ---