

**Müşteri Adı / Adresi:** HERA Eğlence ve Mimari Aydınlatma Sistemleri A.Ş.  
**Client name / address:** Güllübağlar Mahallesi Kahramanlar Caddesi No:3-1 34906 Pendik İstanbul / TÜRKİYE

**İş Emri No:** 210226-01  
**Work Order No:**

**Test Edilen Ürün:** Chronopix RGBW (HERA P0102510505002050100)  
**Items tested:** Chronopix RGBW (HERA P0102510505002050100)

**Açıklamalar:** DGC'ye TS EN IEC 62368-1 standardı uyarınca testler uygulanmıştır. Detaylı Bilgi için 5. sayfaya bakınız.

**Remarks:** Test were applied to EUT according to TS EN IEC 62368-1 standart. Check Page 5 for further information.

**Numune Kabul Tarihi:** 05.02.2021  
**The date of receipt of test item:**

**Deney Tarihi:** 12.03.2021 - 23.03.2021  
**Date of test:**

**Yayımlandığı Tarih:** 01.04.2021  
**Date of Publication:**

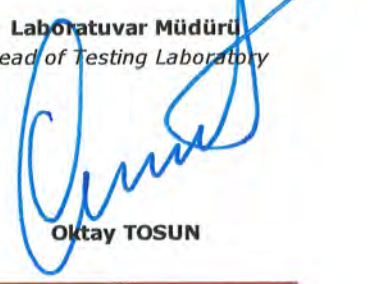
**Onay Tarihi:** 01.04.2021  
**Date of Approval:**



**Rapor Sorumlusu**  
**Person in Charge of Test**

  
**Hakan ÇOTA**

**Laboratuvar Müdürü**  
**Head of Testing Laboratory**

  
**Oktay TOSUN**

**Türk Akreditasyon Kurumu ( TÜRKAK ) deney raporlarının tanınması konusunda Avrupa Akreditasyon Birliği ( EA ) ve Uluslararası Laboratuvar Akreditasyon Birliği ( ILAC ) ile karşılıklı tanınma antlaşmasını imzalamıştır.**

*The Turkish Accreditation Agency ( TÜRKAK ) is signatory to the multilateral agreements of the European cooperation for the Accreditation ( EA ) and of the International Laboratory Accreditation ( ILAC ) for the Mutual recognition of test reports.*

**\* İşaretsiz deneyler veya akreditasyon numarasının yer almadığı sayfalar, akreditasyon kapsamı dahilinde değildir.**

*\* Signed tests or the papers which have not the accreditation number are not in the scope of accreditation.*

**Deney ve/veya ölçüm sonuçları, genişletilmiş ölçüm belirsizlikleri (olması halinde) ve deney metodları bu sertifikanın tamamlayıcı kısmı olan takip eden sayfalarda verilmiştir.**

*The test and/or measurement results, the uncertainties (if applicable) with confidence probability and test methods are given on the following pages which are part of this report.*

**Bu rapor: Firmamıza ulaşan numunelere deney ve/veya deneyler uygulanarak elde edilmiştir. Müşteriye ait diğer numuneleri kapsamaz.**

*This report was prepared after applying test/tests to the samples that are sent to our company.*

*Note that this report does not involve other samples of the customer.*

**Bu rapor laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz. İmzasız ve mühürsüz sertifikalar geçersizdir.**

*This report shall not be reproduced other than in full except with the permission of the laboratory.*

*Testing reports without signature and seal are not valid.*

ELDAŞ; TÜRKAK (TÜRK AKREDİTASYON KURUMU) TARAFINDAN AKREDİTE EDİLMİŞTİR  
ELDAŞ is ACCREDITED by TÜRKAK (TURKISH ACCREDITATION AGENCY)



## Sonuç

### Conclusion

Bu bir LVD test raporudur.

Bu raporda verilen sonuçlar ve değerlendirmeler sadece üretici/başvuru sahibi tarafından test için sağlanan ürün/sistem ile ilgilidir. Üretilen diğer bütün modellerin bu raporda verilen gereksinimleri karşılması üreticinin/başvuru sahibinin sorumluluğundadır.

*This is a LVD test report.*

*The test results presented in this report relate only to the object/system tested. The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer/applicant to ensure that all production models meet the intent of the requirements detailed within this report.*

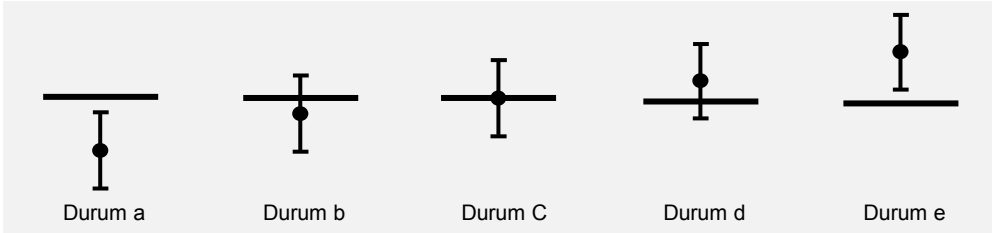
## Doküman Tarihçesi

### Revision History

Baskı / Edition	Tarih / Date	Açıklama / Remarks
İlk yayın / First edition	01.04.2021	---

## Karar Kuralı Seçimi

### Decision Rule Chosen



" • " **Ölçüm Sonucu / Measurement Result**

" I " **Ölçüm Belirsizliği Aralığı / Measurement Uncertainty Range**

### Durum a / Situation a ;

Üst sınırın altındadır bu sebeple ürün spesifikasyona uygundur. / EUT results below the upper limit therefore results are OK.

### Durum b / Situation b ;

Üst sınırın altındadır fakat ölçülen sonuç, belirsizlik aralığının yarısından az bir pay ile üst sınırın altındadır; bu sebeple, uygunluk belirtmek mümkün değildir. Laboratuvar bu sınıra kendi ölçüm belirsizliği hesabına göre karar vererek müşteriye bilgilendirme sağlar. / EUT results are below the upper limit line but below the upper limit line with a margin of less than half of the uncertainty; therefore it is not possible to state conformity. The laboratory decides this limit according to its own measurements of the uncertainty and informs the customer.

### Durum c / Situation c ;

Ölçülen sonuç sınırın tam üzerindedir, bu sebeple ile "uygun" ya da "uygun değil" diye belirtmek mümkün değildir. Müşteri ile görüşülerek ölçülen değer limitinin altına indirilmesi sağlanmalıdır. / Eut results are on the limit line therefore could not to say " pass" or "fail". In consultation with the customer, should be ensured that the measured value is reduced below the limit.

### Durum d / Situation d ;

Üst sınırın üstündedir bu sebeple ürün spesifikasyona uygun değildir. / EUT results above the upper limit therefore results are does not OK.

### Durum e / Situation e ;

Üst sınırın üstündedir bu sebeple ürün spesifikasyona uygun değildir. / EUT results above the upper limit therefore results are does not OK.



## İÇİNDEKİLER Contents

<b>1- DÖKÜMANTASYON</b> (Documantation)	<b>SAYFA</b> Page
<b>1.1 DGC, Çevre Koşulları ve Sembollerin Tanımları</b> (Conditions/Power Utilized,Description of the EUT & Symbollers Definitions)	<b>4</b>
<b>1.2 Deney Standardları</b> (Test Standards)	<b>5</b>
<b>2- Deney Sonuçları ve Koşulları</b> (Test Results and Conditions)	<b>14-54</b>
<b>3- Ekler</b> (Attachments)	
<b>3.3 Ayniyet Beyanı</b> (Identity Declaration)	<b>55</b>
<b>3.3 DGC' nin Fotoğrafları</b> (Photos of EUT)	<b>56-60</b>



Bu sertifika laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz. İmzasız ve mühürsüz sertifikalar geçersizdir.

This certificate shall not be produced other in full except with the permission of the laboratory. Certificate without signature and seal are not valid.

## **DENEYDEN GEÇİRİLEN CİHAZIN :**

*Equipment Under Test's*

**Markası** : HERA  
*Brand*

**Modeli** : P0102510505002050100  
*Model* : P0102510505002050101 (Dome)

**Seri No.** : 14049-00001  
*Serial Nu.*

**Kısa Tanımı** : **DMX512 kontrollü RGBW dış cephe aydınlatma ürünü.**  
*Short Description* : DMX512 RGBW facade lighting fixture.

**Beyan Gerilimi** : 48 VDC  
*Rated Voltage*

**Beyan Gücü** : 4,8 W (2pcs)  
*Rated Power*

**Beyan Akımı** : 0,1 A (2pcs)  
*Rated Current*

**Ürün Ailesi Tanımı** : **Ürüne ailesi sayfa 11'deki tabloda belirtilen farklılıklar doğrultusunda değişiklik göstermektedir.**  
*(Product Family Definition)* : The product family varies according to the variables specified in the table(Page 11).

## **ÇEVRE ŞARTLARI**

*Environmental Conditions*

**Deneyler sırasında ölçülen çevre şartları ilgili sayfalarda belirtilmiştir.**

*The enviromental conditions are measured during tests, are determined related pages.*

## **DENEY RAPORUNDA KULLANILAN SEMBOLLERİN TANIMLARI**

*Definations of Symbols Used in This Test Report*

- - **Siyah kutu, deney raporunda kullanılan cihaz, standard ve koşulları gösterir.**  
*The black square indicates that the listed condition, standard or equipment is applicable for this report.*
- - **Boş kutu, deney raporunda kullanılmayan cihaz, standard ve koşulları gösterir.**  
*The empty square indicates that the listed condition, standard or equipment is not applicable for this report.*
- DGC** - **Deneyden geçen cihaz**
- EUT** - **Equipment under test**

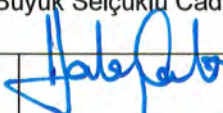
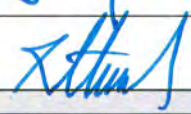
Bu sertifika laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğalılabilir. İmzasız ve mühürsüz sertifikalar geçersizdir.

This certificate shall not be produced other in full except with the permission of the laboratory . Certificate without signature and seal are not valid.



<b>TEST REPORT</b> <b>IEC 62368-1</b> <b>Audio/video, information and communication technology equipment</b> <b>Part 1: Safety requirements</b>	
<b>Report Number</b> ..... :	LVD21-029
<b>Date of issue</b> .....	01.04.2021
<b>Total number of pages</b> .....	60
<b>Name of Testing Laboratory preparing the Report</b> .....	ELDAŞ Test ve Kalibrasyon Elektrik Sanayi Ticaret A.Ş.
<b>Applicant's name</b> .....	HERA Eğlence ve Mimari Aydınlatma Sistemleri A.Ş.
<b>Address</b> .....	Güllübağlar Mahallesi Kahramanlar Caddesi No:3-1 34906 Pendik İstanbul / TÜRKİYE
<b>Test specification:</b>	
<b>Standard</b> .....	IEC 62368-1:2018
<b>Test procedure</b> ..... :	LVD
<b>Non-standard test method</b> ..... :	N/A
<b>TRF template used</b> .....	IECEE OD-2020-F1:2020, Ed.1.3
<b>Test Report Form No</b> ..... :	IEC62368_1E
<b>Test Report Form(s) Originator</b> .... :	UL(US)
<b>Master TRF</b> .....	Dated 2021-02-04
<b>Copyright © 2021 IEC System of Conformity Assessment Schemes for Electrotechnical Equipment and Components (IECEE System). All rights reserved.</b>	
This publication may be reproduced in whole or in part for non-commercial purposes as long as the IECEE is acknowledged as copyright owner and source of the material. IECEE takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.	
If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.	
<b>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.</b>	
<b>General disclaimer:</b>	
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.	



