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TEST REPORT

IEC 62368-1

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

Report Number..... :	210929015SZN-001
Date of issue ..... :	January 19, 2022
Total number of pages ..... :	Refer to page 3 for details
Name of Testing Laboratory preparing the Report ..... :	Intertek Testing Services Shenzhen Ltd. Longhua Branch
Applicant's name ..... :	GlobTek, Inc.
Address ..... :	186 Veterans Dr. Northvale, NJ 07647, United States of America.
Test specification:	
Standard ..... :	IEC 62368-1:2018
Test procedure..... :	CB Scheme
Non-standard test method..... :	N/A
TRF template used ..... :	IECEE OD-2020-F1:2020, Ed.1.3
Test Report Form No. ..... :	IEC62368_1E
Test Report Form(s) Originator.... :	UL(US)
Master TRF ..... :	Dated 2021-02-04

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.

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

General disclaimer:

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

Test item description .....:	ICT/ITE Power Supply
Trade Mark(s) .....:	GlobTek, Inc.
Manufacturer.....:	Same as applicant
Model/Type reference.....:	GT-46600-WWVV-X.X-TB* (See general product information for model designation)
Ratings.....:	Input: 100-240V~ 50-60Hz or 50/60Hz 1.5A for all models. Class I or Class II equipment Output: See general product information for details

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):			
☒	**CB Testing Laboratory:**	Intertek Testing Services Shenzhen Ltd. Longhua Branch	
Testing location/ address ..... :		101, 201, Building B, No. 308 Wuhe Avenue, Zhangkengjing Community, GuanHu Subdistrict, LongHua District, Shenzhen, P.R. China	
Tested by (name, function, signature) ..... :		Mingo Liu/ Engineer	Mingo Liu
Approved by (name, function, signature) .. :		Joe Ding/ Project Engineer	
☐	**Testing procedure: CTF Stage 1:**		
Testing location/ address ..... :			
Tested by (name, function, signature) ..... :			
Approved by (name, function, signature) .. :			
☐	**Testing procedure: CTF Stage 2:**		
Testing location/ address ..... :			
Tested by (name, function, signature)			
Witnessed by (name, function, signature) . :			
Approved by (name, function, signature) .. :			
☐	**Testing procedure: CTF Stage 3:**		
☐	**Testing procedure: CTF Stage 4:**		
Testing location/ address ..... :			
Tested by (name, function, signature) ..... :			
Witnessed by (name, function, signature) . :			
Approved by (name, function, signature) .. :			
Supervised by (name, function, signature) :			

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

- Pages 1 to 63 for IEC 62368-1 TRF (main report)
- Appendix 1 (10 pages): Product photos
- Appendix 2 (1 page): PCB Layout
- Appendix 3 (3 pages): Transformer specification
- Appendix 4 (21 pages): EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES
- Appendix 5 (7 pages): United States of America and Canada NATIONAL DIFFERENCES

Summary of testing:

The sample(s) tested complies with the requirements of IEC 62368-1: 2018 and EN IEC 62368-1:2020+A11:2020

Tests performed (name of test and test clause):	**Testing location:**
Refer to content of this test report	Intertek Testing Services Shenzhen Ltd. Longhua Branch 101, 201, Building B, No. 308 Wuhe Avenue, Zhangkengjing Community, GuanHu Subdistrict, LongHua District, Shenzhen, P.R. China

Summary of compliance with National Differences:

List of countries addressed

Group and national differences of all CENELEC members have been considered.

National differences of United States of America and Canada were checked.

☒ **The product fulfils the requirements of:** IEC 62368-1: 2018 and EN IEC 62368-1:2020+A11:2020

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

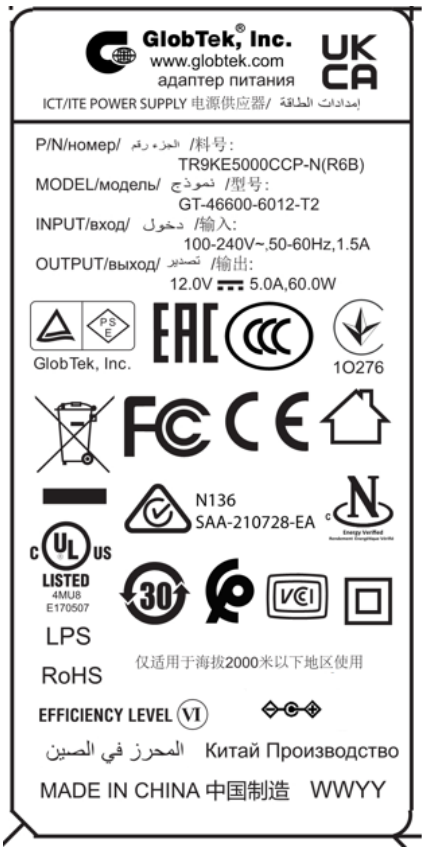
☐ **Internal procedure used for type testing through which traceability of the measuring uncertainty has been established:**
Procedure number, issue date and title:

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**

Copy of marking plate:

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



Test item particulars:	
Product group .....:	☒ end product ☐ built-in component
Classification of use by .....:	☒ Ordinary person ☒ Children likely present ☐ Instructed person ☐ Skilled person
Supply connection.....:	☒ AC mains ☐ DC mains ☐ not mains connected: ☐ ES1 ☐ ES2 ☐ ES3
Supply tolerance .....:	☒ +10%/-10% ☐ +20%/-15% ☐ + %/ - % ☐ None
Supply connection – type .....:	☒ pluggable equipment type A - ☐ non-detachable supply cord ☒ appliance coupler ☐ direct plug-in ☐ pluggable equipment type B - ☐ non-detachable supply cord ☐ appliance coupler ☐ permanent connection ☐ mating connector☐ other:
Considered current rating of protective device ..... :	☒ 16 A; 20A for Canada and US Location: ☒ building ☒ equipment ☐ N/A
Equipment mobility ..... :	☒ movable ☐ hand-held ☒ transportable ☐ direct plug-in ☐ stationary ☐ for building-in ☐ wall/ceiling-mounted ☐ SRME/rack-mounted ☐ other:
Overvoltage category (OVC) ..... :	☐ OVC I ☒ OVC II ☐ OVC III ☐ OVC IV ☐ other:
Class of equipment ..... :	☒ Class I ☒ Class II ☐ Class III ☐ Not classified ☐
Special installation location ..... :	☒ N/A ☐ restricted access area ☐ outdoor location☐
Pollution degree (PD) ..... :	☐ PD 1 ☒ PD 2 ☐ PD 3
Manufacturer's specified T_{ma}..... :	40 °C ☐ Outdoor: minimum °C
IP protection class ..... :	☒ IPX0 ☐ IP___
Power systems ..... :	☒ TN ☐ TT ☒ IT - 230 V $_{L-L}$ for Norway ☐ not AC mains
Altitude during operation (m) ..... :	☐ 2000 m or less ☒ 5000 m
Altitude of test laboratory (m) ..... :	☒ 2000 m or less ☐ m
Mass of equipment (kg) ..... :	0.281 kg

Possible test case verdicts:	
- test case does not apply to the test object....:	N/A
- test object does meet the requirement.....:	P (Pass)
- test object does not meet the requirement....:	F (Fail)
Testing:	
Date of receipt of test item .....:	September 29, 2021
Date (s) of performance of tests .....:	September 29, 2021 – January 19, 2022
General remarks:	

"(See Enclosure #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.
Throughout this report a ☐ comma / ☒ point is used as the decimal separator.
Determination of the test conclusion is based on IEC Guide 115 in consideration of measurement uncertainty. This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program. The test report only allows to be revised only within the report defined retention period unless standard or regulation was withdrawn or invalid.

The clause which indicated with * is the subcontract test item. (if there is subcontracting test).

Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided .....:	☒ **Yes** ☐ **Not applicable**
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies) .....:	Factory 1: GlobTek, Inc. 186 Veterans Dr. Northvale, NJ 07647, United States of America. Factory 2: GlobTek (Suzhou) Co., Ltd. Building 4, No.76, Jin Ling East Rd, Suzhou Industrial Park, Suzhou, JiangSu 215021, China

General product information and other remarks:

The equipment is a switching mode power supply adaptor intended for use with Audi/video, information and communication technology equipment.

The equipment has two kinds of structures: Class I and Class II. Class II equipment is same with Class I equipment except remove of protective conductor and change of inlet type.

External enclosure is made of V-0 plastic material. Two pieces of enclosure are enclosed with ultrasonic welding without screw.

Max. normal load condition: Output load to rated output.

Additional requirements:

Exposure to extreme temperatures, excessive dust, moisture or vibration; to flammable gases; to corrosive or explosive atmospheres:

This equipment is intended to operate in a “normal” environment (Offices and homes).

Electromedical equipment connected to the patient:

This equipment is not an electromedical equipment intended to be physically connected to patient.

