Safety Test Report

Report No.: AGC08509200801ES01

PRODUCT DESIGNATION	:	Bluetooth Low Energy Data Transmission Module
BRAND NAME	:	HOPERF
MODEL NAME	:	Refer to page 3
CLIENT	:	SHEN ZHEN HOPE MICROELECTRONICS CO., LTD
DATE OF ISSUE	:	Aug. 06, 2020
STANDARD(S)	:	EN 62368-1:2014+A11:2017
REPORT VERSION:	:	V1.0

Attestation of Global Compliance(Shenzhen) Co., Ltd.

TEST REPORT

EN 62368-1

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

Report No. ..... :	AGC08509200801ES01	
Tested by (+ signature) ..... :	Bengi Liu	Bengi Liu
Reviewed by (+ signature) ..... :	Byron Wang	Byron Wang
Approved by (+ signature) ..... :	Matte He (Authorized Officer)	Matte He
Date of issue ..... :	Aug. 06, 2020	
Contents ..... :	Total 53 pages	

Testing laboratory

Name ..... :	Attestation of Global Compliance (Shenzhen) Co., Ltd.
Address ..... :	1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
Testing location ..... :	Same as above.

Applicant

Name ..... :	SHEN ZHEN HOPE MICROELECTRONICS CO., LTD
Address ..... :	30th Floor, Block A, Building 8, Vanke Cloud City Phase III, Xili Street, Nanshan District, Shenzhen, GD, P.R. China

Manufacturer

Name ..... :	SHEN ZHEN HOPE MICROELECTRONICS CO., LTD
Address ..... :	30th Floor, Block A, Building 8, Vanke Cloud City Phase III, Xili Street, Nanshan District, Shenzhen, GD, P.R. China

Factory

Name ..... :	SHEN ZHEN HOPE MICROELECTRONICS CO., LTD
Address ..... :	30th Floor, Block A, Building 8, Vanke Cloud City Phase III, Xili Street, Nanshan District, Shenzhen, GD, P.R. China

Test specification

Standard ..... :	EN 62368-1:2014+A11:2017
Test procedure ..... :	Type test
Procedure deviation ..... :	N/A
Non-standard test method ..... :	N/A

Test Report Form/blank test report	
Test Report Form No. :	AGC62368A2
TRF originator. :	AGC
Master TRF :	2018-09
Test item	
Product designation :	Bluetooth Low Energy Data Transmission Module
Brand name :	HOPERF
Test model :	HM-BT2204
Seris model :	HM-BT2201, HM-BT2202, HM-BT2206, HM-BT2208, HM-BT2210
Rating(s) :	DC3.3V
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% ☐ +____%/ -_____% ☒ None
Supply Connection – Type :	☐ pluggable equipment type A - ☐ non-detachable supply cord ☐ appliance coupler ☐ direct plug-in ☐ mating connector ☐ pluggable equipment type B - ☐ non-detachable supply cord ☐ appliance coupler ☐ permanent connection ☐ mating connector ☒ other: not mains connected
Considered current rating of protective device as part of building or equipment installation :	N/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: not mains connected
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..... :	85°C
IP protection class ..... :	☒ IPX0 ☐ IP__
Power Systems ..... :	☐ TN ☐ TT ☐ IT - ____ V_{L-L}
Altitude during operation (m) ..... :	☒ 2000 m or less ☐ _____ m
Altitude of test laboratory (m) ..... :	☒ 2000 m or less ☐ _____ m
Mass of equipment (kg) ..... :	☒ <1 kg

Test case verdicts

Test case does not apply to the test object ..... : N (/A)

Test item does meet the requirement ..... : P(ass)

Test item does not meet the requirement ..... : F(ail)

Testing

Date of receipt of test item ..... : Aug. 03, 2020

Date of performance of test ..... : Aug. 03, 2020–Aug. 06, 2020

Attachments

Attachment A ..... : Photos of product

General remarks

This report shall not be reproduced except in full without the written approval of the testing laboratory.

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

"(See remark #)" refers to a remark appended to the report.

"(See appended table)" refers to a table appended to the report.

Throughout this report a comma is used as the decimal separator.

Report Revise Record:

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Aug. 06, 2020	Valid	Initial release

General product information

The product is build-in product, suitable enclosure should be provided when installed in end system.

The series models are identical except for model name due to market purpose, which have no effect on test result.

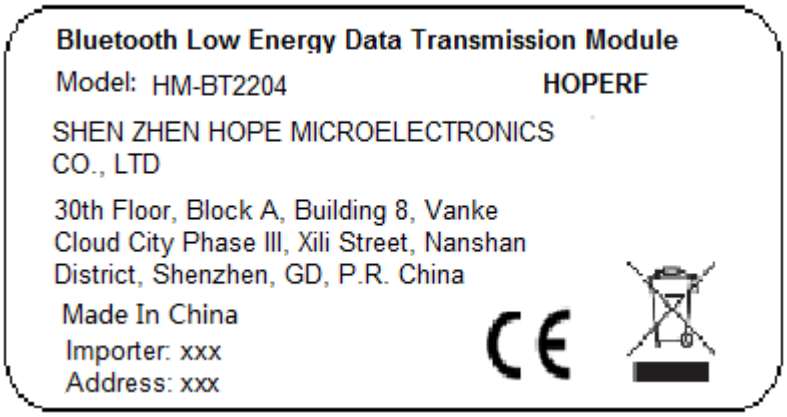
Instructions and equipment marking related to safety is applied in the language that is acceptable in the country in which the equipment is to be sold.

The product was submitted and tested for use at the manufacturer's recommended ambient temperature (Tma) of 85°C.

Summary of testing

The test item passed.

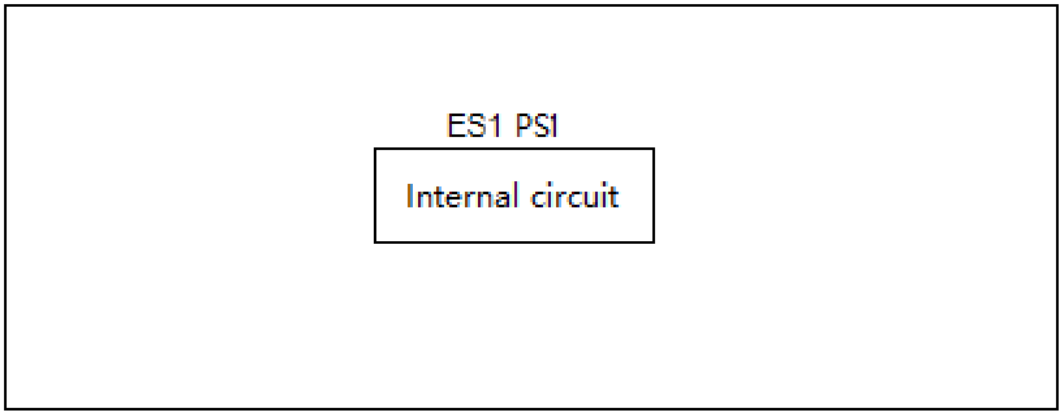
Copy of marking plates



Remark:
1) The CE marking and WEEE symbol (if any) should be at least 5mm and 7mm respectively in height.
2) The markings and instructions are the minimum requirements required by safety standard. For final production samples, the additional markings which do not give rise to misunderstanding may be added.
3) As declared by the applicant, the importer (and manufacturer, if it is different)'s name, registered trade name or mark and the postal address will be marked on the products before being place on the market.
4) Marking on the packaging or in a document accompanying the electrical equipment is only acceptable if it is not possible to place such markings on the product.

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)**
Internal circuitry	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)**
Internal circuitry	PS1
Injury caused by hazardous substances (Clause 7) (Note: Specify hazardous chemicals, whether produces ozone or other chemical construction not addressed as part of the component evaluation.) Example: Liquid in filled component Glycol	
Source of hazardous substances	**Corresponding chemical**
Complied with annex M	--
Mechanically-caused injury (Clause 8) (Note: List moving part(s), fan, special installations, etc. & corresponding MS classification based on Table 35.) Example: Wall mount unit MS2	
Source of kinetic/mechanical energy	**Corresponding classification (MS)**
Edges and corners	MS1
Equipment mass	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)**
All accessible parts	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)**
LED indicator	N/A

ENERGY SOURCE DIAGRAM



☒ **ES** ☒ **PS** ☒ **MS** ☒ **TS** ☒ **RS**

OVERVIEW OF EMPLOYED SAFEGUARDS				
Clause	**Possible Hazard**			
5.1	Electrically-caused injury			
Body Part (e.g. Ordinary)	Energy Source (ES3: Primary Filter circuit)	Safeguards		
		Basic	Supplementary	Reinforced (Enclosure)
Ordinary	ES1	N/A	N/A	N/A
6.1	Electrically-caused fire			
Material part (e.g. mouse enclosure)	Energy Source (PS2: 100 Watt circuit)	Safeguards		
		Basic	Supplementary	Reinforced
All internal combustible material and enclosure	Internal circuitry: PS1	1. No ignition occurred. 2. No parts exceeding 90% of its spontaneous ignition temperature.	N/A	N/A
7.1	Injury caused by hazardous substances			
Body Part (e.g., skilled)	Energy Source (hazardous material)	Safeguards		
		Basic	Supplementary	Reinforced
Complied with annex M	N/A	N/A	N/A	N/A
8.1	Mechanically-caused injury			
Body Part (e.g. Ordinary)	Energy Source (MS3:High Pressure Lamp)	Safeguards		
		Basic	Supplementary	Reinforced (Enclosure)
Ordinary	MS1: Edges and corners	N/A	N/A	N/A
Ordinary	MS1: Equipment mass	N/A	N/A	N/A
9.1	Thermal Burn			
Body Part (e.g., Ordinary)	Energy Source (TS2)	Safeguards		
		Basic	Supplementary	Reinforced
Ordinary	TS1: Accessible plastic enclosure	N/A	N/A	N/A
10.1	Radiation			
Body Part (e.g., Ordinary)	Energy Source (Output from audio port)	Safeguards		
		Basic	Supplementary	Reinforced
Ordinary	N/A	N/A	N/A	N/A
Supplementary Information: (1) See attached energy source diagram for additional details. (2) “N” – Normal Condition; “A” – Abnormal Condition; “S” Single Fault				

