Test Report issued under the responsibility of:

EKTOS

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

Report Number ..... :	**P18-0060-1**
Date of issue ..... :	2018-11-21
Total number of pages ..... :	69
Applicant's name ..... :	**Airtame ApS**
Address ..... :	Kuglegårdsvej 1 1434 Copenhagen K Denmark Att: Kendra Bannister
Test specification:	
Standard..... :	IEC 62368-1:2014 (Second Edition)
Test procedure ..... :	
Non-standard test method ..... :	N/A
Test Report Form No. ..... :	IEC62368_1B
Test Report Form(s) Originator..... :	UL(US)
Master TRF ..... :	2014-03

This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

General disclaimer:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing CB Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

Test Item description ..... :		PoE enabled USB to Ethernet adaptor	
Trade Mark ..... :		Airtame	
Manufacturer ..... :		Airtame ApS	
Model/Type reference ..... :		AT-PoE	
Ratings ..... :		48V (36-57V) supply, output of 5V 2A	
Testing procedure and testing location:			
☒	Testing Laboratory:	EKTOS TRS A/S	
Testing location/ address .....:		A C. Meyers Vaenge 15 2450 Copenhagen SV Denmark	
☐	Associated Testing Laboratory:		
Testing location/ address .....:			
Tested by (name + signature) .....:		Rasmus Skjær	
Approved by (name + signature).....:		Kennet Palm	
☐	Testing procedure: Elsewhere		
Testing location/ address ..... :			
Tested by (name + signature) .....:			
Approved by (name + signature).....:			

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

Summary of testing: The test specimens comply with all relevant parts of the test specification.

Tests performed (name of test and test clause):	**Testing location:**
4.4.4.7 Thermoplastic material tests 5.2 Classification and limits of electrical energy sources 5.3 Protection against electrical energy sources 6.2 Classification of power sources (PS) and potential ignition sources (PIS) 6.3 Safeguards against fire under normal operating and abnormal operating conditions 9.2 Thermal energy source classifications B.2 Normal Operating Conditions F.3.9 Durability, legibility and permanence of marking Q.1 Limited power sources R Limited Short circuit test T.2 Steady force test, 10 N T.3 Steady force test, 30 N T.4 Steady force test, 100 N T.5 Steady force test, 250 N T.6 Impact test (ball drop) T.8 Stress relief test	**EKTOS TRS A/S** **A. C. Meyers Vaenge 15** **2450Copenhagen SV** **Denmark**

Summary of compliance with National Differences:

List of countries addressed

☒ **The product fulfils the requirements of EN62368-1:2014**

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 Certification Bodies that own these marks.

TEST ITEM PARTICULARS:	
Classification of use by ..... :	☒ Ordinary person ☐ Instructed person ☐ Skilled person ☐ Children likely to be present
Supply Connection ..... :	☐ AC Mains ☐ DC Mains ☒ External Circuit - not Mains connected - ☒ ES1 ☐ ES2 ☐ ES3
Supply % Tolerance ..... :	☐ +10%/-10% ☐ +20%/-15% ☒ +20%/ -20% ☐ None *See Electrically-caused fire (Clause 6), for details*
Supply Connection – Type ..... :	☐ pluggable equipment type A - ☐ non-detachable supply cord ☐ appliance coupler ☐ direct plug-in ☒ mating connector ☐ pluggable equipment type B - ☐ non-detachable supply cord ☐ appliance coupler ☐ permanent connection ☐ mating connector ☐ other:_____
Considered current rating of protective device as part of building or equipment installation ..... :	0.26 A; Installation location: ☒ building; ☒ equipment
Equipment mobility ..... :	☒ movable ☐ hand-held ☒ transportable ☐ stationary ☐ for building-in ☐ direct plug-in ☐ rack-mounting ☐ wall-mounted
Over voltage category (OVC) ..... :	☒ OVC I ☐ OVC II ☐ OVC III ☐ OVC IV ☐ other: _____
Class of equipment ..... :	☐ Class I ☐ Class II ☒ Class III
Access location ..... :	☐ restricted access location ☒ N/A
Pollution degree (PD) ..... :	☐ PD 1 ☒ PD 2 ☐ PD 3
Manufacturer's specified maxium operating ambient :	35°C
IP protection class ..... :	☐ IPX0 ☒ IP20___ NO IP rating_
Power Systems ..... :	☐ TN ☐ TT ☒ IT - 36-57 V DC
Altitude during operation (m) ..... :	☒ 2000 m or less ☐ ___3000 m
Altitude of test laboratory (m) ..... :	☒ 2000 m or less ☐ _____ m
Mass of equipment (kg) ..... :	☒ 61 gram
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)

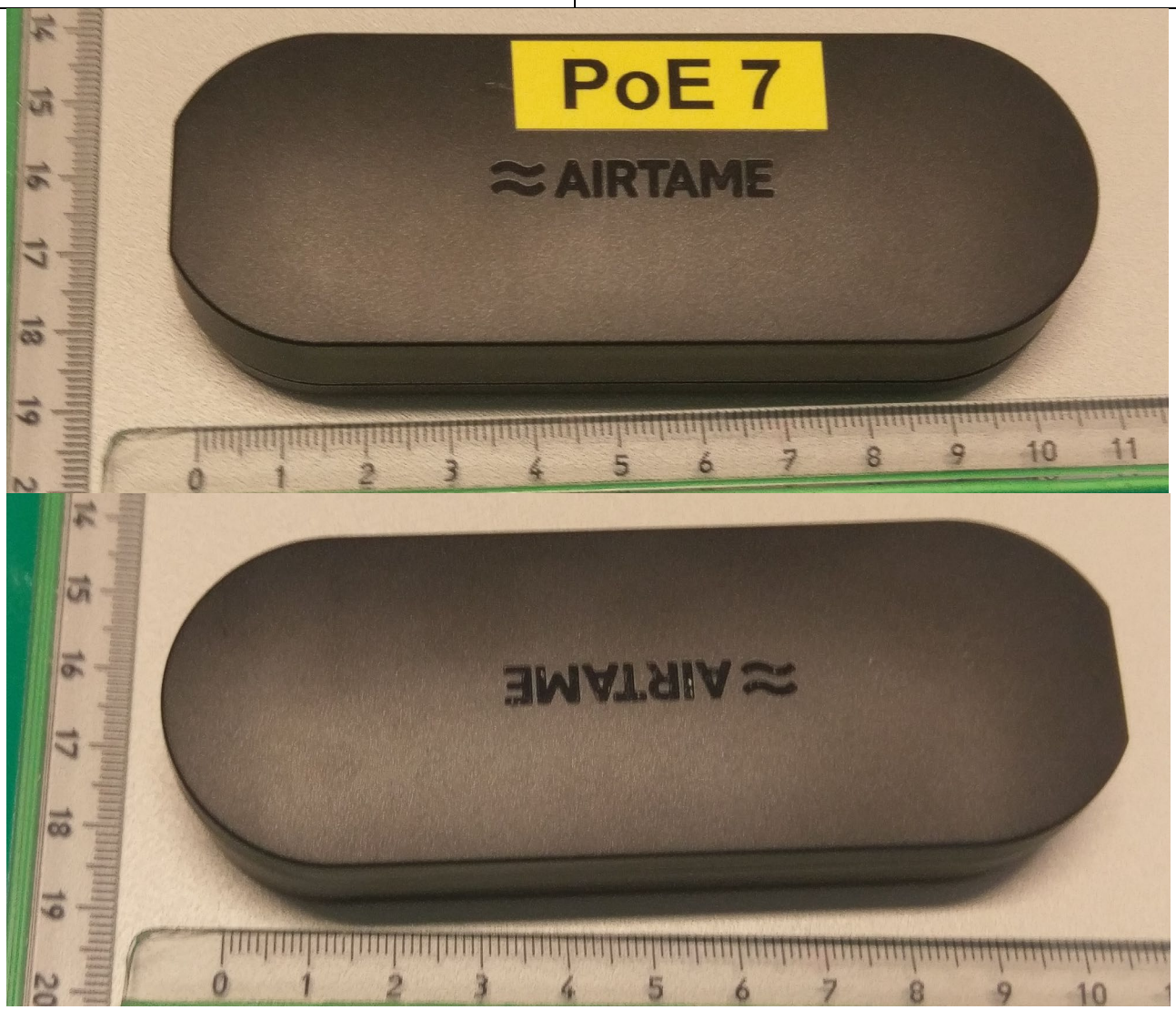


Photo 1: EUT Top side (Upper photo), EUT Bottom side (lower photo).

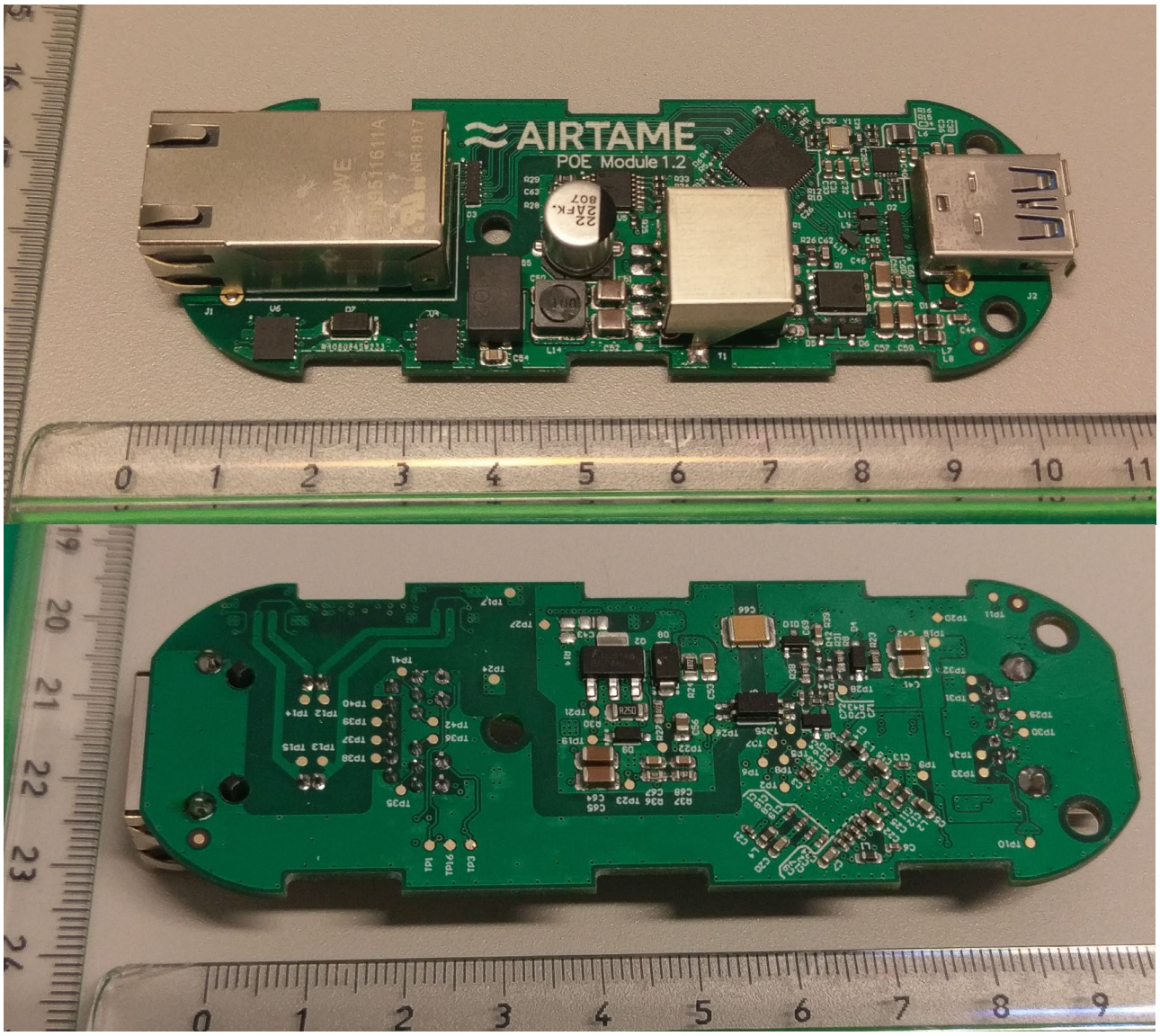


Photo 2: EUT PCB, top side (upper photo), PCB bottom side (lower photo)

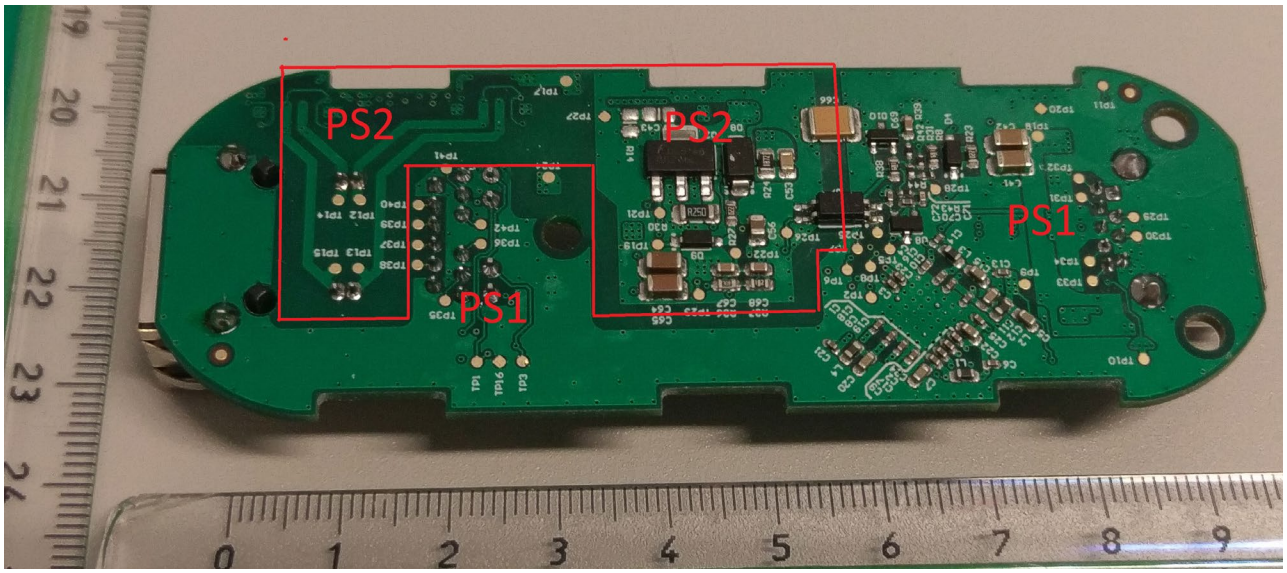


Photo 3: PS1 and PS2 area of the PCB

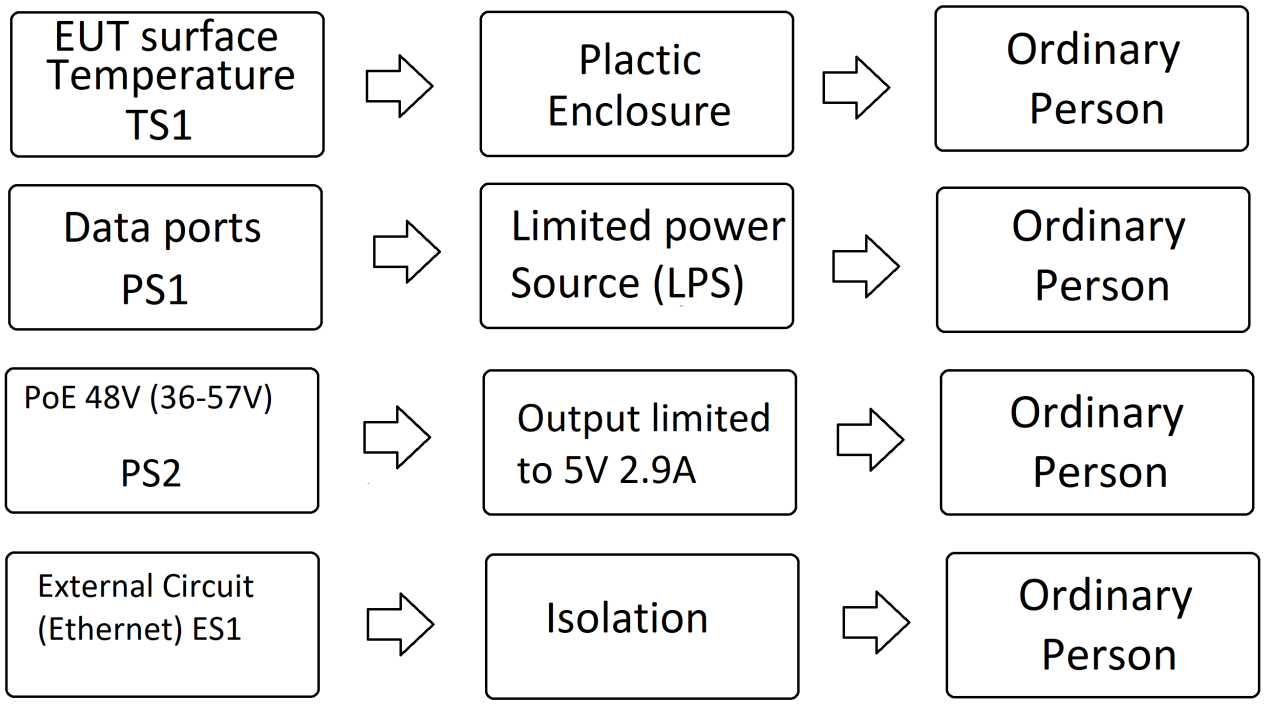
ENERGY SOURCE IDENTIFICATION AND CLASSIFICATION TABLE:	
(Note 1: Identify the following six (6) energy source forms based on the origin of the energy.) (Note 2: The identified classification e.g., ES2, TS1, should be with respect to its ability to cause pain or injury on the body or its ability to ignite a combustible material. Any energy source can be declared Class 3 as a worse case classification e.g. PS3, ES3.	
Electrically-caused injury (Clause 5): (Note: Identify type of source, list sub-assembly or circuit designation and corresponding energy source classification) Example: +5 V dc input ES1	
Source of electrical energy	**Corresponding classification (ES)**
48V (36-57) DC from External circuit (ethernet PoE)	ES1
Electrically-caused fire (Clause 6): (Note: List sub-assembly or circuit designation and corresponding energy source classification) Example: Battery pack (maximum 85 watts): PS2 The EUT consists of two power "Zones", the power input section is rated as PS1 and PS2 depending on the building (PoE power supply) capability, *see chart below.* *See Photo 3* The EUT power output section is rated to PS1. *See Photo 3*	
Source of power or PIS	**Corresponding classification (PS)**
Power from PoE ethernet, 36-57V, 802.3af (PoE) 12.95W	PS1
Power from PoE ethernet, 50-57V, 802.3at (PoE+) 25.5W	PS2
Power from PoE ethernet, 50-57V, 802.3at (4PPoE) 51W	PS2
Power from PoE ethernet, 50-57V 802.3bt Type4 71W	PS2
Injury caused by hazardous substances (Clause 7) (Note: Specify hazardous chemicals, whether produces ozone or other chemical construction not addressed as part of the component evaluation.) Example: Liquid in filled component Glycol	
Source of hazardous substances	**Corresponding chemical**
NA	NA
Mechanically-caused injury (Clause 8) (Note: List moving part(s), fan, special installations, etc. & corresponding MS classification based on Table 35.) Example: Wall mount unit MS2	
Source of kinetic/mechanical energy	**Corresponding classification (MS)**
EUT contains no movable parts, EUT weight =61 gram	MS1
Thermal burn injury (Clause 9) (Note: Identify the surface or support, and corresponding energy source classification based on type of part, location, operating temperature and contact time in Table 38.) Example: Hand-held scanner – thermoplastic enclosure TS1	
Source of thermal energy	**Corresponding classification (TS)**