Equipment used in vehicles, ships or aircrafts, in tropical countries, or at elevations > 5000m:

This equipment is intended to operate in a “normal” environment (Offices and homes) and is intended to be operated under altitude up to 5000m, specified in table 17 of IEC 62368-1.

Mode differences

Explanation of model designation GT-46600-WWVV-X.X-TB*:

WW is the standard output wattage, with a maximum value of “65”,

VV is the standard rated output voltage designation, with a value of “12” “15” and “24”;

-X.X denote the output voltage differentiator, subtracting X.X volts from standard output voltage VV in 0.1V increments, the actual output voltage range is12-24Vdc, blank is to indicate the no voltage different.

B can be 3, 3A or 2, 3 means C14 inlet type, 3A means C6 inlet type, 2 means C8 inlet type.

The last “*” can be any six characters consist of 0 to 9 or A to Z or () [] or – or blank for marketing purpose.

These below models, have the same circuit diagram, the same PCB layout.

The turns of secondary winding maybe added or reduced according to different output voltage.

But some-non-critical components maybe adjusted according to different output voltage.

The parameters of these components depend on output.

The model designations and ratings are detailed as follows:

Model	Output Voltage	Max. Output Current	Max. Power
GT-46600-WW12-TB*	12V	5.0A	60W
GT-46600-WW15-X.X-TB*	12.1~15V	5.0A	60W
GT-46600-WW24-X.X-TB*	15.1~18.9V	4.0A	60W
GT-46600-WW24-X.X-TB*	19~24V	3.42A	65W

Unless otherwise specified, all the tests are performed on models GT-46600-6524-T3.

OVERVIEW OF ENERGY SOURCES AND SAFEGUARDS				
Clause	**Possible Hazard**			
5	Electrically-caused injury			
Class and Energy Source (e.g. ES3: Primary circuit)	Body Part (e.g. Ordinary)	Safeguards		
		B	S	R
ES3: Primary circuits conductively connected to mains (for Class I equipment)	Ordinary	Basic insulation distances: complied with Cl. 5.4.2 and 5.4.3, 5.4.9	Protective conductor Complied with 5.6	Reinforced insulation distances: complied with Cl. 5.4.2 and 5.4.3, 5.4.9, Enclosure
ES3: Primary circuits conductively connected to mains (for Class II equipment)	Ordinary	N/A	N/A	Reinforced insulation distances: complied with Cl. 5.4.2 and 5.4.3, 5.4.9, Enclosure
ES3: Primary circuit (X-cap)	Ordinary	N/A	N/A	Bleeder resistors
ES1: Secondary circuits	Ordinary	N/A	N/A	N/A
6	Electrically-caused fire			
Class and Energy Source (e.g. PS2: 100 Watt circuit)	Material part (e.g. Printed board)	Safeguards		
		B	1st S	2nd S
PS3: All circuits expect for DC output	Combustible material	No ignition, No parts exceeding 90% of its spontaneous ignition temperature.	Min. V-1 PCB, Min V-0 enclosure. Internal wire complied with 60695-11-21 or equivalent.	N/A
PS2: DC output	Combustible material	No ignition, No parts exceeding 90% of its spontaneous ignition temperature.	Min. V-1 PCB, Internal wire complied with 60695-11-21 or equivalent.	N/A
7	Injury caused by hazardous substances			
Class and Energy Source (e.g. Ozone)	Body Part (e.g., Skilled)	Safeguards		
		B	S	R
N/A	N/A	N/A	N/A	N/A
8	Mechanically-caused injury			
Class and Energy Source (e.g. MS3: Plastic fan blades)	Body Part (e.g. Ordinary)	Safeguards		
		B	S	R
MS1: Sharp edge and corners	Ordinary	N/A	N/A	N/A
MS1: Equipment mass	Ordinary	N/A	N/A	N/A

9	Thermal burn			
Class and Energy Source (e.g. TS1: Keyboard caps)	Body Part (e.g., Ordinary)	Safeguards		
		B	S	R
TS1: External surface	Ordinary	N/A	N/A	N/A
TS1: Output cord, Inlet	Ordinary	N/A	N/A	N/A
10	Radiation			
Class and Energy Source (e.g. RS1: PMP sound output)	Body Part (e.g., Ordinary)	Safeguards		
		B	S	R
Indicating light	Ordinary	N/A	N/A	N/A
Supplementary Information: “B” – Basic Safeguard; “S” – Supplementary Safeguard; “R” – Reinforced Safeguard				

ENERGY SOURCE DIAGRAM
Optional. Manufacturers are to provide the energy sources diagram identify declared energy sources and identifying the demarcations are between power sources. Recommend diagram be provided included in power supply and multipart systems. Insert diagram below. Example diagram designs are; Block diagrams; image(s) with layered data; mechanical drawings
☐ **ES** ☐ **PS** ☐ **MS** ☐ **TS** ☐ **RS**

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
4	**GENERAL REQUIREMENTS**		**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) .....:		N/A
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)	P
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)	P
4.4.3.3	Drop tests	(See Clause T.7)	P
4.4.3.4	Impact tests	(See Clause T.6)	P
4.4.3.5	Internal accessible safeguard tests		P
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	(See Clause T.8)	P
4.4.3.9	Air comprising a safeguard		P
4.4.3.10	Accessibility, glass, safeguard effectiveness		P
4.4.4	Displacement of a safeguard by an insulating liquid		N/A
4.4.5	Safety interlocks	(See Annex K)	N/A
4.5	**Explosion**		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
4.6	**Fixing of conductors**		P
	Fix conductors not to defeat a safeguard		P
	Compliance is checked by test .....:	(See Clause T.2)	P
4.7	**Equipment for direct insertion into mains socket–outlets**		N/A
4.7.2	Mains plug part complies with relevant standard...:		N/A
4.7.3	Torque (Nm).....:		N/A
4.8	**Equipment containing coin/button cell batteries**		N/A
4.8.1	General		N/A
4.8.2	Instructional safeguard.....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
4.8.3	Battery compartment door/cover construction		N/A
	Open torque test		N/A
4.8.4.2	Stress relief test		N/A
4.8.4.3	Battery replacement test		N/A
4.8.4.4	Drop test		N/A
4.8.4.5	Impact test		N/A
4.8.4.6	Crush test		N/A
4.8.5	Compliance		N/A
	30N force test with test probe		N/A
	20N force test with test hook		N/A
4.9	**Likelihood of fire or shock due to entry of conductive object**		N/A
4.10	**Component requirements**		N/A
4.10.1	Disconnect Device	(See Annex L)	N/A
4.10.2	Switches and relays	(See Annex G)	N/A

5	**ELECTRICALLY-CAUSED INJURY**		**P**
5.2	**Classification and limits of electrical energy sources**		P
5.2.2	ES1, ES2 and ES3 limits		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)	P
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)	P
5.2.2.6	Ringing signals	(See Annex H)	N/A
5.2.2.7	Audio signals	(See Clause E.1)	N/A
5.3	**Protection against electrical energy sources**		P
5.3.1	General Requirements for accessible parts to ordinary, instructed and skilled persons	Sufficient safeguard was provided between energy source and ordinary, instructed and skilled persons.	P
5.3.1 a)	Accessible ES1/ES2 derived from ES2/ES3 circuits		P
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		P
	Accessibility to outdoor equipment bare parts		N/A
5.3.2.2	Contact requirements	No openings.	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		P

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.3.2.4	Terminals for connecting stripped wire		N/A
5.4	**Insulation materials and requirements**		P
5.4.1.2	Properties of insulating material	No hygroscopic material.	P
5.4.1.3	Material is non-hygroscopic		P
5.4.1.4	Maximum operating temperature for insulating materials ..... :	(See appended table 5.4.1.4)	P
5.4.1.5	Pollution degrees..... :	PD2	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		N/A
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)	N/A
5.4.2	Clearances		P
5.4.2.1	General requirements		P
	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 ..... :	2000Vpeak	—
5.4.2.3	Procedure 2 for determining clearance		P
5.4.2.3.2.2	a.c. mains transient voltage ..... :	2500Vpeak	—
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 ..... :	1.48	P
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..... :	IIIb	—
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

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.4.2	Minimum distance through insulation ..... :	(See appended table 5.4.4.2)	P
5.4.4.3	Insulating compound forming solid insulation		P
5.4.4.4	Solid insulation in semiconductor devices	Certificated optocoupler used and comply with G.12.	P
5.4.4.5	Insulating compound forming cemented joints		N/A
5.4.4.6	Thin sheet material		P
5.4.4.6.1	General requirements		P
5.4.4.6.2	Separable thin sheet material		P
	Number of layers (pcs) ..... :	(See appended table 5.4.9)	P
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
5.4.4.7	Solid insulation in wound components		P
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 5.4.9)	P
5.4.5	Antenna terminal insulation		P
5.4.5.1	General		P
5.4.5.2	Voltage surge test		P
5.4.5.3	Insulation resistance (MΩ) .....:	>4MΩ	P
	Electric strength test ..... :	(See appended table 5.4.9)	P
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 (°C), duration (h) .....:	93%, 40°C, 120h	—
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		N/A
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