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Clause	Requirement – Test	Result - Remark	Verdict
4	**GENERAL REQUIREMENTS**		P
4.1.1	Acceptance of materials, components and subassemblies	See appended table 4.1.2	P
4.1.2	Use of components	Components which are certified to IEC and/or national standards are used correctly within their ratings. Components not covered by IEC standards are tested under the conditions present in the equipment.	P
4.1.3	Equipment design and construction	No accessible part which could cause injury	P
4.1.15	Markings and instructions .....:	(See Annex F)	P
4.4.4	Safeguard robustness	See below	P
4.4.4.2	Steady force tests .....:	(See Annex T)	N
4.4.4.3	Drop tests.....:	(See Annex T)	N
4.4.4.4	Impact tests .....:		N
4.4.4.5	Internal accessible safeguard enclosure and barrier tests.....:		N
4.4.4.6	Glass Impact tests .....:		N
4.4.4.7	Thermoplastic material tests.....:	(See Annex T)	N
4.4.4.8	Air comprising a safeguard .....:		N
4.4.4.9	Accessibility and safeguard effectiveness	No damaged	P
4.5	Explosion	No explosion occurs during normal/abnormal operation and single fault conditions	P
4.6	Fixing of conductors		N
4.6.1	Fix conductors not to defeat a safeguard		N
4.6.2	10 N force test applied to .....:		N
4.7	Equipment for direct insertion into mains socket - outlets		N
4.7.2	Mains plug part complies with the relevant standard.....:	See above	N
4.7.3	Torque (Nm) .....:	See above	N
4.8	Products containing coin/button cell batteries	No coin/button batteries used.	N
4.8.2	Instructional safeguard		N

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Clause	Requirement – Test	Result - Remark	Verdict
4.8.3	Battery Compartment Construction		N
	Means to reduce the possibility of children removing the battery .....:		—
4.8.4	Battery Compartment Mechanical Tests.....:		N
4.8.5	Battery Accessibility		N
4.9	Likelihood of fire or shock due to entry of conductive object .....:	It's impossible entry of a conductive object from outside the equipment.	N

5	**ELECTRICALLY-CAUSED INJURY**		P
5.2.1	Electrical energy source classifications.....:	(See appended table 5.2)	P
5.2.2	ES1, ES2 and ES3 limits	ES1	P
5.2.2.2	Steady-state voltage and current .....:	See appended table 5.2)	P
5.2.2.3	Capacitance limits .....:		N
5.2.2.4	Single pulse limits.....:	No such single pulses with the EUT	N
5.2.2.5	Limits for repetitive pulses.....:	No such repetitive pulses with the EUT	N
5.2.2.6	Ringing signals .....:	No such ringing signals with the EUT	N
5.2.2.7	Audio signals .....:		N
5.3	Protection against electrical energy sources	ES1	N
5.3.1	General Requirements for accessible parts to ordinary, instructed and skilled persons	See above.	N
5.3.2.1	Accessibility to electrical energy sources and safeguards		N
5.3.2.2	Contact requirements		N
	a) Test with test probe from Annex V.....:		N
	b) Electric strength test potential (V) .....:		N
	c) Air gap (mm) .....:		N
5.3.2.4	Terminals for connecting stripped wire		N
5.4	Insulation materials and requirements		N
5.4.1.2	Properties of insulating material		N
5.4.1.3	Humidity conditioning.....:		N
5.4.1.4	Maximum operating temperature for insulating materials .....:		N
5.4.1.5	Pollution degree.....:		—

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Clause	Requirement – Test	Result - Remark	Verdict
5.4.1.5.2	Test for pollution degree 1 environment and for an insulating compound		N
5.4.1.5.3	Thermal cycling		N
5.4.1.6	Insulation in transformers with varying dimensions		N
5.4.1.7	Insulation in circuits generating starting pulses		N
5.4.1.8	Determination of working voltage		N
5.4.1.9	Insulating surfaces		N
5.4.1.10	Thermoplastic parts on which conductive metallic parts are directly mounted		N
5.4.1.10.2	Vicat softening temperature .....:		N
5.4.1.10.3	Ball pressure .....:		N
5.4.2	Clearances		N
5.4.2.2	Determining clearance using peak working voltage		N
5.4.2.3	Determining clearance using required withstand voltage .....:		N
	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		N
5.4.2.5	Multiplication factors for clearances and test voltages.....:		N
5.4.3	Creepage distances.....:		N
5.4.3.1	General		N
5.4.3.3	Material Group .....:		—
5.4.4	Solid insulation		N
5.4.4.2	Minimum distance through insulation .....:		N
5.4.4.3	Insulation compound forming solid insulation		N
5.4.4.4	Solid insulation in semiconductor devices		N
5.4.4.5	Cemented joints		N
5.4.4.6	Thin sheet material		N
5.4.4.6.1	General requirements		N
5.4.4.6.2	Separable thin sheet material		N

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Clause	Requirement – Test	Result - Remark	Verdict
	Number of layers (pcs) .....:		N
5.4.4.6.3	Non-separable thin sheet material		N
5.4.4.6.4	Standard test procedure for non-separable thin sheet material .....:		N
5.4.4.6.5	Mandrel test		N
5.4.4.7	Solid insulation in wound components		N
5.4.4.9	Solid insulation at frequencies >30 kHz .....:		N
5.4.5	Antenna terminal insulation		N
5.4.5.1	General		N
5.4.5.2	Voltage surge test		N
	Insulation resistance (MΩ) .....:		—
5.4.6	Insulation of internal wire as part of supplementary safeguard .....:		N
5.4.7	Tests for semiconductor components and for cemented joints		N
5.4.8	Humidity conditioning		N
	Relative humidity (%) .....:		—
	Temperature (°C) .....:		—
	Duration (h) .....:		—
5.4.9	Electric strength test .....:		N
5.4.9.1	Test procedure for a solid insulation type test		N
5.4.9.2	Test procedure for routine tests		N
5.4.10	Protection against transient voltages between external circuit		N
5.4.10.1	Parts and circuits separated from external circuits		N
5.4.10.2	Test methods		N
5.4.10.2.1	General		N
5.4.10.2.2	Impulse test.....:		N
5.4.10.2.3	Steady-state test .....:		N
5.4.11	Insulation between external circuits and earthed circuitry.....:		N
5.4.11.1	Exceptions to separation between external circuits and earth		N
5.4.11.2	Requirements		N

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Clause	Requirement – Test	Result - Remark	Verdict
	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		N
5.5.1	General		N
5.5.2	Capacitors and RC units		N
5.5.2.1	General requirement		N
5.5.2.2	Safeguards against capacitor discharge after disconnection of a connector .....:		N
5.5.3	Transformers		N
5.5.4	Optocouplers		N
5.5.5	Relays		N
5.5.6	Resistors		N
5.5.7	SPD's		N
5.5.7.1	Use of an SPD connected to reliable earthing		N
5.5.7.2	Use of an SPD between mains and protective earth		N
5.5.8	Insulation between the mains and external circuit consisting of a coaxial cable .....:		N
5.6	Protective conductor		N
5.6.2	Requirement for protective conductors		N
5.6.2.1	General requirements		N
5.6.2.2	Colour of insulation		N
5.6.3	Requirement for protective earthing conductors		N
	Protective earthing conductor size (mm^2) ..... :		—
5.6.4	Requirement for protective bonding conductors		N
5.6.4.1	Protective bonding conductors		N
	Protective bonding conductor size (mm^2)..... :		—
	Protective current rating (A) ..... :		—
5.6.4.3	Current limiting and overcurrent protective devices		N
5.6.5	Terminals for protective conductors		N

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Clause	Requirement – Test	Result - Remark	Verdict
5.6.5.1	Requirement		N
	Conductor size (mm^2), nominal thread diameter (mm). ..... :		N
5.6.5.2	Corrosion		N
5.6.6	Resistance of the protective system		N
5.6.6.1	Requirements		N
5.6.6.2	Test Method Resistance (Ω)..... :		N
5.6.7	Reliable earthing		N
5.7	Prospective touch voltage, touch current and protective conductor current		N
5.7.2	Measuring devices and networks		N
5.7.2.1	Measurement of touch current..... :		N
5.7.2.2	Measurement of prospective touch voltage		N
5.7.3	Equipment set-up, supply connections and earth connections		N
	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 ..... :		N
5.7.5	Protective conductor current		N
	Supply Voltage (V) ..... :		—
	Measured current (mA)..... :		—
	Instructional Safeguard..... :		N
5.7.6	Prospective touch voltage and touch current due to external circuits		N
5.7.6.1	Touch current from coaxial cables		N
5.7.6.2	Prospective touch voltage and touch current from external circuits		N
5.7.7	Summation of touch currents from external circuits		N
	a) Equipment with earthed external circuits Measured current (mA)..... :		N
	b) Equipment whose external circuits are not referenced to earth. Measured current (mA) ..... :		N