ENERGY SOURCE IDENTIFICATION AND CLASSIFICATION TABLE:	
Enclosure	TS1
Radiation (Clause 10) (Note: List the types of radiation present in the product and the corresponding energy source classification.) Example: DVD – Class 1 Laser Product RS1	
Type of radiation	**Corresponding classification (RS)**
EUT contains a low power indicator led	RS1

ENERGY SOURCE IDENTIFICATION AND CLASSIFICATION TABLE:	
(Note 1: Identify the following six (6) energy source forms based on the origin of the energy.) (Note 2: The identified classification e.g., ES2, TS1, should be with respect to its ability to cause pain or injury on the body or its ability to ignite a combustible material. Any energy source can be declared Class 3 as a worse case classification e.g. PS3, ES3.	
Electrically-caused injury (Clause 5): (Note: Identify type of source, list sub-assembly or circuit designation and corresponding energy source classification) Example: +5 V dc input ES1	
Source of electrical energy	**Corresponding classification (ES)**
RJ45 PoE(36-57V), or PoE+ (50-57V DC)	ES1
Electrically-caused fire (Clause 6): (Note: List sub-assembly or circuit designation and corresponding energy source classification) Example: Battery pack (maximum 85 watts): PS2	
Source of power or PIS	**Corresponding classification (PS)**
RJ45 PoE+ input (36-57V DC)	PS2
Injury caused by hazardous substances (Clause 7) (Note: Specify hazardous chemicals, whether produces ozone or other chemical construction not addressed as part of the component evaluation.) Example: Liquid in filled component Glycol	
Source of hazardous substances	**Corresponding chemical**
NA	NA
Mechanically-caused injury (Clause 8) (Note: List moving part(s), fan, special installations, etc. & corresponding MS classification based on Table 35.) Example: Wall mount unit MS2	
Source of kinetic/mechanical energy	**Corresponding classification (MS)**
EUT contains no movable parts	MS1

ENERGY SOURCE IDENTIFICATION AND CLASSIFICATION TABLE:	
Thermal burn injury (Clause 9) (Note: Identify the surface or support, and corresponding energy source classification based on type of part, location, operating temperature and contact time in Table 38.) Example: Hand-held scanner – thermoplastic enclosure TS1	
Source of thermal energy	**Corresponding classification (TS)**
Max temperature on enclosure surface is 40.1°C **EUT enclosure is made of plastic**	**TS1**
Radiation (Clause 10) (Note: List the types of radiation present in the product and the corresponding energy source classification.) Example: DVD – Class 1 Laser Product RS1	
Type of radiation	**Corresponding classification (RS)**
EUT contains no parts emitting radiation	RS1

ENERGY SOURCE DIAGRAM
Indicate which energy sources are included in the energy source diagram. Insert diagram below
X ES X PS ☐MS X TS ☐ RS



OVERVIEW OF EMPLOYED SAFEGUARDS				
Clause	**Possible Hazard**			
5.1	Electrically-caused injury			
Body Part (e.g. Ordinary)	Energy Source (ES3: Primary Filter circuit)	Safeguards		
		Basic	Supplementary	Reinforced (Enclosure)
Ordinary	ES1:RJ45 PoE power inlet	Enclosure	Isolation transformer	Non conductive enclosure
6.1	Electrically-caused fire			
Material part (e.g. mouse enclosure)	Energy Source (PS2: 100 Watt circuit)	Safeguards		
		Basic	Supplementary	Reinforced
EUT enclosure	PS2, 71W See Photo 3	All comp. approved for the application	14.5W power limited output	Enclosure UL94-V5VB flammability rated
7.1	Injury caused by hazardous substances			
Body Part (e.g., skilled)	Energy Source (hazardous material)	Safeguards		
		Basic	Supplementary	Reinforced
NA	NA			
8.1	Mechanically-caused injury			
Body Part (e.g. Ordinary)	Energy Source (MS3:High Pressure Lamp)	Safeguards		
		Basic	Supplementary	Reinforced (Enclosure)
NA	NA			Round enclosure
9.1	Thermal Burn			
Body Part (e.g., Ordinary)	Energy Source (TS2)	Safeguards		
		Basic	Supplementary	Reinforced
Enclosure surface	TS1	Enclosure	Output current limited	
10.1	Radiation			
Body Part (e.g., Ordinary)	Energy Source (Output from audio port)	Safeguards		
		Basic	Supplementary	Reinforced
NA	NA			
Supplementary Information: (1) See attached energy source diagram for additional details. (2) “N” – Normal Condition; “A” – Abnormal Condition; “S” Single Fault				

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

4	**GENERAL REQUIREMENTS**		PASS
4.1.1	Acceptance of materials, components and subassemblies	Approved	PASS
4.1.2	Use of components	All components rated for the application	PASS
4.1.3	Equipment design and construction	Approved	PASS
4.1.15	Markings and instructions.....:	(See Annex F)	PASS
4.4.4	Safeguard robustness	See 4.4.4.4 Impact test	PASS
4.4.4.2	Steady force tests.....:	(See Annex T.4, T.5)	PASS
4.4.4.3	Drop tests .....:	(See Annex T.7) EUT is not handheld	NA
4.4.4.4	Impact tests .....:	(See Annex T.6)	PASS
4.4.4.5	Internal accessible safeguard enclosure and barrier tests.....:	(See Annex T.3)	NA
4.4.4.6	Glass Impact tests .....:	(See Annex T.9, Annex U) EUT Contains no glass	NA
4.4.4.74	Thermoplastic material tests.....:	(See Annex T.8)	PASS
4.4.4.8	Air comprising a safeguard.....:	(See Annex T)	NA
4.4.4.9	Accessibility and safeguard effectiveness		PASS
4.5	Explosion	EUT contains no chemicals, no liquids, or gas.	NA
4.6	Fixing of conductors	EUT contains no wires.	NA
4.6.1	Fix conductors not to defeat a safeguard	EUT contains no wires	NA
4.6.2	10 N force test applied to .....:	EUT contains no wires	NA
4.7	Equipment for direct insertion into mains socket - outlets	EUT has no means for direct connection to mains	NA
4.7.2	Mains plug part complies with the relevant standard.....:	EUT has no means for direct connection to mains	NA
4.7.3	Torque (Nm) .....:	EUT has no means for direct connection to mains	NA
4.8	Products containing coin/button cell batteries	EUT contains no coin/button cell battery	NA
4.8.2	Instructional safeguard	No safeguard used, or needed	NA
4.8.3	Battery Compartment Construction	EUT contains no battery	NA
	Means to reduce the possibility of children removing the battery.....:	See 4.8.3	—
4.8.4	Battery Compartment Mechanical Tests .....:	(See Table 4.8.4) See 4.8.3	NA
4.8.5	Battery Accessibility	See 4.8.3	NA
4.9	Likelihood of fire or shock due to entry of	(See Annex P)	NA

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	conductive object.....:	No risk of fire or shock due to entry of a conductive object, since the EUT has no openings.	

5	ELECTRICALLY-CAUSED INJURY		PASS
5.2.1	Electrical energy source classifications.....:	(See appended table 5.2)	NA
5.2.2	ES1, ES2 and ES3 limits	EUT rated as ES1 EUT is Class III, no means for connection to protective earth. EUT enclosure is made of non conductive thermo plastic.	NA
5.2.2.2	Steady-state voltage and current.....:	See appended table 5.2) See 5.2.2	NA
5.2.2.3	Capacitance limits .....:	(See appended table 5.2) See 5.2.2	NA
5.2.2.4	Single pulse limits .....:	(See appended table 5.2) See 5.2.2	NA
5.2.2.5	Limits for repetitive pulses .....:	(See appended table 5.2) See 5.2.2	NA
5.2.2.6	Ringing signals .....:	(See Annex H) EUT has no means for connection to PSTN telephone systems	NA
5.2.2.7	Audio signals .....:	(See Clause E.1) EUT has no means for connection to Audio systems	NA
5.3	Protection against electrical energy sources	EUT rated as ES1	NA
5.3.1	General Requirements for accessible parts to ordinary, instructed and skilled persons	EUT has no connection to ES3	NA
5.3.2.1	Accessibility to electrical energy sources and safeguards	EUT has no parts exposed to ES2, or ES3	NA
5.3.2.2	Contact requirements	EUT rated as ES1	NA
	a) Test with test probe from Annex V.....:		NA
	b) Electric strength test potential (V) .....:		NA
	c) Air gap (mm) .....:		NA
5.3.2.4	Terminals for connecting stripped wire	EUT contains no such terminal type	NA
5.4	Insulation materials and requirements		PASS
5.4.1.2	Properties of insulating material	All insulation material approved for the application	PASS
5.4.1.3	Humidity conditioning .....:	(See sub-clause 5.4.8) EUT contains no hygroscopic materials	NA
5.4.1.4	Maximum operating temperature for insulating materials .....:	(See appended table 5.4.1.4)	NA

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.1.5	Pollution degree ..... :	Pollution degree 2 assumed	—
5.4.1.5.2	Test for pollution degree 1 environment and for an insulating compound	See 5.4.1.5	NA
5.4.1.5.3	Thermal cycling	EUT rated as ES1	NA
5.4.1.6	Insulation in transformers with varying dimensions	EUT contains no such type of transformer	NA
5.4.1.7	Insulation in circuits generating starting pulses	EUT has no means for connection to such circuits	NA
5.4.1.8	Determination of working voltage	EUT rates as Class III, no connection to protective earth. EUT	NA
5.4.1.9	Insulating surfaces	EUT rated as ES1	NA
5.4.1.10	Thermoplastic parts on which conductive metallic parts are directly mounted	EUT rated as ES1	NA
5.4.1.10.2	Vicat softening temperature..... :	(See appended table 5.4.1.10.2) EUT rated as ES1	NA
5.4.1.10.3	Ball pressure ..... :	(See appended table 5.4.1.10.3) EUT rated as ES1	NA
5.4.2	Clearances	EUT rated as ES1	NA
5.4.2.2	Determining clearance using peak working voltage	(See appended table 5.4.2.2) EUT rated as ES1	NA
5.4.2.3	Determining clearance using required withstand voltage ..... :	(See appended table 5.4.2.3) EUT rated as ES1	NA
	a) a.c. mains transient voltage ..... :		—
	b) d.c. mains transient voltage ..... :		—
	c) external circuit transient voltage ..... :		—
	d) transient voltage determined by measurement ... :		—
5.4.2.4	Determining the adequacy of a clearance using an electric strength test	(See appended table 5.4.2.4) EUT rated as ES1	NA
5.4.2.5	Multiplication factors for clearances and test voltages ..... :	EUT rated as ES1	NA
5.4.3	Creepage distances ..... :	(See appended table 5.4.3) EUT rated as ES1	NA
5.4.3.1	General	EUT rated as ES1	NA
5.4.3.3	Material Group ..... :	EUT rated as ES1	—
5.4.4	Solid insulation	EUT rated as ES1	NA
5.4.4.2	Minimum distance through insulation ..... :	(See appended table 5.4.4.2) EUT rated as ES1	NA
5.4.4.3	Insulation compound forming solid insulation	EUT rated as ES1	NA
5.4.4.4	Solid insulation in semiconductor devices	EUT rated as ES1	NA

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.4.5	Cemented joints	EUT rated as ES1	NA
5.4.4.6	Thin sheet material	EUT rated as ES1	NA
5.4.4.6.1	General requirements	EUT rated as ES1	NA
5.4.4.6.2	Separable thin sheet material	EUT rated as ES1	NA
	Number of layers (pcs) ..... :	EUT rated as ES1	NA
5.4.4.6.3	Non-separable thin sheet material	EUT rated as ES1	NA
5.4.4.6.4	Standard test procedure for non-separable thin sheet material ..... :	(See appended Table 5.4.9) EUT contains no such material	NA
5.4.4.6.5	Mandrel test	See 5.4.4.6.4	NA
5.4.4.7	Solid insulation in wound components	All wounded components approved for the application	NA
5.4.4.9	Solid insulation at frequencies >30 kHz ..... :	(See appended Table 5.4.4.9) See 5.4.4.7	NA
5.4.5	Antenna terminal insulation	EUT contains no antenna terminal	NA
5.4.5.1	General	EUT rated as ES1	
5.4.5.2	Voltage surge test	EUT rated as ES1	NA
	Insulation resistance (MΩ)..... :	EUT rated as ES1	—
5.4.6	Insulation of internal wire as part of supplementary safeguard ..... :	(See appended table 5.4.4.2) EUT rated as ES1	NA
5.4.7	Tests for semiconductor components and for cemented joints	EUT rated as ES1	NA
5.4.8	Humidity conditioning	EUT rated as ES1	NA
	Relative humidity (%)..... :		—
	Temperature (°C) ..... :		—
	Duration (h) ..... :		—
5.4.9	Electric strength test ..... :	(See appended table 5.4.9) EUT tested for 1500V AC 50Hz for 60 Seconds, between Ethernet data wires, and GND See Photo 8	PASS
5.4.9.1	Test procedure for a solid insulation type test	EUT rated as ES1	NA
5.4.9.2	Test procedure for routine tests	EUT rated as ES1	NA
5.4.10	Protection against transient voltages between external circuit	EUT tested for 1500V AC 50Hz for 60 Seconds, between Ethernet data wires, and GND See Photo 8	PASS
5.4.10.1	Parts and circuits separated from external circuits	(See appended table 5.4.9) EUT rated as ES1	NA
5.4.10.2	Test methods	EUT rated as ES1	NA
5.4.10.2.1	General	EUT rated as ES1	NA

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.10.2.2	Impulse test .....:	(See appended table 5.4.9) EUT rated as ES1	NA
5.4.10.2.3	Steady-state test.....:	(See appended table 5.4.9) EUT rated as ES1	NA
5.4.11	Insulation between external circuits and earthed circuitry .....:	(See appended table 5.4.9) EUT rated as ES1	NA
5.4.11.1	Exceptions to separation between external circuits and earth	EUT rated as ES1	NA
5.4.11.2	Requirements	EUT rated as ES1	NA
	Rated operating voltage U_{op} (V).....:		—
	Nominal voltage U_{peak} (V).....:		—
	Max increase due to variation U_{sp} .....:		—
	Max increase due to ageing ΔU_{sa} .....:		—
	$U_{op} = U_{peak} + \Delta U_{sp} + \Delta U_{sa}$ .....:		—
5.5	Components as safeguards		
5.5.1	General	EUT rated as ES1 EUT is rated as Class III, no connection to protective earth.	NA
5.5.2	Capacitors and RC units	See 5.5.1	NA
5.5.2.1	General requirement	See 5.5.1	NA
5.5.2.2	Safeguards against capacitor discharge after disconnection of a connector.....:	(See appended table 5.5.2.2) See 5.5.1	NA
5.5.3	Transformers	EUT contains a PoE Ethernet isolation transformer.	PASS
5.5.4	Optocouplers	EUT contains a approved optocoupler.	PASS
5.5.5	Relays	(See Annex G.2) EUT contains no relay	NA
5.5.6	Resistors	(See Annex G.10) EUT contain no relay	NA
5.5.7	SPD's	(See Annex G.8) See 5.5.1	NA
5.5.7.1	Use of an SPD connected to reliable earthing	See 5.5.1	NA
5.5.7.2	Use of an SPD between mains and protective earth	See 5.5.1	NA
5.5.8	Insulation between the mains and external circuit consisting of a coaxial cable.....:	(See Annex G.10.3) See 5.5.1	NA
5.6	Protective conductor		NA
5.6.2	Requirement for protective conductors	EUT is rated as Class III, no connection to protective earth.	NA
5.6.2.1	General requirements	See 5.6.2	NA