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Clause	Requirement + Test	Result - Remark	Verdict
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
	Rated operating voltage U_{op} (V) .....:		—
	Nominal voltage U_{peak} (V) .....:		—
	Max increase due to variation ΔU_{sp} .....:		—
	Max increase due to ageing ΔU_{sa} .....:		—
5.4.11.3	Test method and compliance.....:	(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
5.5	**Components as safeguards**		P
5.5.1	General		P
5.5.2	Capacitors and RC units		P
5.5.2.1	General requirement	CX1, CY1 and CY2 certified with IEC 60384-14.	P
5.5.2.2	Safeguards against capacitor discharge after disconnection of a connector .....:	(See appended table 5.5.2.2)	P
5.5.3	Transformers	(See Annex G.5.3)	P
5.5.4	Optocouplers	(See Annex G.12)	P
5.5.5	Relays		N/A
5.5.6	Resistors	Certified bleeder resistors (RX1 and RX2 in series) used after fuse and used as discharge safeguard.	P
5.5.7	SPDs	(See Clause G.8)	P
5.5.8	Insulation between the mains and an external circuit consisting of a coaxial cable.....:		N/A
5.5.9	Safeguards for socket-outlets in outdoor equipment		N/A
	RCD rated residual operating current (mA) .....:		—
5.6	**Protective conductor**		P
5.6.2	Requirement for protective conductors		P
5.6.2.1	General requirements		P
5.6.2.2	Colour of insulation		P

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Clause	Requirement + Test	Result - Remark	Verdict
5.6.3	Requirement for protective earthing conductors		N/A
	Protective earthing conductor size (mm^2) .....:		—
	Protective earthing conductor serving as a reinforced safeguard		N/A
	Protective earthing conductor serving as a double safeguard		N/A
5.6.4	Requirements for protective bonding conductors		P
5.6.4.1	Protective bonding conductors		P
	Protective bonding conductor size (mm^2).....:	18AWG	—
5.6.4.2	Protective current rating (A) .....:	1.5A	P
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		P
5.6.6.1	Requirements		P
5.6.6.2	Test Method .....:	(See appended table 5.6.6)	P
5.6.6.3	Resistance (Ω) or voltage drop .....:	(See appended table 5.6.6)	P
5.6.7	Reliable connection of a protective earthing conductor		N/A
5.6.8	Functional earthing		N/A
	Conductor size (mm^2) .....:		N/A
	Class II with functional earthing marking .....:		N/A
	Appliance inlet cl & cr (mm) .....:		N/A
5.7	**Prospective touch voltage, touch current and protective conductor current**		P
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		P
5.7.4	Unearthed accessible parts .....:	(See appended table 5.2 or 5.7.4)	P
5.7.5	Earthed accessible conductive parts .....:	(See appended table 5.7.5)	P
5.7.6	Requirements when touch current exceeds ES2 limits		N/A
	Protective conductor current (mA) .....:		N/A
	Instructional Safeguard .....:		N/A
5.7.7	Prospective touch voltage and touch current associated with external circuits		N/A

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

6	**ELECTRICALLY- CAUSED FIRE**		**P**
6.2	**Classification of PS and PIS**		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)	P
6.2.3.2	Resistive PIS ..... :	(See appended table 6.2.3.2)	P
6.3	**Safeguards against fire under normal operating and abnormal operating conditions**		P
6.3.1	No ignition and attainable temperature value less than 90 % defined by ISO 871 or less than 300 °C for unknown materials .....:	(See appended table 5.4.1.4, 9.3, B.1.5, B.2.6)	P
	Combustible materials outside fire enclosure..... :		N/A
6.4	**Safeguards against fire under single fault conditions**		P
6.4.1	Safeguard method	Control fire spread was used.	P
6.4.2	Reduction of the likelihood of ignition under single fault conditions in PS1 circuits		N/A
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		N/A
6.4.5	Control of fire spread in PS2 circuits		P
6.4.5.2	Supplementary safeguards		P
6.4.6	Control of fire spread in PS3 circuits		P
6.4.7	Separation of combustible materials from a PIS	V-0 material fire enclosure used.	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		P

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Clause	Requirement + Test	Result - Remark	Verdict
6.4.8.2	Fire enclosure and fire barrier material properties	V-0 material fire enclosure used.	P
6.4.8.2.1	Requirements for a fire barrier		N/A
6.4.8.2.2	Requirements for a fire enclosure		P
6.4.8.3	Constructional requirements for a fire enclosure and a fire barrier	No openings	N/A
6.4.8.3.1	Fire enclosure and fire barrier openings		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
6.5	**Internal and external wiring**		P
6.5.1	General requirements	Internal primary wires and output wires complied with IEC 60695-11-21. The test method described in IEC60695-11-21 is considered equivalent to that test wiring materials which bearing VW-1 rating (according to UL758).	P
6.5.2	Requirements for interconnection to building wiring .....:		N/A
6.5.3	Internal wiring size (mm^2) for socket-outlets .....:		N/A
6.6	**Safeguards against fire due to the connection to additional equipment**		P

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

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Clause	Requirement + Test	Result - Remark	Verdict
7.6	**Batteries and their protection circuits**		N/A
8	**MECHANICALLY-CAUSED INJURY**		**P**
8.2	**Mechanical energy source classifications**		P
8.3	**Safeguards against mechanical energy sources**		P
8.4	**Safeguards against parts with sharp edges and corners**		P
8.4.1	Safeguards		N/A
	Instructional Safeguard ..... :		N/A
8.4.2	Sharp edges or corners	MS1	N/A
8.5	**Safeguards against moving parts**		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
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

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Clause	Requirement + Test	Result - Remark	Verdict
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
8.6	**Stability of equipment**		N/A
8.6.1	General		N/A
	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
8.7	**Equipment mounted to wall, ceiling or other structure**		N/A
8.7.1	Mount means type ..... :		N/A
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
8.8	**Handles strength**		N/A
8.8.1	General		N/A
8.8.2	Handle strength test		N/A
	Number of handles ..... :		—
	Force applied (N)..... :		—
8.9	**Wheels or casters attachment requirements**		N/A
8.9.2	Pull test		N/A
8.10	**Carts, stands and similar carriers**		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

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Clause	Requirement + Test	Result - Remark	Verdict
	Force applied (N) ..... :		—
8.10.6	Thermoplastic temperature stability		N/A
8.11	**Mounting means for slide-rail mounted equipment (SRME)**		N/A
8.11.1	General		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
8.12	**Telescoping or rod antennas**		N/A
	Button/ball diameter (mm) ..... :		—

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

10	**RADIATION**		**P**
10.2	**Radiation energy source classification**		P
10.2.1	General classification	MS1: Indicating light	P
	Lasers ..... :		—
	Lamps and lamp systems ..... :		—
	Image projectors ..... :		—
	X-Ray ..... :		—
	Personal music player ..... :		—
10.3	**Safeguards against laser radiation**		N/A
	The standard(s) equipment containing laser(s) comply ..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
10.4	**Safeguards against optical radiation from lamps and lamp systems (including LED types)**		N/A
10.4.1	General requirements		N/A
	Instructional safeguard provided for accessible radiation level needs to exceed		N/A
	Risk group marking and location ..... :		N/A
	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
10.5	**Safeguards against X-radiation**		N/A
10.5.1	Requirements		N/A
	Instructional safeguard for skilled persons ..... :		—
10.5.3	Maximum radiation (pA/kg) ..... :	(See appended tables B.3 & B.4)	—
10.6	**Safeguards against acoustic energy sources**		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 ≥ 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