<b>Test item description</b> .....	Chronopix RGBW	
<b>Trade Mark(s)</b> .....	HERA	
<b>Manufacturer</b> .....	HERA Eğlence ve Mimari Aydınlatma Sistemleri A.Ş.	
<b>Model/Type reference</b> .....	P0102510505002050100	
<b>Ratings</b> .....	48VDC, 0,1A, 4,8W (2pcs)	
<b>Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):</b>		
<input checked="" type="checkbox"/>	<b>LVD Testing Laboratory:</b>	ELDAŞ Test ve Kalibrasyon Elektrik Sanayi Ticaret A.Ş.
<b>Testing location/ address</b> .....		Ahi Evran OSB Mah. Büyük Selçuklu Cad. No:2 Sincan Ankara/TÜRKİYE
<b>Tested by (name, function, signature)</b> .....		Hakan ÇOTA 
<b>Approved by (name, function, signature)</b> ..		Ahmet CANBOLAT 
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 1:</b>	
<b>Testing location/ address</b> .....		
<b>Tested by (name, function, signature)</b> .....		
<b>Approved by (name, function, signature)</b> ..		
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 2:</b>	
<b>Testing location/ address</b> .....		
<b>Tested by (name, function, signature)</b> .....		
<b>Witnessed by (name, function, signature)</b> ..		
<b>Approved by (name, function, signature)</b> ..		
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 3:</b>	
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 4:</b>	
<b>Testing location/ address</b> .....		
<b>Tested by (name, function, signature)</b> .....		
<b>Witnessed by (name, function, signature)</b> ..		
<b>Approved by (name, function, signature)</b> ..		
<b>Supervised by (name, function, signature)</b> :		



**List of Attachments (including a total number of pages in each attachment):****Summary of testing:****Tests performed (name of test and test clause):**

Full test for all relevant clauses except the clauses with “—”.

**Testing location:**

ELDAŞ Test ve Kalibrasyon Elektrik Sanayi Ticaret A.Ş.

Ahi Evran OSB Mah. Büyük Selçuklu Cad. No:2  
Sincan Ankara/TÜRKİYE

**Summary of compliance with National Differences (List of countries addressed):**

The product fulfils the requirements of \_\_\_\_\_ (insert standard number and edition and delete the text in parenthesis, leave it blank or delete the whole sentence, if not applicable)

**Statement concerning the uncertainty of the measurement systems used for the tests**

(may be required by the product standard or client)

Internal procedure used for type testing through which traceability of the measuring uncertainty has been established:

**Procedure number, issue date and title:**

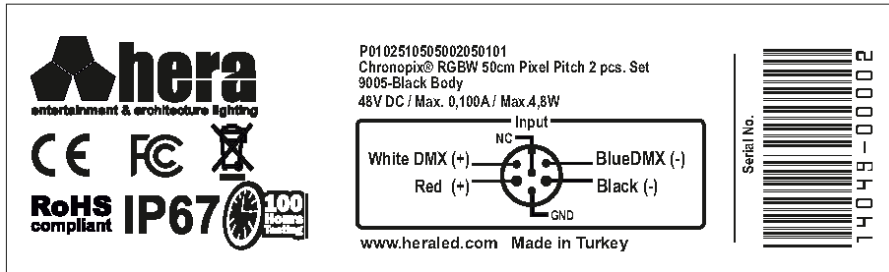
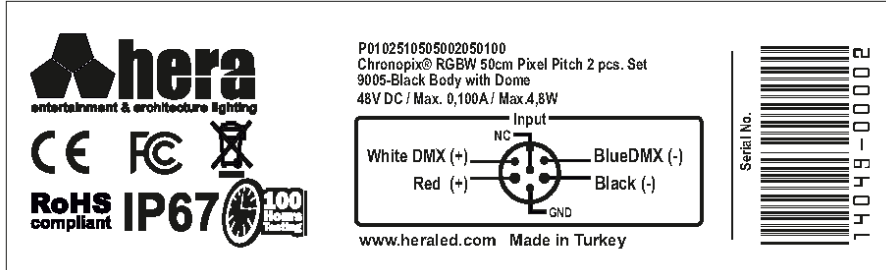
Calculations leading to the reported values are on file with the NCB and testing laboratory that conducted the testing.

Statement not required by the standard used for type testing

(Note: When IEC or ISO standard requires a statement concerning the uncertainty of the measurement systems used for tests, this should be reported above. The informative text in parenthesis should be delete in both cases after selecting the applicable option)



## Copy of marking plate:





<b>Possible test case verdicts:</b>	
- test case does not apply to the test object.....: N/A	
- test object does meet the requirement.....: P (Pass)	
- test object does not meet the requirement.....: F (Fail)	
<b>Testing:</b>	
Date of receipt of test item .....: 05.03.2021	
Date (s) of performance of tests .....: 12.03.2021 – 22.03.2021	
<b>General remarks:</b>	
"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report.	
Throughout this report a <input checked="" type="checkbox"/> comma / <input type="checkbox"/> point is used as the decimal separator.	
<b>Manufacturer's Declaration per sub-clause 4.2.5 of IEC60335-1:</b>	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided .....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable
<b>When differences exist; they shall be identified in the General product information section.</b>	
Name and address of factory (ies) ..... : HERA Eğlence ve Mimari Aydınlatma Sistemleri A.Ş. Güllübağlar Mahallesi Kahramanlar Caddesi No:3-1 34906 Pendik İstanbul / TÜRKİYE	



**General product information and other remarks:**

The product family varies according to the variables specified in the table below.

<b>P0XXXXXXXXXX</b>	<b>XXX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>X</b>	<b>X</b>
LED Color	Pixel Pitch	Number of Dots in the Node	Leader Cable Length	Body Color	Cable Hide Profile	Dome
Led Color Code	01,5-300 (cm)	01-70 (pcs)	01-70 (meter)	01-08	1:Present 0:N/A	1:Present 0:N/A
<b>P01025105 300 70 05 01 1 1</b> <b>Chronopix® RGBW 300 cm Pixel Pitch 70 pcs Set RAL9005 Black Body with Dome</b>						



<b>OVERVIEW OF ENERGY SOURCES AND SAFEGUARDS</b>				
<b>Clause</b>	<b>Possible Hazard</b>			
5	Electrically-caused injury			
Class and Energy Source (e.g. ES3: Primary circuit)	Body Part (e.g. Ordinary)	Safeguards		
		B	S	R
ES1	Ordinary	Enclosure	—	—
6	Electrically-caused fire			
Class and Energy Source (e.g. PS2: 100 Watt circuit)	Material part (e.g. Printed board)	Safeguards		
		B	1 <sup>st</sup> S	2 <sup>nd</sup> S
PS1: <15W	Leds	Enclosure	—	—
7	Injury caused by hazardous substances			
Class and Energy Source (e.g. Ozone)	Body Part (e.g., Skilled)	Safeguards		
		B	S	R
—	—	—	—	—
8	Mechanically-caused injury			
Class and Energy Source (e.g. MS3: Plastic fan blades)	Body Part (e.g. Ordinary)	Safeguards		
		B	S	R
—	—	—	—	—
9	Thermal burn			
Class and Energy Source (e.g. TS1: Keyboard caps)	Body Part (e.g., Ordinary)	Safeguards		
		B	S	R
—	—	—	—	—
10	Radiation			
Class and Energy Source (e.g. RS1: PMP sound output)	Body Part (e.g., Ordinary)	Safeguards		
		B	S	R
—	—	—	—	—
Supplementary Information:				
“B” – Basic Safeguard; “S” – Supplementary Safeguard; “R” – Reinforced Safeguard				



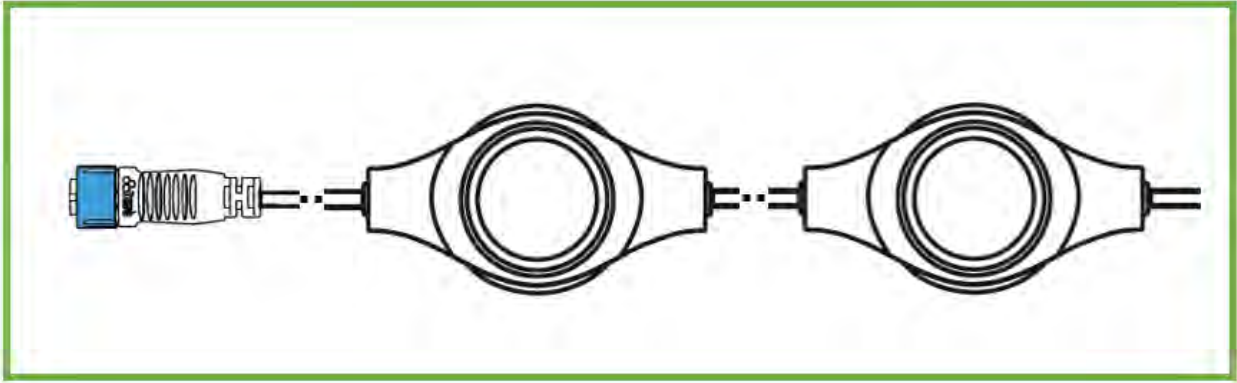
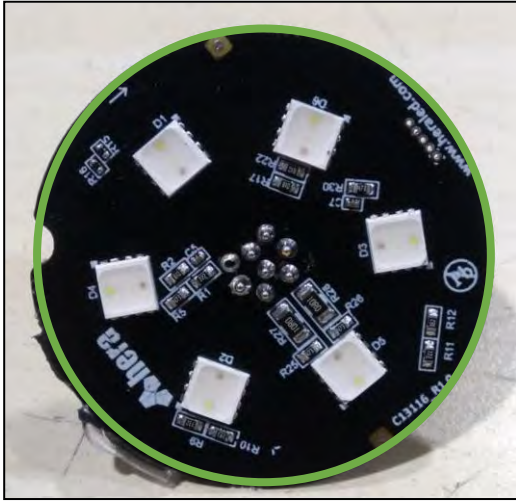
### ENERGY SOURCE DIAGRAM