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.6.2.2	Colour of insulation	See 5.6.2	NA
5.6.3	Requirement for protective earthing conductors	See 5.6.2	NA
	Protective earthing conductor size (mm^2) .....:	See 5.6.2	—
5.6.4	Requirement for protective bonding conductors	See 5.6.2	NA
5.6.4.1	Protective bonding conductors	See 5.6.2	NA
	Protective bonding conductor size (mm^2). .....:	See 5.6.2	—
	Protective current rating (A) ..... :	See 5.6.2	—
5.6.4.3	Current limiting and overcurrent protective devices	See 5.6.2	NA
5.6.5	Terminals for protective conductors	See 5.6.2	NA
5.6.5.1	Requirement	See 5.6.2	NA
	Conductor size (mm^2), nominal thread diameter (mm). .....:	See 5.6.2	NA
5.6.5.2	Corrosion	See 5.6.2	NA
5.6.6	Resistance of the protective system	See 5.6.2	NA
5.6.6.1	Requirements	See 5.6.2	NA
5.6.6.2	Test Method Resistance (Ω).....:	(See appended table 5.6.6.2) See 5.6.2	NA
5.6.7	Reliable earthing	See 5.6.2	NA
5.7	Prospective touch voltage, touch current and protective conductor current		NA
5.7.2	Measuring devices and networks	EUT is rated as Class III, no connection to protective earth. EUT enclosure is made of non-conductive plastic	NA
5.7.2.1	Measurement of touch current .....:	(See appended table 5.7.4) See 5.7.2	NA
5.7.2.2	Measurement of prospective touch voltage	See 5.7.2	NA
5.7.3	Equipment set-up, supply connections and earth connections	See 5.7.2	NA
	System of interconnected equipment (separate connections/single connection) .....:		—
	Multiple connections to mains (one connection at a time/simultaneous connections).....:		—
5.7.4	Earthed conductive accessible parts.....:	(See appended Table 5.7.4) See 5.7.2	NA
5.7.5	Protective conductor current	See 5.7.2	NA
	Supply Voltage (V).....:		—
	Measured current (mA).....:		—
	Instructional Safeguard.....:	(See F.4 and F.5) See 5.7.2	NA

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.7.6	Prospective touch voltage and touch current due to external circuits	See 5.7.2	NA
5.7.6.1	Touch current from coaxial cables	See 5.7.2	NA
5.7.6.2	Prospective touch voltage and touch current from external circuits	See 5.7.2	NA
5.7.7	Summation of touch currents from external circuits	See 5.7.2	NA
	a) Equipment with earthed external circuits Measured current (mA).....:	See 5.7.2	NA
	b) Equipment whose external circuits are not referenced to earth. Measured current (mA).....:	See 5.7.2	NA

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

6	**ELECTRICALLY- CAUSED FIRE**		PASS
6.2	Classification of power sources (PS) and potential ignition sources (PIS)		PASS
6.2.2	Power source circuit classifications	EUT rated as PS2	PASS
6.2.2.1	General	Approved	PASS
6.2.2.2	Power measurement for worst-case load fault ... :	(See appended table 6.2.2)	PASS
6.2.2.3	Power measurement for worst-case power source fault ..... :	(See appended table 6.2.2)	PASS
6.2.2.4	PS1 ..... :	(See appended table 6.2.2)	NA
6.2.2.5	PS2 ..... :	(See appended table 6.2.2) EUT is rated as PS2 *See Photo 3*	PASS
6.2.2.6	PS3 ..... :	(See appended table 6.2.2)	NA
6.2.3	Classification of potential ignition sources		
6.2.3.1	Arcing PIS ..... :	(See appended table 6.2.3.1) EUT rated as ES1	NA
6.2.3.2	Resistive PIS ..... :	(See appended table 6.2.3.2) EUT rated as PS2	PASS
6.3	Safeguards against fire under normal operating and abnormal operating conditions		PASS
6.3.1 (a)	No ignition and attainable temperature value less than 90 % defined by ISO 871 or less than 300 °C for unknown materials ..... :	(See appended table 5.4.1.5, 6.3.2, 9.0, B.2.6)	PASS
6.3.1 (b)	Combustible materials outside fire enclosure	EUT rated as PS2. EUT has no Combustible components outside of the Fire enclosure.	NA
6.4	Safeguards against fire under single fault conditions		
6.4.1	Safeguard Method	EUT rated as PS2 All components approved for the application. EUT enclosure made of UL94-5VB flame retardant material. *See Figure 2, and Figure 3*	PASS
6.4.2	Reduction of the likelihood of ignition under single fault conditions in PS1 circuits	EUT rated as PS2	NA

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
6.4.3	Reduction of the likelihood of ignition under single fault conditions in PS2 and PS3 circuits	All components approved for the application. The PCB in the EUT is rated for UL94-V0 EUT uses power limitation circuit for the 5v DC output, limited to 2.9A (14.5VA) EUT enclosure made of UL94-5VB flame retardant material. *See Figure 2, and Figure 3*	PASS
6.4.3.1	General	Approved	PASS
6.4.3.2	Supplementary Safeguards	None	NA
	Special conditions if conductors on printed boards are opened or peeled	None	NA
6.4.3.3	Single Fault Conditions..... :	(See appended table 6.4.3)	PASS
	Special conditions for temperature limited by fuse	EUT does not use such technique	NA
6.4.4	Control of fire spread in PS1 circuits	EUT rated as PS2	NA
6.4.5	Control of fire spread in PS2 circuits	EUT PCB is rated UL94-V0, EUT contains no wire or cable. EUT Enclosure made of UL94-5VB material. All components approved for the application.	PASS
6.4.5.2	Supplementary safeguards .....:	(See appended tables 4.1.2 and Annex G) EUT rated as PS2	PASS
6.4.7	Separation of combustible materials from a PIS	All components approved for the application.	PASS
6.4.7.1	General.....:	(See tables 6.2.3.1 and 6.2.3.2) See 6.4.7	PASS
6.4.7.2	Separation by distance	See 6.4.7	NA
6.4.7.3	Separation by a fire barrier	See 6.4.7	NA
6.4.8	Fire enclosures and fire barriers	EUT enclosure rated as a Fire enclosure EUT is rated as PS2	PASS
6.4.8.1	Fire enclosure and fire barrier material properties	EUT enclosure made of thermoplastic, of UL94-5VB flammability rating. The EUT enclosure wall thickness is 1.6mm See Figure 2, and Figure 3	PASS
6.4.8.2.1	Requirements for a fire barrier	Enclosure is a fire barrier.	PASS
6.4.8.2.2	Requirements for a fire enclosure	EUT rated as PS2 EUT enclosure is UL94-5VB rated. See Figure 2, and Figure 3	PASS

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
6.4.8.3	Constructional requirements for a fire enclosure and a fire barrier	EUT enclosure made of thermoplastic, of UL94-5VB flammability rating. The EUT enclosure wall thickness is 1.6mm See Figure 2, and Figure 3	PASS
6.4.8.3.1	Fire enclosure and fire barrier openings	EUT enclosure has no openings, except for connectors. See Photo 1, and Photo 2	NA
6.4.8.3.2	Fire barrier dimensions	The EUT enclosure wall thickness is 1.6mm	PASS
6.4.8.3.3	Top Openings in Fire Enclosure: dimensions (mm) .....:	EUT enclosure has no top openings	NA
	Needle Flame test	See 6.4.8	NA
6.4.8.3.4	Bottom Openings in Fire Enclosure, condition met a), b) and/or c) dimensions (mm) .....:	EUT enclosure has no bottom openings	NA
	Flammability tests for the bottom of a fire enclosure .....:	See 6.4.8	NA
6.4.8.3.5	Integrity of the fire enclosure, condition met: a), b) or c) .....:	See 6.4.8	NA
6.4.8.4	Separation of PIS from fire enclosure and fire barrier distance (mm) or flammability rating.....:	EUT enclosure made of thermoplastic, of UL94-5VB flammability rating. The EUT enclosure wall thickness is 1.6mm Minimum distance from resistive PIS to enclosure is more than 10mm. See Figure 2, and Figure 3	PASS
6.5	Internal and external wiring		NA
6.5.1	Requirements	EUT contains no wires	NA
6.5.2	Cross-sectional area (mm^2) .....:	See 6.5.1	—
6.5.3	Requirements for interconnection to building wiring .....:	(See Annex Q.) EUT connects to Ethernet, with PoE (Power over Ethernet).	PASS
6.6	Safeguards against fire due to connection to additional equipment	All external power current limited to PS1	PASS
	External port limited to PS2 or complies with Clause Q.1	All external power current limited to PS1	NA

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
7	**INJURY CAUSED BY HAZARDOUS SUBSTANCES**		PASS
7.2	Reduction of exposure to hazardous substances	EUT contains no hazardous substances	NA
7.3	Ozone exposure	EUT contains no High voltage circuit	NA
7.4	Use of personal safeguards (PPE)	None needed	NA
	Personal safeguards and instructions ..... :	None needed	—
7.5	Use of instructional safeguards and instructions	None needed	NA
	Instructional safeguard (ISO 7010) .....:	None needed	—
7.6	Batteries.....:	(See Annex M) EUT contains no battery	NA
8	**MECHANICALLY-CAUSED INJURY**		PASS
8.1	General	Approved	PASS
8.2	Mechanical energy source classifications	EUT rated as MS1	PASS
8.3	Safeguards against mechanical energy sources	EUT has round corners	PASS
8.4	Safeguards against parts with sharp edges and corners	See 8.3	NA
8.4.1	Safeguards	Enclosure, See Photo 1	PASS
8.5	Safeguards against moving parts	EUT contains no moving parts	NA
8.5.1	MS2 or MS3 part required to be accessible for the function of the equipment	EUT is rated MS1	NA
8.5.2	Instructional Safeguard..... :		—
8.5.4	Special categories of equipment comprising moving parts	EUT contains no moving parts	NA
8.5.4.1	Large data storage equipment	EUT not type of equipment	NA
8.5.4.2	Equipment having electromechanical device for destruction of media	EUT not type of equipment	NA
8.5.4.2.1	Safeguards and Safety Interlocks .....:	(See Annex F.4 and Annex K) EUT not type of equipment	NA
8.5.4.2.2	Instructional safeguards against moving parts	EUT contains no moving parts EUT not type of equipment	NA
	Instructional Safeguard.....:	EUT not type of equipment	—
8.5.4.2.3	Disconnection from the supply	EUT not type of equipment	NA
8.5.4.2.4	Probe type and force (N) .....:	EUT not type of equipment	NA
8.5.5	High Pressure Lamps	EUT contains no High Pressure Lamp	NA
8.5.5.1	Energy Source Classification	See 8.5.5	NA

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
8.5.5.2	High Pressure Lamp Explosion Test.....:	(See appended table 8.5.5.2) See 8.5.5	NA
8.6	Stability	EUT is very light (60.8g)	PASS
8.6.1	Product classification	Rated as MS1	PASS
	Instructional Safeguard.....:		—
8.6.2	Static stability	Rated as MS1	NA
8.6.2.2	Static stability test	Rated as MS1	NA
	Applied Force.....:		—
8.6.2.3	Downward Force Test	Rated as MS1	NA
8.6.3	Relocation stability test	Rated as MS1	NA
	Unit configuration during 10° tilt.....:		—
8.6.4	Glass slide test	Rated as MS1	PASS
8.6.5	Horizontal force test (Applied Force).....:	Rated as MS1. EUT has very mass.	NA
	Position of feet or movable parts.....:	Rated as MS1	—
8.7	Equipment mounted to wall or ceiling	EUT cannot be mounted to wall or ceiling	NA
8.7.1	Mounting Means (Length of screws (mm) and mounting surface) .....:	See 8.7	NA
8.7.2	Direction and applied force.....:	See 8.7	NA
8.8	Handles strength	EUT is not equipped with handles	PASS
8.8.1	Classification	See 8.8	NA
8.8.2	Applied Force .....:	See 8.8	NA
8.9	Wheels or casters attachment requirements	EUT is not equipped with Wheels or casters	NA
8.9.1	Classification	See 8.9	NA
8.9.2	Applied force .....:		—
8.10	Carts, stands and similar carriers	EUT is not equipped with such type of carriers	NA
8.10.1	General	See 8.10	NA
8.10.2	Marking and instructions	See 8.10	NA
	Instructional Safeguard.....:		—
8.10.3	Cart, stand or carrier loading test and compliance	See 8.10	NA
	Applied force .....:		—
8.10.4	Cart, stand or carrier impact test	See 8.10	NA
8.10.5	Mechanical stability	See 8.10	NA
	Applied horizontal force (N).....:	See 8.10	—

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
8.10.6	Thermoplastic temperature stability (°C).....:	See 8.10	NA
8.11	Mounting means for rack mounted equipment	EUT is not rack mountable	NA
8.11.1	General	See 8.11	NA
8.11.2	Product Classification	See 8.11	NA
8.11.3	Mechanical strength test, variable *N* .....:	See 8.11	NA
8.11.4	Mechanical strength test 250N, including end stops	See 8.11	NA
8.12	Telescoping or rod antennas.....	EUT contains no Telescoping or rod antenna (See Annex T)	NA
	Button/Ball diameter (mm).....:		—
9	**THERMAL BURN INJURY**		PASS
9.2	Thermal energy source classifications	EUT surface reach 40.1°C during normal operation. EUT rated as TS1 *See Figure 4*	PASS
9.3	Safeguard against thermal energy sources	Max Temperature of the EUT enclosure 40.1°C, tested in 35.0°C ambient temperature. *See Photo 4, and Figure 4*	PASS
9.4	Requirements for safeguards		PASS
9.4.1	Equipment safeguard	EUT enclosure made of thermo plastic	PASS
9.4.2	Instructional safeguard .....:	None Needed	NA
10	**RADIATION**		NA
10.2	Radiation energy source classification	EUT no parts emitting radiation EUT rated as RS1	NA
10.2.1	General classification	EUT rated as RS1 See 10.2	NA
10.3	Protection against laser radiation	See 10.2	NA
	Laser radiation that exists equipment:		—
	Normal, abnormal, single-fault..... :	See 10.2	NA
	Instructional safeguard ..... :		—
	Tool..... :		—
10.4	Protection against visible, infrared, and UV radiation	See 10.2	NA
10.4.1	General	See 10.2	NA
10.4.1.a)	RS3 for Ordinary and instructed persons .....:	See 10.2	NA

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
10.4.1.b)	RS3 accessible to a skilled person.....:	See 10.2	NA
	Personal safeguard (PPE) instructional safeguard.....:		—
10.4.1.c)	Equipment visible, IR, UV does not exceed RS1 . :	See 10.2	NA
10.4.1.d)	Normal, abnormal, single-fault conditions .....:	(See appended table B.3 & B.4) See 10.2	NA
10.4.1.e)	Enclosure material employed as safeguard is opaque.....:	See 10.2	NA
10.4.1.f)	UV attenuation.....:	See 10.2	NA
10.4.1.g)	Materials resistant to degradation UV .....:	See 10.2	NA
10.4.1.h)	Enclosure containment of optical radiation.....:	See 10.2	NA
10.4.1.i)	Exempt Group under normal operating conditions.....:	See 10.2	NA
10.4.2	Instructional safeguard .....:	See 10.2	NA
10.5	Protection against x-radiation	See 10.2	NA
10.5.1	X- radiation energy source that exists equipment:	(See appended table B.3 & B.4) See 10.2	NA
	Normal, abnormal, single fault conditions	See 10.2	NA
	Equipment safeguards.....:	See 10.2	NA
	Instructional safeguard for skilled person..... :	See 10.2	NA
10.5.3	Most unfavourable supply voltage to give maximum radiation .....:		—
	Abnormal and single-fault condition .....:	(See appended table B.3 & B.4) See 10.2	NA
	Maximum radiation (pA/kg).....:	See 10.2	NA
10.6	Protection against acoustic energy sources	See 10.2	NA
10.6.1	General	See 10.2	NA
10.6.2	Classification	See 10.2	NA
	Acoustic output, dB(A).....:	See 10.2	NA
	Output voltage, unweighted r.m.s.....:	See 10.2	NA
10.6.4	Protection of persons	See 10.2	NA
	Instructional safeguards .....:	See 10.2	NA
	Equipment safeguard prevent ordinary person to RS2.....:		—
	Means to actively inform user of increase sound pressure.....:		—
	Equipment safeguard prevent ordinary person to RS2.....:		—
10.6.5	Requirements for listening devices (headphones, earphones, etc.)	EUT has no means for such connection	NA

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
10.6.5.1	Corded passive listening devices with analog input	See 10.6.5	NA
	Input voltage with 94 dB(A) L_{Aeq} acoustic pressure output..... :		—
10.6.5.2	Corded listening devices with digital input	See 10.6.5	NA
	Maximum dB(A)..... :		—
10.6.5.3	Cordless listening device	See 10.6.5	NA
	Maximum dB(A)..... :		—
B	**NORMAL OPERATING CONDITION TESTS, ABNORMAL OPERATING CONDITION TESTS AND SINGLE FAULT CONDITION TESTS**		PASS
B.2	Normal Operating Conditions		PASS
B.2.1	General requirements..... :	(See Test Item Particulars and appended test tables)	PASS
	Audio Amplifiers and equipment with audio amplifiers ..... :	(See Annex E)	NA
B.2.3	Supply voltage and tolerances	36.0 to 57.0V DC	PASS
B.2.5	Input test..... :	(See appended table B.2.5)	PASS
B.3	Simulated abnormal operating conditions		PASS
B.3.1	General requirements..... :	(See appended table B.3) EUT output loaded until the voltage collapse. Max Current@rated voltage is 2.9A.	PASS
B.3.2	Covering of ventilation openings	EUT has no openings	NA
B.3.3	D.C. mains polarity test	EUT is wrong polarity protected, be means of 2 x diode bridge	PASS
B.3.4	Setting of voltage selector ..... :	EUT contains no voltage selector	NA
B.3.5	Maximum load at output terminals ..... :	EUT output loaded until the voltage collapse. Max Current@rated voltage (5.0) is 2.9A. Max Current@4.4Vis 3.3A Maximum power >14.5W	PASS
B.3.6	Reverse battery polarity	EUT contains no battery	NA
B.3.7	Abnormal operating conditions as specified in Clause E.2.	EUT contains no audio amplifier	NA
B.3.8	Safeguards functional during and after abnormal operating conditions	After abnormal operating, the EUT operates as normal condition.	PASS
B.4	Simulated single fault conditions		PASS
B.4.2	Temperature controlling device open or short-circuited ..... :	(See appended table B.4)	PASS