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Clause	Requirement – Test	Result - Remark	Verdict
6	**ELECTRICALLY- CAUSED FIRE**		P
6.2.2	Power source circuit classifications	PS (power source) classification determined by measuring the maximum power in Figures 34 and 35 for load and power source circuits.	P
6.2.2.1	General	See the following details.	P
6.2.2.2	Power measurement for worst-case load fault ....:	(See appended table 6.2.2)	P
6.2.2.3	Power measurement for worst-case power source fault .....:	(See appended table 6.2.2)	P
6.2.2.4	PS1 .....:	(See appended table 6.2.2)	P
6.2.2.5	PS2 .....:		N
6.2.2.6	PS3 .....:		N
6.2.3	Classification of potential ignition sources		N
6.2.3.1	Arcing PIS .....:		N
6.2.3.2	Resistive PIS .....:	No PIS	N
6.3	Safeguards against fire under normal operating and abnormal operating conditions		N
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.....:		N
6.3.1 (b)	Combustible materials outside fire enclosure	No such materials used.	N
6.4	Safeguards against fire under single fault conditions		N
6.4.1	Safeguard Method	Built-in product, shall be evaluated in final system	N
6.4.2	Reduction of the likelihood of ignition under single fault conditions in PS1 circuits		N
6.4.3	Reduction of the likelihood of ignition under single fault conditions in PS2 and PS3 circuits		N
6.4.3.1	General		N
6.4.3.2	Supplementary Safeguards		N
	Special conditions if conductors on printed boards are opened or peeled	No such case happened.	N
6.4.3.3	Single Fault Conditions..... :		N
	Special conditions for temperature limited by fuse		N
6.4.4	Control of fire spread in PS1 circuits		P

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Clause	Requirement – Test	Result - Remark	Verdict
6.4.5	Control of fire spread in PS2 circuits		N
6.4.5.2	Supplementary safeguards .....:	(See appended table 5.4.1.5, 6.3.2, 9.0, B.2.6)	N
6.4.6	Control of fire spread in PS3 circuit		N
6.4.7	Separation of combustible materials from a PIS		N
6.4.7.1	General .....:		N
6.4.7.2	Separation by distance		N
6.4.7.3	Separation by a fire barrier		N
6.4.8	Fire enclosures and fire barriers		N
6.4.8.1	Fire enclosure and fire barrier material properties		N
6.4.8.2.1	Requirements for a fire barrier	No such construction.	N
6.4.8.2.2	Requirements for a fire enclosure		N
6.4.8.3	Constructional requirements for a fire enclosure and a fire barrier		N
6.4.8.3.1	Fire enclosure and fire barrier openings	No openings.	N
6.4.8.3.2	Fire barrier dimensions	No barrier used.	N
6.4.8.3.3	Top Openings in Fire Enclosure: dimensions (mm) :		N
	Needle Flame test		N
6.4.8.3.4	Bottom Openings in Fire Enclosure, condition met a), b) and/or c) dimensions (mm) .....:		N
	Flammability tests for the bottom of a fire enclosure .....:		N
6.4.8.3.5	Integrity of the fire enclosure, condition met: a), b) or c).....:		N
6.4.8.4	Separation of PIS from fire enclosure and fire barrier distance (mm) or flammability rating .....:		N
6.5	Internal and external wiring		N
6.5.1	Requirements		N
6.5.2	Cross-sectional area (mm2) .....:		—
6.5.3	Requirements for interconnection to building wiring.....:	No such interconnection to building wiring.	N
6.6	Safeguards against fire due to connection to additional equipment		N
	External port limited to PS2 or complies with Clause Q.1		N

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Clause	Requirement – Test	Result - Remark	Verdict
7	**INJURY CAUSED BY HAZARDOUS SUBSTANCES**		N
7.2	Reduction of exposure to hazardous substances	No hazardous chemicals within the equipment.	N
7.3	Ozone exposure	No ozone production within the equipment.	N
7.4	Use of personal safeguards (PPE)	No such consideration.	N
	Personal safeguards and instructions..... :	See above.	—
7.5	Use of instructional safeguards and instructions	No chemical-caused injuries, the instruction safeguard was not required.	N
	Instructional safeguard (ISO 7010)..... :	(See Annex F)	—
7.6	Batteries.....:	Complied with Annex M	N
8	***MECHANICALLY-CAUSED INJURY***		P
8.1	General	See the following details.	P
8.2	Mechanical energy source classifications	Edges and corners, classified as MS1 Equipment mass < 7 kg, classified as MS1	P
8.3	Safeguards against mechanical energy sources	MS1	N
8.4	Safeguards against parts with sharp edges and corners	Accessible edges and corners of the equipment are rounded and are classified as MS1.	P
8.4.1	Safeguards	See above.	N
8.5	Safeguards against moving parts		N
8.5.1	MS2 or MS3 part required to be accessible for the function of the equipment	See above.	N
8.5.2	Instructional Safeguard..... :	See above.	—
8.5.4	Special categories of equipment comprising moving parts		N
8.5.4.1	Large data storage equipment		N
8.5.4.2	Equipment having electromechanical device for destruction of media		N
8.5.4.2.1	Safeguards and Safety Interlocks ..... :		N
8.5.4.2.2	Instructional safeguards against moving parts		N

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Clause	Requirement – Test	Result - Remark	Verdict
	Instructional Safeguard..... :		—
8.5.4.2.3	Disconnection from the supply		N
8.5.4.2.4	Probe type and force (N) ..... :		N
8.5.5	High Pressure Lamps		N
8.5.5.1	Energy Source Classification		N
8.5.5.2	High Pressure Lamp Explosion Test ..... :		N
8.6	Stability	< 7 kg	N
8.6.1	Product classification		N
	Instructional Safeguard..... :		—
8.6.2	Static stability		N
8.6.2.2	Static stability test		N
	Applied Force..... :		—
8.6.2.3	Downward Force Test		N
8.6.3	Relocation stability test		N
	Unit configuration during 10° tilt ..... :		—
8.6.4	Glass slide test		N
8.6.5	Horizontal force test (Applied Force)..... :		N
	Position of feet or movable parts..... :		—
8.7	Equipment mounted to wall or ceiling		N
8.7.1	Mounting Means (Length of screws (mm) and mounting surface) ..... :		N
8.7.2	Direction and applied force..... :		N
8.8	Handles strength		N
8.8.1	Classification		N
8.8.2	Applied Force ..... :		N
8.9	Wheels or casters attachment requirements		N
8.9.1	Classification		N
8.9.2	Applied force..... :		—
8.10	Carts, stands and similar carriers	No such device provided within the EUT.	N
8.10.1	General		N
8.10.2	Marking and instructions		N
	Instructional Safeguard..... :		—

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Clause	Requirement – Test	Result - Remark	Verdict
8.10.3	Cart, stand or carrier loading test and compliance		N
	Applied force ..... :		—
8.10.4	Cart, stand or carrier impact test		N
8.10.5	Mechanical stability		N
	Applied horizontal force (N) ..... :		—
8.10.6	Thermoplastic temperature stability (°C)..... :		N
8.11	Mounting means for rack mounted equipment		N
8.11.1	General		N
8.11.2	Product Classification		N
8.11.3	Mechanical strength test, variable N ..... :		N
8.11.4	Mechanical strength test 250N, including end stops		N
8.12	Telescoping or rod antennas..... :	No such device provided within the EUT.	N
	Button/Ball diameter (mm) ..... :	See above.	—

9	**THERMAL BURN INJURY**		P
9.2	Thermal energy source classifications	All accessible surfaces are classified as TS1, see appended table 5.4.1.4, 6.3.2, 9.0, B.2.6	P
9.3	Safeguard against thermal energy sources	See above.	P
9.4	Requirements for safeguards		P
9.4.1	Equipment safeguard	Enclosure temperatures do not exceed TS1 limits.	P
9.4.2	Instructional safeguard ..... :		N

10	**RADIATION**		P
10.2	Radiation energy source classification		P
10.2.1	General classification		P
10.3	Protection against laser radiation		N
	Laser radiation that exists equipment:		—
	Normal, abnormal, single-fault..... :		N
	Instructional safeguard..... :		—
	Tool ..... :		—

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Clause	Requirement – Test	Result - Remark	Verdict
10.4	Protection against visible, infrared, and UV radiation	The LEDs used as indicator only.	N
10.4.1	General		N
10.4.1.a)	RS3 for Ordinary and instructed persons.....:		N
10.4.1.b)	RS3 accessible to a skilled person .....:		N
	Personal safeguard (PPE) instructional safeguard .....:		—
10.4.1.c)	Equipment visible, IR, UV does not exceed RS1..:		N
10.4.1.d)	Normal, abnormal, single-fault conditions .....:		N
10.4.1.e)	Enclosure material employed as safeguard is opaque .....:		N
10.4.1.f)	UV attenuation .....:		N
10.4.1.g)	Materials resistant to degradation UV.....:		N
10.4.1.h)	Enclosure containment of optical radiation .....:		N
10.4.1.i)	Exempt Group under normal operating conditions.....:		N
10.4.2	Instructional safeguard.....:		N
10.5	Protection against x-radiation	No such x-radiation generated from the equipment.	N
10.5.1	X- radiation energy source that exists equipment :		N
	Normal, abnormal, single fault conditions		N
	Equipment safeguards.....:		N
	Instructional safeguard for skilled person ..... :		N
10.5.3	Most unfavourable supply voltage to give maximum radiation ..... :		—
	Abnormal and single-fault condition.....:		N
	Maximum radiation (pA/kg).....:		N
10.6	Protection against acoustic energy sources		P
10.6.1	General		P
10.6.2	Classification		N
	Acoustic output, dB(A) .....:		N
	Output voltage, unweighted r.m.s. .....:		N
10.6.4	Protection of persons		N
	Instructional safeguards.....:		N