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

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

ES    PS    MS    TS    RS

**ES1, TS1**



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
<b>4</b>	<b>GENERAL REQUIREMENTS</b>		P
4.1.1	Acceptance of materials, components and subassemblies		P
4.1.2	Use of components		P
4.1.3	Equipment design and construction		P
4.1.4	Specified ambient temperature for outdoor use (°C) .....:	-40C ... +55C	P
4.1.5	Constructions and components not specifically covered		P
4.1.8	Liquids and liquid filled components (LFC)	(See G.15)	N/A
4.1.15	Markings and instructions	(See Annex F)	
4.4.3	Safeguard robustness		P
4.4.3.1	General		P
4.4.3.2	Steady force tests	(See Clause T.3, T.4, T.5)	N/A
4.4.3.3	Drop tests		N/A
4.4.3.4	Impact tests		P
4.4.3.5	Internal accessible safeguard tests		N/A
4.4.3.6	Glass impact tests	(See Clause T.9, Annex U)	N/A
4.4.3.7	Glass fixation tests		N/A
	Glass impact test (1J)		N/A
	Push/pull test (10 N)		N/A
4.4.3.8	Thermoplastic material tests		N/A
4.4.3.9	Air comprising a safeguard		N/A
4.4.3.10	Accessibility, glass, safeguard effectiveness		N/A
4.4.4	Displacement of a safeguard by an insulating liquid		N/A
4.4.5	Safety interlocks	(See Annex K)	N/A
<b>4.5</b>	<b>Explosion</b>		N/A
4.5.1	General	(See Annex M for batteries)	N/A
4.5.2	No explosion during normal/abnormal operating condition	(See Clause B.2, B.3)	N/A
	No harm by explosion during single fault conditions	(See Clause B.4)	N/A
<b>4.6</b>	<b>Fixing of conductors</b>		P
	Fix conductors not to defeat a safeguard		P



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Compliance is checked by test..... :	(See Clause T.2)	P
<b>4.7</b>	<b>Equipment for direct insertion into mains socket-outlets</b>		N/A
4.7.2	Mains plug part complies with relevant standard .. :		N/A
4.7.3	Torque (Nm) .....		N/A
<b>4.8</b>	<b>Equipment containing coin/button cell batteries</b>		N/A
4.8.1	General		N/A
4.8.2	Instructional safeguard .....		N/A
4.8.3	Battery compartment door/cover construction		N/A
	Open torque test		N/A
4.8.4.2	Stress relief test		N/A
4.8.4.3	Battery replacement test		N/A
4.8.4.4	Drop test		N/A
4.8.4.5	Impact test		N/A
4.8.4.6	Crush test		N/A
4.8.5	Compliance		N/A
	30N force test with test probe		N/A
	20N force test with test hook		N/A
<b>4.9</b>	<b>Likelihood of fire or shock due to entry of conductive object</b>		N/A
<b>4.10</b>	<b>Component requirements</b>		N/A
4.10.1	Disconnect Device	(See Annex L)	P
4.10.2	Switches and relays	(See Annex G)	N/A

<b>5</b>	<b>ELECTRICALLY-CAUSED INJURY</b>		P
<b>5.2</b>	<b>Classification and limits of electrical energy sources</b>		P
5.2.2	ES1, ES2 and ES3 limits		P
5.2.2.2	Steady-state voltage and current limits .....	(See appended table 5.2)	P
5.2.2.3	Capacitance limits .....	(See appended table 5.2)	N/A
5.2.2.4	Single pulse limits .....	(See appended table 5.2)	N/A
5.2.2.5	Limits for repetitive pulses .....	(See appended table 5.2)	N/A
5.2.2.6	Ringling signals	(See Annex H)	N/A
5.2.2.7	Audio signals	(See Clause E.1)	N/A
<b>5.3</b>	<b>Protection against electrical energy sources</b>		P



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.3.1	General Requirements for accessible parts to ordinary, instructed and skilled persons		P
5.3.1 a)	Accessible ES1/ES2 derived from ES2/ES3 circuits		N/A
5.3.1 b)	Skilled persons not unintentional contact ES3 bare conductors		N/A
5.3.2.1	Accessibility to electrical energy sources and safeguards		N/A
	Accessibility to outdoor equipment bare parts		N/A
5.3.2.2	Contact requirements		N/A
	Test with test probe from Annex V		—
5.3.2.2 a)	Air gap – electric strength test potential (V) .....	(See appended table 5.4.9)	N/A
5.3.2.2 b)	Air gap – distance (mm) .....		N/A
5.3.2.3	Compliance		N/A
5.3.2.4	Terminals for connecting stripped wire		N/A
<b>5.4</b>	<b>Insulation materials and requirements</b>		P
5.4.1.2	Properties of insulating material		P
5.4.1.3	Material is non-hygroscopic		P
5.4.1.4	Maximum operating temperature for insulating materials .....	(See appended table)	P
5.4.1.5	Pollution degrees .....	PD1	P
5.4.1.5.2	Test for pollution degree 1 environment and for an insulating compound		N/A
5.4.1.5.3	Thermal cycling test		N/A
5.4.1.6	Insulation in transformers with varying dimensions		N/A
5.4.1.7	Insulation in circuits generating starting pulses		N/A
5.4.1.8	Determination of working voltage .....	(See appended table 5.4.1.8)	P
5.4.1.9	Insulating surfaces		P
5.4.1.10	Thermoplastic parts on which conductive metallic parts are directly mounted		P
5.4.1.10.2	Vicat test.....	(See appended table 5.4.1.10.2)	N/A
5.4.1.10.3	Ball pressure test .....	(See appended table 5.4.1.10.3)	P
5.4.2	Clearances		P
5.4.2.1	General requirements		P



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Clearances in circuits connected to AC Mains, Alternative method	(See Annex X)	N/A
5.4.2.2	Procedure 1 for determining clearance		P
	Temporary overvoltage .....		—
5.4.2.3	Procedure 2 for determining clearance		N/A
5.4.2.3.2.2	a.c. mains transient voltage .....		—
5.4.2.3.2.3	d.c. mains transient voltage .....		—
5.4.2.3.2.4	External circuit transient voltage.....		—
5.4.2.3.2.5	Transient voltage determined by measurement .....		—
5.4.2.4	Determining the adequacy of a clearance using an electric strength test .....	(See appended table 5.4.2)	P
5.4.2.5	Multiplication factors for clearances and test voltages .....		N/A
5.4.2.6	Clearance measurement .....	(See appended table 5.4.2)	P
5.4.3	Creepage distances		P
5.4.3.1	General		P
5.4.3.3	Material group .....		—
5.4.3.4	Creepage distances measurement .....	(See appended table 5.4.3)	P
5.4.4	Solid insulation		P
5.4.4.1	General requirements		P
5.4.4.2	Minimum distance through insulation .....	(See appended table 5.4.4.2)	N/A
5.4.4.3	Insulating compound forming solid insulation		N/A
5.4.4.4	Solid insulation in semiconductor devices		N/A
5.4.4.5	Insulating compound forming cemented joints		N/A
5.4.4.6	Thin sheet material		N/A
5.4.4.6.1	General requirements		N/A
5.4.4.6.2	Separable thin sheet material		N/A
	Number of layers (pcs) .....		N/A
5.4.4.6.3	Non-separable thin sheet material		N/A
	Number of layers (pcs) .....		N/A
5.4.4.6.4	Standard test procedure for non-separable thin sheet material .....	(See appended table 5.4.9)	N/A
5.4.4.6.5	Mandrel test		N/A



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.4.7	Solid insulation in wound components		N/A
5.4.4.9	Solid insulation at frequencies >30 kHz, $E_P$ , $K_R$ , $d$ , $V_{PW}$ (V) .....	(See appended Table 5.4.4.9)	N/A
	Alternative by electric strength test, tested voltage (V), $K_R$ .....	(See appended Tables 5.4.4.9 and 5.4.9)	N/A
5.4.5	Antenna terminal insulation		N/A
5.4.5.1	General		N/A
5.4.5.2	Voltage surge test		N/A
5.4.5.3	Insulation resistance (M $\Omega$ ) .....		N/A
	Electric strength test .....	(See appended table 5.4.9)	N/A
5.4.6	Insulation of internal wire as part of supplementary safeguard		N/A
5.4.7	Tests for semiconductor components and for cemented joints		N/A
5.4.8	Humidity conditioning		P
	Relative humidity (%), temperature ( $^{\circ}$ C), duration (h) .....		—
5.4.9	Electric strength test		P
5.4.9.1	Test procedure for type test of solid insulation .....	(See appended table 5.4.9)	P
5.4.9.2	Test procedure for routine test		P
5.4.10	Safeguards against transient voltages from external circuits		N/A
5.4.10.1	Parts and circuits separated from external circuits		N/A
5.4.10.2	Test methods		N/A
5.4.10.2.1	General		N/A
5.4.10.2.2	Impulse test .....	(See appended table 5.4.9)	N/A
5.4.10.2.3	Steady-state test .....	(See appended table 5.4.9)	N/A
5.4.10.3	Verification for insulation breakdown for impulse test .....		N/A
5.4.11	Separation between external circuits and earth		N/A
5.4.11.1	Exceptions to separation between external circuits and earth		N/A
5.4.11.2	Requirements		N/A
	SPDs bridge separation between external circuit and earth		N/A



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Rated operating voltage $U_{op}$ (V)..... :		—
	Nominal voltage $U_{peak}$ (V)..... :		—
	Max increase due to variation $\Delta U_{sp}$ ..... :		—
	Max increase due to ageing $\Delta U_{sa}$ ..... :		—
5.4.11.3	Test method and compliance ..... :	(See appended table 5.4.9)	N/A
5.4.12	Insulating liquid		N/A
5.4.12.1	General requirements		N/A
5.4.12.2	Electric strength of an insulating liquid ..... :	(See appended table 5.4.9)	N/A
5.4.12.3	Compatibility of an insulating liquid ..... :	(See appended table 5.4.9)	N/A
5.4.12.4	Container for insulating liquid ..... :		N/A
<b>5.5</b>	<b>Components as safeguards</b>		N/A
5.5.1	General		N/A
5.5.2	Capacitors and RC units		N/A
5.5.2.1	General requirement		N/A
5.5.2.2	Safeguards against capacitor discharge after disconnection of a connector..... :	(See appended table 5.5.2.2)	N/A
5.5.3	Transformers		N/A
5.5.4	Optocouplers	(See sub-clause 5.4 or Clause G.12)	N/A
5.5.5	Relays	(See sub-clause 5.4)	N/A
5.5.6	Resistors	(See Clause G.10)	N/A
5.5.7	SPDs	(See Clause G.8)	N/A
5.5.8	Insulation between the mains and an external circuit consisting of a coaxial cable ..... :		N/A
5.5.9	Safeguards for socket-outlets in outdoor equipment		N/A
	RCD rated residual operating current (mA)..... :		—
<b>5.6</b>	<b>Protective conductor</b>		N/A
5.6.2	Requirement for protective conductors		N/A
5.6.2.1	General requirements		N/A
5.6.2.2	Colour of insulation		N/A
5.6.3	Requirement for protective earthing conductors		N/A
	Protective earthing conductor size (mm <sup>2</sup> ) ..... :		—