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
B.4.3	Motor tests	EUT contains no motor	NA
B.4.3.1	Motor blocked or rotor locked increasing the internal ambient temperature ..... :	(See Clause G.5) See B.4.3	NA
B.4.4	Short circuit of functional insulation	EUT rated as ES1	NA
B.4.4.1	Short circuit of clearances for functional insulation	EUT rated as ES1	NA
B.4.4.2	Short circuit of creepage distances for functional insulation	EUT rated as ES1	NA
B.4.4.3	Short circuit of functional insulation on coated printed boards	EUT rated as ES1	NA
B.4.5	Short circuit and interruption of electrodes in tubes and semiconductors	EUT rated as ES1	NA
B.4.6	Short circuit or disconnect of passive components	EUT rated as ES1	NA
B.4.7	Continuous operation of components	EUT tested for continuous operation of 24h EUT intended for continuous operation	PASS
B.4.8	Class 1 and Class 2 energy sources within limits during and after single fault conditions	EUT rated as ES1, during and after a single fault condition	PASS
B.4.9	Battery charging under single fault conditions ... :	(See Annex M) EUT contains no battery	NA
C	**UV RADIATION**		NA
C.1	Protection of materials in equipment from UV radiation	EUT contains no UV source	NA
C.1.2	Requirements	See C.1	NA
C.1.3	Test method	See C.1	NA
C.2	UV light conditioning test	See C.1	NA
C.2.1	Test apparatus	See C.1	NA
C.2.2	Mounting of test samples	See C.1	NA
C.2.3	Carbon-arc light-exposure apparatus	See C.1	NA
C.2.4	Xenon-arc light exposure apparatus	See C.1	NA
D	**TEST GENERATORS**		NA
D.1	Impulse test generators	EUT contains no such part	NA
D.2	Antenna interface test generator	EUT contains no such part	NA
D.3	Electronic pulse generator	EUT contains no such part	NA
E	**TEST CONDITIONS FOR EQUIPMENT CONTAINING AUDIO AMPLIFIERS**		NA
E.1	Audio amplifier normal operating conditions	EUT contains no audio amplifier	NA
	Audio signal voltage (V) .....:		—
	Rated load impedance (Ω) .....:		—
E.2	Audio amplifier abnormal operating conditions	See E.1	NA

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
F	**EQUIPMENT MARKINGS, INSTRUCTIONS, AND INSTRUCTIONAL SAFEGUARDS**		PASS
F.1	General requirements	Approved	PASS
	Instructions – Language .....:	Instruction manual language is English	—
F.2	Letter symbols and graphical symbols	Approved	PASS
F.2.1	Letter symbols according to IEC60027-1	Approved	PASS
F.2.2	Graphic symbols IEC, ISO or manufacturer specific	Approved	PASS
F.3	Equipment markings		PASS
F.3.1	Equipment marking locations	EUT marking located on the side of the device	PASS
F.3.2	Equipment identification markings	EUT contains a marking label See Photo 7	PASS
F.3.2.1	Manufacturer identification .....:	Airtame See Photo 7	—
F.3.2.2	Model identification .....:	AT-PoE See Photo 7	—
F.3.3	Equipment rating markings	EUT has no direct connection to mains, no rating needed	NA
F.3.3.1	Equipment with direct connection to mains	EUT has no direct connection to mains	NA
F.3.3.2	Equipment without direct connection to mains	EUT contains no ratings	PASS
F.3.3.3	Nature of supply voltage.....:		—
F.3.3.4	Rated voltage .....:		—
F.3.3.4	Rated frequency.....:		—
F.3.3.6	Rated current or rated power .....:		—
F.3.3.7	Equipment with multiple supply connections	EUT has only 1 supply connection	NA
F.3.4	Voltage setting device	EUT contains no voltage selector	NA
F.3.5	Terminals and operating devices	EUT employs a RJ45 connector	NA
F.3.5.1	Mains appliance outlet and socket-outlet markings..... :	EUT has no direct connection to Mains	NA
F.3.5.2	Switch position identification marking ..... :	EUT contains no switch	NA
F.3.5.3	Replacement fuse identification and rating markings..... :	EUT contains no replaceable fuses	NA
F.3.5.4	Replacement battery identification marking ..... :	EUT contains no battery	NA
F.3.5.5	Terminal marking location	None, none needed	NA
F.3.6	Equipment markings related to equipment classification	None, none needed	NA
F.3.6.1	Class I Equipment	EUT rated as Class III Equipment	NA
F.3.6.1.1	Protective earthing conductor terminal	EUT has no means for connection to protective earth	NA

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
F.3.6.1.2	Neutral conductor terminal	See F.3.6.1.1	NA
F.3.6.1.3	Protective bonding conductor terminals	See F.3.6.1.1	NA
F.3.6.2	Class II equipment (IEC60417-5172)	See F.3.6.1.1	NA
F.3.6.2.1	Class II equipment with or without functional earth	See F.3.6.1.1	NA
F.3.6.2.2	Class II equipment with functional earth terminal marking	See F.3.6.1.1	NA
F.3.7	Equipment IP rating marking .....:	EUT has no IP rating	—
F.3.8	External power supply output marking	None	NA
F.3.9	Durability, legibility and permanence of marking	approved	PASS
F.3.10	Test for permanence of markings	EUT label tested with rubbing with a soaked cloth of Petroleum spirit for 15 seconds, and with water for 15 seconds	PASS
F.4	Instructions		PASS
	a) Equipment for use in locations where children not likely to be present - marking	EUT not intended for use in such areas	NA
	b) Instructions given for installation or initial use	EUT instruction manual, contains relevant information, regarding setup, and use of the EUT	PASS
	c) Equipment intended to be fastened in place	EUT not to be fastened	NA
	d) Equipment intended for use only in restricted access area	EUT not intended for use in such areas	NA
	e) Audio equipment terminals classified as ES3 and other equipment with terminals marked in accordance F.3.6.1	EUT not audio equipment.	NA
	f) Protective earthing employed as safeguard	EUT has no means for connection to protective earth	NA
	g) Protective earthing conductor current exceeding ES 2 limits	EUT has no means for connection to protective earth	NA
	h) Symbols used on equipment	EUT uses text, no symbols used	NA
	i) Permanently connected equipment not provided with all-pole mains switch	EUT is rated as ES1	NA
j)	j) Replaceable components or modules providing safeguard function	EUT is rated as ES1	NA
F.5	Instructional safeguards	Approved	PASS
	Where “instructional safeguard” is referenced in the test report it specifies the required elements, location of marking and/or instruction	Approved	PASS
G	**COMPONENTS**		NA
G.1	Switches		NA
G.1.1	General requirements	EUT rated as ES1	NA
G.1.2	Ratings, endurance, spacing, maximum load	See G.1.1	NA
G.2	Relays		NA

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
G.2.1	General requirements	EUT contains no relays	NA
G.2.2	Overload test	See G.2.1	NA
G.2.3	Relay controlling connectors supply power	See G.2.1	NA
G.2.4	Mains relay, modified as stated in G.2	See G.2.1	NA
G.3	Protection Devices		NA
G.3.1	Thermal cut-offs	EUT contains no thermal cut-offs	NA
G.3.1.1a) &b)	Thermal cut-outs separately approved according to IEC 60730 with conditions indicated in a) & b)	See G.3.1	NA
G.3.1.1c)	Thermal cut-outs tested as part of the equipment as indicated in c)	See G.3.1	NA
G.3.1.2	Thermal cut-off connections maintained and secure	See G.3.1	NA
G.3.2	Thermal links		NA
G.3.2.1a)	Thermal links separately tested with IEC 60691	EUT contains no thermal links	NA
G.3.2.1b)	Thermal links tested as part of the equipment	See G.3.2.1.a	NA
	Aging hours (H) ..... :		—
	Single Fault Condition ..... :		—
	Test Voltage (V) and Insulation Resistance (Ω). :		—
G.3.3	PTC Thermistors	EUT contains no PTC resistors	NA
G.3.4	Overcurrent protection devices	EUT contains no single overcurrent devices. EUT output is current and power limited.	NA
G.3.5	Safeguards components not mentioned in G.3.1 to G.3.5		PASS
G.3.5.1	Non-resettable devices suitably rated and marking provided	EUT contains no such type of device	NA
G.3.5.2	Single faults conditions.....:	(See appended Table B.4)	PASS
G.4	**Connectors**		NA
G.4.1	Spacings	EUT rated as ES1, no direct connection to mains	
G.4.2	Mains connector configuration .....:	See G.4.1	NA
G.4.3	Plug is shaped that insertion into mains socket-outlets or appliance coupler is unlikely	See G.4.1	NA
G.5	Wound Components		NA
G.5.1	Wire insulation in wound components.....	(See Annex J) EUT rated as ES1	NA
G.5.1.2 a)	Two wires in contact inside wound component, angle between 45° and 90°	See G.5.1	NA
G.5.1.2 b)	Construction subject to routine testing	See G.5.1	NA
G.5.2	Endurance test on wound components	See G.5.1	NA

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
G.5.2.1	General test requirements	See G.5.1	NA
G.5.2.2	Heat run test	See G.5.1	NA
	Time (s) ..... :	See G.5.1	—
	Temperature (°C) ..... :	See G.5.1	—
G.5.2.3	Wound Components supplied by mains	See G.5.1	NA
G.5.3	**Transformers**		NA
G.5.3.1	Requirements applied (IEC61204-7, IEC61558-1/-2, and/or IEC62368-1)..... :	EUT rated as ES1	NA
	Position..... :		—
	Method of protection ..... :		—
G.5.3.2	Insulation	See G.5.3.1	NA
	Protection from displacement of windings..... :	See G.5.3.1	—
G.5.3.3	Overload test ..... :	(See appended table B.3) See G.5.3.1	NA
G.5.3.3.1	Test conditions	See G.5.3.1	NA
G.5.3.3.2	Winding Temperatures testing in the unit	See G.5.3.1	NA
G.5.3.3.3	Winding Temperatures - Alternative test method	See G.5.3.1	NA
G.5.4	**Motors**		NA
G.5.4.1	General requirements	EUT contains no motors	NA
	Position ..... :		—
G.5.4.2	Test conditions	See G.5.4.1	NA
G.5.4.3	Running overload test	See G.5.4.1	NA
G.5.4.4	Locked-rotor overload test	See G.5.4.1	NA
	Test duration (days) ..... :		—
G.5.4.5	Running overload test for d.c. motors in secondary circuits	See G.5.4.1	NA
G.5.4.5.2	Tested in the unit	See G.5.4.1	NA
	Electric strength test (V)..... :		—
G.5.4.5.3	Tested on the Bench - Alternative test method; test time (h) ..... :	See G.5.4.1	NA
	Electric strength test (V)..... :		—
G.5.4.6	Locked-rotor overload test for d.c. motors in secondary circuits	See G.5.4.1	NA
G.5.4.6.2	Tested in the unit	See G.5.4.1	NA
	Maximum Temperature ..... :	See G.5.4.1	NA
	Electric strength test (V) ..... :	See G.5.4.1	NA
G.5.4.6.3	Tested on the bench - Alternative test method; test time (h) ..... :	See G.5.4.1	NA
	Electric strength test (V)..... :	See G.5.4.1	NA

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
G.5.4.7	Motors with capacitors	See G.5.4.1	NA
G.5.4.8	Three-phase motors	See G.5.4.1	NA
G.5.4.9	Series motors	See G.5.4.1	NA
	Operating voltage .....:		—
G.6	**Wire Insulation**		NA
G.6.1	General	EUT contains no wires	NA
G.6.2	Solvent-based enamel wiring insulation	See G.6.1	NA
G.7	**Mains supply cords**		NA
G.7.1	General requirements	EUT has no means for direct connection to mains	NA
	Type.....:		—
	Rated current (A).....:		—
	Cross-sectional area (mm^2), (AWG)..... :		—
G.7.2	Compliance and test method	See G.7.1	NA
G.7.3	Cord anchorages and strain relief for non-detachable power supply cords	See G.7.1	NA
G.7.3.2	Cord strain relief	See G.7.1	NA
G.7.3.2.1	Requirements	See G.7.1	NA
	Strain relief test force (N) .....:		—
G.7.3.2.2	Strain relief mechanism failure	See G.7.1	NA
G.7.3.2.3	Cord sheath or jacket position, distance (mm)....:		—
G.7.3.2.4	Strain relief comprised of polymeric material	See G.7.1	NA
G.7.4	Cord Entry ..... :	(See appended table 5.4.11.1) See G.7.1	NA
G.7.5	Non-detachable cord bend protection	See G.7.1	NA
G.7.5.1	Requirements	See G.7.1	NA
G.7.5.2	Mass (g) ..... :		—
	Diameter (m) .....:		—
	Temperature (°C) .....:		—
G.7.6	Supply wiring space		NA
G.7.6.2	Stranded wire		NA
G.7.6.2.1	Test with 8 mm strand		NA
G.8	**Varistors**		NA
G.8.1	General requirements	EUT does not contain any varistors	NA
G.8.2	Safeguard against shock	G.8.1	NA
G.8.3	Safeguard against fire		NA
G.8.3.2	Varistor overload test .....:	(See appended table B.3) G.8.1	NA

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
G.8.3.3	Temporary overvoltage .....:	(See appended table B.3) G.8.1	NA
G.9	**Integrated Circuit (IC) Current Limiters**		PASS
G.9.1 a)	Manufacturer defines limit at max. 5A.	EUT uses an isolated flyback controller IC (U5) type Texas Instruments TPS23753A. The current is limited to 2.9A@5V, by external current sense resistor R30 of 0.5 Ohm	PASS
G.9.1 b)	Limiters do not have manual operator or reset	EUT contains no such limiter	NA
G.9.1 c)	Supply source does not exceed 250 VA .....:		—
G.9.1 d)	IC limiter output current (max. 5A) .....:		—
G.9.1 e)	Manufacturers' defined drift .....:		—
G.9.2	Test Program 1		NA
G.9.3	Test Program 2		NA
G.9.4	Test Program 3		NA
G.10	**Resistors**		NA
G.10.1	General requirements	EUT rated as PS1	NA
G.10.2	Resistor test	See G.10.1	NA
G.10.3	Test for resistors serving as safeguards between the mains and an external circuit consisting of a coaxial cable	EUT has no means for connection to a coaxial cable	NA
G.10.3.1	General requirements	See G.10.1	NA
G.10.3.2	Voltage surge test		NA
G.10.3.3	Impulse test		NA
G.11	**Capacitor and RC units**		
G.11.1	General requirements		NA
G.11.2	Conditioning of capacitors and RC units		NA
G.11.3	Rules for selecting capacitors		NA
G.12	**Optocouplers**		PASS
	Optocouplers comply with IEC 60747-5-5:2007 Spacing or Electric Strength Test (specify option and test results).....:	EUT contain an optocoupler (U7) in the feedback circuit of the PoE power circuit. Approved to IEC60747-5-5 and UL1577 *See Figure 6*	PASS
	Type test voltage Vini .....:		—
	Routine test voltage, Vini,b .....:		—
G.13	**Printed boards**		PASS
G.13.1	General requirements	EUT uses a UL94-V0 approved PCB	PASS
G.13.2	Uncoated printed boards		NA

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
G.13.3	Coated printed boards	EUT uses a coated PCB.	NA
G.13.4	Insulation between conductors on the same inner surface	EUT rated as ES1	NA
	Compliance with cemented joint requirements (Specify construction).....:		—
G.13.5	Insulation between conductors on different surfaces	EUT rated as ES1	NA
	Distance through insulation .....:	EUT rated as ES1	NA
	Number of insulation layers (pcs) .....:		—
G.13.6	Tests on coated printed boards	EUT rated as ES1	NA
G.13.6.1	Sample preparation and preliminary inspection	EUT rated as ES1	NA
G.13.6.2a)	Thermal conditioning	EUT rated as ES1	NA
G.13.6.2b)	Electric strength test	EUT rated as ES1	NA
G.13.6.2c)	Abrasion resistance test	EUT rated as ES1	NA
G.14	**Coating on components terminals**		NA
G.14.1	Requirements ..... :	(See G.13)	NA
G.15	**Liquid filled components**		NA
G.15.1	General requirements	EUT contains no liquid filled components	NA
G.15.2	Requirements	See G.15.1	NA
G.15.3	Compliance and test methods	See G.15.1	NA
G.15.3.1	Hydrostatic pressure test	See G.15.1	NA
G.15.3.2	Creep resistance test	See G.15.1	NA
G.15.3.3	Tubing and fittings compatibility test	See G.15.1	NA
G.15.3.4	Vibration test	See G.15.1	NA
G.15.3.5	Thermal cycling test	See G.15.1	NA
G.15.3.6	Force test	See G.15.1	NA
G.15.4	Compliance	See G.15.1	NA
G.16	**IC including capacitor discharge function (ICX)**		NA
a)	Humidity treatment in accordance with sc5.4.8 – 120 hours	EUT rated as ES1	NA
b)	Impulse test using circuit 2 with Uc = to transient voltage .....:	EUT rated as ES1	NA
C1)	Application of ac voltage at 110% of rated voltage for 2.5 minutes	EUT rated as ES1	NA
C2)	Test voltage .....:		—
D1)	10,000 cycles on and off using capacitor with smallest capacitance resistor with largest resistance specified by manufacturer	EUT rated as ES1	NA
D2)	Capacitance .....:		—