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Clause	Requirement – Test	Result - Remark	Verdict
	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.)		N
10.6.5.1	Corded passive listening devices with analog input		N
	Input voltage with 94 dB(A) L_{Aeq} acoustic pressure output ..... :		—
10.6.5.2	Corded listening devices with digital input		N
	Maximum dB(A) ..... :		—
10.6.5.3	Cordless listening device		N
	Maximum dB(A) ..... :		—

B	**NORMAL OPERATING CONDITION TESTS, ABNORMAL OPERATING CONDITION TESTS AND SINGLE FAULT CONDITION TESTS**		P
B.2	Normal Operating Conditions	See the following details.	P
B.2.1	General requirements ..... :	(See Test Item Particulars and appended test tables)	P
	Audio Amplifiers and equipment with audio amplifiers ..... :		N
B.2.3	Supply voltage and tolerances		N
B.2.5	Input test ..... :	(See appended table B.2.5)	N
B.3	Simulated abnormal operating conditions		N
B.3.1	General requirements ..... :	(See appended table B.3&B.4)	N
B.3.2	Covering of ventilation openings	No ventilation openings provided.	N
B.3.3	D.C. mains polarity test		N
B.3.4	Setting of voltage selector ..... :	No setting of voltage selector within the EUT	N
B.3.5	Maximum load at output terminals..... :	No such terminals.	N
B.3.6	Reverse battery polarity	Impossible reverse polarity by inherent design.	N
B.3.7	Abnormal operating conditions as specified in Clause E.2.		N

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Clause	Requirement – Test	Result - Remark	Verdict
B.3.8	Safeguards functional during and after abnormal operating conditions	All safeguards remained effectively.	N
B.4	Simulated single fault conditions		P
B.4.2	Temperature controlling device open or short-circuited ..... :		N
B.4.3	Motor tests		N
B.4.3.1	Motor blocked or rotor locked increasing the internal ambient temperature ..... :		N
B.4.4	Short circuit of functional insulation	See the following details.	P
B.4.4.1	Short circuit of clearances for functional insulation	(See appended table B.3 &B.4)	P
B.4.4.2	Short circuit of creepage distances for functional insulation	(See appended table B.3 &B.4)	P
B.4.4.3	Short circuit of functional insulation on coated printed boards	No coated printed boards within the EUT	N
B.4.5	Short circuit and interruption of electrodes in tubes and semiconductors		N
B.4.6	Short circuit or disconnect of passive components	(See appended table B.3 &B.4)	P
B.4.7	Continuous operation of components	The EUT is continuous operating type and no such components intended for short time operation or intermittent operation	N
B.4.8	Class 1 and Class 2 energy sources within limits during and after single fault conditions	(See appended table B.3&B.4)	P
B.4.9	Battery charging under single fault conditions .... :	Complied with the annex M	N

C	**UV RADIATION**		N
C.1	Protection of materials in equipment from UV radiation	No such UV generated from the equipment.	N
C.1.2	Requirements		N
C.1.3	Test method		N
C.2	UV light conditioning test		N
C.2.1	Test apparatus		N
C.2.2	Mounting of test samples		N
C.2.3	Carbon-arc light-exposure apparatus		N
C.2.4	Xenon-arc light exposure apparatus		N

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Clause	Requirement – Test	Result - Remark	Verdict
D	**TEST GENERATORS**		N
D.1	Impulse test generators	No such consideration.	N
D.2	Antenna interface test generator		N
D.3	Electronic pulse generator		N

E	**TEST CONDITIONS FOR EQUIPMENT CONTAINING AUDIO AMPLIFIERS**		N
E.1	Audio amplifier normal operating conditions		N
	Audio signal voltage (V) .....:		—
	Rated load impedance (Ω) .....:		—
E.2	Audio amplifier abnormal operating conditions	(See appended table B.3 &B.4)	N

F	**EQUIPMENT MARKINGS, INSTRUCTIONS, AND INSTRUCTIONAL SAFEGUARDS**		P
F.1	General requirements	See the following details.	P
	Instructions – Language ..... :	English	—
F.2	Letter symbols and graphical symbols	See the following details.	P
F.2.1	Letter symbols according to IEC60027-1	Letter symbols for quantities and units are complied with IEC 60027-1.	P
F.2.2	Graphic symbols IEC, ISO or manufacturer specific	Graphical symbols are complied with IEC 60417, ISO 3864-2, ISO 7000 or ISO 7010.	P
F.3	Equipment markings		P
F.3.1	Equipment marking locations	Equipment marking is located on the exterior surface and is easily visible.	P
F.3.2	Equipment identification markings	See the following details.	P
F.3.2.1	Manufacturer identification .....:	See copy of marking plate.	—
F.3.2.2	Model identification .....:	See copy of marking plate.	—
F.3.3	Equipment rating markings	See the following details.	P
F.3.3.1	Equipment with direct connection to mains		N
F.3.3.2	Equipment without direct connection to mains	See above.	P
F.3.3.3	Nature of supply voltage ..... :		—
F.3.3.4	Rated voltage..... :	3.3VDC(no show)	—
F.3.3.4	Rated frequency..... :		—
F.3.3.6	Rated current or rated power..... :		—
F.3.3.7	Equipment with multiple supply connections	Only one supply connection.	N

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Clause	Requirement – Test	Result - Remark	Verdict
F.3.4	Voltage setting device	No such device on the equipment.	N
F.3.5	Terminals and operating devices	See below	N
F.3.5.1	Mains appliance outlet and socket-outlet markings ..... :	No such devices on the equipment.	N
F.3.5.2	Switch position identification marking ..... :	No such switch on the equipment.	N
F.3.5.3	Replacement fuse identification and rating markings ..... :		N
F.3.5.4	Replacement battery identification marking..... :		N
F.3.5.5	Terminal marking location		N
F.3.6	Equipment markings related to equipment classification	Class III	N
F.3.6.1	Class I Equipment		N
F.3.6.1.1	Protective earthing conductor terminal		N
F.3.6.1.2	Neutral conductor terminal		N
F.3.6.1.3	Protective bonding conductor terminals		N
F.3.6.2	Class II equipment (IEC60417-5172)		N
F.3.6.2.1	Class II equipment with or without functional earth		N
F.3.6.2.2	Class II equipment with functional earth terminal marking		N
F.3.7	Equipment IP rating marking .....:	This equipment is classified as IPX0.	—
F.3.8	External power supply output marking		N
F.3.9	Durability, legibility and permanence of marking	See the following details.	P
F.3.10	Test for permanence of markings	The label was subjected to the permanence of marking test, 15 sec. for water and 15 sec. for petroleum spirit. After each test, the marking remained legible.	P
F.4	Instructions		P
	a) Equipment for use in locations where children not likely to be present - marking		N
	b) Instructions given for installation or initial use	Relevant safety caution texts and installation instruction are available.	P
	c) Equipment intended to be fastened in place		N
	d) Equipment intended for use only in restricted access area		N

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Clause	Requirement – Test	Result - Remark	Verdict
	e) Audio equipment terminals classified as ES3 and other equipment with terminals marked in accordance F.3.6.1		N
	f) Protective earthing employed as safeguard		N
	g) Protective earthing conductor current exceeding ES 2 limits		N
	h) Symbols used on equipment		N
	i) Permanently connected equipment not provided with all-pole mains switch	The EUT is not a permanently connected equipment	N
	j) Replaceable components or modules providing safeguard function		N
F.5	Instructional safeguards		N
	Where “instructional safeguard” is referenced in the test report it specifies the required elements, location of marking and/or instruction		N

G	**COMPONENTS**		P
G.1	**Switches**		N
G.1.1	General requirements	No such switch as disconnect devices provided within the equipment.	N
G.1.2	Ratings, endurance, spacing, maximum load		N
G.2	**Relays**		N
G.2.1	General requirements	No such relay provided within the equipment.	N
G.2.2	Overload test		N
G.2.3	Relay controlling connectors supply power		N
G.2.4	Mains relay, modified as stated in G.2		N
G.3	**Protection Devices**		N
G.3.1	Thermal cut-offs	No thermal cut-off provided within the equipment.	N
G.3.1.1a) &b)	Thermal cut-outs separately approved according to IEC 60730 with conditions indicated in a) & b)	See above.	N
G.3.1.1c)	Thermal cut-outs tested as part of the equipment as indicated in c)	See above.	N
G.3.1.2	Thermal cut-off connections maintained and secure	See above.	N

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Clause	Requirement – Test	Result - Remark	Verdict
G.3.2	Thermal links		N
G.3.2.1a)	Thermal links separately tested with IEC 60691	No thermal link provided within the equipment.	N
G.3.2.1b)	Thermal links tested as part of the equipment	See above.	N
	Aging hours (H)..... :	See above.	—
	Single Fault Condition..... :	See above.	—
	Test Voltage (V) and Insulation Resistance (Ω) . :	See above.	—
G.3.3	PTC Thermistors	No PTC thermistor provided within the equipment.	N
G.3.4	Overcurrent protection devices		N
G.3.5	Safeguards components not mentioned in G.3.1 to G.3.5		N
G.3.5.1	Non-resettable devices suitably rated and marking provided	No such component.	N
G.3.5.2	Single faults conditions ..... :		N
G.4	**Connectors**		N
G.4.1	Spacings	No such connector within the EUT	N
G.4.2	Mains connector configuration .....:		N
G.4.3	Plug is shaped that insertion into mains socket-outlets or appliance coupler is unlikely		N
G.5	**Wound Components**		N
G.5.1	Wire insulation in wound components	No such component.	N
G.5.1.2 a)	Two wires in contact inside wound component, angle between 45° and 90°		N
G.5.1.2 b)	Construction subject to routine testing		N
G.5.2	Endurance test on wound components		N
G.5.2.1	General test requirements		N
G.5.2.2	Heat run test		N
	Time (s).....:		—
	Temperature (°C).....:		—
G.5.2.3	Wound Components supplied by mains		N
G.5.3	**Transformers**		N
G.5.3.1	Requirements applied (IEC61204-7, IEC61558-1/-2, and/or IEC62368-1) .....:		N
	Position .....:		—
	Method of protection .....:		—