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Protective earthing conductor serving as a reinforced safeguard		N/A
	Protective earthing conductor serving as a double safeguard		N/A
5.6.4	Requirements for protective bonding conductors		N/A
5.6.4.1	Protective bonding conductors		N/A
	Protective bonding conductor size (mm <sup>2</sup> ). ..... :		—
5.6.4.2	Protective current rating (A)..... :		N/A
5.6.5	Terminals for protective conductors		N/A
5.6.5.1	Terminal size for connecting protective earthing conductors (mm)..... :		N/A
	Terminal size for connecting protective bonding conductors (mm) ..... :		N/A
5.6.5.2	Corrosion		N/A
5.6.6	Resistance of the protective bonding system		N/A
5.6.6.1	Requirements		N/A
5.6.6.2	Test Method..... :	(See appended table 5.6.6)	N/A
5.6.6.3	Resistance ( $\Omega$ ) or voltage drop..... :	(See appended table 5.6.6)	N/A
5.6.7	Reliable connection of a protective earthing conductor		N/A
5.6.8	Functional earthing		N/A
	Conductor size (mm <sup>2</sup> ). ..... :		N/A
	Class II with functional earthing marking ..... :		N/A
	Appliance inlet cl & cr (mm)..... :		N/A
<b>5.7</b>	<b>Prospective touch voltage, touch current and protective conductor current</b>		<b>P</b>
5.7.2	Measuring devices and networks		P
5.7.2.1	Measurement of touch current		P
5.7.2.2	Measurement of voltage		P
5.7.3	Equipment set-up, supply connections and earth connections		N/A
5.7.4	Unearthed accessible parts ..... :	(See appended table 5.7.4)	N/A
5.7.5	Earthed accessible conductive parts ..... :	(See appended table 5.7.5)	N/A
5.7.6	Requirements when touch current exceeds ES2 limits		N/A



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Protective conductor current (mA)..... :		N/A
	Instructional Safeguard..... :		N/A
5.7.7	Prospective touch voltage and touch current associated with external circuits		N/A
5.7.7.1	Touch current from coaxial cables		N/A
5.7.7.2	Prospective touch voltage and touch current associated with paired conductor cables		N/A
5.7.8	Summation of touch currents from external circuits		N/A
	a) Equipment connected to earthed external circuits, current (mA) .....		N/A
	b) Equipment connected to unearthed external circuits, current (mA) .....		N/A
<b>5.8</b>	<b>Backfeed safeguard in battery backed up supplies</b>		N/A
	Mains terminal ES..... :	(See appended table 5.8)	N/A
	Air gap (mm)..... :		N/A



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
<b>6</b>	<b>ELECTRICALLY- CAUSED FIRE</b>		P
<b>6.2</b>	<b>Classification of PS and PIS</b>		P
6.2.2	Power source circuit classifications .....	(See appended table 6.2.2)	P
6.2.3	Classification of potential ignition sources		P
6.2.3.1	Arcing PIS .....	(See appended table 6.2.3.1)	N/A
6.2.3.2	Resistive PIS .....	(See appended table 6.2.3.2)	N/A
<b>6.3</b>	<b>Safeguards against fire under normal operating and abnormal operating conditions</b>		P
6.3.1	No ignition and attainable temperature value less than 90 % defined by ISO 871 or less than 300 °C for unknown materials .....	(See appended table B.1.5 and B.3)	P
	Combustible materials outside fire enclosure .....		P
<b>6.4</b>	<b>Safeguards against fire under single fault conditions</b>		P
6.4.1	Safeguard method		N/A
6.4.2	Reduction of the likelihood of ignition under single fault conditions in PS1 circuits		P
6.4.3	Reduction of the likelihood of ignition under single fault conditions in PS2 and PS3 circuits		N/A
6.4.3.1	Supplementary safeguards		N/A
6.4.3.2	Single Fault Conditions .....	(See appended table B.4)	N/A
	Special conditions for temperature limited by fuse		N/A
6.4.4	Control of fire spread in PS1 circuits		P
6.4.5	Control of fire spread in PS2 circuits		N/A
6.4.5.2	Supplementary safeguards		N/A
6.4.6	Control of fire spread in PS3 circuits		N/A
6.4.7	Separation of combustible materials from a PIS		N/A
6.4.7.2	Separation by distance		N/A
6.4.7.3	Separation by a fire barrier		N/A
6.4.8	Fire enclosures and fire barriers		N/A
6.4.8.2	Fire enclosure and fire barrier material properties		N/A
6.4.8.2.1	Requirements for a fire barrier		N/A
6.4.8.2.2	Requirements for a fire enclosure		N/A



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
6.4.8.3	Constructional requirements for a fire enclosure and a fire barrier		N/A
6.4.8.3.1	Fire enclosure and fire barrier openings		N/A
6.4.8.3.2	Fire barrier dimensions		N/A
6.4.8.3.3	Top openings and properties		N/A
	Openings dimensions (mm)..... :		N/A
6.4.8.3.4	Bottom openings and properties		N/A
	Openings dimensions (mm)..... :		N/A
	Flammability tests for the bottom of a fire enclosure	(See Clause S.3)	N/A
	Instructional Safeguard..... :		N/A
6.4.8.3.5	Side openings and properties		N/A
	Openings dimensions (mm)..... :		N/A
6.4.8.3.6	Integrity of a fire enclosure, condition met: a), b) or c)..... :		N/A
6.4.8.4	Separation of a PIS from a fire enclosure and a fire barrier distance (mm) or flammability rating..... :		N/A
6.4.9	Flammability of insulating liquid..... :		N/A
<b>6.5</b>	<b>Internal and external wiring</b>		N/A
6.5.1	General requirements		N/A
6.5.2	Requirements for interconnection to building wiring..... :		N/A
6.5.3	Internal wiring size (mm <sup>2</sup> ) for socket-outlets..... :		N/A
<b>6.6</b>	<b>Safeguards against fire due to the connection to additional equipment</b>		N/A

<b>7</b>	<b>INJURY CAUSED BY HAZARDOUS SUBSTANCES</b>		N/A
<b>7.2</b>	<b>Reduction of exposure to hazardous substances</b>		N/A
<b>7.3</b>	<b>Ozone exposure</b>		N/A
<b>7.4</b>	<b>Use of personal safeguards or personal protective equipment (PPE)</b>		N/A
	Personal safeguards and instructions..... :		—
<b>7.5</b>	<b>Use of instructional safeguards and instructions</b>		N/A
	Instructional safeguard (ISO 7010)..... :		—
<b>7.6</b>	<b>Batteries and their protection circuits</b>		N/A



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
<b>8</b>	<b>MECHANICALLY-CAUSED INJURY</b>		P
<b>8.2</b>	<b>Mechanical energy source classifications</b>		P
<b>8.3</b>	<b>Safeguards against mechanical energy sources</b>		P
<b>8.4</b>	<b>Safeguards against parts with sharp edges and corners</b>		P
8.4.1	Safeguards		N/A
	Instructional Safeguard .....		N/A
8.4.2	Sharp edges or corners		N/A
<b>8.5</b>	<b>Safeguards against moving parts</b>		N/A
8.5.1	Fingers, jewellery, clothing, hair, etc., contact with MS2 or MS3 parts		N/A
	MS2 or MS3 part required to be accessible for the function of the equipment		N/A
	Moving MS3 parts only accessible to skilled person		N/A
8.5.2	Instructional safeguard.....		N/A
8.5.4	Special categories of equipment containing moving parts		N/A
8.5.4.1	General		N/A
8.5.4.2	Equipment containing work cells with MS3 parts		N/A
8.5.4.2.1	Protection of persons in the work cell		N/A
8.5.4.2.2	Access protection override		N/A
8.5.4.2.2.1	Override system		N/A
8.5.4.2.2.2	Visual indicator		N/A
8.5.4.2.3	Emergency stop system		N/A
	Maximum stopping distance from the point of activation (m).....		N/A
	Space between end point and nearest fixed mechanical part (mm) .....		N/A
8.5.4.2.4	Endurance requirements		N/A
	Mechanical system subjected to 100 000 cycles of operation		N/A
	- Mechanical function check and visual inspection		N/A
	- Cable assembly .....		N/A
8.5.4.3	Equipment having electromechanical device for destruction of media		N/A



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
8.5.4.3.1	Equipment safeguards		N/A
8.5.4.3.2	Instructional safeguards against moving parts .....		N/A
8.5.4.3.3	Disconnection from the supply		N/A
8.5.4.3.4	Cut type and test force (N).....		N/A
8.5.4.3.5	Compliance		N/A
8.5.5	High pressure lamps		N/A
	Explosion test.....		N/A
8.5.5.3	Glass particles dimensions (mm) .....		N/A
<b>8.6</b>	<b>Stability of equipment</b>		P
8.6.1	General		P
	Instructional safeguard.....		N/A
8.6.2	Static stability		N/A
8.6.2.2	Static stability test .....		N/A
8.6.2.3	Downward force test		N/A
8.6.3	Relocation stability		N/A
	Wheels diameter (mm) .....		—
	Tilt test		N/A
8.6.4	Glass slide test		N/A
8.6.5	Horizontal force test .....		N/A
<b>8.7</b>	<b>Equipment mounted to wall, ceiling or other structure</b>		P
8.7.1	Mount means type .....		P
8.7.2	Test methods		N/A
	Test 1, additional downwards force (N).....		N/A
	Test 2, number of attachment points and test force (N).....		N/A
	Test 3 Nominal diameter (mm) and applied torque (Nm).....		N/A
<b>8.8</b>	<b>Handles strength</b>		N/A
8.8.1	General		N/A
8.8.2	Handle strength test		N/A
	Number of handles.....		—
	Force applied (N) .....		—



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
<b>8.9</b>	<b>Wheels or casters attachment requirements</b>		N/A
8.9.2	Pull test		N/A
<b>8.10</b>	<b>Carts, stands and similar carriers</b>		N/A
8.10.1	General		N/A
8.10.2	Marking and instructions.....:		N/A
8.10.3	Cart, stand or carrier loading test		N/A
	Loading force applied (N).....:		N/A
8.10.4	Cart, stand or carrier impact test		N/A
8.10.5	Mechanical stability		N/A
	Force applied (N).....:		—
8.10.6	Thermoplastic temperature stability		N/A
<b>8.11</b>	<b>Mounting means for slide-rail mounted equipment (SRME)</b>		N/A
8.11.1	General		N/A
8.11.2	Requirements for slide rails		N/A
	Instructional Safeguard.....:		N/A
8.11.3	Mechanical strength test		N/A
8.11.3.1	Downward force test, force (N) applied.....:		N/A
8.11.3.2	Lateral push force test		N/A
8.11.3.3	Integrity of slide rail end stops		N/A
8.11.4	Compliance		N/A
<b>8.12</b>	<b>Telescoping or rod antennas</b>		N/A
	Button/ball diameter (mm).....:		—