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
D3)	Resistance .....:		—
H	**CRITERIA FOR TELEPHONE RINGING SIGNALS**		NA
H.1	General	EUT has no means for connection to a Phone system	NA
H.2	Method A	See H.1	NA
H.3	Method B	See H.1	NA
H.3.1	Ringing signal	See H.1	NA
H.3.1.1	Frequency (Hz) .....:		—
H.3.1.2	Voltage (V) .....:		—
H.3.1.3	Cadence; time (s) and voltage (V) .....:		—
H.3.1.4	Single fault current (mA):.....:		—
H.3.2	Tripping device and monitoring voltage .....:	See H.1	NA
H.3.2.1	Conditions for use of a tripping device or a monitoring voltage complied with	See H.1	NA
H.3.2.2	Tripping device	See H.1	NA
H.3.2.3	Monitoring voltage (V) .....:		—
J	**INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION**		NA
	General requirements	(See separate test report)	NA
K	**SAFETY INTERLOCKS**		NA
K.1	General requirements	EUT contains no interlock	NA
K.2	Components of safety interlock safeguard mechanism	(See Annex G) See K.1	NA
K.3	Inadvertent change of operating mode	See K.1	NA
K.4	Interlock safeguard override	See K.1	NA
K.5	Fail-safe	See K.1	NA
	Compliance .....:	(See appended table B.4) See K.1	NA
K.6	Mechanically operated safety interlocks	See K.1	NA
K.6.1	Endurance requirement	See K.1	NA
K.6.2	Compliance and Test method .....:	See K.1	NA
K.7	Interlock circuit isolation	See K.1	NA
K.7.1	Separation distance for contact gaps & interlock circuit elements (type and circuit location) .....:	See K.1	NA
K.7.2	Overload test, Current (A).....:	See K.1	NA
K.7.3	Endurance test	See K.1	NA
K.7.4	Electric strength test .....:	(See appended table 5.4.11) See K.1	NA

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
L	**DISCONNECT DEVICES**		PASS
L.1	General requirements	MAX EUT supply voltage is 57VDC	PASS
L.2	Permanently connected equipment	See L.1	NA
L.3	Parts that remain energized	See L.1	NA
L.4	Single phase equipment	See L.1	NA
L.5	Three-phase equipment	See L.1	NA
L.6	Switches as disconnect devices	See L.1	NA
L.7	Plugs as disconnect devices	EUT uses a RJ45 connector as disconnect device.	PASS
L.8	Multiple power sources	EUT has only a single Power supply source	NA
M	**EQUIPMENT CONTAINING BATTERIES AND THEIR PROTECTION CIRCUITS**		NA
M.1	General requirements	EUT contains no battery	NA
M.2	Safety of batteries and their cells	See M.1	NA
M.2.1	Requirements	See M.1	NA
M.2.2	Compliance and test method (identify method) .. :	See M.1	NA
M.3	Protection circuits	See M.1	NA
M.3.1	Requirements	See M.1	NA
M.3.2	Tests	See M.1	NA
	- Overcharging of a rechargeable battery	See M.1	NA
	- Unintentional charging of a non-rechargeable battery	See M.1	NA
	- Reverse charging of a rechargeable battery	See M.1	NA
	- Excessive discharging rate for any battery	See M.1	NA
M.3.3	Compliance .....:	(See appended Tables and Annex M and M.4) See M.1	NA
M.4	Additional safeguards for equipment containing secondary lithium battery	See M.1	NA
M.4.1	General	See M.1	NA
M.4.2	Charging safeguards	See M.1	NA
M.4.2.1	Charging operating limits	See M.1	NA
M.4.2.2a)	Charging voltage, current and temperature .....:	(See Table M.4)	—
M.4.2.2 b)	Single faults in charging circuitry .....:	(See Annex B.4)	—
M.4.3	Fire Enclosure	See M.1	NA
M.4.4	Endurance of equipment containing a secondary lithium battery	See M.1	NA
M.4.4.2	Preparation	See M.1	NA

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
M.4.4.3	Drop and charge/discharge function tests	See M.1	NA
	Drop	See M.1	NA
	Charge	See M.1	NA
	Discharge	See M.1	NA
M.4.4.4	Charge-discharge cycle test	See M.1	NA
M.4.4.5	Result of charge-discharge cycle test	See M.1	NA
M.5	Risk of burn due to short circuit during carrying	See M.1	NA
M.5.1	Requirement	See M.1	NA
M.5.2	Compliance and Test Method (Test of P.2.3)	See M.1	NA
M.6	Prevention of short circuits and protection from other effects of electric current	See M.1	NA
M.6.1	Short circuits	See M.1	NA
M.6.1.1	General requirements	See M.1	NA
M.6.1.2	Test method to simulate an internal fault	See M.1	NA
M.6.1.3	Compliance (Specify M.6.1.2 or alternative method) ..... :	See M.1	NA
M.6.2	Leakage current (mA) ..... :	See M.1	NA
M.7	Risk of explosion from lead acid and NiCd batteries	See M.1	NA
M.7.1	Ventilation preventing explosive gas concentration	See M.1	NA
M.7.2	Compliance and test method	See M.1	NA
M.8	Protection against internal ignition from external spark sources of lead acid batteries	See M.1	NA
M.8.1	General requirements	See M.1	NA
M.8.2	Test method	See M.1	NA
M.8.2.1	General requirements	See M.1	NA
M.8.2.2	Estimation of hypothetical volume *Vz* (m^3/s)..... :		—
M.8.2.3	Correction factors..... :		—
M.8.2.4	Calculation of distance *d* (mm) ..... :		—
M.9	Preventing electrolyte spillage	See M.1	NA
M.9.1	Protection from electrolyte spillage	See M.1	NA
M.9.2	Tray for preventing electrolyte spillage	See M.1	NA
M.10	Instructions to prevent reasonably foreseeable misuse (Determination of compliance: inspection, data review; or abnormal testing) ..... :	See M.1	NA
N	**ELECTROCHEMICAL POTENTIALS**		NA
	Metal(s) used ..... :	None	—

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
O	**MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES**		NA
	Figures O.1 to O.20 of this Annex applied ..... :	-	—
P	**SAFEGUARDS AGAINST ENTRY OF FOREIGN OBJECTS AND SPILLAGE OF INTERNAL LIQUIDS**		PASS
P.1	General requirements	Approved	PASS
P.2.2	Safeguards against entry of foreign object	EUT has no openings	NA
	Location and Dimensions (mm) ..... :		—
P.2.3	Safeguard against the consequences of entry of foreign object	See P.2.2	NA
P.2.3.1	Safeguards against the entry of a foreign object	See P.2.2	NA
	Openings in transportable equipment	See P.2.2	NA
	Transportable equipment with metalized plastic parts ..... :	See P.2.2	NA
P.2.3.2	Openings in transportable equipment in relation to metallized parts of a barrier or enclosure (identification of supplementary safeguard) ..... :	See P.2.2	NA
P.3	Safeguards against spillage of internal liquids	EUT contains no liquids	NA
P.3.1	General requirements	EUT contains no liquids	NA
P.3.2	Determination of spillage consequences	EUT contains no liquids	NA
P.3.3	Spillage safeguards	EUT contains no liquids	NA
P.3.4	Safeguards effectiveness	EUT contains no liquids	NA
P.4	Metallized coatings and adhesive securing parts	None such coatings in the EUT	NA
P.4.2 a)	Conditioning testing	See P.4	NA
	Tc (°C) ..... :		—
	Tr (°C) ..... :		—
	Ta (°C) ..... :		—
P.4.2 b)	Abrasion testing ..... :	(See G.13.6.2) See P.4	NA
P.4.2 c)	Mechanical strength testing ..... :	(See Annex T) See P.4	NA
Q	**CIRCUITS INTENDED FOR INTERCONNECTION WITH BUILDING WIRING**		PASS
Q.1	Limited power sources	EUT	PASS
Q.1.1 a)	Inherently limited output	EUT ha impedance limited output	NA
Q.1.1 b)	Impedance limited output	EUT is power limited to 14.5W	PASS
	- Regulating network limited output under normal operating and simulated single fault condition	Approved. 2.9A@5V, 3.3A@4.4V	PASS
Q.1.1 c)	Overcurrent protective device limited output	2.9A@5V, 3.3A@4.4V	PASS
Q.1.1 d)	IC current limiter complying with G.9	Approved, See G.9	PASS

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
Q.1.2	Compliance and test method	Tested with USB outlet for max power (watt) load. See Q.1.1.c Resistive load used.	PASS
Q.2	Test for external circuits – paired conductor cable	Approved	PASS
	Maximum output current (A) .....:	3.3	—
	Current limiting method .....:	Current sense resistor, feedback circuit.	—
R	**LIMITED SHORT CIRCUIT TEST**		PASS
R.1	General requirements	Approved	PASS
R.2	Determination of the overcurrent protective device and circuit	EUT contains a current limited 2.9A) isolated flyback power supply output.	PASS
R.3	Test method Supply voltage (V) and short-circuit current (A)). .....:	The EUT supply is 57V DC, power limited to 71W. The USB connector outlet is short circuited.	PASS
S	**TESTS FOR RESISTANCE TO HEAT AND FIRE**		PASS
S.1	Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power does not exceed 4 000 W	EUT enclosure, made of U94-5VB, EUT enclosure wall thickness is 1.6mm. *See Figure 2, Figure 3*	NA
	Samples, material .....:		—
	Wall thickness (mm).....:		—
	Conditioning (°C).....:		—
	Test flame according to IEC 60695-11-5 with conditions as set out	See S.1	NA
	- Material not consumed completely	See S.1	NA
	- Material extinguishes within 30s	See S.1	NA
	- No burning of layer or wrapping tissue	See S.1	NA
S.2	Flammability test for fire enclosure and fire barrier integrity	EUT enclosure, made of U94-5VB, EUT enclosure wall thickness is 1.6mm.	NA
	Samples, material .....:		—
	Wall thickness (mm).....:		—
	Conditioning (°C).....:		—
	Test flame according to IEC 60695-11-5 with conditions as set out	See S.2	NA
	Test specimen does not show any additional hole	See S.2	NA
S.3	Flammability test for the bottom of a fire enclosure		NA
	Samples, material .....:		—
	Wall thickness (mm).....:		—

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Cheesecloth did not ignite	See S.2	NA
S.4	Flammability classification of materials	EUT enclosure, made of U94-5VB, EUT enclosure wall thickness is 1.6mm.	PASS
S.5	Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power does not exceed 4 000 W	EUT enclosure, made of U94-5VB, EUT enclosure wall thickness is 1.6mm.	PASS
	Samples, material .....:		—
	Wall thickness (mm).....:		—
	Conditioning (test condition), (°C).....:		—
	Test flame according to IEC 60695-11-20 with conditions as set out	See S.5	NA
	After every test specimen was not consumed completely	See S.5	NA
	After fifth flame application, flame extinguished within 1 min	See S.5	NA
T	**MECHANICAL STRENGTH TESTS**		PASS
T.1	General requirements	Approved	PASS
T.2	Steady force test, 10 N .....:	(See appended table T.2)	PASS
T.3	Steady force test, 30 N .....:	(See appended table T3)	PASS
T.4	Steady force test, 100 N .....:	(See appended table T4)	PASS
T.5	Steady force test, 250 N .....:	(See appended table T5)	PASS
T.6	Enclosure impact test	(See appended table T6) EUT NON-Functional after impact test. Isolation transformer damaged. EUT pass High voltage 1500V 60 Sec test, after impact test. *See Photo 10*	PASS
	Fall test	EUT shape is flat, tested at T.6	NA
	Swing test	See above.	NA
T.7	Drop test .....:	(See appended table T7)	NA
T.8	Stress relief test .....:	(See appended table T8) EUT tested at 70° for 7h	PASS
T.9	Impact Test (glass)	EUT contains no glass	NA
T.9.1	General requirements	See T.9	NA
T.9.2	Impact test and compliance	See T.9	NA
	Impact energy (J).....:		—
	Height (m) .....:		—
T.10	Glass fragmentation test .....:	(See sub-clause 4.4.4.9)	NA

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
T.11	Test for telescoping or rod antennas	EUT contains no telescoping or rod antenna	NA
	Torque value (Nm) .....:		—
U	**MECHANICAL STRENGTH OF CATHODE RAY TUBES (CRT) AND PROTECTION AGAINST THE EFECTS OF IMPLOSION**		NA
U.1	General requirements	EUT contains no CRT tube	NA
U.2	Compliance and test method for non-intrinsically protected CRTs	See U.1	NA
U.3	Protective Screen.....:	(See Annex T)	NA
V	**DETERMINATION OF ACCESSIBLE PARTS (FINGERS, PROBES AND WEDGES)**		PASS
V.1	Accessible parts of equipment	EUT has no openings	PASS
V.2	Accessible part criterion	No parts can be touched	NA

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

4.1.2	**TABLE: List of critical components**				PASS
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity[1]
Capacitor C66	Yageo	CC1812KKX7RDBB103	2.2nF 2kV SMD capacitor	NONE	NONE
Optocoupler U7	ON Semiconductor	FODM217A	Optocoupler, SO4, If:50mA, 70V, 1, -55°C, 110°C	UL15177, EN/IEC60745-5-5	-
Flyback controller IC U5	Texas instruments	TPS23753	Voltage Regulator, PoE integrated controller, flyback converter.	-	-
Clamping diode D7	Littlefuse	SMAJ58A	TVS Diode, DO214AC (SMA), N:1, unipolar, 400W, 58V, 40A	UL94-V0	-
Capacitors C54, C55	Generic	Generic	Ceramic Capacitor, 0603, 1nF, 10%, 100V, X7R	-	-
PoE isolation transformer	Coilcraft	NA6223	Flyback transformer for 10 W PoE applications	-	-
RJ45 connector, including ethernet isolation transformer	Würth Electronics	WE-RJ45LAN	RJ45 connector with build in ethernet isolation transformer.	UL94-V0	
- Description[2] :					
- Description[2] :					
- Description[2] :					

Supplementary information:

[1] Provided evidence ensures the agreed level of compliance. See OD-CB2039.

[2] Description line content is optional. Main line description needs to clearly detail the component used for testing

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

4.8.4, 4.8.5	**TABLE: Lithium coin/button cell batteries mechanical tests**	NA

(The following mechanical tests are conducted in the sequence noted.)

4.8.4.2 TABLE: Stress Relief test —

Part	Material	Oven Temperature (°C)	Comments

4.8.4.3 TABLE: Battery replacement test —

Battery part no. .....: —

Battery Installation/withdrawal	Battery Installation/Removal Cycle	Comments
	1	
	2	
	3	
	4	
	5	
	6	
	8	
	9	
	10	

4.8.4.4 TABLE: Drop test —

Impact Area	Drop Distance	Drop No.	Observations
		1	
		2	
		3	

4.8.4.5 TABLE: Impact —

Impacts per surface	Surface tested	Impact energy (Nm)	Comments

4.8.4.6 TABLE: Crush test —

Test position	Surface tested	Crushing Force (N)	Duration force applied (s)

Supplementary information:

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

4.8.5	TABLE: Lithium coin/button cell batteries mechanical test result	NA

Test position	Surface tested	Force (N)	Duration force applied (s)

Supplementary information:

5.2	Table: Classification of electrical energy sources	PASS

5.2.2.2 – Steady State Voltage and Current conditions

No.	Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters			ES Class
				U (Vrms or Vpk)	I (Apk or Arms)	Hz	
1	36-57V DC	RJ45 Connector	Normal	36-57V	250mA	DC	ES1
			Abnormal				
			Single fault – SC/OC				
			Normal				
			Abnormal				
			Single fault – SC/OC				

5.2.2.3 - Capacitance Limits

No.	Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters		ES Class
				Capacitance, nF	Upk (V)	
			Normal			ES1
			Abnormal			
			Single fault – SC/OC			

5.2.2.4 - Single Pulses

No.	Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters			ES Class
				Duration (ms)	Upk (V)	Ipk (mA)	
			Normal				ES1
			Abnormal				
			Single fault – SC/OC				

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

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

5.4.1.4, 6.3.2, 9.0, B.2.6	**TABLE: Temperature measurements**					
	Supply voltage (V) ..... :					—
	Ambient T_{min} (°C) ..... :					—
	Ambient T_{max} (°C) ..... :					—
	Tma (°C) ..... :					—
Maximum measured temperature T of part/at:		T (°C)				Allowed T_{max} (°C)
Supplementary information:						

Temperature T of winding:	t_1 (°C)	R_1 (Ω)	t_2 (°C)	R_2 (Ω)	T (°C)	Allowed T_{max} (°C)	Insulation class
Supplementary information: Note 1: Tma should be considered as directed by appliable requirement Note 2: Tma is not included in assessment of Touch Temperatures (Clause 9)							

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

5.4.1.10.2	TABLE: Vicat softening temperature of thermoplastics		NA
Penetration (mm)..... :			—
Object/ Part No./Material	Manufacturer/trademark	T softening (°C)	
supplementary information:			

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

5.4.2.2, 5.4.2.4 and 5.4.3	TABLE: Minimum Clearances/Creepage distance							NA
Clearance (cl) and creepage distance (cr) at/of/between:	Up (V)	U r.m.s. (V)	Frequency (kHz)[1]	Required cl (mm)	cl (mm)[2]	Required[3] cr (mm)	cr (mm)	

Supplementary information:

Note 1: Only for frequency above 30 kHz
Note 2: See table 5.4.2.4 if this is based on electric strength test
Note 3: Provide Material Group

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

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

5.4.2.4	**TABLE: Clearances based on electric strength test**			NA
Test voltage applied between:		Required cl (mm)	Test voltage (kV) peak/ r.m.s. / d.c.	Breakdown Yes / No
Supplementary information:				

5.4.4.2, 5.4.4.5 c) 5.4.4.9	**TABLE: Distance through insulation measurements**					NA
Distance through insulation di at/of:		Peak voltage (V)	Frequency (kHz)	Material	Required DTI (mm)	DTI (mm)
Supplementary information:						

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

5.4.9	TABLE: Electric strength tests			PASS
Test voltage applied between:		Voltage shape (AC, DC)	Test voltage (V)	Breakdown Yes / No
Functional:				
Basic/supplementary:				
Reinforced:				
Ethernet data wires and GND		AC	1500V	No
Routine Tests:				
Supplementary information:				

5.5.2.2	TABLE: Stored discharge on capacitors					NA
Supply Voltage (V), Hz	Test Location	Operating Condition (N, S)	Switch position On or off	Measured Voltage (after 2 seconds)	ES Classification	

Supplementary information:

X-capacitors installed for testing are:

☐ bleeding resistor rating:

☐ ICX:

Notes:

A. Test Location:

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

B. Operating condition abbreviations:

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

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

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

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

Supplementary Information:

Notes:
[1] Supply voltage is the anticipated maximum Touch Voltage

[2] Earthed neutral conductor [Voltage differences less than 1% or more]

[3] Specify method used for measurement as described in IEC 60990 sub-clause 4.3

[4] IEC60990, sub-clause 6.2.2.7, Fault 7 not applicable.