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Clause	Requirement + Test	Result - Remark	Verdict
B	**NORMAL OPERATING CONDITION TESTS, ABNORMAL OPERATING CONDITION TESTS AND SINGLE FAULT CONDITION TESTS**		**P**
B.1	**General**		P
B.1.5	Temperature measurement conditions	(See appended table B.1.5)	P
B.2	**Normal operating conditions**		P
B.2.1	General requirements ..... :	(See Test Item Particulars and appended test tables)	P
	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.3	**Simulated abnormal operating conditions**		P
B.3.1	General		P
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		P
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)	P
B.4	**Simulated single fault conditions**		P
B.4.1	General		P
B.4.2	Temperature controlling device		N/A
B.4.3	Blocked motor test		N/A
B.4.4	Functional insulation		P
B.4.4.1	Short circuit of clearances for functional insulation		P
B.4.4.2	Short circuit of creepage distances for functional insulation		P
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		P
B.4.6	Short circuit or disconnection of passive components		P
B.4.7	Continuous operation of components		N/A
B.4.8	Compliance during and after single fault conditions ..... :	(See appended table B.4)	P
B.4.9	Battery charging and discharging under single fault conditions	(See Annex M)	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
C	**UV RADIATION**		**N/A**
C.1	**Protection of materials in equipment from UV radiation**		N/A
C.1.2	Requirements		N/A
C.1.3	Test method		N/A
C.2	**UV light conditioning test**		N/A
C.2.1	Test apparatus ..... :		N/A
C.2.2	Mounting of test samples		N/A
C.2.3	Carbon-arc light-exposure test		N/A
C.2.4	Xenon-arc light-exposure test		N/A
D	**TEST GENERATORS**		**P**
D.1	**Impulse test generators**		N/A
D.2	**Antenna interface test generator**		P
D.3	**Electronic pulse generator**		N/A
E	**TEST CONDITIONS FOR EQUIPMENT CONTAINING AUDIO AMPLIFIERS**		N/A
E.1	**Electrical energy source classification for audio signals**		N/A
	Maximum non-clipped output power (W)..... :		—
	Rated load impedance (Ω) ..... :		—
	Open-circuit output voltage (V)..... :		—
	Instructional safeguard ..... :	See Clause F.5	—
E.2	**Audio amplifier normal operating conditions**		N/A
	Audio signal source type..... :		—
	Audio output power (W) ..... :		—
	Audio output voltage (V) ..... :		—
	Rated load impedance (Ω) ..... :		—
	Requirements for temperature measurement	(See Table B.1.5)	N/A
E.3	Audio amplifier abnormal operating conditions	(See Table B.3, B.4)	N/A
F	**EQUIPMENT MARKINGS, INSTRUCTIONS, AND INSTRUCTIONAL SAFEGUARDS**		**P**
F.1	**General**		P
	Language ..... :	English	—
F.2	**Letter symbols and graphical symbols**		P
F.2.1	Letter symbols according to IEC60027-1		P
F.2.2	Graphic symbols according to IEC, ISO or manufacturer specific		P
F.3	**Equipment markings**		P
F.3.1	Equipment marking locations	External enclosure.	P
F.3.2	Equipment identification markings		P
F.3.2.1	Manufacturer identification ..... :	GlobTek, Inc.	P
F.3.2.2	Model identification ..... :	GT-46600-WWVV-X.X-TB*	P

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Clause	Requirement + Test	Result - Remark	Verdict
F.3.3	Equipment rating markings		P
F.3.3.1	Equipment with direct connection to mains		P
F.3.3.2	Equipment without direct connection to mains		N/A
F.3.3.3	Nature of the supply voltage ..... :	~	P
F.3.3.4	Rated voltage..... :	100-240V~	P
F.3.3.5	Rated frequency ..... :	50-60Hz or 50/60Hz	P
F.3.3.6	Rated current or rated power..... :	1.5A	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 ..... :	Non-replaceable PCB-mount fuse: F1 T3.15AL / 250V	P
	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		P
F.3.6.1.1	Protective earthing conductor terminal..... :	⏚	P
F.3.6.1.2	Protective bonding conductor terminals ..... :		N/A
F.3.6.2	Equipment class marking..... :	⧈	P
F.3.6.3	Functional earthing terminal marking ..... :		N/A
F.3.7	Equipment IP rating marking ..... :	IPX0	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	Markings withstand the required test.	P
F.4	**Instructions**		N/A
	a) Information prior to installation and initial use		N/A
	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		N/A
	f) Instructions for audio equipment terminals		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	g) Protective earthing used as a safeguard		N/A
	h) Protective conductor current exceeding ES2 limits		N/A
	i) Graphic symbols used on equipment		N/A
	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
F.5	Instructional safeguards		N/A
G	**COMPONENTS**		**P**
G.1	**Switches**		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
G.2	**Relays**		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
G.2.4	Test method and compliance		N/A
G.3	**Protective devices**		P
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		P
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

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Clause	Requirement + Test	Result - Remark	Verdict
G.4	**Connectors**		P
G.4.1	Spacings		P
G.4.2	Mains connector configuration..... :	Certified appliance inlet used.	P
G.4.3	Plug is shaped that insertion into mains socket-outlets or appliance coupler is unlikely	The output terminal is unlikely insertion into mains socket-outlets.	P
G.5	**Wound components**		P
G.5.1	Wire insulation in wound components		P
G.5.1.2	Protection against mechanical stress	Protection against mechanical stress is provided by insulation tube and insulation tape.	P
G.5.2	Endurance test		N/A
G.5.2.1	General test requirements		N/A
G.5.2.2	Heat run test		N/A
	Test time (days per cycle)..... :		—
	Test temperature (°C) ..... :		—
G.5.2.3	Wound components supplied from the mains		N/A
G.5.2.4	No insulation breakdown		N/A
G.5.3	Transformers		P
G.5.3.1	Compliance method..... :	Complied with G.5.3.2 and G.5.3.3	P
	Position ..... :	T1	P
	Method of protection ..... :	Inherent	P
G.5.3.2	Insulation	TIW and insulation tape used.	P
	Protection from displacement of windings..... :	Refer to transformer specification.	—
G.5.3.3	Transformer overload tests		P
G.5.3.3.1	Test conditions	Load applied to the output of the power supply unit.	P
G.5.3.3.2	Winding temperatures	See append table B.3	P
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

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Clause	Requirement + Test	Result - Remark	Verdict
G.5.3.4.7	Routine test		N/A
G.5.4	Motors		N/A
G.5.4.1	General requirements		N/A
G.5.4.2	Motor overload test conditions		N/A
G.5.4.3	Running overload test		N/A
G.5.4.4.2	Locked-rotor overload test		N/A
	Test duration (days) ..... :		—
G.5.4.5	Running overload test for DC motors		N/A
G.5.4.5.2	Tested in the unit		N/A
G.5.4.5.3	Alternative method		N/A
G.5.4.6	Locked-rotor overload test for DC motors		N/A
G.5.4.6.2	Tested in the unit		N/A
	Maximum Temperature ..... :		N/A
G.5.4.6.3	Alternative method		N/A
G.5.4.7	Motors with capacitors		N/A
G.5.4.8	Three-phase motors		N/A
G.5.4.9	Series motors		N/A
	Operating voltage ..... :		—
G.6	**Wire Insulation**		P
G.6.1	General	(See appended table 4.1.2)	P
G.6.2	Enamelled winding wire insulation		N/A
G.7	**Mains supply cords**		N/A
G.7.1	General requirements	Mains supply cords is not covered in this report.	N/A
	Type ..... :		—
G.7.2	Cross sectional area (mm^2 or AWG) ..... :		N/A
G.7.3	Cord anchorages and strain relief for non-detachable power supply cords		N/A
G.7.3.2	Cord strain relief		N/A
G.7.3.2.1	Requirements		N/A
	Strain relief test force (N)..... :		N/A
G.7.3.2.2	Strain relief mechanism failure		N/A
G.7.3.2.3	Cord sheath or jacket position, distance (mm) ..... :		N/A
G.7.3.2.4	Strain relief and cord anchorage material		N/A
G.7.4	Cord Entry		N/A
G.7.5	Non-detachable cord bend protection		N/A
G.7.5.1	Requirements		N/A
G.7.5.2	Test method and compliance		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Overall diameter or minor overall dimension, *D* (mm)..... :		—
	Radius of curvature after test (mm)..... :		—
G.7.6	Supply wiring space		N/A
G.7.6.1	General requirements		N/A
G.7.6.2	Stranded wire		N/A
G.7.6.2.1	Requirements		N/A
G.7.6.2.2	Test with 8 mm strand		N/A
G.8	**Varistors**		P
G.8.1	General requirements		P
G.8.2	Safeguards against fire		P
G.8.2.1	General		P
G.8.2.2	Varistor overload test		P
G.8.2.3	Temporary overvoltage test		N/A
G.9	**Integrated circuit (IC) current limiters**		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
G.10	**Resistors**		P
G.10.1	General	Certified bleeder resistors (RX1 and RX2 in series) used after fuse and used as discharge safeguard.	P
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
G.11	**Capacitors and RC units**		P
G.11.1	General requirements	X1 or X2, Y1 capacitors certified according to IEC 60384-14.	P
G.11.2	Conditioning of capacitors and RC units	Capacitors complied with IEC 60384-14.	P
G.11.3	Rules for selecting capacitors	X1 or X2, Y1 capacitors are used appropriately.	P
G.12	**Optocouplers**		P
	Optocouplers comply with IEC 60747-5-5 with specifics	Certificated optocoupler used and complied with requirement. (See appended table 4.1.2)	P

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Type test voltage $V_{ini,a}$..... :	Considered.	—
	Routine test voltage, $V_{ini,b}$..... :	Considered.	—
G.13	**Printed boards**		P
G.13.1	General requirements		P
G.13.2	Uncoated printed boards		P
G.13.3	Coated printed boards		N/A
G.13.4	Insulation between conductors on the same inner surface		N/A
G.13.5	Insulation between conductors on different surfaces		N/A
	Distance through insulation ..... :		N/A
	Number of insulation layers (pcs) ..... :		—
G.13.6	Tests on coated printed boards		N/A
G.13.6.1	Sample preparation and preliminary inspection		N/A
G.13.6.2	Test method and compliance		N/A
G.14	**Coating on components terminals**		N/A
G.14.1	Requirements ..... :	(See Clause G.13)	N/A
G.15	**Pressurized liquid filled components**		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
G.16	**IC including capacitor discharge function (ICX)**		
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