<b>9</b>	<b>THERMAL BURN INJURY</b>		P
<b>9.2</b>	<b>Thermal energy source classifications</b>		P
<b>9.3</b>	<b>Touch temperature limits</b>		P
9.3.1	Touch temperatures of accessible parts.....:	(See appended table)	P
9.3.2	Test method and compliance		P
<b>9.4</b>	<b>Safeguards against thermal energy sources</b>		N/A
<b>9.5</b>	<b>Requirements for safeguards</b>		N/A
9.5.1	Equipment safeguard		N/A
9.5.2	Instructional safeguard.....:		N/A



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
<b>9.6</b>	<b>Requirements for wireless power transmitters</b>		N/A
9.6.1	General		N/A
9.6.2	Specification of the foreign objects		N/A
9.6.3	Test method and compliance .....	(See appended table 9.6)	N/A

<b>10</b>	<b>RADIATION</b>		P
<b>10.2</b>	<b>Radiation energy source classification</b>		P
10.2.1	General classification		P
	Lasers .....		—
	Lamps and lamp systems .....	LEDs	—
	Image projectors .....		—
	X-Ray .....		—
	Personal music player .....		—
<b>10.3</b>	<b>Safeguards against laser radiation</b>		N/A
	The standard(s) equipment containing laser(s) comply .....		N/A
<b>10.4</b>	<b>Safeguards against optical radiation from lamps and lamp systems (including LED types)</b>		P
10.4.1	General requirements		P
	Instructional safeguard provided for accessible radiation level needs to exceed		P
	Risk group marking and location .....	Dominant Wavelength/CCT Red (619 - 624nm) Green (520 - 535nm) Blue (460 - 475nm) White(3000K/4000K/5000K/5700K) Exempt Group Risk Group 1	P
	Information for safe operation and installation		N/A
10.4.2	Requirements for enclosures		N/A
	UV radiation exposure .....	(See Annex C)	N/A
10.4.3	Instructional safeguard .....		N/A
<b>10.5</b>	<b>Safeguards against X-radiation</b>		N/A
10.5.1	Requirements		N/A
	Instructional safeguard for skilled persons .....		—



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
10.5.3	Maximum radiation (pA/kg)..... :	(See appended tables B.3 & B.4)	—
<b>10.6</b>	<b>Safeguards against acoustic energy sources</b>		N/A
10.6.1	General		N/A
10.6.2	Classification		N/A
	Acoustic output $L_{Aeq,T}$ , dB(A)..... :		N/A
	Unweighted RMS output voltage (mV)..... :		N/A
	Digital output signal (dBFS)..... :		N/A
10.6.3	Requirements for dose-based systems		N/A
10.6.3.1	General requirements		N/A
10.6.3.2	Dose-based warning and automatic decrease		N/A
10.6.3.3	Exposure-based warning and requirements		N/A
	30 s integrated exposure level (MEL30) ..... :		N/A
	Warning for MEL $\geq$ 100 dB(A) ..... :		N/A
10.6.4	Measurement methods		N/A
10.6.5	Protection of persons		N/A
	Instructional safeguards ..... :		N/A
10.6.6	Requirements for listening devices (headphones, earphones, etc.)		N/A
10.6.6.1	Corded listening devices with analogue input		N/A
	Listening device input voltage (mV)..... :		N/A
10.6.6.2	Corded listening devices with digital input		N/A
	Max. acoustic output $L_{Aeq,T}$ , dB(A) ..... :		N/A
10.6.6.3	Cordless listening devices		N/A
	Max. acoustic output $L_{Aeq,T}$ , dB(A) ..... :		N/A

<b>B</b>	<b>NORMAL OPERATING CONDITION TESTS, ABNORMAL OPERATING CONDITION TESTS AND SINGLE FAULT CONDITION TESTS</b>		P
<b>B.1</b>	<b>General</b>		P
B.1.5	Temperature measurement conditions	(See appended table B.1.5)	P
<b>B.2</b>	<b>Normal operating conditions</b>		P
B.2.1	General requirements..... :	(See Test Item Particulars and appended test tables)	P



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Audio Amplifiers and equipment with audio amplifiers .....	(See Annex E)	N/A
B.2.3	Supply voltage and tolerances		P
B.2.5	Input test .....	(See appended table B.2.5)	P
<b>B.3</b>	<b>Simulated abnormal operating conditions</b>		N/A
B.3.1	General		N/A
B.3.2	Covering of ventilation openings		N/A
	Instructional safeguard .....		N/A
B.3.3	DC mains polarity test		N/A
B.3.4	Setting of voltage selector		N/A
B.3.5	Maximum load at output terminals		N/A
B.3.6	Reverse battery polarity		N/A
B.3.7	Audio amplifier abnormal operating conditions		N/A
B.3.8	Safeguards functional during and after abnormal operating conditions .....	(See appended table B.3)	N/A
<b>B.4</b>	<b>Simulated single fault conditions</b>		N/A
B.4.1	General		N/A
B.4.2	Temperature controlling device		N/A
B.4.3	Blocked motor test		N/A
B.4.4	Functional insulation		N/A
B.4.4.1	Short circuit of clearances for functional insulation		N/A
B.4.4.2	Short circuit of creepage distances for functional insulation		N/A
B.4.4.3	Short circuit of functional insulation on coated printed boards		N/A
B.4.5	Short-circuit and interruption of electrodes in tubes and semiconductors		N/A
B.4.6	Short circuit or disconnection of passive components		N/A
B.4.7	Continuous operation of components		N/A
B.4.8	Compliance during and after single fault conditions .....	(See appended table B.4)	N/A
B.4.9	Battery charging and discharging under single fault conditions	(See Annex M)	N/A
<b>C</b>	<b>UV RADIATION</b>		—



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
<b>C.1</b>	<b>Protection of materials in equipment from UV radiation</b>		—
C.1.2	Requirements		—
C.1.3	Test method		—
<b>C.2</b>	<b>UV light conditioning test</b>		—
C.2.1	Test apparatus..... :		—
C.2.2	Mounting of test samples		—
C.2.3	Carbon-arc light-exposure test		—
C.2.4	Xenon-arc light-exposure test		—
<b>D</b>	<b>TEST GENERATORS</b>		—
<b>D.1</b>	<b>Impulse test generators</b>		—
<b>D.2</b>	<b>Antenna interface test generator</b>		—
<b>D.3</b>	<b>Electronic pulse generator</b>		—
<b>E</b>	<b>TEST CONDITIONS FOR EQUIPMENT CONTAINING AUDIO AMPLIFIERS</b>		N/A
<b>E.1</b>	<b>Electrical energy source classification for audio signals</b>		N/A
	Maximum non-clipped output power (W)..... :		—
	Rated load impedance ( $\Omega$ ) .....		—
	Open-circuit output voltage (V)..... :		—
	Instructional safeguard .....	See Clause F.5	—
<b>E.2</b>	<b>Audio amplifier normal operating conditions</b>		N/A
	Audio signal source type .....		—
	Audio output power (W)..... :		—
	Audio output voltage (V) .....		—
	Rated load impedance ( $\Omega$ ) .....		—
	Requirements for temperature measurement	(See Table B.1.5)	N/A
E.3	Audio amplifier abnormal operating conditions	(See Table B.3, B.4)	N/A
<b>F</b>	<b>EQUIPMENT MARKINGS, INSTRUCTIONS, AND INSTRUCTIONAL SAFEGUARDS</b>		P
<b>F.1</b>	<b>General</b>		P
	Language .....		—
<b>F.2</b>	<b>Letter symbols and graphical symbols</b>		P
F.2.1	Letter symbols according to IEC60027-1		P



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
F.2.2	Graphic symbols according to IEC, ISO or manufacturer specific		P
<b>F.3</b>	<b>Equipment markings</b>		P
F.3.1	Equipment marking locations		P
F.3.2	Equipment identification markings		P
F.3.2.1	Manufacturer identification .....	hera	P
F.3.2.2	Model identification .....	P0102510505002050100	P
F.3.3	Equipment rating markings		P
F.3.3.1	Equipment with direct connection to mains		N/A
F.3.3.2	Equipment without direct connection to mains		P
F.3.3.3	Nature of the supply voltage .....	DC	N/A
F.3.3.4	Rated voltage .....	48 V	P
F.3.3.5	Rated frequency .....		N/A
F.3.3.6	Rated current or rated power .....	0,1A 4,8W	P
F.3.3.7	Equipment with multiple supply connections		N/A
F.3.4	Voltage setting device		N/A
F.3.5	Terminals and operating devices		N/A
F.3.5.1	Mains appliance outlet and socket-outlet markings .....		N/A
F.3.5.2	Switch position identification marking .....		N/A
F.3.5.3	Replacement fuse identification and rating markings .....		N/A
	Instructional safeguards for neutral fuse .....		N/A
F.3.5.4	Replacement battery identification marking .....		N/A
F.3.5.5	Neutral conductor terminal		N/A
F.3.5.6	Terminal marking location		N/A
F.3.6	Equipment markings related to equipment classification		P
F.3.6.1	Class I equipment		N/A
F.3.6.1.1	Protective earthing conductor terminal .....		N/A
F.3.6.1.2	Protective bonding conductor terminals .....		N/A
F.3.6.2	Equipment class marking .....	Class III	N/A
F.3.6.3	Functional earthing terminal marking .....		N/A



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
F.3.7	Equipment IP rating marking .....	IP67	P
F.3.8	External power supply output marking .....		N/A
F.3.9	Durability, legibility and permanence of marking		P
F.3.10	Test for permanence of markings		P
<b>F.4</b>	<b>Instructions</b>		P
	a) Information prior to installation and initial use		P
	b) Equipment for use in locations where children not likely to be present		N/A
	c) Instructions for installation and interconnection		N/A
	d) Equipment intended for use only in restricted access area		N/A
	e) Equipment intended to be fastened in place		P
	f) Instructions for audio equipment terminals		N/A
	g) Protective earthing used as a safeguard		N/A
	h) Protective conductor current exceeding ES2 limits		N/A
	i) Graphic symbols used on equipment		P
	j) Permanently connected equipment not provided with all-pole mains switch		N/A
	k) Replaceable components or modules providing safeguard function		N/A
	l) Equipment containing insulating liquid		N/A
	m) Installation instructions for outdoor equipment		N/A
<b>F.5</b>	Instructional safeguards		N/A
<b>G</b>	<b>COMPONENTS</b>		P
<b>G.1</b>	<b>Switches</b>		N/A
G.1.1	General		N/A
G.1.2	Ratings, endurance, spacing, maximum load		N/A
G.1.3	Test method and compliance		N/A
<b>G.2</b>	<b>Relays</b>		N/A
G.2.1	Requirements		N/A
G.2.2	Overload test		N/A
G.2.3	Relay controlling connectors supplying power to other equipment		N/A