[5] (*) IEC60990, sub-clause 6.2.2.2 is not applicable if switch or disconnect device (e.g., appliance coupler) provided.

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

6.2.2	Table: Electrical power sources (PS) measurements for classification				PASS
Source	Description	Measurement	Max Power after 3 s	Max Power after 5 s*)	PS Classification
RJ45 PoE Connector J1	48V input	Power (W) :	14.5		PS1
		V_A (V) :			
		I_A (A) :			
		Power (W) :			
		V_A (V) :			
		I_A (A) :			
		Power (W) :			
		V_A (V) :			
		I_A (A) :			
		Power (W) :			
		V_A (V) :			
		I_A (A) :			
Supplementary Information: (*) Measurement taken only when limits at 3 seconds exceed PS1 limits					

6.2.3.1	Table: Determination of Potential Ignition Sources (Arcing PIS)			PASS
Location	Open circuit voltage After 3 s (Vp)	Measured r.m.s current (Irms)	Calculated value (V_p x I_{rms})	Arcing PIS? Yes / No
RJ45 Connector J1	57V	0.28	15.9	Yes
ESD protection Diodes D3	57V	0.28	15.9	Yes
Rectifiers U4, and U6	57V	0.28	15.9	Yes
transient voltage supressor diode D7	57V	0.28	15.9	Yes
Supplementary information: An Arcing PIS requires a minimum of 50 V (peak) a.c. or d.c. An Arcing PIS is established when the product of the open circuit voltage (V_p) and normal operating condition rms current (I_{rms}) is greater than 15.				

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

6.2.3.2	Table: Determination of Potential Ignition Sources (Resistive PIS)				PASS
Circuit Location (x-y)	Operating Condition (Normal / Describe Single Fault)	Measured wattage or VA During first 30 s (W / VA)	Measured wattage or VA After 30 s (W / VA)	Protective Circuit, Regulator, or PTC Operated? Yes / No (Comment)	Resistive PIS? Yes/No
D7	Simulated max load	16.5W	16.5W	Yes	Yes
C54,C55	Simulated max load	16.5W	16.5W	Yes	Yes
C52	Simulated max load	16.5W	16.5W	Yes	Yes

Supplementary Information:

A combination of voltmeter, VA and ammeter IA may be used instead of a wattmeter.

If a separate voltmeter and ammeter are used, the product of (VA x IA) is used to determine Resistive PIS classification.

A Resistive PIS: (a) dissipates more than 15 W, measured after 30 s of normal operation, or (b) under single fault conditions has either a power exceeding 100 W measured immediately after the introduction of the fault if electronic circuits, regulators or PTC devices are used, or has an available power exceeding 15 W measured 30 s after introduction of the fault.

8.5.5	TABLE: High Pressure Lamp		NA
Description		Values	Energy Source Classification
Lamp type.....:			—
Manufacturer .....:			—
Cat no. .....:			—
Pressure (cold) (MPa).....:			MS_
Pressure (operating) (MPa).....:			MS_
Operating time (minutes) .....:			—
Explosion method .....:			—
Max particle length escaping enclosure (mm) .:			MS_
Max particle length beyond 1 m (mm).....:			MS_
Overall result .....:			

Supplementary information:

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

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

Supplementary information:
Equipment may be have rated current or rated power or both. Both should be measured

B.3	TABLE: Abnormal operating condition tests								PASS
Ambient temperature (°C) .....:					35°C				—
Power source for EUT: Manufacturer, model/type, output rating ..:					POE enabled HP Switch type: 2910al-24PoE+				—
Component No.	Abnormal Condition	Supply voltage, (V)	Test time (h)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation	
POE-PSU-1	5V 2A load	54V	7	NA	NA	#02	40.9	None	

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

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

B.4	TABLE: Fault condition tests							PASS
Ambient temperature (°C) ..... :			23.2°C					—
Power source for EUT: Manufacturer, model/type, output rating .:			POE enabled HP Switch type: 2910al-24PoE+					—
Component No.	Fault Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
L7	Diode D1 short circuit	54V	1000	NA	NA	#01	No rise	PoE supply shut down
L1	Capacitor C8 short circuit	54V	1000	NA	NA	#01	No rise	EUT shut down
L2	Capacitor C12 short circuit	54V	1000	NA	NA	#01	No rise	EUT shut down
T1, L14	Capacitor C57 short circuit	54V	1000	NA	NA	#01, #02	No rise	EUT shut down
U3	Capacitor C31 short circuit	54V	1000	NA	NA	#01	No rise	EUT shut down
Supplementary information:								

Annex M	TABLE: Batteries									NA
The tests of Annex M are applicable only when appropriate battery data is not available										
Is it possible to install the battery in a reverse polarity position?..... :										
	Non-rechargeable batteries			Rechargeable batteries						
	Discharging		Un-intentional charging	Charging		Discharging		Reversed charging		
	Meas. current	Manuf. Specs.		Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.	
Max. current during normal condition										
Max. current during fault condition										
Test results:										Verdict
- Chemical leaks										
- Explosion of the battery										
- Emission of flame or expulsion of molten metal										
- Electric strength tests of equipment after completion of tests										

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

Annex M	**TABLE: Batteries**									NA
The tests of Annex M are applicable only when appropriate battery data is not available										
Is it possible to install the battery in a reverse polarity position?..... :										
	Non-rechargeable batteries			Rechargeable batteries						
	Discharging		Un-intentional charging	Charging		Discharging		Reversed charging		
	Meas. current	Manuf. Specs.		Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.	
Supplementary information:										

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

Annex M.4	**Table: Additional safeguards for equipment containing secondary lithium batteries**	NA

Battery/Cell No.	Test conditions	Measurements			Observation
		U	I (A)	Temp (C)	
	Normal				
	Abnormal				
	Single fault –SC/OC				
	Normal				
	Abnormal				
	Single fault – SC/OC				

Supplementary Information:

Battery identification	Charging at T_{lowest} (°C)	Observation	Charging at $T_{highest}$ (°C)	Observation

Supplementary Information:

Annex Q.1	**TABLE: Circuits intended for interconnection with building wiring (LPS)**	PASS

Note: Measured UOC (V) with all load circuits disconnected:

Output Circuit	Components	U_{oc} (V)	I_{sc} (A)		S (VA)	
			Meas.	Limit	Meas.	Limit

Supplementary Information:
SC=Short circuit, OC=Open circuit

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

T.2, T.3, T.4, T.5	TABLE: Steady force test				PASS
Part/Location	Material	Thickness (mm)	Force (N)	Test Duration (sec)	Observation
Top, middle	Thermoplastic	1.6	250	60	-
Bottom, middle	Thermoplastic	1.6	250	60	-
Left side, middle	Thermoplastic	1.6	250	60	-
Right side, middle	Thermoplastic	1.6	250	60	-
Supplementary information:					

T.6, T.9	TABLE: Impact tests			PASS
Part/Location	Material	Thickness (mm)	Vertical distance (mm)	Observation
Top of enclosure (Component side)	Thermo plastic	1.6	1300mm	EUT NON-Functional after impact test Isolation transformer damaged See Photo 10
Supplementary information:				

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

T.8	TABLE: Stress relief test				PASS
Part/Location	Material	Thickness (mm)	Oven Temperature (°C)	Duration (h)	Observation
Complete EUT	Thermo plastic	1.6	70	7	None
Supplementary information:Tested with Airtame2. See Photo 4					

List of test equipment used:

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

Clause	Measurement / testing	Testing / measuring equipment / material used	Range used	Equipent ID	Calibration date
	Temperature °C / Humidity %RH	HYT939 Temp & Humidity Sensor #02	-40 to 125°C 0 to 100% RH	NA	NOT
T8, B2.5, B3, B4	Temperature °C	SP Datalogger 1, Thermocouple sensor #01	40 to 85°C	NA	NOT
T8, B2.5, B3, B4	Temperature °C	SP Datalogger 1, Thermocouple sensor #02	-40 to 85°C	NA	NOT
		SP Datalogger 1, Humidity BOX-2	-	30150068	NOT
		SP Datalogger 1, Humidity BOX-4	-	30150069	NOT
T.8, B2.5, B3, B4	Temperature °C / Humidity %RH	SP Datalogger 1, Humidity BOX-7	-	30150071	NOT
		Climatic chamber H1		30118712	2018-04-05
		Climatic chamber H3		30117624	2018-04-05
		Climatic chamber H5		30118162	2018-04-05
		Climatic chamber H7		30118711	2018-04-05
T.8		Climatic chamber WKL34	70°C, 35°C	30150076	2018-04-05
		Kepco HSM48-21 Power supply		30150072	NOT
B2.5, B3, B4	Power supply	HP3632A	5V DC 7A	30114094	NOT
B2.5, B3, B4	Multimeter	Textronics TX3	10A DC	30114172	NOT
B2.5, B3, B4	Multimeter	Fluke 87-III	200V DC	NA	NOT
T2, T3, T4, T5	Steady force	Lloyd LRX material tester	0-500N	30116670	NOT
T6, T9	Impact test	SEC Drop test machine, Nokia Denmark	1000mm	30150043	NOT

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

Photos:

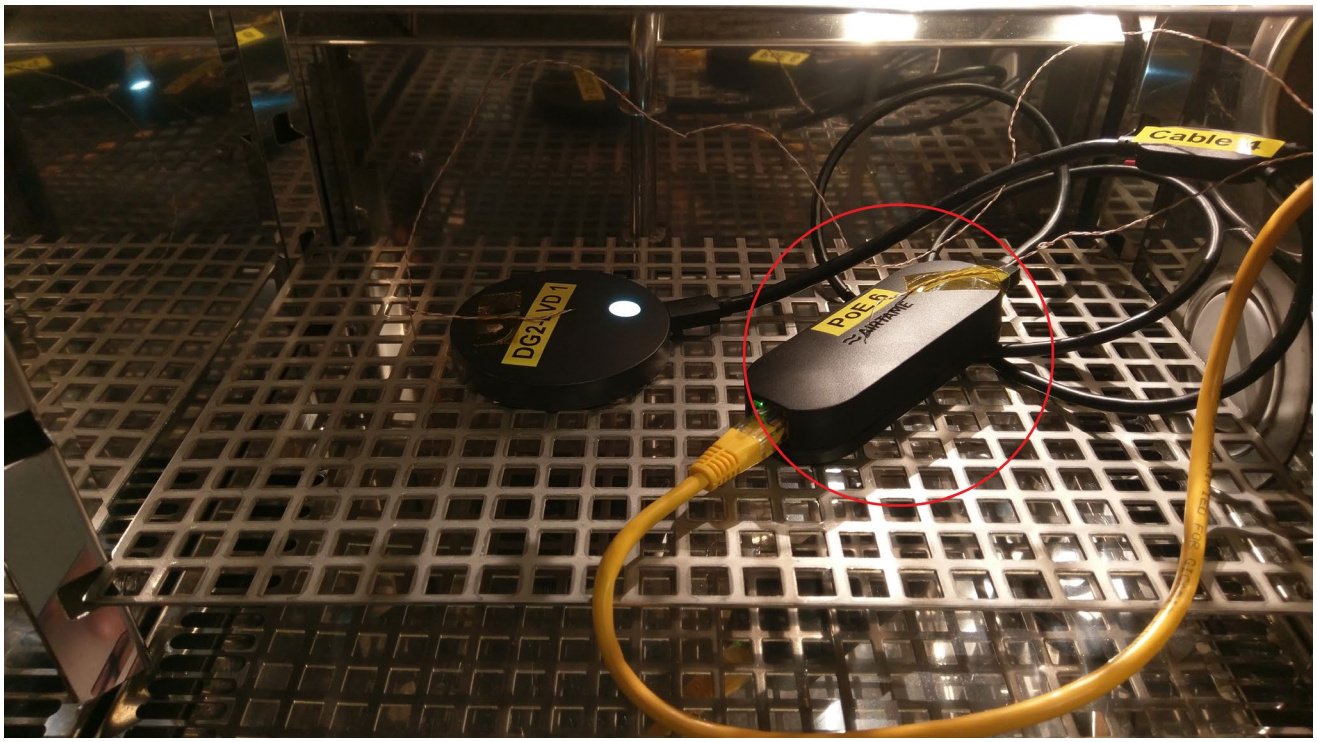


Photo 4: EUT (red circle) in Climatic exposure

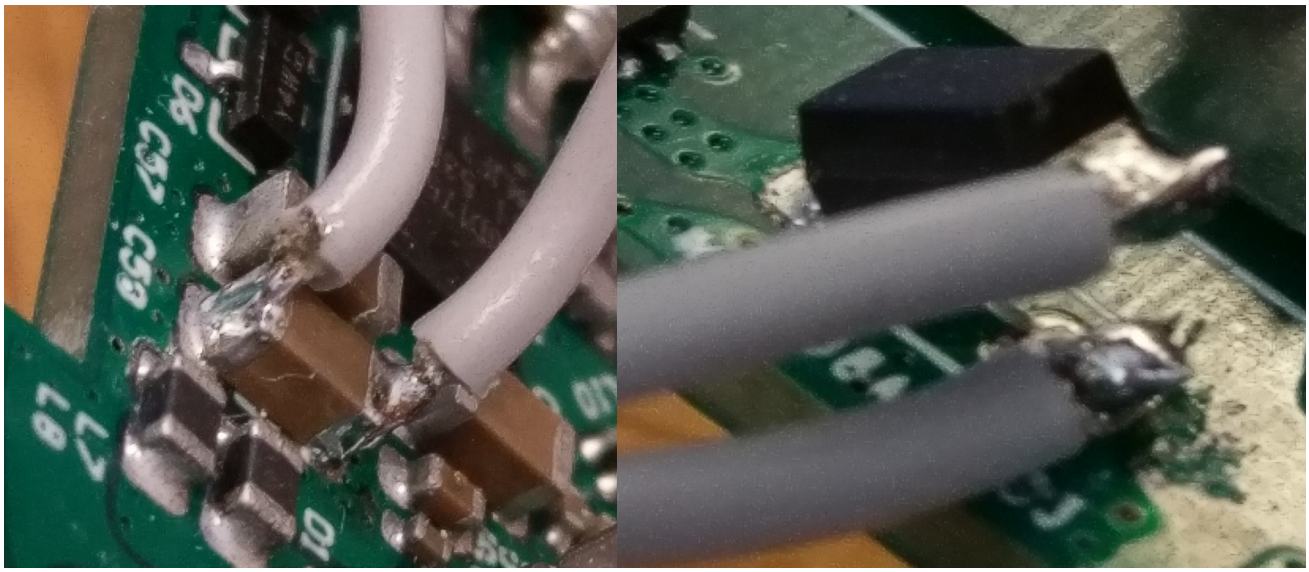


Photo 5: Capacitor C57/58 short circuit simulation (left photo), Diode D7 leakage current measurement (right photo)

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

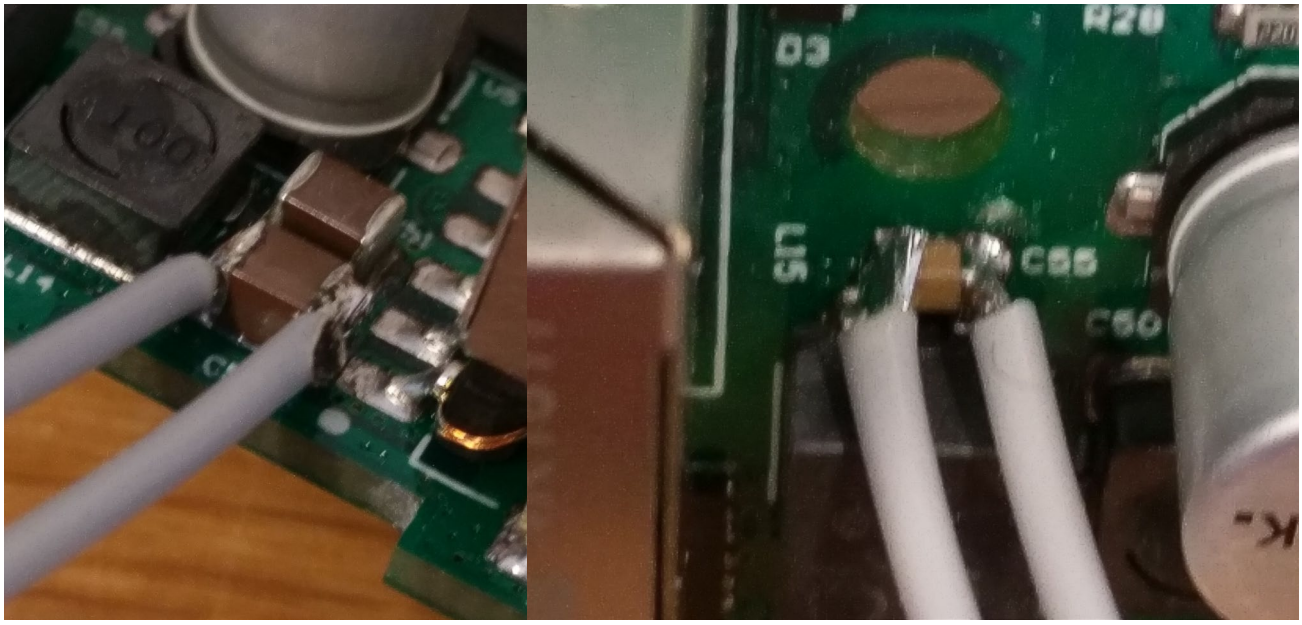


Photo 6: Capacitor C51/52 short circuit simulation (left photo), Capacitor C55 short circuit simulation (right photo)