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Clause	Requirement – Test	Result - Remark	Verdict
G.5.3.2	Insulation		N
	Protection from displacement of windings ..... :		—
G.5.3.3	Overload test ..... :		N
G.5.3.3.1	Test conditions		N
G.5.3.3.2	Winding Temperatures testing in the unit		N
G.5.3.3.3	Winding Temperatures - Alternative test method		N
G.5.4	**Motors**		N
G.5.4.1	General requirements		N
	Position .....:		—
G.5.4.2	Test conditions		N
G.5.4.3	Running overload test		N
G.5.4.4	Locked-rotor overload test		N
	Test duration (days) .....:		—
G.5.4.5	Running overload test for d.c. motors in secondary circuits		N
G.5.4.5.2	Tested in the unit		N
	Electric strength test (V) .....:		—
G.5.4.5.3	Tested on the Bench - Alternative test method; test time (h) .....:		N
	Electric strength test (V) .....:		—
G.5.4.6	Locked-rotor overload test for d.c. motors in secondary circuits		N
G.5.4.6.2	Tested in the unit		N
	Maximum Temperature .....:		N
	Electric strength test (V) .....:		N
G.5.4.6.3	Tested on the bench - Alternative test method; test time (h).....:		N
	Electric strength test (V) .....:		N
G.5.4.7	Motors with capacitors		N
G.5.4.8	Three-phase motors		N
G.5.4.9	Series motors		N
	Operating voltage .....:		—
G.6	**Wire Insulation**		N
G.6.1	General		N

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Clause	Requirement – Test	Result - Remark	Verdict
G.6.2	Solvent-based enamel wiring insulation		N
G.7	**Mains supply cords**		N
G.7.1	General requirements		N
	Type ..... :		—
	Rated current (A) ..... :		—
	Cross-sectional area (mm^2), (AWG)..... :		—
G.7.2	Compliance and test method		N
G.7.3	Cord anchorages and strain relief for non-detachable power supply cords		N
G.7.3.2	Cord strain relief		N
G.7.3.2.1	Requirements		N
	Strain relief test force (N).....:		—
G.7.3.2.2	Strain relief mechanism failure		
G.7.3.2.3	Cord sheath or jacket position, distance (mm) ....:		—
G.7.3.2.4	Strain relief comprised of polymeric material		N
G.7.4	Cord Entry..... :		N
G.7.5	Non-detachable cord bend protection		N
G.7.5.1	Requirements		N
G.7.5.2	Mass (g) .....:		—
	Diameter (m).....:		—
	Temperature (°C).....:		—
G.7.6	Supply wiring space		N
G.7.6.2	Stranded wire		N
G.7.6.2.1	Test with 8 mm strand		N
G.8	**Varistors**		N
G.8.1	General requirements	No VDRs.	N
G.8.2	Safeguard against shock		N
G.8.3	Safeguard against fire		N
G.8.3.2	Varistor overload test..... :		N
G.8.3.3	Temporary overvoltage..... :	(See appended table B.3)	N
G.9	**Integrated Circuit (IC) Current Limiters**		N
G.9.1 a)	Manufacturer defines limit at max. 5A.	No IC current limiter provided within the equipment.	N

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Clause	Requirement – Test	Result - Remark	Verdict
G.9.1 b)	Limiters do not have manual operator or reset		N
G.9.1 c)	Supply source does not exceed 250 VA .....:		—
G.9.1 d)	IC limiter output current (max. 5A).....:		—
G.9.1 e)	Manufacturers' defined drift .....:		—
G.9.2	Test Program 1		N
G.9.3	Test Program 2		N
G.9.4	Test Program 3		N
G.10	**Resistors**		N
G.10.1	General requirements		N
G.10.2	Resistor test		N
G.10.3	Test for resistors serving as safeguards between the mains and an external circuit consisting of a coaxial cable		N
G.10.3.1	General requirements		N
G.10.3.2	Voltage surge test		N
G.10.3.3	Impulse test		N
G.11	**Capacitor and RC units**		N
G.11.1	General requirements		N
G.11.2	Conditioning of capacitors and RC units		N
G.11.3	Rules for selecting capacitors		N
G.12	**Optocouplers**		N
	Optocouplers comply with IEC 60747-5-5:2007 Spacing or Electric Strength Test (specify option and test results) ..... :		N
	Type test voltage Vini .....:		—
	Routine test voltage, Vini,b .....:		—
G.13	**Printed boards**		P
G.13.1	General requirements	See the following details.	P
G.13.2	Uncoated printed boards	The insulation between conductors on the outer surfaces of an uncoated printed board complied with the minimum clearance and creepage requirements	P
G.13.3	Coated printed boards	No coated printed board provided within the equipment.	N

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Clause	Requirement – Test	Result - Remark	Verdict
G.13.4	Insulation between conductors on the same inner surface		N
	Compliance with cemented joint requirements (Specify construction) .....:		—
G.13.5	Insulation between conductors on different surfaces		N
	Distance through insulation ..... :		N
	Number of insulation layers (pcs) .....:		—
G.13.6	Tests on coated printed boards		N
G.13.6.1	Sample preparation and preliminary inspection		N
G.13.6.2a)	Thermal conditioning		N
G.13.6.2b)	Electric strength test		N
G.13.6.2c)	Abrasion resistance test		N
G.14	**Coating on components terminals**		N
G.14.1	Requirements ..... :	(See G.13)	N
G.15	**Liquid filled components**		N
G.15.1	General requirements		N
G.15.2	Requirements		N
G.15.3	Compliance and test methods		N
G.15.3.1	Hydrostatic pressure test		N
G.15.3.2	Creep resistance test		N
G.15.3.3	Tubing and fittings compatibility test		N
G.15.3.4	Vibration test		N
G.15.3.5	Thermal cycling test		N
G.15.3.6	Force test		N
G.15.4	Compliance		N
G.16	**IC including capacitor discharge function (ICX)**		N
a)	Humidity treatment in accordance with sc5.4.8 – 120 hours		N
b)	Impulse test using circuit 2 with Uc = to transient voltage .....:		N
C1)	Application of ac voltage at 110% of rated voltage for 2.5 minutes		N
C2)	Test voltage .....:		—

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Clause	Requirement – Test	Result - Remark	Verdict
D1)	10,000 cycles on and off using capacitor with smallest capacitance resistor with largest resistance specified by manufacturer		N
D2)	Capacitance .....:		—
D3)	Resistance .....:		—

H	**CRITERIA FOR TELEPHONE RINGING SIGNALS**		N
H.1	General		N
H.2	Method A		N
H.3	Method B		N
H.3.1	Ringing signal		N
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
H.3.2.1	Conditions for use of a tripping device or a monitoring voltage complied with		N
H.3.2.2	Tripping device		N
H.3.2.3	Monitoring voltage (V)..... :		—

J	**INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION**		N
	General requirements		N

K	**SAFETY INTERLOCKS**		N
K.1	General requirements	No safety interlock provided within the equipment.	N
K.2	Components of safety interlock safeguard mechanism	(See Annex G)	N
K.3	Inadvertent change of operating mode		N
K.4	Interlock safeguard override		N
K.5	Fail-safe		N
	Compliance..... :	(See appended table B.4)	N
K.6	Mechanically operated safety interlocks		N

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Clause	Requirement – Test	Result - Remark	Verdict
K.6.1	Endurance requirement		N
K.6.2	Compliance and Test method ..... :		N
K.7	Interlock circuit isolation		N
K.7.1	Separation distance for contact gaps & interlock circuit elements (type and circuit location) ..... :		N
K.7.2	Overload test, Current (A) ..... :		N
K.7.3	Endurance test		N
K.7.4	Electric strength test ..... :	(See appended table 5.4.11)	N

L	**DISCONNECT DEVICES**		N
L.1	General requirements		N
L.2	Permanently connected equipment		N
L.3	Parts that remain energized		N
L.4	Single phase equipment		N
L.5	Three-phase equipment		N
L.6	Switches as disconnect devices		N
L.7	Plugs as disconnect devices		N
L.8	Multiple power sources		N

M	**EQUIPMENT CONTAINING BATTERIES AND THEIR PROTECTION CIRCUITS**		N
M.1	General requirements		N
M.2	Safety of batteries and their cells		N
M.2.1	Requirements		N
M.2.2	Compliance and test method (identify method) ...:		N
M.3	Protection circuits		N
M.3.1	Requirements		N
M.3.2	Tests		N
	- Overcharging of a rechargeable battery		N
	- Unintentional charging of a non-rechargeable battery		N
	- Reverse charging of a rechargeable battery		N
	- Excessive discharging rate for any battery		N
M.3.3	Compliance .....:		N