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Clause	Requirement + Test	Result - Remark	Verdict
H	**CRITERIA FOR TELEPHONE RINGING SIGNALS**		N/A
H.1	**General**		N/A
H.2	**Method A**		N/A
H.3	**Method B**		N/A
H.3.1	Ringing signal		N/A
H.3.1.1	Frequency (Hz) ..... :		—
H.3.1.2	Voltage (V) ..... :		—
H.3.1.3	Cadence; time (s) and voltage (V) ..... :		—
H.3.1.4	Single fault current (mA): ..... :		—
H.3.2	Tripping device and monitoring voltage		N/A
H.3.2.1	Conditions for use of a tripping device or a monitoring voltage		N/A
H.3.2.2	Tripping device		N/A
H.3.2.3	Monitoring voltage (V)..... :		N/A
J	**INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION**		**P**
J.1	**General**		P
	Winding wire insulation ..... :	Triple insulated wire used in transformer is separately approved.	—
	Solid round winding wire, diameter (mm) ..... :		N/A
	Solid square and rectangular (flatwise bending) winding wire, cross-sectional area (mm^2)..... :		N/A
J.2/J.3	Tests and Manufacturing	(See separate test report)	—
K	**SAFETY INTERLOCKS**		**N/A**
K.1	**General requirements**		N/A
	Instructional safeguard ..... :		N/A
K.2	**Components of safety interlock safeguard mechanism**		N/A
K.3	**Inadvertent change of operating mode**		N/A
K.4	**Interlock safeguard override**		N/A
K.5	**Fail-safe**		N/A
K.5.1	Under single fault condition		N/A
K.6	**Mechanically operated safety interlocks**		N/A
K.6.1	Endurance requirement		N/A
K.6.2	Test method and compliance ..... :		N/A
K.7	**Interlock circuit isolation**		N/A
K.7.1	Separation distance for contact gaps & interlock circuit elements		N/A
	In circuit connected to mains, separation distance for contact gaps (mm)..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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
L	**DISCONNECT DEVICES**		**P**
L.1	**General requirements**		P
L.2	**Permanently connected equipment**		N/A
L.3	**Parts that remain energized**		N/A
L.4	**Single-phase equipment**		P
L.5	**Three-phase equipment**		N/A
L.6	**Switches as disconnect devices**		N/A
L.7	**Plugs as disconnect devices**		P
L.8	**Multiple power sources**		N/A
	Instructional safeguard ..... :		N/A
M	**EQUIPMENT CONTAINING BATTERIES AND THEIR PROTECTION CIRCUITS**		**N/A**
M.1	**General requirements**		N/A
M.2	**Safety of batteries and their cells**		N/A
M.2.1	Batteries and their cells comply with relevant IEC standards ..... :		N/A
M.3	**Protection circuits for batteries provided within the equipment**		N/A
M.3.1	Requirements		N/A
M.3.2	Test method		N/A
	Overcharging of a rechargeable battery		N/A
	Excessive discharging		N/A
	Unintentional charging of a non-rechargeable battery		N/A
	Reverse charging of a rechargeable battery		N/A
M.3.3	Compliance	(See appended table M.3)	N/A
M.4	**Additional safeguards for equipment containing a portable secondary lithium battery**		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

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Clause	Requirement + Test	Result - Remark	Verdict
M.4.4	Drop test of equipment containing a secondary lithium battery		N/A
M.4.4.2	Preparation and procedure for the drop test		N/A
M.4.4.3	Drop, Voltage on reference and dropped batteries (V); voltage difference during 24 h period (%): ..... :		N/A
M.4.4.4	Check of the charge/discharge function		N/A
M.4.4.5	Charge / discharge cycle test		N/A
M.4.4.6	Compliance		N/A
M.5	**Risk of burn due to short-circuit during carrying**		N/A
M.5.1	Requirement		N/A
M.5.2	Test method and compliance		N/A
M.6	**Safeguards against short-circuits**		N/A
M.6.1	External and internal faults		N/A
M.6.2	Compliance		N/A
M.7	**Risk of explosion from lead acid and NiCd batteries**		N/A
M.7.1	Ventilation preventing explosive gas concentration		N/A
	Calculated hydrogen generation rate ..... :		N/A
M.7.2	Test method and compliance		N/A
	Minimum air flow rate, *Q* (m^3/h) ..... :		N/A
M.7.3	Ventilation tests		N/A
M.7.3.1	General		N/A
M.7.3.2	Ventilation test – alternative 1		N/A
	Hydrogen gas concentration (%) ..... :		N/A
M.7.3.3	Ventilation test – alternative 2		N/A
	Obtained hydrogen generation rate..... :		N/A
M.7.3.4	Ventilation test – alternative 3		N/A
	Hydrogen gas concentration (%) ..... :		N/A
M.7.4	Marking ..... :		N/A
M.8	**Protection against internal ignition from external spark sources of batteries with aqueous electrolyte**		N/A
M.8.1	General		N/A
M.8.2	Test method		N/A
M.8.2.1	General		N/A
M.8.2.2	Estimation of hypothetical volume V_Z (m^3/s)..... :		—
M.8.2.3	Correction factors ..... :		—
M.8.2.4	Calculation of distance *d* (mm) ..... :		—
M.9	**Preventing electrolyte spillage**		N/A
M.9.1	Protection from electrolyte spillage		N/A
M.9.2	Tray for preventing electrolyte spillage		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
M.10	Instructions to prevent reasonably foreseeable misuse		N/A
	Instructional safeguard ..... :		N/A
N	**ELECTROCHEMICAL POTENTIALS**		**N/A**
	Material(s) used ..... :		—
O	**MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES**		**P**
	Value of *X* (mm) ..... :	Considered.	—
P	**SAFEGUARDS AGAINST CONDUCTIVE OBJECTS**		**N/A**
P.1	**General**		N/A
P.2	**Safeguards against entry or consequences of entry of a foreign object**		N/A
P.2.1	General		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
P.2.3.2	Consequence of entry test ..... :		N/A
P.3	**Safeguards against spillage of internal liquids**		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
P.4	**Metallized coatings and adhesives securing parts**		N/A
P.4.1	General		N/A
P.4.2	Tests		N/A
	Conditioning, T_C (°C) ..... :		—
	Duration (weeks) ..... :		—
Q	**CIRCUITS INTENDED FOR INTERCONNECTION WITH BUILDING WIRING**		**P**
Q.1	**Limited power sources**		P
Q.1.1	Requirements		P
	a) Inherently limited output		N/A
	b) Impedance limited output		P