Photo 7: EUT label artwork

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

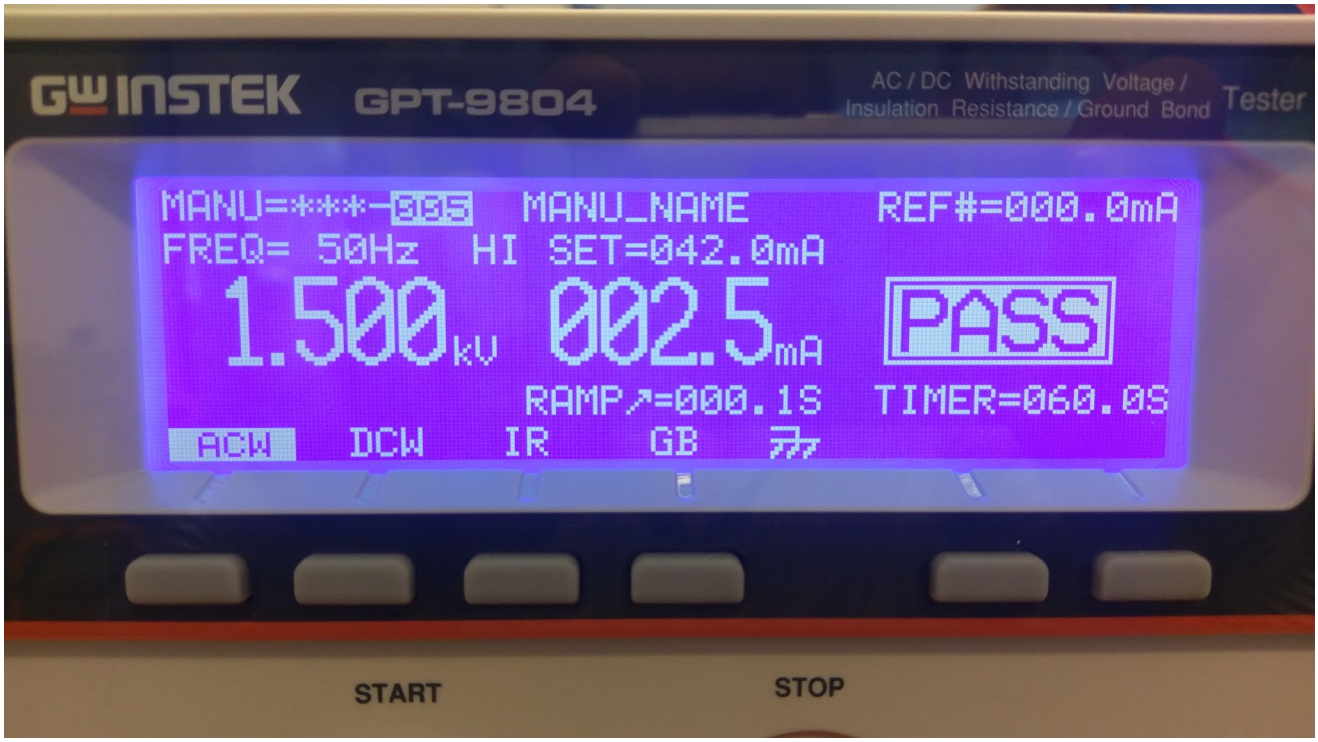


Photo 8: Electric strength test.

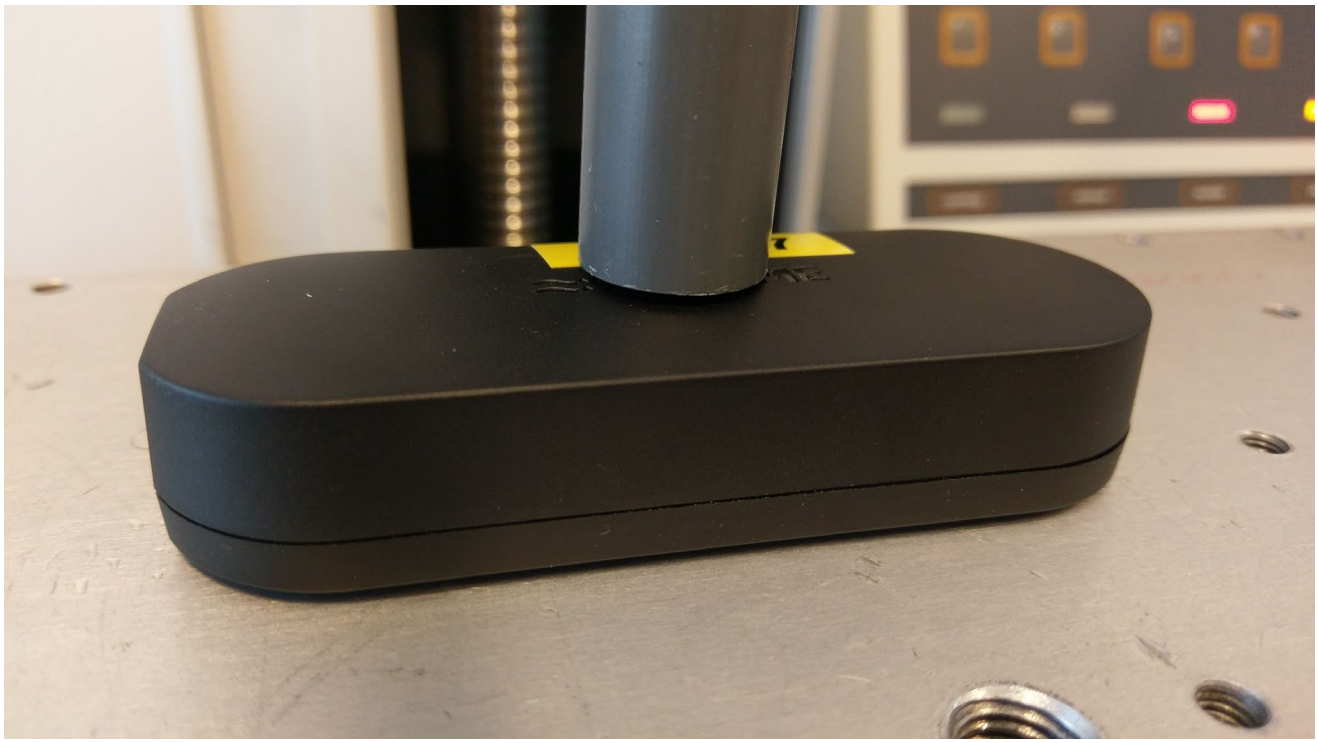


Photo 9: T.5 250N of force on to top of EUT enclosure

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

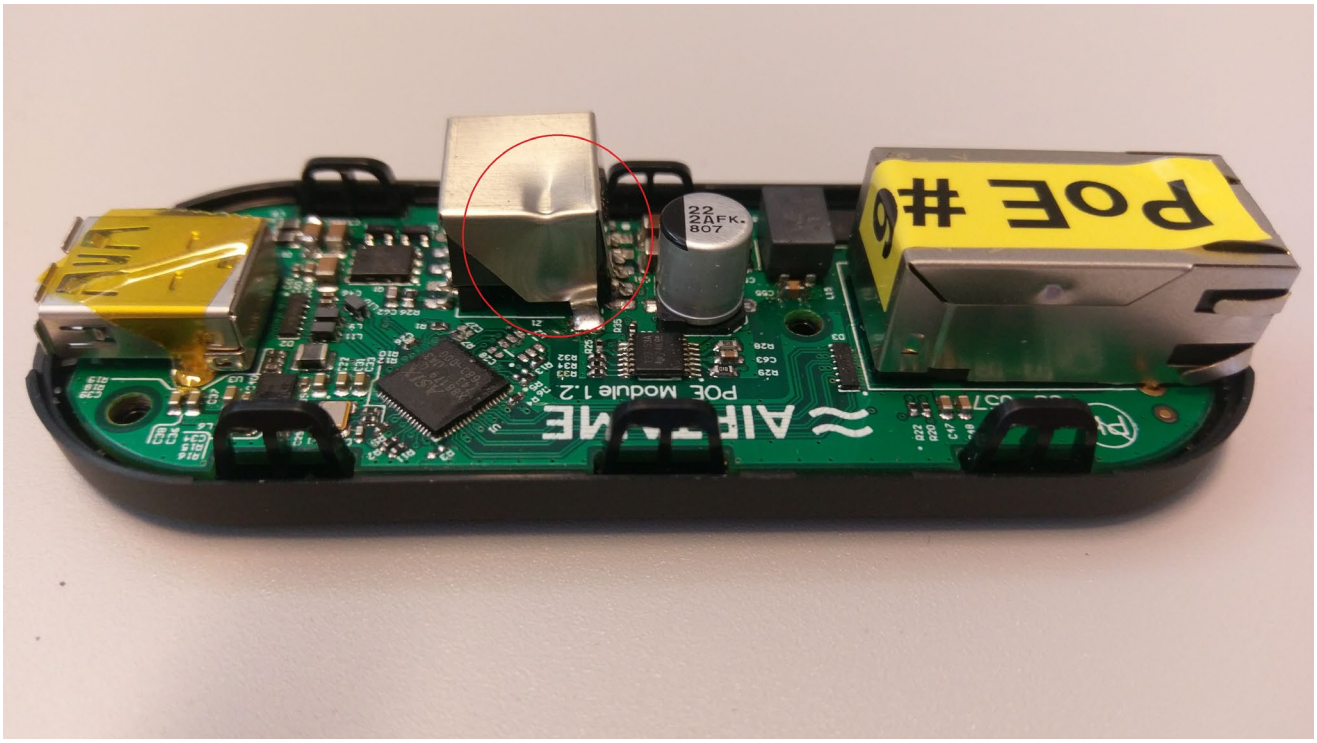


Photo 10: Isolation transformer damaged after impact test T.6

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

Figures:

Rev 1 – 7/7/2018

AIRTAME

SUPPLY VOLTAGES AND DESCRIPTIONS - Airtame PoE Adaptor

Item	Description	Minimum	Nominal	Maximum
1	Input supply voltage to the device. Power is drawn from PSE (Power Sourcing Equipment: e.x. Injector, POE Switch, etc) over Ethernet cable. Voltage is measured at the RJ45 socket of the POE Module.	36 V	48 V	57 V
2	Output supply voltage. It is used to power external AT-DG2 device over Custom Cable adapter from Airtame. Voltage is measured at the USB socket of the POE Module.	4.75 V	5 V	5.25 V
3	Internal voltage 3.3V. It is used to power the AX88179 chip. Not available to the user	3.2 V	3.3 V	3.4 V
4	Internal voltage 1.2V. It is used to power the AX88179 chip. Not available to the user	1.15 V	1.2 V	1.25 V

Figure 1: Internal and External supply voltage documentation from client

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

SABIC Innovative Plastics™

CYCOLOY* CX7240 Resin

Wednesday, 16 February 2011

General Information

Product Description

Cycoloy* CX7240 resin is an injection moldable PC/ABS blend. It contains non-brominated and non-chlorinated flame retardant systems to meet UL-94 V0 at 0.75mm, V1 at 0.6mm, V2 at 0.2mm and 5VB at 1.5mm respectively. Excellent flow and impact balance together with the thin wall flame resistance and all color options make Cycoloy CX7240 an ideal candidate for a wide variety of thin wall applications.

General

Material Status	• Commercial: Active		
Availability	• Asia Pacific		
Additive	• Flame Retardant		
Features	• Bromine Free • Chlorine Free	• Flame Retardant • Good Flow	• Good Impact Resistance
Uses	• Thin-walled Parts		
Appearance	• Colors Available		
Processing Method	• Injection Molding		

ASTM and ISO Properties [1]

Physical	Nominal Value	Unit	Test Method
Specific Gravity	1.19		ASTM D792
Density	1.20	g/cm³	ISO 1183
Melt Mass-Flow Rate (MFR) (260°C/2.16 kg)	18	g/10 min	ASTM D1238
Melt Volume-Flow Rate (MVR) (260°C/2.16 kg)	0.915	in³/10min	ISO 1133
Molding Shrinkage - Flow (0.126 in)	0.0040 to 0.0060	in/in	Internal Method
Water Absorption (Saturation, 73°F)	0.20	%	ISO 62
Water Absorption (Equilibrium, 73°F, 50% RH)	0.10	%	ISO 62
Mechanical	**Nominal Value**	**Unit**	**Test Method**
Tensile Modulus [2]	377000	psi	ASTM D638
Tensile Modulus	377000	psi	ISO 527-2/1
Tensile Strength [3] (Yield)	9430	psi	ASTM D638
Tensile Stress (Yield)	9430	psi	ISO 527-2/50
Tensile Strength [3] (Break)	8410	psi	ASTM D638
Tensile Stress (Break)	7250	psi	ISO 527-2/50
Tensile Elongation [3] (Yield)	4.1	%	ASTM D638
Tensile Strain (Yield)	4.0	%	ISO 527-2/50
Tensile Elongation [3] (Break)	100	%	ASTM D638
Tensile Strain (Break)	90	%	ISO 527-2/50
Flexural Modulus [4] (1.97 in Span)	363000	psi	ASTM D790
Flexural Modulus [5]	363000	psi	ISO 178
Flexural Strength [5, 6]	13900	psi	ISO 178

Figure 2: EUT enclosure injection moulding resin documentation, frontpage

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

CYCOLOY* CX7240 Resin

SABIC Innovative Plastics Asia Pacific - Acrylonitrile Butadiene Styrene + PC

Flammability	Nominal Value	Unit	Test Method
Flame Rating - UL			UL 94
0.0236 in	V-1		
0.0295 in	V-0		
0.0591 in	5VB		
0.118 in	5VA		
Glow Wire Flammability Index			IEC 60695-2-12
0.0295 in [13]	1760	°F	
0.0295 in	1760	°F	
Glow Wire Ignition Temperature			IEC 60695-2-13
0.0295 in [13]	1430	°F	
0.0394 in	1520	°F	
0.0591 in [13]	1430	°F	
0.118 in	1470	°F	
0.118 in [13]	1430	°F	
Oxygen Index	35	%	ISO 4589-2
UL 746	**Nominal Value**	**Unit**	**Test Method**
RTI Str	194	°F	UL 746
RTI Imp	194	°F	UL 746
RTI Elec	194	°F	UL 746
Comparative Tracking Index (CTI) (PLC)	PLC 3		UL 746
Hot-wire Ignition (HWI) (PLC)	PLC 3		UL 746
High Amp Arc Ignition (HAI) (PLC)	PLC 0		UL 746

Figure 3: EUT enclosure injection moulding resin documentation, UL Flammability.

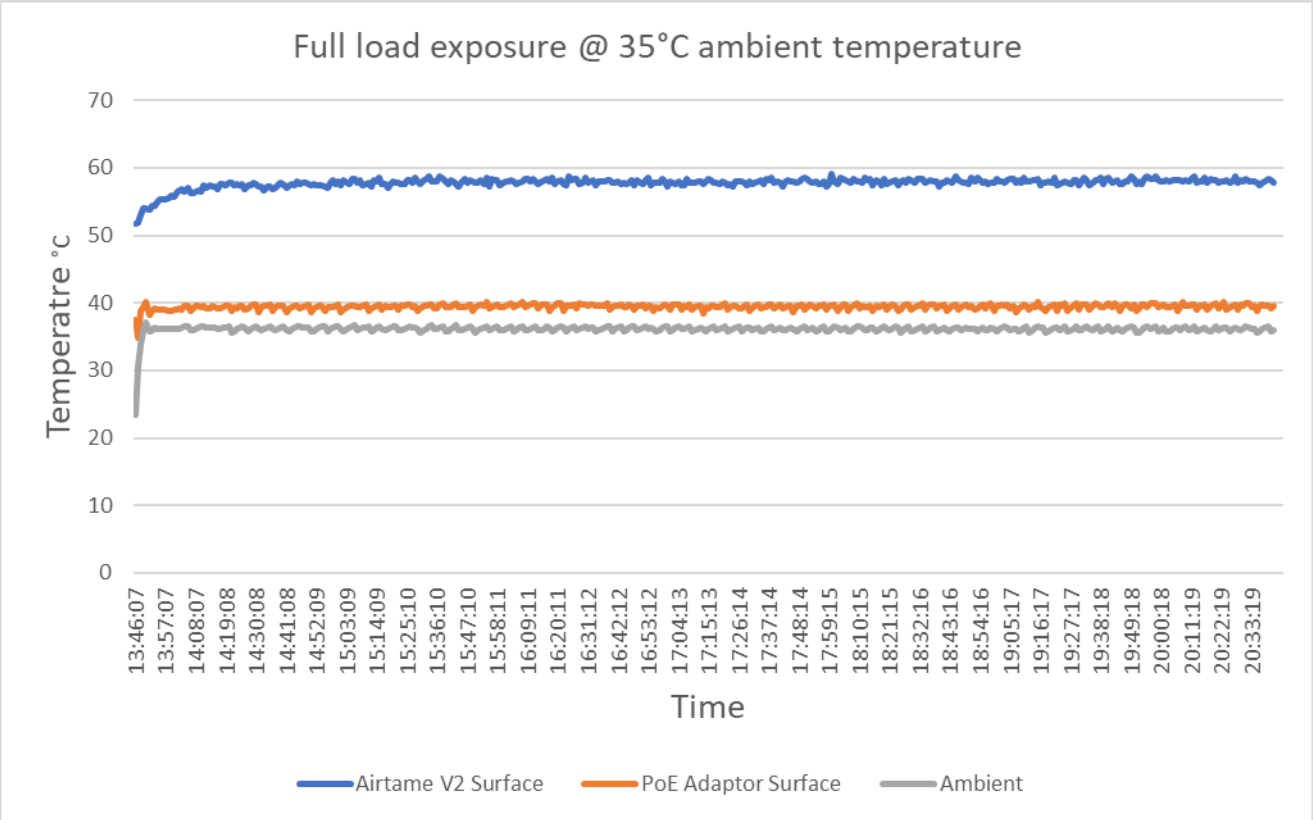


Figure 4: EUT surface temperature (orange line), during full load test @ 35°C ambient temperature.