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
G.2.4	Test method and compliance		N/A
<b>G.3</b>	<b>Protective devices</b>		N/A
G.3.1	Thermal cut-offs		N/A
	Thermal cut-outs separately approved according to IEC 60730 with conditions indicated in a) & b)		N/A
	Thermal cut-outs tested as part of the equipment as indicated in c)		N/A
G.3.1.2	Test method and compliance		N/A
G.3.2	Thermal links		N/A
G.3.2.1	a) Thermal links tested separately according to IEC 60691 with specifics		N/A
	b) Thermal links tested as part of the equipment		N/A
G.3.2.2	Test method and compliance		N/A
G.3.3	PTC thermistors		N/A
G.3.4	Overcurrent protection devices		N/A
G.3.5	Safeguards components not mentioned in G.3.1 to G.3.4		N/A
G.3.5.1	Non-resettable devices suitably rated and marking provided		N/A
G.3.5.2	Single faults conditions..... :	(See appended table B.4)	N/A
<b>G.4</b>	<b>Connectors</b>		P
G.4.1	Spacings		P
G.4.2	Mains connector configuration .....		N/A
G.4.3	Plug is shaped that insertion into mains socket-outlets or appliance coupler is unlikely		P
<b>G.5</b>	<b>Wound components</b>		N/A
G.5.1	Wire insulation in wound components		N/A
G.5.1.2	Protection against mechanical stress		N/A
G.5.2	Endurance test		N/A
G.5.2.1	General test requirements		N/A
G.5.2.2	Heat run test		N/A
	Test time (days per cycle) .....		—
	Test temperature (°C)..... :		—
G.5.2.3	Wound components supplied from the mains		N/A



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
G.5.2.4	No insulation breakdown		N/A
G.5.3	Transformers		N/A
G.5.3.1	Compliance method..... :		N/A
	Position ..... :		N/A
	Method of protection..... :		N/A
G.5.3.2	Insulation		N/A
	Protection from displacement of windings..... :		—
G.5.3.3	Transformer overload tests		N/A
G.5.3.3.1	Test conditions		N/A
G.5.3.3.2	Winding temperatures		N/A
G.5.3.3.3	Winding temperatures - alternative test method		N/A
G.5.3.4	Transformers using FIW		N/A
G.5.3.4.1	General		N/A
	FIW wire nominal diameter..... :		—
G.5.3.4.2	Transformers with basic insulation only		N/A
G.5.3.4.3	Transformers with double insulation or reinforced insulation..... :		N/A
G.5.3.4.4	Transformers with FIW wound on metal or ferrite core		N/A
G.5.3.4.5	Thermal cycling test and compliance		N/A
G.5.3.4.6	Partial discharge test		N/A
G.5.3.4.7	Routine test		N/A
G.5.4	Motors		N/A
G.5.4.1	General requirements		N/A
G.5.4.2	Motor overload test conditions		N/A
G.5.4.3	Running overload test		N/A
G.5.4.4.2	Locked-rotor overload test		N/A
	Test duration (days) ..... :		—
G.5.4.5	Running overload test for DC motors		N/A
G.5.4.5.2	Tested in the unit		N/A
G.5.4.5.3	Alternative method		N/A
G.5.4.6	Locked-rotor overload test for DC motors		N/A
G.5.4.6.2	Tested in the unit		N/A



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Maximum Temperature .....		N/A
G.5.4.6.3	Alternative method		N/A
G.5.4.7	Motors with capacitors		N/A
G.5.4.8	Three-phase motors		N/A
G.5.4.9	Series motors		N/A
	Operating voltage .....		—
<b>G.6</b>	<b>Wire Insulation</b>		P
G.6.1	General		N/A
G.6.2	Enamelled winding wire insulation		N/A
<b>G.7</b>	<b>Mains supply cords</b>		P
G.7.1	General requirements		P
	Type.....		—
G.7.2	Cross sectional area (mm <sup>2</sup> or AWG) .....	<3A	P
G.7.3	Cord anchorages and strain relief for non-detachable power supply cords		P
G.7.3.2	Cord strain relief		P
G.7.3.2.1	Requirements		P
	Strain relief test force (N).....	30N	P
G.7.3.2.2	Strain relief mechanism failure		N/A
G.7.3.2.3	Cord sheath or jacket position, distance (mm) .....		N/A
G.7.3.2.4	Strain relief and cord anchorage material		N/A
G.7.4	Cord Entry		N/A
G.7.5	Non-detachable cord bend protection		N/A
G.7.5.1	Requirements		N/A
G.7.5.2	Test method and compliance		N/A
	Overall diameter or minor overall dimension, <i>D</i> (mm) .....		—
	Radius of curvature after test (mm).....		—
G.7.6	Supply wiring space		P
G.7.6.1	General requirements		P
G.7.6.2	Stranded wire		P
G.7.6.2.1	Requirements		P
G.7.6.2.2	Test with 8 mm strand		N/A



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
<b>G.8</b>	<b>Varistors</b>		N/A
G.8.1	General requirements		N/A
G.8.2	Safeguards against fire		N/A
G.8.2.1	General		N/A
G.8.2.2	Varistor overload test		N/A
G.8.2.3	Temporary overvoltage test		N/A
<b>G.9</b>	<b>Integrated circuit (IC) current limiters</b>		N/A
G.9.1	Requirements		N/A
	IC limiter output current (max. 5A) .....		—
	Manufacturers' defined drift .....		—
G.9.2	Test Program		N/A
G.9.3	Compliance		N/A
<b>G.10</b>	<b>Resistors</b>		N/A
G.10.1	General		N/A
G.10.2	Conditioning		N/A
G.10.3	Resistor test		N/A
G.10.4	Voltage surge test		N/A
G.10.5	Impulse test		N/A
G.10.6	Overload test		N/A
<b>G.11</b>	<b>Capacitors and RC units</b>		N/A
G.11.1	General requirements		N/A
G.11.2	Conditioning of capacitors and RC units		N/A
G.11.3	Rules for selecting capacitors		N/A
<b>G.12</b>	<b>Optocouplers</b>		N/A
	Optocouplers comply with IEC 60747-5-5 with specifics		N/A
	Type test voltage $V_{ini,a}$ .....		—
	Routine test voltage, $V_{ini,b}$ .....		—
<b>G.13</b>	<b>Printed boards</b>		P
G.13.1	General requirements		P
G.13.2	Uncoated printed boards		N/A
G.13.3	Coated printed boards		P



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
G.13.4	Insulation between conductors on the same inner surface		P
G.13.5	Insulation between conductors on different surfaces		P
	Distance through insulation ..... :		P
	Number of insulation layers (pcs) ..... :		—
G.13.6	Tests on coated printed boards		—
G.13.6.1	Sample preparation and preliminary inspection		—
G.13.6.2	Test method and compliance		—
<b>G.14</b>	<b>Coating on components terminals</b>		N/A
G.14.1	Requirements ..... :	(See Clause G.13)	N/A
<b>G.15</b>	<b>Pressurized liquid filled components</b>		N/A
G.15.1	Requirements		N/A
G.15.2	Test methods and compliance		N/A
G.15.2.1	Hydrostatic pressure test		N/A
G.15.2.2	Creep resistance test		N/A
G.15.2.3	Tubing and fittings compatibility test		N/A
G.15.2.4	Vibration test		N/A
G.15.2.5	Thermal cycling test		N/A
G.15.2.6	Force test		N/A
G.15.3	Compliance		N/A
<b>G.16</b>	<b>IC including capacitor discharge function (ICX)</b>		N/A
G.16.1	Condition for fault tested is not required		N/A
	ICX with associated circuitry tested in equipment		N/A
	ICX tested separately		N/A
G.16.2	Tests		N/A
	Smallest capacitance and smallest resistance specified by ICX manufacturer for impulse test..... :		—
	Mains voltage that impulses to be superimposed on ..... :		—
	Largest capacitance and smallest resistance for ICX tested by itself for 10000 cycles test ..... :		—
G.16.3	Capacitor discharge test..... :		N/A
<b>H</b>	<b>CRITERIA FOR TELEPHONE RINGING SIGNALS</b>		N/A



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
<b>H.1</b>	<b>General</b>		N/A
<b>H.2</b>	<b>Method A</b>		N/A
<b>H.3</b>	<b>Method B</b>		N/A
H.3.1	Ringling signal		N/A
H.3.1.1	Frequency (Hz) .....		—
H.3.1.2	Voltage (V) .....		—
H.3.1.3	Cadence; time (s) and voltage (V) .....		—
H.3.1.4	Single fault current (mA):.....		—
H.3.2	Tripping device and monitoring voltage		N/A
H.3.2.1	Conditions for use of a tripping device or a monitoring voltage		N/A
H.3.2.2	Tripping device		N/A
H.3.2.3	Monitoring voltage (V) .....		N/A
<b>J</b>	<b>INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION</b>		N/A
<b>J.1</b>	<b>General</b>		N/A
	Winding wire insulation .....		—
	Solid round winding wire, diameter (mm) .....		N/A
	Solid square and rectangular (flatwise bending) winding wire, cross-sectional area (mm <sup>2</sup> ).....		N/A
<b>J.2/J.3</b>	Tests and Manufacturing	(See separate test report)	—
<b>K</b>	<b>SAFETY INTERLOCKS</b>		N/A
<b>K.1</b>	<b>General requirements</b>		N/A
	Instructional safeguard .....		N/A
<b>K.2</b>	<b>Components of safety interlock safeguard mechanism</b>		N/A
<b>K.3</b>	<b>Inadvertent change of operating mode</b>		N/A
<b>K.4</b>	<b>Interlock safeguard override</b>		N/A
<b>K.5</b>	<b>Fail-safe</b>		N/A
K.5.1	Under single fault condition		N/A
<b>K.6</b>	<b>Mechanically operated safety interlocks</b>		N/A
K.6.1	Endurance requirement		N/A
K.6.2	Test method and compliance .....		N/A
<b>K.7</b>	<b>Interlock circuit isolation</b>		N/A