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Clause	Requirement + Test	Result - Remark	Verdict
	c) Regulating network limited output	The DC output complies with requirements of Clause Q.1 for model: GT-46600-6012-T3, GT-46600-6015-T3, GT-46600-6524-5.0-T3, GT-46600-6524-T3. (See appended table Q.1)	P
	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)	P
	Current rating of overcurrent protective device (A) ..... :		N/A
Q.2	**Test for external circuits – paired conductor cable**		N/A
	Maximum output current (A) ..... :		N/A
	Current limiting method..... :		—
R	**LIMITED SHORT CIRCUIT TEST**		**N/A**
R.1	**General**		N/A
R.2	**Test setup**		N/A
	Overcurrent protective device for test..... :		—
R.3	**Test method**		N/A
	Cord/cable used for test..... :		—
R.4	**Compliance**		N/A
S	**TESTS FOR RESISTANCE TO HEAT AND FIRE**		**N/A**
S.1	**Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power does not exceed 4 000 W**		N/A
	Samples, material ..... :		—
	Wall thickness (mm) ..... :		—
	Conditioning (°C) ..... :		—
	Test flame according to IEC 60695-11-5 with conditions as set out		N/A
	- Material not consumed completely		N/A
	- Material extinguishes within 30s		N/A
	- No burning of layer or wrapping tissue		N/A
S.2	**Flammability test for fire enclosure and fire barrier integrity**		N/A
	Samples, material ..... :		—
	Wall thickness (mm) ..... :		—
	Conditioning (°C) ..... :		—
S.3	**Flammability test for the bottom of a fire enclosure**		N/A
S.3.1	Mounting of samples		N/A
S.3.2	Test method and compliance		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Mounting of samples ..... :		—
	Wall thickness (mm) ..... :		—
S.4	**Flammability classification of materials**		N/A
S.5	**Flammability test for fire enclosure materials of equipment with a steady state power exceeding 4 000 W**		N/A
	Samples, material ..... :		—
	Wall thickness (mm) ..... :		—
	Conditioning (°C) ..... :		—
T	**MECHANICAL STRENGTH TESTS**		**P**
T.1	**General**		P
T.2	**Steady force test, 10 N ..... :**	(See appended table T.2)	P
T.3	**Steady force test, 30 N ..... :**	(See appended table T.3)	N/A
T.4	**Steady force test, 100 N ..... :**	(See appended table T.4)	N/A
T.5	**Steady force test, 250 N ..... :**	(See appended table T.5)	P
T.6	**Enclosure impact test**	(See appended table T.6)	P
	Fall test		P
	Swing test		P
T.7	**Drop test ..... :**	(See appended table T.7)	P
T.8	**Stress relief test..... :**	(See appended table T.8)	P
T.9	**Glass Impact Test .....:**	(See appended table T.9)	N/A
T.10	**Glass fragmentation test**		N/A
	Number of particles counted.....:		N/A
T.11	**Test for telescoping or rod antennas**		N/A
	Torque value (Nm) ..... :		N/A
U	**MECHANICAL STRENGTH OF CATHODE RAY TUBES (CRT) AND PROTECTION AGAINST THE EFFECTS OF IMPLOSION**		**N/A**
U.1	**General**		N/A
	Instructional safeguard **:**		N/A
U.2	**Test method and compliance for non-intrinsically protected CRTs**		N/A
U.3	**Protective screen**		N/A
V	**DETERMINATION OF ACCESSIBLE PARTS**		**P**
V.1	**Accessible parts of equipment**		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		N/A
V.1.4	Plugs, jacks, connectors tested with blunt probe		N/A
V.1.5	Slot openings tested with wedge probe		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
V.1.6	Terminals tested with rigid test wire		N/A
V.2	**Accessible part criterion**		P
X	**ALTERNATIVE METHOD FOR DETERMINING CLEARANCES FOR INSULATION IN CIRCUITS CONNECTED TO AN AC MAINS NOT EXCEEDING 420 V PEAK (300 V RMS)**		**N/A**
	Clearance .....:	(See appended table X)	N/A
Y	**CONSTRUCTION REQUIREMENTS FOR OUTDOOR ENCLOSURES**		**N/A**
Y.1	**General**		N/A
Y.2	**Resistance to UV radiation**		N/A
Y.3	**Resistance to corrosion**		N/A
Y.3	**Resistance to corrosion**		N/A
Y.3.1	Metallic parts of outdoor enclosures are resistant to effects of water-borne contaminants by..... :		N/A
Y.3.2	Test apparatus		N/A
Y.3.3	Water – saturated sulphur dioxide atmosphere		N/A
Y.3.4	Test procedure ..... :		N/A
Y.3.5	Compliance		N/A
Y.4	**Gaskets**		N/A
Y.4.1	General		N/A
Y.4.2	Gasket tests		N/A
Y.4.3	Tensile strength and elongation tests		N/A
	Alternative test methods ..... :		N/A
Y.4.4	Compression test		N/A
Y.4.5	Oil resistance		N/A
Y.4.6	Securing means	(See Annex P.4)	N/A
Y.5	**Protection of equipment within an outdoor enclosure**		N/A
Y.5.1	General		N/A
Y.5.2	Protection from moisture		N/A
	Relevant tests of IEC 60529 or Y.5.3 ..... :		N/A
Y.5.3	Water spray test		N/A
Y.5.4	Protection from plants and vermin		N/A
Y.5.5	Protection from excessive dust		N/A
Y.5.5.1	General		N/A
Y.5.5.2	IP5X equipment		N/A
Y.5.5.3	IP6X equipment		N/A
Y.6	**Mechanical strength of enclosures**		N/A
Y.6.1	General		N/A
Y.6.2	Impact test ..... :	(See Table T.6)	N/A

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Clause	Requirement + Test	Result - Remark	Verdict

5.2	TABLE: Classification of electrical energy sources						P
Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters				ES Class
			U (V)	I (mA)	Type[1)]	Additional Info [2)]	
264Vac	Primary Circuit	Normal	--	--	SS	--	ES3
		Abnormal-Max	--	--	SS	--	
		Single fault - SC/OC	--	--	SS	--	
264Vac	DC output port (+12V / GT-46600-6012-T3)	Normal	12.24	--	SS	--	ES1
		Abnormal-Max	11.93	--	SS	--	
		Single fault - SC/OC	0	--	SS	--	
264Vac	DC output port (+15V / GT-46600-6015-T3)	Normal	15.24	--	SS	--	ES1
		Abnormal-Max	15.01	--	SS	--	
		Single fault - SC/OC	0	--	SS	--	
264Vac	DC output port (+19V / GT-46600-6524-5.0-T3)	Normal	19.03	--	SS	--	ES1
		Abnormal-Max	18.75	--	SS	--	
		Single fault - SC/OC	0	--	SS	--	
264Vac	DC output port (+24V / GT-46600-6524-T3)	Normal	24.11	--	SS	--	ES1
		Abnormal-Max	24.80	--	SS	--	
		Single fault - SC/OC	0	--	SS	--	
264Vac	DC output port to earth	Normal	--	0.001 mApk	SS	60Hz	ES1
		Fault (Refer to fault condition on table B.3 and B.4, fuse open)	--	0.001 mApk	SS	60Hz	
		Fault (Refer to fault condition on table B.3 and B.4, output shutdown)	--	0.001 mApk	SS	60Hz	

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Clause	Requirement + Test	Result - Remark	Verdict

		Fault (Single fault condition of basic safeguard: loss of protective earth connection)	--	0.186 mApk	SS	60Hz	
264Vac	Accessible Enclosure (with metal foil) to earth	Normal[a)]	--	0.001 mApk	SS	60Hz	ES1
264Vac	CX1	Normal	374V (330nF Max)	--	CP	--	ES3
		Abnormal-Max	--	--	CP	--	
		Single fault - SC/OC	--	--	CP	--	

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.

[a)] Fault and abnormal condition test no effect on the touch current test result.

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

Supplementary information:

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

Supplementary information:

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Clause	Requirement + Test	Result - Remark	Verdict

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

5.4.2, 5.4.3	TABLE: Minimum Clearances/Creepage distance							P
Clearance (cl) and creepage distance (cr) at/of/between:	U_p (V)	U_{rms} (V)	Freq [1] (Hz)	Required cl (mm)	cl (mm)	E.S. [2] (V)	Required cr (mm)	cr (mm)
Basic:								
Live - Neutral before fuse F1 [a]	340	240	0.06	2.3	4.8	--	2.5	4.8
Live - RX2 before fuse F1	340	240	0.06	2.3	5.0	--	2.5	5.0
F1 body, in to out	340	240	0.06	2.3	2.8	--	2.5	2.8
F1, in to out [a]	340	240	0.06	2.3	10.6	--	2.5	10.6
LF2 coil with tape - Earth pin of inlet (for Class I equipment)	340	240	0.06	2.3	8.0	--	2.5	>8.0
Reinforced								
HS1 trace - EMI shield (with Mylar sheet)	340	240	0.06	4.5	5.2	--	5.0	5.2
HS1 body - C9 body	340	240	0.06	4.5	5.3	--	5.0	5.3
HS2 body - PC1	340	240	0.06	4.5	6.5	--	5.0	6.5
HS1 body - HS2 body	340	240	0.06	4.5	9.4	--	5.0	>9.4
Live - EMI shield [a]	340	240	0.06	4.5	5.4	--	5.0	5.4
CY1 primary - CY2 secondary [a]	340	240	0.06	4.5	13.1	--	5.0	13.1
PC1 primary - PC1 secondary (with slot 1.2mm width) [a]	340	240	0.06	4.5	6.9	--	5.0	7.1 [b]
HS1 trace - EMI shield [a]	340	240	0.06	4.5	5.0	--	5.0	5.0
For Transformer T1								

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Reinforced: Primary - Secondary	592	333	62.5	4.5	7.6	--	6.7	7.6
Reinforced: Core - Secondary	592	333	62.5	4.5	7.6	--	6.7	7.6
Supplementary information:								
1) Only for frequency above 30 kHz 2) Complete Electric Strength voltage (E.S. (V) when 5.4.2.4 applied) a) measure on PCB b) there is a>1.0 slot								

5.4.4.2	**TABLE: Minimum distance through insulation**			**P**
Distance through insulation (DTI) at/of	Peak voltage (V)	Insulation	Required DTI (mm)	Measured DTI (mm)
Reinforced: Insulation tape (on HS2, on T1)	592	0.06	--	2 layers
Reinforced: Mylar sheet (Between PCB trace side and EMI shield)	592	0.06	0.4	Min.0.4
Enclosure	592	0.06	0.4	Min. 2.0
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	
Basic				
Live - Neutral (disconnected fuse)	DC	2500	No	
Primary – Earth pin of AC inlet	DC	2500	No	
Reinforced				

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Primary – Output terminals	DC	4000	No
Primary – Plastic enclosure (wrapped with foil)	DC	4000	No
T1 Primary – Secondary 1)	DC	4000	No
T1 Core – Secondary 1) 2)	DC	4000	No
Insulation tape used in T1 (Test with 1 layer)	DC	4000	No
Mylar sheet	DC	4000	No
Supplementary information:			
1) T1 core considered as primary.			
2) Test conducted on all type's transformer under all manufacturers.			