IEC62368_1B

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

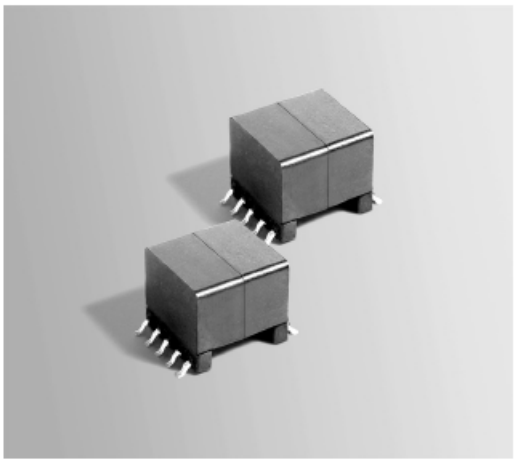
Document 1139

NEW!

Flyback Transformer

For Texas Instruments TPS23753A PoE controller

RoHS COMPLIANT



- Flyback transformer for 10 W PoE applications
- Developed to work with TI TPS23753A PoE controller (PMP8896 and PMP9175 Reference Design)
- 1500 Vrms isolation from primary and bias to secondary and sync

Core material Ferrite

Terminations RoHS tin-silver (96.5/3.5) over tin over nickel over phos bronze.

Weight 6.2 g

Ambient temperature –40°C to +85°C

Storage temperature Component: –40°C to +85°C. Tape and reel packaging: –40°C to +80°C

Resistance to soldering heat Max three 40 second reflows at +260°C, parts cooled to room temperature between cycles

Moisture Sensitivity Level (MSL) 1 (unlimited floor life at <30°C / 85% relative humidity)

Failures in Time (FIT) / Mean Time Between Failures (MTBF) 38 per billion hours / 26,315,789 hours, calculated per Telcordia SR-332

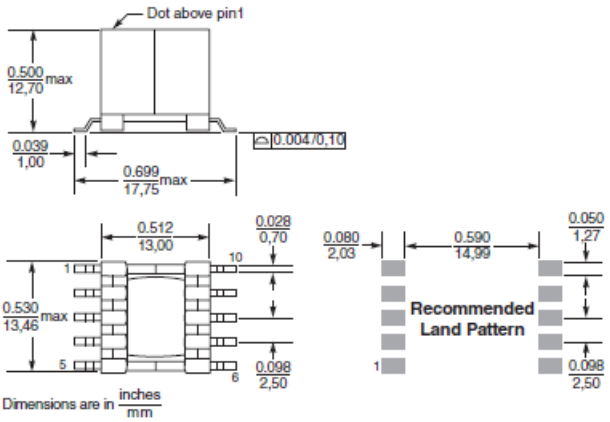
Packaging 175 per 13″ reel Plastic tape: 32 mm wide, 0.5 mm thick, 28 mm pocket spacing, 12.93 mm pocket depth

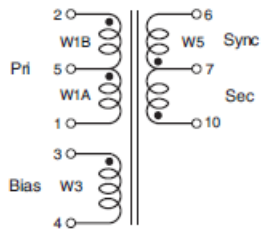
PCB washing Tested with pure water or alcohol only. For other solvents, see Doc787_PCB_Washing.pdf

Part number[1]	L at 0A[2] ±10% (µH)	L at Ipk[3] min (µH)	DCR max (Ohms)[4] pri	sec	bias	sync	Leakage inductance max (µH)[5]	Turns ratio[6] pri : sec	pri : bias	pri : sync	Output[7]
NA6223-AL_	180	162	0.330	0.0135	0.230	0.190	1.20	1 : 0.167	1 : 0.361	1 : 0.167	5.0 V, 2.0 A

1. When ordering, please specify **packaging** code:
   NA6223-ALD
   Packaging: D = 13″ machine-ready reel. EIA-481 embossed plastic tape (175 parts per full reel).
   B = Less than full reel. In tape, but not machine ready. To have a leader and trailer added ($25 charge), use code letter D instead.
2. Inductance is for the primary, measured at 1 kHz, 0.5 Vrms, 0 Adc.
3. Peak primary current (1.1 A) drawn at minimum input voltage.
4. DCR for the primary is from pin 1 to pin 2.
5. Leakage inductance measured between pins 1 and 2 with all other windings shorted.
6. Turns ratio is with the primary windings connected in series.
7. Output is between pins 7 and 10. Bias winding output is 10 V, 20 mA. Sync winding output is a 5 V Sync FET gate drive signal.
8. Electrical specifications at 25°C.

Refer to Doc 362 "Soldering Surface Mount Components" before soldering.





Coilcraft
www.coilcraft.com

US +1-847-639-6400 sales@coilcraft.com
UK +44-1236-730595 sales@coilcraft-europe.com
Taiwan +886-2-2264 3646 sales@coilcraft.com.tw
China +86-21-6218 8074 sales@coilcraft.com.cn
Singapore + 65-6484 8412 sales@coilcraft.com.sg

Document 1139 Revised 08/08/13

Figure 5: PoE Power isolation transformer, Datasheet

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

FODM217 Series

Single Channel, DC Sensing Input, Phototransistor Optocoupler In Half-Pitch Mini-Flat 4-Pin Package

ON Semiconductor®

www.onsemi.com

The FODM217 Series single channel, DC sensing input, optocoupler consists of one gallium arsenide (GaAs) infrared light emitting diode optically coupled to one phototransistor, in a compact, half-pitch, mini-flat, 4-pin package. The input-output isolation voltage, V_{ISO}, is rated at 3,750 VAC_{RMS}.

SOP 4 PINS

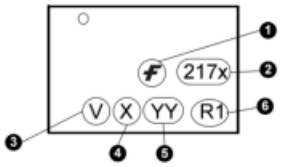
Features

- Current Transfer Ratio Ranges from 80 to 600% at I_F = 5 mA, V_{CE} = 5 V, T_A = 25°C
  - FODM217A - 80 to 160%
  - FODM217B - 130 to 260%
  - FODM217C - 200 to 400%
  - FODM217D - 300 to 600%
- Safety and Regulatory Approvals:
  - UL1577, 3750 VAC_{RMS} for 1 min
  - DIN EN/IEC60747-5-5, 565 V Peak Working Insulation Voltage
- Applicable to Infrared Ray Reflow, 260°C

Typical Applications

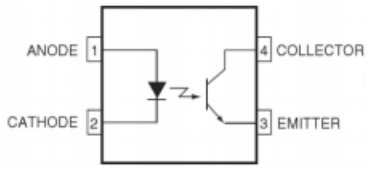
- Primarily Suited for DC-DC Converters
- For Ground Loop Isolation, Signal to Noise Isolation
- Communications – Adapters, Chargers
- Consumer – Appliances, Set Top Boxes
- Industrial – Power Supplies, Motor Control, Programmable Logic Control

MARKING DIAGRAM



1. F = Corporate Logo
2. 217x = Device Number
3. V = DIN EN/IEC60747-5-5 Option
4. X = One-Digit Year Code
5. YY = Digit Work Week
6. R1 = Assembly Package Code

PIN CONNECTIONS

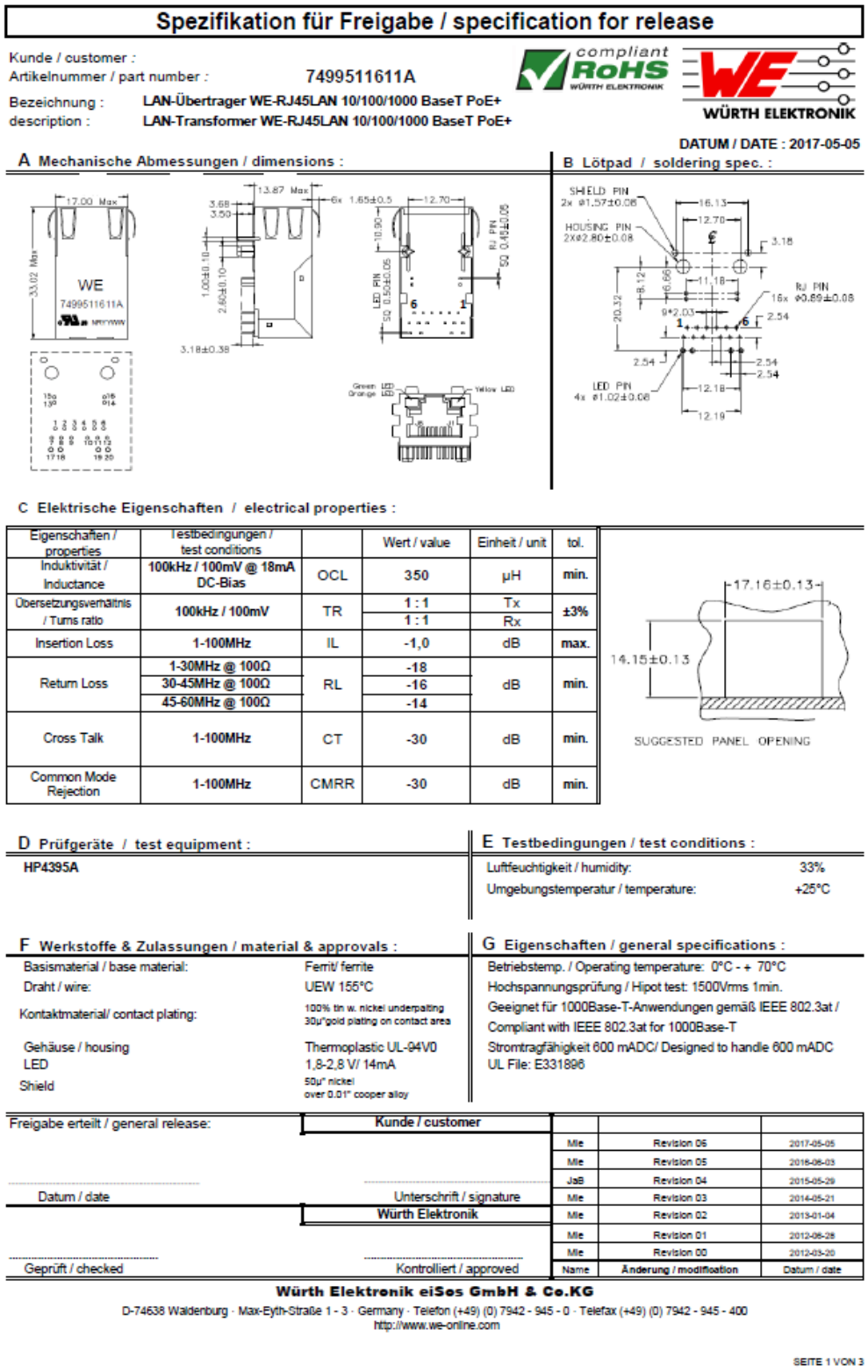


ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 9 of this data sheet.

Figure 6: PoE flyback voltage sense isolation optocoupler, Datasheet

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



Spezifikation für Freigabe / specification for release

Kunde / customer :
Artikelnummer / part number : 7499511611A
Bezeichnung : LAN-Übertrager WE-RJ45LAN 10/100/1000 BaseT PoE+
description : LAN-Transformer WE-RJ45LAN 10/100/1000 BaseT PoE+

compliant RoHS WÜRTH ELEKTRONIK — WÜRTH ELEKTRONIK

DATUM / DATE : 2017-05-05

A Mechanische Abmessungen / dimensions :

B Lötpad / soldering spec. :

C Elektrische Eigenschaften / electrical properties :

Eigenschaften / properties	Testbedingungen / test conditions		Wert / value	Einheit / unit	tol.
Induktivität / Inductance	100kHz / 100mV @ 18mA DC-Bias	OCL	350	µH	min.
Übersetzungsverhältnis / Turns ratio	100kHz / 100mV	TR	1 : 1	Tx	±3%
			1 : 1	Rx	
Insertion Loss	1-100MHz	IL	-1,0	dB	max.
Return Loss	1-30MHz @ 100Ω	RL	-18	dB	min.
	30-45MHz @ 100Ω		-16		
	45-60MHz @ 100Ω		-14		
Cross Talk	1-100MHz	CT	-30	dB	min.
Common Mode Rejection	1-100MHz	CMRR	-30	dB	min.

SUGGESTED PANEL OPENING

D Prüfgeräte / test equipment :
HP4395A

E Testbedingungen / test conditions :
Luftfeuchtigkeit / humidity: 33%
Umgebungstemperatur / temperature: +25°C

F Werkstoffe & Zulassungen / material & approvals :

Basismaterial / base material:	Ferrit/ ferrite
Draht / wire:	UEW 155°C
Kontaktmaterial/ contact plating:	100% tin w. nickel underplating 30u"gold plating on contact area
Gehäuse / housing	Thermoplastic UL-94V0
LED	1,8-2,8 V/ 14mA
Shield	50u" nickel over 0.01" cooper alloy

G Eigenschaften / general specifications :
Betriebstemp. / Operating temperature: 0°C - + 70°C
Hochspannungsprüfung / Hipot test: 1500Vrms 1min.
Geeignet für 1000Base-T-Anwendungen gemäß IEEE 802.3at / Compliant with IEEE 802.3at for 1000Base-T
Stromtragfähigkeit 600 mADC/ Designed to handle 600 mADC
UL File: E331896

Freigabe erteilt / general release: Kunde / customer

Datum / date Unterschrift / signature

Würth Elektronik

Geprüft / checked Kontrolliert / approved

Name	Änderung / modification	Datum / date
Mie	Revision 06	2017-05-05
Mie	Revision 05	2016-06-03
JaB	Revision 04	2015-05-29
Mie	Revision 03	2014-05-21
Mie	Revision 02	2013-01-04
Mie	Revision 01	2012-06-28
Mie	Revision 00	2012-03-20

Würth Elektronik eiSos GmbH & Co.KG
D-74638 Waldenburg · Max-Eyth-Straße 1 - 3 · Germany · Telefon (+49) (0) 7942 - 945 - 0 · Telefax (+49) (0) 7942 - 945 - 400
http://www.we-online.com

SEITE 1 VON 3

Figure 7: RJ45 connector, with build-in ethernet isolation transformer

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

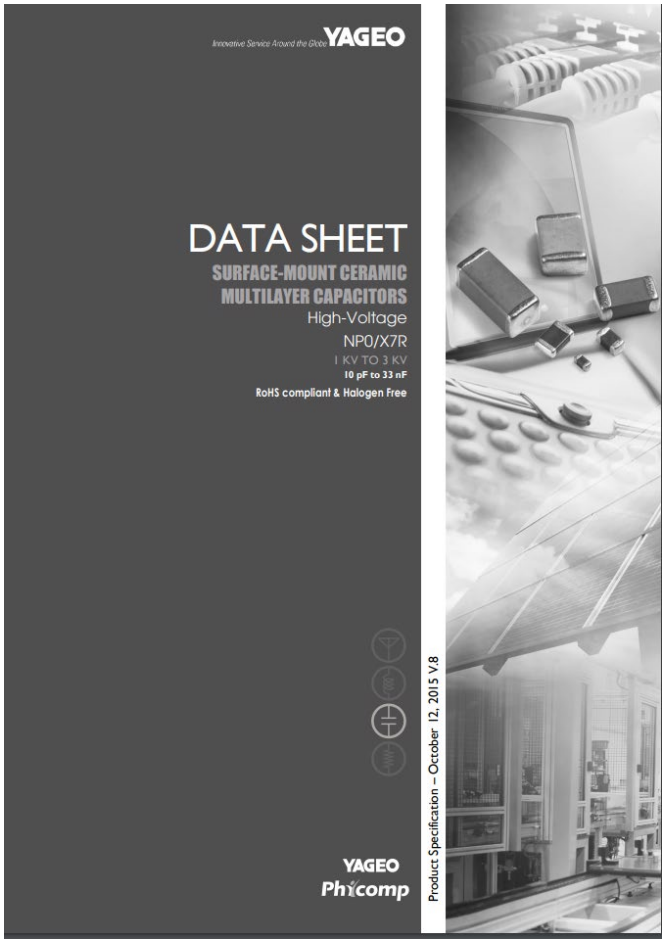


Figure 8: C66 Capacitor, Datasheet

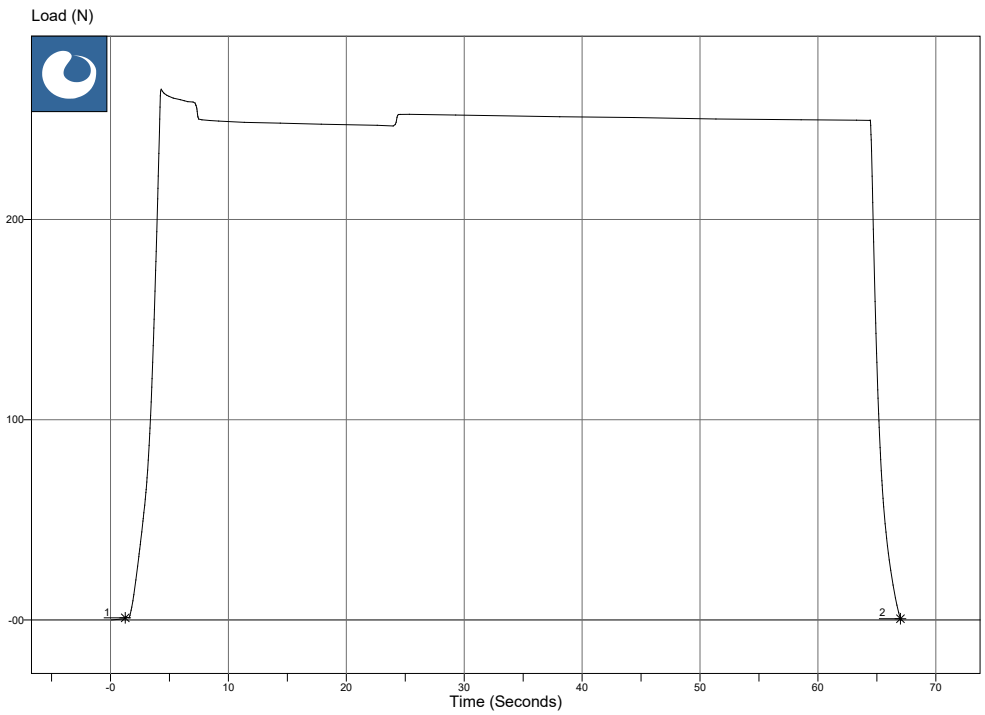


Figure 9: T.5 250N of force on to top of EUT enclosure, Graph

IEC62368_1B