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
K.7.1	Separation distance for contact gaps & interlock circuit elements		N/A
	In circuit connected to mains, separation distance for contact gaps (mm)..... :		N/A
	In circuit isolated from mains, separation distance for contact gaps (mm)..... :		N/A
	Electric strength test before and after the test of K.7.2 .....	(See appended table 5.4.9)	N/A
K.7.2	Overload test, Current (A) .....		N/A
K.7.3	Endurance test		N/A
K.7.4	Electric strength test		N/A
<b>L</b>	<b>DISCONNECT DEVICES</b>		<b>P</b>
<b>L.1</b>	<b>General requirements</b>		<b>P</b>
<b>L.2</b>	<b>Permanently connected equipment</b>		<b>N/A</b>
<b>L.3</b>	<b>Parts that remain energized</b>		<b>N/A</b>
<b>L.4</b>	<b>Single-phase equipment</b>		<b>N/A</b>
<b>L.5</b>	<b>Three-phase equipment</b>		<b>N/A</b>
<b>L.6</b>	<b>Switches as disconnect devices</b>		<b>N/A</b>
<b>L.7</b>	<b>Plugs as disconnect devices</b>		<b>P</b>
<b>L.8</b>	<b>Multiple power sources</b>		<b>N/A</b>
	Instructional safeguard .....		<b>N/A</b>
<b>M</b>	<b>EQUIPMENT CONTAINING BATTERIES AND THEIR PROTECTION CIRCUITS</b>		<b>N/A</b>
<b>M.1</b>	<b>General requirements</b>		<b>N/A</b>
<b>M.2</b>	<b>Safety of batteries and their cells</b>		<b>N/A</b>
M.2.1	Batteries and their cells comply with relevant IEC standards .....		<b>N/A</b>
<b>M.3</b>	<b>Protection circuits for batteries provided within the equipment</b>		<b>N/A</b>
M.3.1	Requirements		<b>N/A</b>
M.3.2	Test method		<b>N/A</b>
	Overcharging of a rechargeable battery		<b>N/A</b>
	Excessive discharging		<b>N/A</b>
	Unintentional charging of a non-rechargeable battery		<b>N/A</b>
	Reverse charging of a rechargeable battery		<b>N/A</b>



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
M.3.3	Compliance	(See appended table M.3)	N/A
<b>M.4</b>	<b>Additional safeguards for equipment containing a portable secondary lithium battery</b>		N/A
M.4.1	General		N/A
M.4.2	Charging safeguards		N/A
M.4.2.1	Requirements		N/A
M.4.2.2	Compliance..... :	(See appended table M.4.2)	N/A
M.4.3	Fire enclosure..... :		N/A
M.4.4	Drop test of equipment containing a secondary lithium battery		N/A
M.4.4.2	Preparation and procedure for the drop test		N/A
M.4.4.3	Drop, Voltage on reference and dropped batteries (V); voltage difference during 24 h period (%): ..... :		N/A
M.4.4.4	Check of the charge/discharge function		N/A
M.4.4.5	Charge / discharge cycle test		N/A
M.4.4.6	Compliance		N/A
<b>M.5</b>	<b>Risk of burn due to short-circuit during carrying</b>		N/A
M.5.1	Requirement		N/A
M.5.2	Test method and compliance		N/A
<b>M.6</b>	<b>Safeguards against short-circuits</b>		N/A
M.6.1	External and internal faults		N/A
M.6.2	Compliance		N/A
<b>M.7</b>	<b>Risk of explosion from lead acid and NiCd batteries</b>		N/A
M.7.1	Ventilation preventing explosive gas concentration		N/A
	Calculated hydrogen generation rate ..... :		N/A
M.7.2	Test method and compliance		N/A
	Minimum air flow rate, Q (m <sup>3</sup> /h)..... :		N/A
M.7.3	Ventilation tests		N/A
M.7.3.1	General		N/A
M.7.3.2	Ventilation test – alternative 1		N/A
	Hydrogen gas concentration (%)..... :		N/A
M.7.3.3	Ventilation test – alternative 2		N/A
	Obtained hydrogen generation rate..... :		N/A



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
M.7.3.4	Ventilation test – alternative 3		N/A
	Hydrogen gas concentration (%) .....		N/A
M.7.4	Marking .....		N/A
<b>M.8</b>	<b>Protection against internal ignition from external spark sources of batteries with aqueous electrolyte</b>		N/A
M.8.1	General		N/A
M.8.2	Test method		N/A
M.8.2.1	General		N/A
M.8.2.2	Estimation of hypothetical volume $V_2$ (m <sup>3</sup> /s) .....		—
M.8.2.3	Correction factors .....		—
M.8.2.4	Calculation of distance $d$ (mm) .....		—
<b>M.9</b>	<b>Preventing electrolyte spillage</b>		N/A
M.9.1	Protection from electrolyte spillage		N/A
M.9.2	Tray for preventing electrolyte spillage		N/A
<b>M.10</b>	<b>Instructions to prevent reasonably foreseeable misuse</b>		N/A
	Instructional safeguard .....		N/A
<b>N</b>	<b>ELECTROCHEMICAL POTENTIALS</b>		N/A
	Material(s) used .....		—
<b>O</b>	<b>MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES</b>		P
	Value of $X$ (mm).....	>0,25	—
<b>P</b>	<b>SAFEGUARDS AGAINST CONDUCTIVE OBJECTS</b>		N/A
<b>P.1</b>	<b>General</b>		N/A
<b>P.2</b>	<b>Safeguards against entry or consequences of entry of a foreign object</b>		N/A
P.2.1	General		N/A
P.2.2	Safeguards against entry of a foreign object		N/A
	Location and Dimensions (mm) .....		—
P.2.3	Safeguards against the consequences of entry of a foreign object		N/A
P.2.3.1	Safeguard requirements		N/A
	The ES3 and PS3 keep-out volume in Figure P.3 not applicable to transportable equipment		N/A
	Transportable equipment with metalized plastic parts.....		N/A



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
P.2.3.2	Consequence of entry test..... :		N/A
<b>P.3</b>	<b>Safeguards against spillage of internal liquids</b>		N/A
P.3.1	General		N/A
P.3.2	Determination of spillage consequences		N/A
P.3.3	Spillage safeguards		N/A
P.3.4	Compliance		N/A
<b>P.4</b>	<b>Metallized coatings and adhesives securing parts</b>		N/A
P.4.1	General		N/A
P.4.2	Tests		N/A
	Conditioning, T <sub>c</sub> (°C) .....		—
	Duration (weeks) .....		—
<b>Q</b>	<b>CIRCUITS INTENDED FOR INTERCONNECTION WITH BUILDING WIRING</b>		N/A
<b>Q.1</b>	<b>Limited power sources</b>		N/A
Q.1.1	Requirements		N/A
	a) Inherently limited output		N/A
	b) Impedance limited output		N/A
	c) Regulating network limited output		N/A
	d) Overcurrent protective device limited output		N/A
	e) IC current limiter complying with G.9		N/A
Q.1.2	Test method and compliance .....	(See appended table Q.1)	N/A
	Current rating of overcurrent protective device (A) .....		N/A
<b>Q.2</b>	<b>Test for external circuits – paired conductor cable</b>		N/A
	Maximum output current (A) .....		N/A
	Current limiting method .....		—
<b>R</b>	<b>LIMITED SHORT CIRCUIT TEST</b>		N/A
<b>R.1</b>	<b>General</b>		N/A
<b>R.2</b>	<b>Test setup</b>		N/A
	Overcurrent protective device for test .....		—
<b>R.3</b>	<b>Test method</b>		N/A
	Cord/cable used for test .....		—
<b>R.4</b>	<b>Compliance</b>		N/A



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
<b>S</b>	<b>TESTS FOR RESISTANCE TO HEAT AND FIRE</b>		N/A
<b>S.1</b>	<b>Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power does not exceed 4 000 W</b>		N/A
	Samples, material..... :		—
	Wall thickness (mm) .....		—
	Conditioning (°C) .....		—
	Test flame according to IEC 60695-11-5 with conditions as set out		N/A
	- Material not consumed completely		N/A
	- Material extinguishes within 30s		N/A
	- No burning of layer or wrapping tissue		N/A
<b>S.2</b>	<b>Flammability test for fire enclosure and fire barrier integrity</b>		N/A
	Samples, material..... :		—
	Wall thickness (mm) .....		—
	Conditioning (°C) .....		—
<b>S.3</b>	<b>Flammability test for the bottom of a fire enclosure</b>		N/A
S.3.1	Mounting of samples		N/A
S.3.2	Test method and compliance		N/A
	Mounting of samples .....		—
	Wall thickness (mm) .....		—
<b>S.4</b>	<b>Flammability classification of materials</b>		N/A
<b>S.5</b>	<b>Flammability test for fire enclosure materials of equipment with a steady state power exceeding 4 000 W</b>		N/A
	Samples, material..... :		—
	Wall thickness (mm) .....		—
	Conditioning (°C) .....		—
<b>T</b>	<b>MECHANICAL STRENGTH TESTS</b>		P
<b>T.1</b>	<b>General</b>		P
<b>T.2</b>	<b>Steady force test, 10 N .....</b>	(See appended table T.2)	N/A
<b>T.3</b>	<b>Steady force test, 30 N .....</b>	(See appended table T.3)	N/A
<b>T.4</b>	<b>Steady force test, 100 N .....</b>	(See appended table T.4)	P
<b>T.5</b>	<b>Steady force test, 250 N .....</b>	(See appended table T.5)	N/A



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
<b>T.6</b>	<b>Enclosure impact test</b>	(See appended table T.6)	P
	Fall test		N/A
	Swing test		N/A
<b>T.7</b>	<b>Drop test</b> .....	(See appended table T.7)	N/A
<b>T.8</b>	<b>Stress relief test</b> .....	(See appended table T.8)	P
<b>T.9</b>	<b>Glass Impact Test</b> .....	(See appended table T.9)	N/A
<b>T.10</b>	<b>Glass fragmentation test</b>		N/A
	Number of particles counted.....		N/A
<b>T.11</b>	<b>Test for telescoping or rod antennas</b>		N/A
	Torque value (Nm) .....		N/A
<b>U</b>	<b>MECHANICAL STRENGTH OF CATHODE RAY TUBES (CRT) AND PROTECTION AGAINST THE EFFECTS OF IMPLOSION</b>		N/A
<b>U.1</b>	<b>General</b>		N/A
	Instructional safeguard :		N/A
<b>U.2</b>	<b>Test method and compliance for non-intrinsically protected CRTs</b>		N/A
<b>U.3</b>	<b>Protective screen</b>		N/A
<b>V</b>	<b>DETERMINATION OF ACCESSIBLE PARTS</b>		P
<b>V.1</b>	<b>Accessible parts of equipment</b>		P
V.1.1	General		P
V.1.2	Surfaces and openings tested with jointed test probes		P
V.1.3	Openings tested with straight unjointed test probes		P
V.1.4	Plugs, jacks, connectors tested with blunt probe		P
V.1.5	Slot openings tested with wedge probe		P
V.1.6	Terminals tested with rigid test wire		P
<b>V.2</b>	<b>Accessible part criterion</b>		P
<b>X</b>	<b>ALTERNATIVE METHOD FOR DETERMINING CLEARANCES FOR INSULATION IN CIRCUITS CONNECTED TO AN AC MAINS NOT EXCEEDING 420 V PEAK (300 V RMS)</b>		N/A
	Clearance .....	(See appended table X)	N/A
<b>Y</b>	<b>CONSTRUCTION REQUIREMENTS FOR OUTDOOR ENCLOSURES</b>		P
<b>Y.1</b>	<b>General</b>		P
<b>Y.2</b>	<b>Resistance to UV radiation</b>		P