5.5.2.2	TABLE: Stored discharge on capacitors				P
Location	Supply voltage (V)	Operating and fault condition 1)	Switch position	Measured voltage (Vpk)	ES Class
264	Phase to Neutral	N	--	0	ES1
Supplementary information:					
X-capacitors installed for testing: CX1= 330nF.					
[x] bleeding resistor rating: Certified bleeder resistors used. RX1=RX2=1.5MΩ. (Two resistors are in series)					
[ ] 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			P
Location	Test current (A)	Duration (min)	Voltage drop (V)	Resistance (Ω)
From the PE pin of appliance inlet to internal metal frame	32	2	0.128	0.004
From the PE pin of appliance inlet to internal metal frame	40	2	0.08	0.002
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						

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5.7.5	TABLE: Earthed accessible conductive part			P
Supply voltage (V) ..... :	264			—
Phase(s) ..... :	[X] Single Phase; [ ] Three Phase: [ ] Delta [ ] Wye			
Power Distribution System ..... :	[X] TN [ ]TT [X] IT			
Location	Fault Condition No in IEC 60990 clause 6.2.2	Touch current (mA)	Comment	
Output to earth	Earth open	0.186	--	
Supplementary Information:				

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

6.2.2	TABLE: Power source circuit classifications					P
Location	Operating and fault condition	Voltage (V)	Current (A)	Max. Power[1)] (W)	Time (S)	PS class
All circuits except for DC output	--	--	--	--	--	PS3
DC output port (+12V / GT-46600-6012-T3)	--	12.20	6.08	68.9	5	PS2
DC output port (+15V / GT-46600-6015-T3)	--	14.96	5.00	73.0	5	PS2
DC output port (+19V / GT-46600-6524-5.0-T3)	--	19.03	4.4	79.2	5	PS2
DC output port (+24V / GT-46600-6524-T3)	--	24.23	3.9	91.43	5	PS2
Supplementary information:						
Abbreviation: SC= short circuit; OC= open circuit						

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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			P
Location	Open circuit voltage after 3 s (Vpk)	Measured r.m.s current (A)	Calculated value	Arcing PIS? Yes / No
Varistor(MOV1)	--	--	--	Yes (Declared)
Supplementary information:				

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

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

9.6	TABLE: Temperature measurements for wireless power transmitters							N/A
Supply voltage (V) .....:								—
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 (ºC)	Ambient (ºC)	Object (ºC)	Ambient (ºC)	Object (ºC)	Ambient (ºC)	Object (ºC)	Ambient (ºC)
Supplementary information:								

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5.4.1.4, 9.3, B.1.5, B.2.6	**TABLE: Temperature measurements**				**P**
Supply voltage (V) ..... :	90V/60Hz		264V/60Hz		—
Ambient temperature during test T_{amb} (°C) ..... :	--	--	--	--	—
Maximum measured temperature *T* of part/at:	*T* (°C)				Allowed T_{max} (°C)
GT-46600-6012-T3	Lable on bottom	Lable on top	Lable on bottom	Lable on top	--
Inlet body	56.1	56.9	49.5	51.3	70
MOV1 body	74.7	74.8	63.3	64.8	85
LF1 coil	80.8	81.4	65.3	67.4	95
CX1 body	79.4	80.9	65.9	68.7	100
LF2 coil	86.7	89.9	67.3	71.4	95
PCB near BD1	84.9	89.6	69.1	74.4	105
C1 body	79.3	80.5	68.8	71.1	105
T1 primary coil	86.7	91.0	79.5	84.1	110
T1 secondary coil	84.8	88.1	78.2	81.8	110
T1 core	81.0	84.7	78.7	82.6	110
CY1 body	72.7	77.6	68.2	72.9	85
PC1 body	78.3	78.0	72.7	73.4	100
HS2 near Q2	71.8	69.4	64.3	63.4	–
HS1 near Q1	70.9	78.0	65.0	71.9	–
C9 body	68.6	69.5	64.0	65.3	85
LF3 coil	65.4	66.3	62.0	63.1	95
Inside enclosure	62.2	67.4	57.8	63.2	105
Ambient	40.0	40.0	40.0	40.0	–
Touch temperatures					
Output cord	39.5	40.7	37.5	38.7	77
Surface of enclosure	34.5	39.7	32.1	37.4	77
Ambient	25.0	25.0	25.0	25.0	–
GT-46600-6524-5.0-T3					
Inlet body	52.9	57.3	48.4	50.8	70
MOV1 body	80.0	80.2	67.9	67.2	85
LF1 coil	85.1	82.7	69.4	69.1	95
CX1 body	90.1	93.3	70.8	72.5	100
LF2 coil	82.6	84.2	69.1	69.5	95
PCB near BD1	85.7	90.1	70.6	73.0	105
C1 body	85.1	88.1	71.3	72.7	105

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Clause	Requirement + Test	Result - Remark	Verdict

T1 primary coil	90.5	94.0	82.6	84.1	110
T1 secondary coil	81.1	85.5	74.4	76.4	110
T1 core	85.1	88.6	78.5	80.0	110
CY1 body	76.0	80.2	70.7	82.8	85
PC1 body	82.8	82.2	77.1	75.6	100
HS2 near Q2	78.4	75.5	72.7	69.5	–
HS1 near Q1	75.6	82.5	67.3	71.4	–
C9 body	67.4	68.2	63.4	63.5	85
Inside enclosure	67.5	74.0	61.0	65.5	105
Ambient	40.0	40.0	40.0	40.0	–
Touch Temperatures					
Output cord	39.6	39.8	37.2	37.2	77
Surface of enclosure	34.3	40.8	33.1	37.8	77
Ambient	25.0	25.0	25.0	25.0	–

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:

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
GT-46600-6012-T3								
90	50	1.294	--	69.0	--	F1	1.294	Max. normal load:12Vdc/5.0A
90	60	1.320	--	68.0	--	F1	1.320	Max. normal load:12Vdc/5.0A
100	50	1.190	1.5	68.0	--	F1	1.190	Max. normal load:12Vdc/5.0A
100	60	1.226	1.5	68.0	--	F1	1.226	Max. normal load:12Vdc/5.0A
240	50	0.696	1.5	67.0	--	F1	0.696	Max. normal load:12Vdc/5.0A
240	60	0.690	1.5	37.0	--	F1	0.690	Max. normal load:12Vdc/5.0A
254	50	0.674	--	67.0	--	F1	0.674	Max. normal load:12Vdc/5.0A
254	60	0.663	--	67.0	--	F1	0.663	Max. normal load:12Vdc/5.0A

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Clause	Requirement + Test	Result - Remark	Verdict

264	50	0.660	--	67.0	--	F1	0.660	Max. normal load:12Vdc/5.0A
264	60	0.648	--	67.0	--	F1	0.648	Max. normal load:12Vdc/5.0A
GT-46600-6015-T3								
90	50	1.227	--	67.0	--	F1	1.227	Max. normal load:15Vdc/4.0A
90	60	1.304	--	67.0	--	F1	1.304	Max. normal load:15Vdc/4.0A
100	50	1.174	1.5	67.0	--	F1	1.174	Max. normal load:15Vdc/4.0A
100	60	1.206	1.5	67.0	--	F1	1.206	Max. normal load:15Vdc/4.0A
240	50	0.731	1.5	65.0	--	F1	0.731	Max. normal load:15Vdc/4.0A
240	60	0.717	1.5	65.0	--	F1	0.717	Max. normal load:15Vdc/4.0A
254	50	0.703	--	65.0	--	F1	0.703	Max. normal load:15Vdc/4.0A
254	60	0.688	--	65.0	--	F1	0.688	Max. normal load:15Vdc/4.0A
264	50	0.686	--	65.0	--	F1	0.686	Max. normal load:15Vdc/4.0A
264	60	0.670	--	65.0	--	F1	0.670	Max. normal load:15Vdc/4.0A
GT-46600-6524-5.0-T3								
90	50	1.353	--	72.0	--	F1	1.353	Max. normal load: 19Vdc/3.42A
90	60	1.381	--	72.0	--	F1	1.381	Max. normal load: 19Vdc/3.42A
100	50	1.241	1.5	71.0	--	F1	1.241	Max. normal load: 19Vdc/3.42A
100	60	1.272	1.5	71.0	--	F1	1.272	Max. normal load: 19Vdc/3.42A
240	50	0.747	1.5	70.0	--	F1	0.747	Max. normal load: 19Vdc/3.42A
240	60	0.747	1.5	70.0	--	F1	0.747	Max. normal load: 19Vdc/3.42A

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Clause	Requirement + Test	Result - Remark	Verdict