EN 62368-1			
Clause	Requirement – Test	Result - Remark	Verdict
M.4	Additional safeguards for equipment containing secondary lithium battery		N
M.4.1	General		N
M.4.2	Charging safeguards		N
M.4.2.1	Charging operating limits		N
M.4.2.2a)	Charging voltage, current and temperature..... :		N
M.4.2.2 b)	Single faults in charging circuitry ..... :		N
M.4.3	Fire Enclosure		N
M.4.4	Endurance of equipment containing a secondary lithium battery		N
M.4.4.2	Preparation		N
M.4.4.3	Drop and charge/discharge function tests		N
	Drop		N
	Charge		N
	Discharge		N
M.4.4.4	Charge-discharge cycle test		N
M.4.4.5	Result of charge-discharge cycle test		N
M.5	Risk of burn due to short circuit during carrying		N
M.5.1	Requirement		N
M.5.2	Compliance and Test Method (Test of P.2.3)		N
M.6	Prevention of short circuits and protection from other effects of electric current		N
M.6.1	Short circuits		N
M.6.1.1	General requirements		N
M.6.1.2	Test method to simulate an internal fault		N
M.6.1.3	Compliance (Specify M.6.1.2 or alternative method) .....:		N
M.6.2	Leakage current (mA) .....:		N
M.7	Risk of explosion from lead acid and NiCd batteries		N
M.7.1	Ventilation preventing explosive gas concentration		N
M.7.2	Compliance and test method		N
M.8	Protection against internal ignition from external spark sources of lead acid batteries		N

EN 62368-1			
Clause	Requirement – Test	Result - Remark	Verdict
M.8.1	General requirements		N
M.8.2	Test method		N
M.8.2.1	General requirements		N
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		N
M.9.1	Protection from electrolyte spillage		N
M.9.2	Tray for preventing electrolyte spillage		N
M.10	Instructions to prevent reasonably foreseeable misuse (Determination of compliance: inspection, data review; or abnormal testing) .....:		N

N	**ELECTROCHEMICAL POTENTIALS**		N
	Metal(s) used.....:		—

O	**MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES**		N
	Figures O.1 to O.20 of this Annex applied.....:	Considered.	—

P	**SAFEGUARDS AGAINST ENTRY OF FOREIGN OBJECTS AND SPILLAGE OF INTERNAL LIQUIDS**		N
P.1	General requirements	No openings	N
P.2.2	Safeguards against entry of foreign object		N
	Location and Dimensions (mm) .....:		—
P.2.3	Safeguard against the consequences of entry of foreign object		N
P.2.3.1	Safeguards against the entry of a foreign object		N
	Openings in transportable equipment		N
	Transportable equipment with metalized plastic parts.....:		N
P.2.3.2	Openings in transportable equipment in relation to metallized parts of a barrier or enclosure (identification of supplementary safeguard) .....:		N
P.3	Safeguards against spillage of internal liquids	No such construction.	N
P.3.1	General requirements		N

EN 62368-1			
Clause	Requirement – Test	Result - Remark	Verdict
P.3.2	Determination of spillage consequences		N
P.3.3	Spillage safeguards		N
P.3.4	Safeguards effectiveness		N
P.4	Metallized coatings and adhesive securing parts	No such construction.	N
P.4.2 a)	Conditioning testing		N
	Tc (°C) .....:		—
	Tr (°C).....:		—
	Ta (°C) .....:		—
P.4.2 b)	Abrasion testing .....:		N
P.4.2 c)	Mechanical strength testing.....:		N

Q	**CIRCUITS INTENDED FOR INTERCONNECTION WITH BUILDING WIRING**		N
Q.1	Limited power sources		N
Q.1.1 a)	Inherently limited output		N
Q.1.1 b)	Impedance limited output		N
	- Regulating network limited output under normal operating and simulated single fault condition		N
Q.1.1 c)	Overcurrent protective device limited output		N
Q.1.1 d)	IC current limiter complying with G.9		N
Q.1.2	Compliance and test method		N
Q.2	Test for external circuits – paired conductor cable		N
	Maximum output current (A) .....:		—
	Current limiting method .....:		—

R	**LIMITED SHORT CIRCUIT TEST**		N
R.1	General requirements	No such consideration.	N
R.2	Determination of the overcurrent protective device and circuit		N
R.3	Test method Supply voltage (V) and short-circuit current (A)). .....:		N

EN 62368-1			
Clause	Requirement – Test	Result - Remark	Verdict
S	**TESTS FOR RESISTANCE TO HEAT AND FIRE**		N
S.1	Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power does not exceed 4 000 W	.	N
	Samples, material.....:		—
	Wall thickness (mm).....:		—
	Conditioning (°C) .....:		—
	Test flame according to IEC 60695-11-5 with conditions as set out		N
	- Material not consumed completely		N
	- Material extinguishes within 30s		N
	- No burning of layer or wrapping tissue		N
S.2	Flammability test for fire enclosure and fire barrier integrity		N
	Samples, material.....:		—
	Wall thickness (mm).....:		—
	Conditioning (°C) .....:		—
	Test flame according to IEC 60695-11-5 with conditions as set out		N
	Test specimen does not show any additional hole		N
S.3	Flammability test for the bottom of a fire enclosure		N
	Samples, material.....:		—
	Wall thickness (mm).....:		—
	Cheesecloth did not ignite		N
S.4	Flammability classification of materials		N
S.5	Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power does not exceed 4 000 W		N
	Samples, material.....:		—
	Wall thickness (mm).....:		—
	Conditioning (test condition), (°C).....:		—
	Test flame according to IEC 60695-11-20 with conditions as set out		N
	After every test specimen was not consumed completely		N

EN 62368-1			
Clause	Requirement – Test	Result - Remark	Verdict
	After fifth flame application, flame extinguished within 1 min		N

T	**MECHANICAL STRENGTH TESTS**		**N**
T.1	General requirements	See the following details.	N
T.2	Steady force test, 10 N ..... :		N
T.3	Steady force test, 30 N ..... :		N
T.4	Steady force test, 100 N ..... :	(See appended table T.4)	N
T.5	Steady force test, 250 N ..... :		N
T.6	Enclosure impact test		N
	Fall test		N
	Swing test		N
T.7	Drop test ..... :	Complete equipment was dropped onto a horizontal surface from the height of 1000 mm for three times.	N
T.8	Stress relief test..... :	(See appended table T.8)	N
T.9	Impact Test (glass)	No such glass provided within the equipment.	N
T.9.1	General requirements	See above.	N
T.9.2	Impact test and compliance	See above.	N
	Impact energy (J) .....:		—
	Height (m).....:		—
T.10	Glass fragmentation test.....:	(See sub-clause 4.4.4.9)	N
T.11	Test for telescoping or rod antennas	No such antennas provided within the equipment.	N
	Torque value (Nm) ..... :	See above.	—

U	**MECHANICAL STRENGTH OF CATHODE RAY TUBES (CRT) AND PROTECTION AGAINST THE EFECTS OF IMPLOSION**		N
U.1	General requirements	No CRT provided within the equipment.	N
U.2	Compliance and test method for non-intrinsically protected CRTs	See above.	N
U.3	Protective Screen ..... :	See above.	N

EN 62368-1			
Clause	Requirement – Test	Result - Remark	Verdict
V	**DETERMINATION OF ACCESSIBLE PARTS (FINGERS, PROBES AND WEDGES)**		N
V.1	Accessible parts of equipment	Built-in product， shall be evaluated in final system	N
V.2	Accessible part criterion	No live parts can be accessible.	N

EN 62368-1			
Clause	Requirement – Test	Result – Remark	Verdict
ATTACHMENT TO TEST REPORT IEC 62368-1 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES (Audio/video, information and communication technology equipment Part 1: Safety requirements)			
	CENELEC COMMON MODIFICATIONS (EN)		--
1	NOTE Z1		P
4.Z1	Protective devices included as integral parts of the equipment or as parts of the building installation:		N
	a) Included as parts of the equipment		N
	b) For components in series with the mains; by devices in the building installation		N
	c) For pluggable type B or permanently connected; by devices in the building installation		N
5.4.2.3.2.4	Interconnection with external circuit		N
10.2.1	Additional requirements in 10.5.1		N
10.5.1	RS1 compliance measurement conditions		P
10.6.2.1	EN 71-1:2011, 4.20 and methods and distances		N
10.Z1	Non-ionizing radiation from radio frequencies in the range 0 to 300 GHz		N
G.7.1	NOTE Z1		N

ZB	**ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)**		--
4.1.15	**Denmark, Finland, Norway and Sweden:** Class I pluggable equipment type A marking		N
4.7.3	**United Kingdom:** Torque test socket-outlet BS 1363, and the plug part BS 1363.		N
5.2.2.2	**Denmark:** Warning for high touchcurrent		N
5.4.11.1 and Annex G	**Finland and Sweden:** Separation of the telecommunication network from earth		N
5.5.2.1	**Norway:** Capacitors rated for the applicable line-to-line voltage (230 V).		N
5.5.6	**Finland, Norway and Sweden:** Resistors used as basic safeguard or bridging basic insulation comply with G.10.1 and G.10.2.		N
5.6.1	**Denmark:** Protection for pluggable equipment type A; integral part of the equipment		N
5.6.4.2.1	**Ireland and United Kingdom:** The protective current rating is taken to be 13 A		N