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
<b>Y.3</b>	<b>Resistance to corrosion</b>		P
<b>Y.3</b>	<b>Resistance to corrosion</b>		P
Y.3.1	Metallic parts of outdoor enclosures are resistant to effects of water-borne contaminants by ..... :		P
Y.3.2	Test apparatus		—
Y.3.3	Water – saturated sulphur dioxide atmosphere		—
Y.3.4	Test procedure ..... :		—
Y.3.5	Compliance		—
<b>Y.4</b>	<b>Gaskets</b>		—
Y.4.1	General		—
Y.4.2	Gasket tests		—
Y.4.3	Tensile strength and elongation tests		—
	Alternative test methods ..... :		—
Y.4.4	Compression test		—
Y.4.5	Oil resistance		—
Y.4.6	Securing means	(See Annex P.4)	—
<b>Y.5</b>	<b>Protection of equipment within an outdoor enclosure</b>		P
Y.5.1	General		P
Y.5.2	Protection from moisture		P
	Relevant tests of IEC 60529 or Y.5.3 ..... :		P
Y.5.3	Water spray test		N/A
Y.5.4	Protection from plants and vermin		P
Y.5.5	Protection from excessive dust		P
Y.5.5.1	General		P
Y.5.5.2	IP5X equipment		N/A
Y.5.5.3	IP6X equipment		P
<b>Y.6</b>	<b>Mechanical strength of enclosures</b>		N/A
Y.6.1	General		N/A
Y.6.2	Impact test ..... :	(See Table T.6)	N/A



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

5.2	TABLE: Classification of electrical energy sources						P
Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters				ES Class
			U (V)	I (mA)	Type <sup>1)</sup>	Additional Info <sup>2)</sup>	
48VDC	Inlets	Normal Op.	48VDC	—	SS	—	ES1
48VDC	D1	Normal Op.	<48VDC	—	SS	—	ES1
Supplementary information:							
1) Type: Steady state (SS), Capacitance (CP), Single pulse (SP), Repetitive pulses (RP), etc.							
2) Additional Info: Frequency, Pulse duration, Pulse off time, Capacitance value, etc.							

5.4.1.8	TABLE: Working voltage measurement				P
Location	RMS voltage (V)	Peak voltage (V)	Frequency (Hz)	Comments	
Inlets	48VDC	48VDC	—	Normal Op.	
Supplementary information:					

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

5.4.1.10.3	TABLE: Ball pressure test of thermoplastics				P
Allowed impression diameter (mm).....:			≤ 2 mm		—
Object/Part No./Material	Manufacturer/trademark	Thickness (mm)	Test temperature (°C)	Impression diameter (mm)	
Connector	Chogori	—	125	0,93	
Supplementary information:					

5.4.2, 5.4.3	TABLE: Minimum Clearances/Creepage distance			P
--------------	---	--	--	---



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

Clearance (cl) and creepage distance (cr) at/of/between:	$U_p$ (V)	$U_{rms}$ (V)	Freq <sup>1)</sup> (Hz)	Required cl (mm)	cl (mm)	E.S. <sup>2)</sup> (V)	Required cr (mm)	cr (mm)
PCB to Optic Part (Basic Insulation)	48VDC	48VDC	—	0,04	0,6	—	0,18	3,7
PCB to Metal Enclosure (Basic Insulation)	48VDC	48VDC	—	0,04	0,8	—	0,18	0,8
Connector pins (Basic Insulation)	48VDC	48VDC	—	0,04	1,47	—	0,18	3,2

Supplementary information:

1) Only for frequency above 30 kHz

2) Complete Electric Strength voltage (E.S. (V) when 5.4.2.4 applied)

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

Supplementary information:

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

Supplementary information:

5.4.9	TABLE: Electric strength tests			P
Test voltage applied between:	Voltage shape (Surge, Impulse, AC, DC, etc.)	Test voltage (V)	Breakdown Yes / No	
Input to enclosure (Metal)	AC	0,5 kV	No	
Input to enclosure (Thermoplastic)	AC	0,5 kV	No	

Supplementary information:



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

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

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

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

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



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

--

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

6.2.2	TABLE: Power source circuit classifications					P
Location	Operating and fault condition	Voltage (V)	Current (A)	Max. Power <sup>1)</sup> (W)	Time (S)	PS class
LEDs	Operation	48 VDC	—	4,8 W	5S	< PS1
Supplementary information:						
Abbreviation: SC= short circuit; OC= open circuit						
1) Measured after 3 s for PS1 and measured after 5 s for PS2 and PS3.						

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

hj6.2.3.2	TABLE: Determination of resistive PIS			N/A
Location	Operating and fault condition	Dissipate power (W)		Arcing PIS? Yes / No
Supplementary information:				
Abbreviation: SC= short circuit; OC= open circuit				

8.5.5	TABLE: High pressure lamp		N/A
-------	---------------------------	--	-----



IEC 62368-1				
Clause	Requirement + Test	Result - Remark	Verdict	
Lamp manufacturer	Lamp type	Explosion method	Longest axis of glass particle (mm)	Particle found beyond 1 m Yes / No
Supplementary information:				

9.6	TABLE: Temperature measurements for wireless power transmitters								N/A
Supply voltage (V)..... :								—	
Max. transmit power of transmitter (W)..... :								—	
Foreign objects	w/o receiver and direct contact		with receiver and direct contact		with receiver and at distance of 2 mm		with receiver and at distance of 5 mm		
	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)	
Supplementary information:									

5.4.1.4, 9.3, B.1.5, B.2.6	TABLE: Temperature measurements							P
Supply voltage (V)..... :	48VDC	48VDC						—
Ambient temperature during test $T_{amb}$ (°C) .... :	25	50						—
Maximum measured temperature $T$ of part/at:	$T$ (°C)						Allowed <sup>1)</sup> $T_{max}$ (°C)	
Insulation	28,6	55,6					94	
Connector (PCB)	31,6	56,8					94	
Connector (Main Cable)	26,3	50,6					94	
Diffuser	42,8	61,1					94	
Enclosure	29,6	53,8					70	
Mounting Surface	26,2	52,2					—	
Temperature $T$ of winding:	$t_1$ (°C)	$R_1$ (Ω)	$t_2$ (°C)	$R_2$ (Ω)	$T$ (°C)	Allowed $T_{max}$ (°C)	Insulation class	
—	—	—	—	—	—	—	—	



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

Supplementary information:

<sup>1)</sup> Surface that need not be touched to operate the equipment (<1s)

B.2.5 TABLE: Input test								P
U (V)	Hz	I (A)	I rated (A)	P (W)	P rated (W)	Fuse No	I fuse (A)	Condition/status
48VDC	—	0,104A	0,1A	4,8W	4,8W	—	—	Normal Op.
Supplementary information:								

B.3, B.4 TABLE: Abnormal operating and fault condition tests							N/A
Ambient temperature $T_{amb}$ (°C)..... :							—
Power source for EUT: Manufacturer, model/type, outputrating .. :							—
Component No.	Condition	Supply voltage (V)	Test time	Fuse no.	Fuse current (A)	Observation	
Supplementary information:							

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



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

Supplementary information:			
Abbreviation: SC= short circuit; OC= open circuit NL= no chemical leakage; NS= no spillage of liquid; NE= no explosion; NF= no emission of flame or expulsion of molten metal.			

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

<b>Q.1</b>	<b>TABLE: Circuits intended for interconnection with building wiring (LPS)</b>				N/A		
Output Circuit	Condition	U <sub>oc</sub> (V)	Time (s)	I <sub>sc</sub> (A)		S (VA)	
				Meas.	Limit	Meas.	Limit
Supplementary Information:							

<b>T.2, T.3, T.4, T.5</b>	<b>TABLE: Steady force test</b>					P
Location/Part	Material	Thickness (mm)	Probe	Force (N)	Test Duration (s)	Observation
Enclosure	Metal	—	—	100	5	No damage
Enclosure	Thermoplastic	1,67	—	100	5	No damage
Supplementary information:						



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

--

T.6, T.9	TABLE: Impact test				P
Location/Part	Material	Thickness (mm)	Height (mm)	Observation	
Enclosure	Metal	—	—	No Damage	
Diffuser	Plastic	3mm	—	No Damage	
Supplementary information:					

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

T.8	TABLE: Stress relief test					P
Location/Part	Material	Thickness (mm)	Oven Temperature (°C)	Duration (h)	Observation	
Optical Part	Thermoplastic	1,68	71	7h	No damage	
Supplementary information:						

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



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

4.1.2	TABLE: Critical components information					P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity <sup>1)</sup>	
PCB Connector	Chogori	22206131	IP67	IEC 60695-11-10	UL	TUV
		22206625		IEC60695-2-12		
				IEC60695-2-13		
				IEC 60112		
				IEC 60695-10-2		
PCB-FR4	Printrionics	C13116_R1.0	1,6mm FR4 35/35um Cu	—	UL	
LED	Cree	Cree CLQ6A	PLCC8 RGBW4 Clour Led	—	—	
Cable	Başođlu Kablo	2x1,5mm <sup>2</sup> 4x0,22mm <sup>2</sup> Multimedya Control Cable	—	TS13755	TSE	
Cable	Başođlu Kablo	2x1,5mm <sup>2</sup> 4x0,22mm <sup>2</sup> LSZH Control Cable	—	TS 13755	TSE	
Supplementary information:						
<p><sup>1)</sup> Provided evidence ensures the agreed level of compliance. See OD-CB2039.</p> <p>The manufacturer has not declared the certificates of the components marked with “— “. Those components tested with as part of appliance</p>						



<b>Identity Declaration</b>
-----------------------------

16/03/2021

**AYNIYET BEYANI**  
**IDENTITY DECLARATION**

**Chronopix Serisi** ürünlerin bütün teknik özelliklerinin (tasarım, konstrüksiyon, özellikler, kritik komponentler) aynı olduğunu beyan ederiz.

We declare that the products are identical in all technical respects (design, construction, properties, critical components).

Model/Type Ref: **Chronopix Series**

<b>P0XXXXXXXXXX</b>	<b>XXX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>X</b>	<b>X</b>
LED Color	Pixel Pitch	Number of Dots in the Node	Leader Cable Length	Body Color	Cable Hide Profile	Dome
Led Color Code	015 – 300 (cm)	01 – 70 (pcs)	01 – 70 (meter)	01-08	1:Present 0:N/A	1:Present 0:N/A
<b>P01025105 300 70 05 01 1 1</b>						
<b>Chronopix® RGBW 300 cm Pixel Pitch 70 pcs Set RAL9005 Black Body with Dome</b>						

HERA EĞLENCE VE MİMARİ AYDINLATMA  
SİS İÇ VE DIŞ TİC. A.Ş.  
Gullubağlar Mah. Kuvvetsizler Cad. No 3/1  
Pendik / İS TARBİSİ / Tel: 0216 307 79 00  
Tic Sic. No: 106561-S  
Pendik V.D. 461 061 6211

Mahmut AKGÜL



Photos of EUT