EN 62368-1			
Clause	Requirement – Test	Result – Remark	Verdict
5.6.5.1	**Ireland and United Kingdom:** Conductor sizes of flexible cords to be accepted by terminals for equipment rated 10 A to 13 A		N
5.7.5	**Denmark:** The installation instruction affixed to the equipment if high protective conductor current		N
5.7.6.1	**Norway and Sweden:** Television distribution system isolation text in user manual		N
5.7.6.2	**Denmark:** Warning for high touch current		N
B.3.1 and B.4	**Ireland and United Kingdom:** Tests conducted using an external miniature circuit breaker or protective devices included as an integral part of the direct plug-in equipment		N
G.4.2	**Denmark:** Appliances rated ≤13 A provided with a plug according to DS 60884-2-D1:2011.		N
	Class I equipment provided with socket-outlets provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a.		N
	If a single-phase equipment having rated >13 A or poly-phase equipment provided with a supply cord with a plug, plug in accordance with the standard sheets DK 6-1a in DS 60884-2-D1 or EN 60309-2.		N
	Mains socket outlets intended for providing power to Class II apparatus rated 2,5 A in accordance with DS 60884-2-D1:2011 standard sheet DKA 1- 4a.		N
	Other current rating socket outlets in compliance with Standard Sheet DKA 1-3a or DKA 1-1c.		N
	Mains socket-outlets with earth in compliance with DS 60884-2-D1:2011 Standard Sheet DK 1- 3a, DK 1-1c, DK1-1d, DK 1-5a or DK 1-7a		N
G.4.2	**United Kingdom:** The plug part of direct plug-in equipment assessed to BS 1363		N
G.7.1	**United Kingdom:** Equipment fitted with a ‘standard plug’ in accordance with the Plugs and Sockets etc (Safety) Regulations 1994, Statutory Instrument 1994 No. 1768		N
G.7.1	**Ireland:** Apparatus provided with a plug in accordance with Statutory Instrument 525: 1997, “13 A Plugs and Conversion Adapters for Domestic Use		N
G.7.2	**Ireland and United Kingdom:** A power supply cord for equipment which is rated over 10 A and up to and including 13 A.		N

ZC	**ANNEX ZC, NATIONAL DEVIATIONS (EN)**	--

EN 62368-1			
Clause	Requirement – Test	Result – Remark	Verdict
10.5.2	**Germany:** Cathode ray tube intended for the display of visual images, authorization or application of type approval and marking.		N

4.1.2	TABLE: List of critical components				P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity[1]
PCB	SHEN ZHEN HOPE MICROELECTRONICS CO., LTD	HM-BT2204	V-0, 130°C	UL94, UL796	UL
Supplementary information:--					

4.8.4, 4.8.5	TABLE: Lithium coin/button cell batteries mechanical tests			N
(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, 4.8.5	TABLE: Lithium coin/button cell batteries mechanical tests		N
(The following mechanical tests are conducted in the sequence noted.)			
4.8.4.6	TABLE: Crush test		—
Test position	Surface tested	Crushing Force (N)	Duration force applied (s)
Supplementary information:			

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

5.2	Table: Classification of electrical energy sources					P
5.2.2.2 – Steady State Voltage and Current conditions						
No.	Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters		ES Class
				U (Vrms or Vpk)	I (Apk or Arms) / Hz	
1	3.3V	Internal circuit	Normal	3.3	-- / DC	ES1
			Abnormal	--	-- / --	
			Single fault – SC/OC: USB SC	0	-- / DC	

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

--	--	--	Normal	--	--	--	--
			Abnormal	--	--	--	
			Single fault – SC/OC	--	--	--	

5.2.2.5 – Repetitive Pulses

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

Test Conditions:
Normal –
Abnormal –
Supplementary information: SC=Short Circuit, OC=Short Circuit

5.4.1.4, 6.3.2, 9.0, B.2.6	**TABLE: Temperature measurements**			P
	Supply voltage (V) .....:	a) 3.3Vdc		—
	Ambient T_{min} (°C) .....:	--	--	—
	Ambient T_{max} (°C) .....:	--	--	—
	Tma (°C) .....:	85.0	--	—
Maximum measured temperature T of part/at:		T (°C)		Allowed T_{max} (°C)
Test condition No.:		a)		--
PCB		88.5		130
Ambient		85.0		--

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)

5.4.1.10.3	TABLE: Ball pressure test of thermoplastics		N
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						N
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							

5.4.2.3	TABLE: Minimum Clearances distances using required withstand voltage		N
	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			N
Test voltage applied between:	Required cl (mm)	Test voltage (kV) peak/ r.m.s. / d.c.	Breakdown Yes / No	
--	--	--	--	
Supplementary information:				

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

5.4.9	TABLE: Electric strength tests	N

Test voltage applied between:	Voltage shape (AC, DC)	Test voltage (V)	Breakdown Yes / No
Functional:			
--	--	--	--
Basic/supplementary:			
--	--	--	--
Reinforced:			
--	--	--	--
Routine Tests:			
--	--	--	--
Supplementary information:			

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

Supplementary information:

X-capacitors installed for testing are:

☐ bleeding resistor rating:

☐ ICX:

Notes:

A. Test Location:

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

B. Operating condition abbreviations:

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

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

5.7.2.2, 5.7.4	**TABLE: Earthed accessible conductive part**	N
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	--
--	7	--

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.

6.2.2	**Table: Electrical power sources (PS) measurements for classification**				P
Source	Description	Measurement	Max Power after 3 s	Max Power after 5 s*)	PS Classification
A	All circuit	Power (W) :	--	--	PS1 (by declared)
		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)**			**N**
Location	Open circuit voltage After 3 s (Vp)	Measured r.m.s current (Irms)	Calculated value (Vp x Irms)	Arcing PIS? Yes / No
--	--	--	--	--

Supplementary information:

An Arcing PIS requires a minimum of 50 V (peak) a.c. or d.c. An Arcing PIS is established when the product of the open circuit voltage (V_p) and normal operating condition rms current (I_{rms}) is greater than 15.

6.2.3.2	**Table: Determination of Potential Ignition Sources (Resistive PIS)**	**N**

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
--	--	--	--	--	--

Supplementary Information:
A combination of voltmeter, VA and ammeter IA may be used instead of a wattmeter.
If a separate voltmeter and ammeter are used, the product of (VA x IA) is used to determine Resistive PIS classification.
A Resistive PIS: (a) dissipates more than 15 W, measured after 30 s of normal operation, or (b) under single fault conditions has either a power exceeding 100 W measured immediately after the introduction of the fault if electronic circuits, regulators or PTC devices are used, or has an available power exceeding 15 W measured 30 s after introduction of the fault.

8.5.5	**TABLE: High Pressure Lamp**	**N**

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

B.2.5	**TABLE: Input test**						N

U (V)	I (A)	I rated (A)	P (W)	P rated (W)	Fuse No	I fuse (A)	Condition/status
--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--
Supplementary information:							

B.3	**TABLE: Abnormal operating condition tests**	**N**
Ambient temperature (°C) ..... :	--	—
Power source for EUT: Manufacturer, model/type, output rating :	--	—

Component No.	Fault Condition	Supply voltage, (V)	Test time (h)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation

--	--	--	--	--	--	--	--	--
Supplementary information:								

B.4	**TABLE: Fault condition tests**							P
Ambient temperature (°C) ..... :			24-26°C					—
Power source for EUT: Manufacturer, model/type, output rating . :			--					—
Component No.	Fault Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
C2	S-C	3.3V	1h	--	--	J type	PCB near U1: 37.7°C,	Unit working normally. No damaged, no hazards.
C18	S-C	3.3V	1h	--	--	J type	PCB near U1: 36.8°C,	Unit working normally. No damaged, no hazards.
Supplementary information:								

Annex M	TABLE: Batteries									**N**
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										N
- Explosion of the battery										N
- Emission of flame or expulsion of molten metal										N
- Electric strength tests of equipment after completion of tests										N
Supplementary information:										

Annex M.4	Table: Additional safeguards for equipment containing secondary lithium batteries				N
Battery/Cell No.	Test conditions	Measurements			Observation
		U	I (A)	Temp (C)	
--	Normal	--	--	--	--
--	Abnormal	--	--	--	--
--	Single fault –SC/OC	--	--	--	--
Supplementary Information: see table Annex B.4 for detail					

Battery identification	Charging at T_{lowest} (°C)	Observation	Charging at $T_{highest}$ (°C)	Observation
Li-ion	--	---	---	--
Supplementary Information:				

Annex Q.1	TABLE: Circuits intended for interconnection with building wiring (LPS)					N
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: S-C=Short circuit, O-C=Open circuit						

T.2, T.3, T.4, T.5	TABLE: Steady force test				N
Part/Location	Material	Thickness (mm)	Force(N)	Test Duration (sec)	Observation
--	--	--	--	--	--
--	--	--	--	--	--
--	--	--	--	--	--
Supplementary information:					

T.6, T.9	TABLE: Impact tests			N
Part/Location	Material	Thickness (mm)	Vertical distance (mm)	Observation
--	--	--	--	--
--	--	--	--	--
--	--	--	--	--
Supplementary information:				

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

T.8	TABLE: Stress relief test				N
Part/Location	Material	Thickness (mm)	Oven Temperature (°C)	Duration (h)	Observation
--	--	--	--	--	--
Supplementary information: For details refer to appended table 4.1.2.					

Attachment A
Photos of product

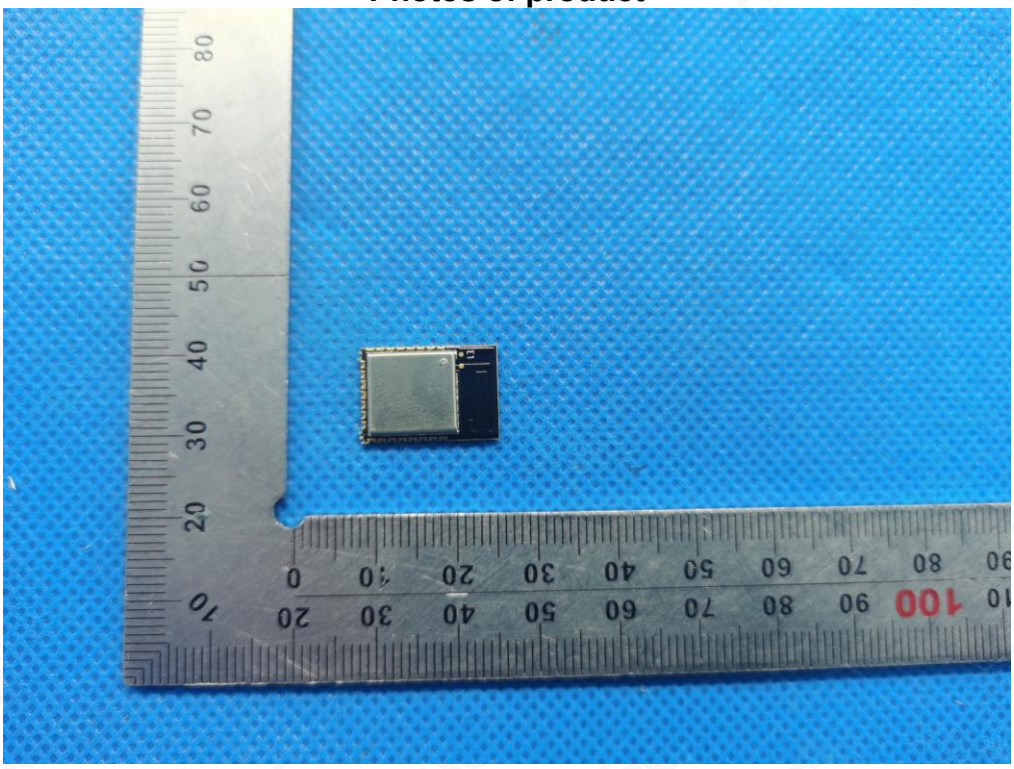

Fig.1 –cover view

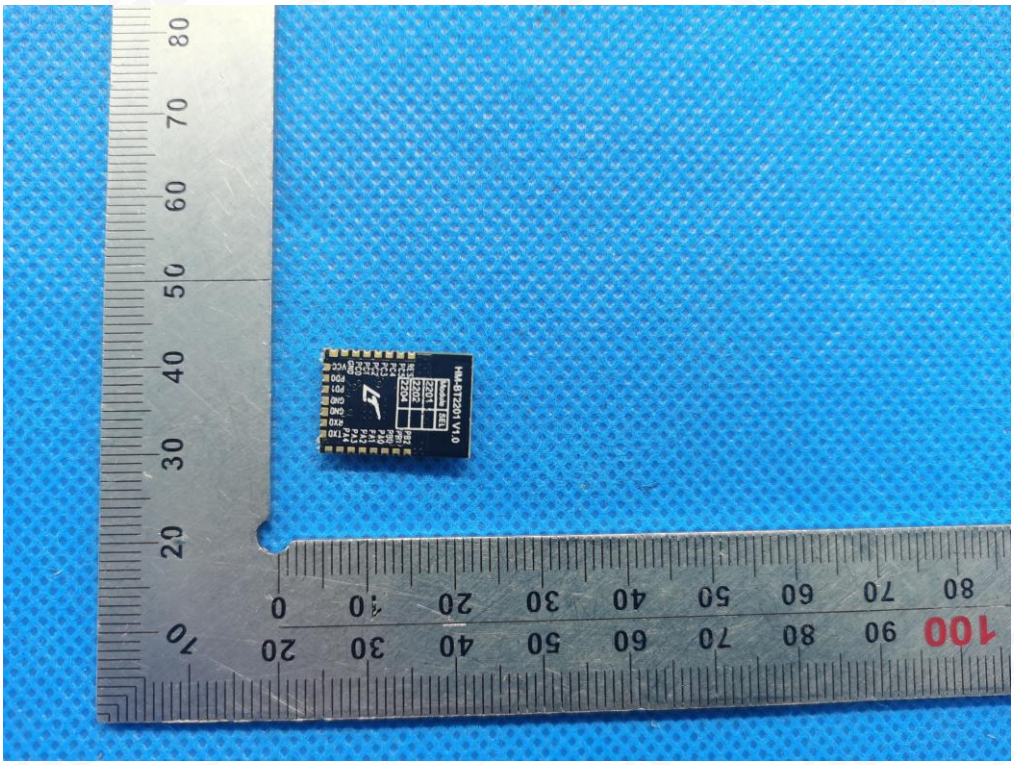

Fig.2 –cover view

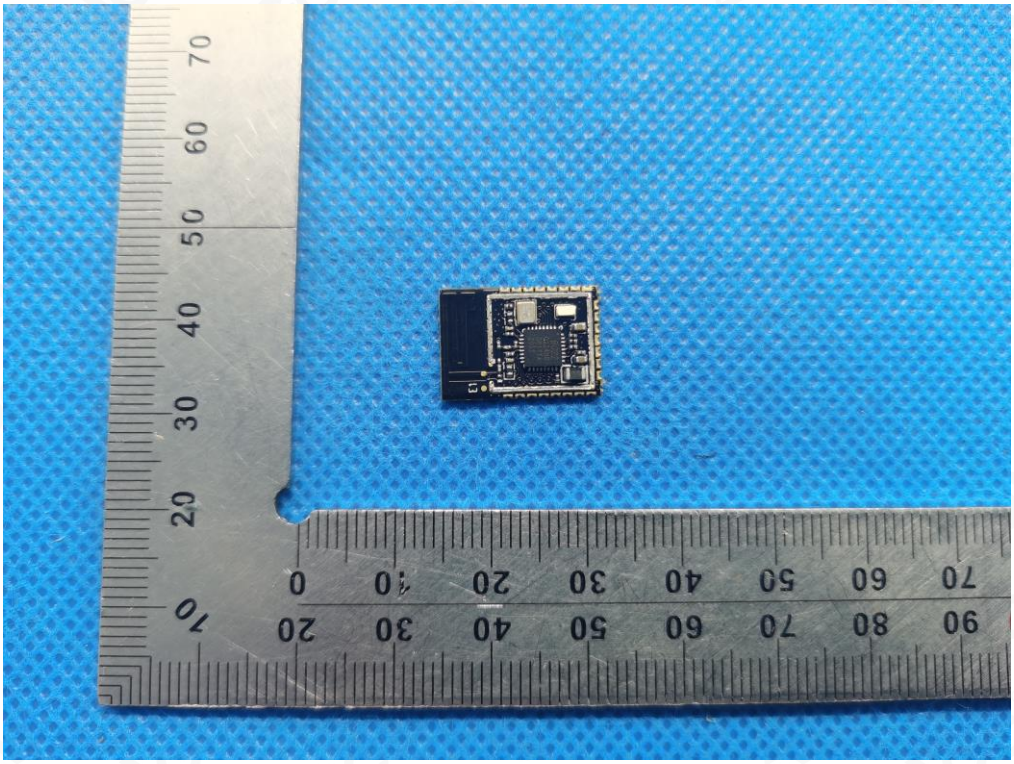

Fig.3 –uncover view

-----END OF REPORT-----

Conditions of Issuance of Test Reports

1. All samples and goods are accepted by the Attestation of Global Compliance (Shenzhen) Co., Ltd (the "Company") solely for testing and reporting in accordance with the following terms and conditions. The company provides its services on the basis that such terms and conditions constitute express agreement between the company and any person, firm or company requesting its services (the "Clients").

2. Any report issued by Company as a result of this application for testing services (the "Report") shall be issued in confidence to the Clients and the Report will be strictly treated as such by the Company. It may not be reproduced either in its entirety or in part and it may not be used for advertising or other unauthorized purposes without the written consent of the Company. The Clients to whom the Report is issued may, however, show or send it, or a certified copy thereof prepared by the Company to its customer, supplier or other persons directly concerned. The Company will not, without the consent of the Clients, enter into any discussion or correspondence with any third party concerning the contents of the Report, unless required by the relevant governmental authorities, laws or court orders.

3.The Company shall not be called or be liable to be called to give evidence or testimony on the Report in a court of law without its prior written consent, unless required by the relevant governmental authorities, laws or court orders.

4. The non-CMA report issued by AGC is only permitted to be used by the client as internal reference use and shall not be used for public demonstration purpose.

5. In the event of the improper use of the report as determined by the Company, the Company reserves the right to withdraw it, and to adopt any other additional remedies which may be appropriate.

6. Samples submitted for testing are accepted on the understanding that the Report issued cannot form the basis of, or be the instrument for, any legal action against the Company.

7. The Company will not be liable for or accept responsibility for any loss or damage however arising from the use of information contained in any of its Reports or in any communication whatsoever about its said tests or investigations.

8.Clients wishing to use the Report in court proceedings or arbitration shall inform the Company to that effect prior to submitting the sample for testing.

9. The Company is not responsible for recalling the electronic version of the original report when any revision is made to them. The Client assumes the responsibility to providing the revised version to any interested party who uses them.

10. Subject to the variable length of retention time for test data and report stored hereinto as otherwise specifically required by individual accreditation authorities, the Company will only keep the supporting test data and information of the test report for a period of six years. The data and information will be disposed of after the aforementioned retention period has elapsed. Under no circumstances shall we provide any data and information which has been disposed of after retention period. Under no circumstances shall we be liable for damage of any kind, including (but not limited to) compensatory damages, lost profits, lost data, or any form of special, incidental, indirect, consequential or punitive damages of any kind, whether based on breach of contract of warranty, tort (including negligence), product liability or otherwise, even if we are informed in advance of the possibility of such damages.