254	50	0.721	--	70.0	--	F1	0.721	Max. normal load: 19Vdc/3.42A
254	60	0.717	--	70.0	--	F1	0.717	Max. normal load: 19Vdc/3.42A
264	50	0.702	--	70.0	--	F1	0.702	Max. normal load: 19Vdc/3.42A
264	60	0.697	--	70.0	--	F1	0.697	Max. normal load: 19Vdc/3.42A
GT-46600-6524-T3								
90	50	1.350	--	72.4	--	F1	1.350	Max. normal load:24Vdc/2.7A
90	60	1.376	--	72.4	--	F1	1.376	Max. normal load:24Vdc/2.7A
100	50	1.238	1.5	71.7	--	F1	1.238	Max. normal load:24Vdc/2.7A
100	60	1.268	1.5	71.7	--	F1	1.268	Max. normal load:24Vdc/2.7A
240	50	0.778	1.5	70.0	--	F1	0.778	Max. normal load:24Vdc/2.7A
240	60	0.757	1.5	70.0	--	F1	0.757	Max. normal load:24Vdc/2.7A
254	50	0.747	--	70.0	--	F1	0.747	Max. normal load:24Vdc/2.7A
254	60	0.733	--	70.0	--	F1	0.733	Max. normal load:24Vdc/2.7A
264	50	0.723	--	70.0	--	F1	0.723	Max. normal load:24Vdc/2.7A
264	60	0.711	--	70.0	--	F1	0.711	Max. normal load:24Vdc/2.7A
Supplementary information:								

B.3, B.4	**TABLE: Abnormal operating and fault condition tests**					**P**
Ambient temperature T_{amb} (°C)....:			See below			—
Power source for EUT: Manufacturer, model/type, outputrating....:			--			—
Component No.	Condition	Supply voltage (V)	Test time	Fuse no.	Fuse current (A)	Observation
T1 (11, 12)	OL	264	6hrs 5	F1	0.78	Temperature was stable when

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before LF3 (+12V / GT-46600-6012-T3)			min			output loaded to 1.7A. NC, NT, NB, ASRE. T1 coil: 115°C, Ambient: 25.0°C
DC output (+12V / GT-46600-6012-T3)	OL	264	6hrs 15 min	F1	0.77	Temperature was stable when output loaded to 6.6A. NC, NT, NB, ASRE. T1 coil: 102°C, Enclosure: 58°C, Output cord: 38°C, Ambient: 25.0°C
DC output (+12V / GT-46600-6012-T3)	SC	264	30 min	F1	0.02	NC, NT, NB, ASRE.
T1 (11, 12) before LF3 (+19V / GT-46600-6524-5.0-T3)	OL	264	6hrs 5 min	F1	0.80	Temperature was stable when output loaded to 1.3A. NC, NT, NB, ASRE. T1 coil: 134°C, Ambient: 25.0°C
DC output (+19V / GT-46600-6524-5.0-T3)	O-L	264	6hrs 15 min	F1	0.77	Temperature was stable when output loaded to 4.1A. NC, NT, NB, ASRE. T1 coil: 104°C, Enclosure: 55°C, Output cord: 32°C, Ambient: 25.0°C
DC output (+19V / GT-46600-6524-5.0-T3)	SC	264	30 min	F1	0.02	NC, NT, NB, ASRE.
GT-46600-6524-T3						
BD1 (L - +)	SC	264	<1s	F1	*)	IP(F1), NC, NT, NB, ASRE.
C1	SC	264	<1s	F1	*)	IP(F1), NC, NT, NB, ASRE.
Q1 (G-D)	SC	264	<1s	F1	*)	IP(F1), CD(Q1), NC, NT, NB, ASRE.
Q1 (D-S)	SC	264	<1s	F1	*)	IP(F1), CD(Q1), NC, NT, NB, ASRE.
Q1 (G-S)	SC	264	30min	F1	0.2	Unit shut down immediately, NT, NB, NC, ASRE.
PC1 (3-4)	SC	264	30min	F1	0.2	Unit shut down immediately, NT, NB, NC, ASRE.

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PC1 (1-2)	SC	264	30min	F1	0.2	Unit shut down immediately, NT, NB, NC, ASRE.
PC1 (1)	OC	264	30min	F1	0.2	Unit shut down immediately, NT, NB, NC, ASRE.
U1 (2-5)	SC	264	30min	F1	0.2	CD(U1), NC, NT, NB, ASRE, Unit shut down, repeat two times result were same.
T1 (1,2-3)	SC	264	30min	F1	0.2	Unit shut down immediately, NT, NB, NC, ASRE.
T1 (8,9-11,12)	SC	264	30min	F1	0.2	Unit shut down immediately, NT, NB, NC, ASRE.
GT-46600-6012-T3						
T1 (1,2-3)	SC	264	30min	F1	0.2	Unit shut down immediately, NT, NB, NC, ASRE.
T1 (8,9-11,12)	SC	264	30min	F1	0.2	Unit shut down immediately, NT, NB, NC, ASRE.
GT-46600-6524-5.0-T3						
T1 (1,2-3)	SC	264	30min	F1	0.2	Unit shut down immediately, NT, NB, NC, ASRE.
T1 (8,9-11,12)	SC	264	30min	F1	0.2	Unit shut down immediately, NT, NB, NC, ASRE.

Supplementary information:

Max: 100% of max. non-clipped output power; BL: Block; OL: Overload; SC=short circuit; OC= open circuit.

NC: Cheesecloth remains intact.

NT: Tissue paper remains intact.

NB: No indication of dielectric breakdown.

CT: Constant temperatures were obtained.

ASRE: All safeguard remained effective.

IP: Internal protection operated (list components), repeat all fuse test one time, test results were same.

*) Fuse current is more than fuse rating times 2.1, repeated the test with each source of fuse and same result come out.

Electric strength tests conducted after abnormal condition, no flash over or insulation breakdown.

After above abnormal condition test, the output comply with ES1 limit.

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	

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	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
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.							

M.4.2	**TABLE: Charging safeguards for equipment containing a secondary lithium battery**	**N/A**
Maximum specified charging voltage (V) .....:		—
Maximum specified charging current (A) .....:		—
Highest specified charging temperature (°C) .....:		
Lowest specified charging temperature (°C) .....:		

Battery manufacturer/type	Operating and fault condition	Measurement			Observation
		Charging voltage (V)	Charging current (A)	Temp. (°C)	
Supplementary information:					
Abbreviation: SC= short circuit; OC= open circuit; MSCV= maximum specified charging voltage; MSCC= maximum specified charging current; HSCT= highest specified charging temperature; LSCT= lowest specified charging temperature					

Q.1	**TABLE: Circuits intended for interconnection with building wiring (LPS)**						**P**
Output Circuit	Condition	U_{oc} (V)	Time (s)	I_{sc} (A)		S (VA)	
				Meas.	Limit	Meas.	Limit
DC output Port (+12V / GT-46600-6012-T3)	Normal	12.20Vdc	5s	6.08	8	68.9	100
	Single fault: R10 SC	12.20Vdc	5s	0	8	0	100
	Single fault: R9 OC	12.20Vdc	5s	0	8	0	100
	Single fault: R9 SC	12.20Vdc	5s	7.98	8	93.7	100
	Single fault: R34 SC	12.20Vdc	5s	0	8	0	100
	Single fault: R29 SC	12.20Vdc	5s	6.08	8	68.9	100
	Single fault: R30 SC	12.20Vdc	5s	6.08	8	68.9	100
DC output	Normal	14.96Vdc	5s	5.00	8	73.0	100
	Single fault: R10 SC	14.96Vdc	5s	0	8	0	100

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port (+15V / GT-46600-6015-T3)	Single fault: R9 OC	14.96Vdc	5s	0	8	0	100
	Single fault: R9 SC	14.96Vdc	5s	5.40	8	76.3	100
	Single fault: R34 SC	14.96Vdc	5s	0	8	0	100
	Single fault: R29 SC	14.96Vdc	5s	5.00	8	73.0	100
	Single fault: R30 SC	14.96Vdc	5s	5.00	8	73.0	100
DC output port (+19V / GT-46600-6524-5.0-T3)	Normal	19.03Vdc	5s	4.4	8	79.2	100
	Single fault: R10 SC	19.03Vdc	5s	0	8	0	100
	Single fault: R9 OC	19.03Vdc	5s	0	8	0	100
	Single fault: R34 SC	19.03Vdc	5s	0	8	0	100
	Single fault: R29 SC	19.03Vdc	5s	4.4	8	79.2	100
	Single fault: R30 SC	19.03Vdc	5s	4.4	8	79.2	100
DC output port (+24V / GT-46600-6524-T3)	Normal	24.23Vdc	5s	3.9	8	91.43	100
	Single fault: R10 SC	24.23Vdc	5s	0	8	0	100
	Single fault: R9 OC	24.23Vdc	5s	0	8	0	100
	Single fault: R34 SC	24.23Vdc	5s	0	8	0	100
	Single fault: R29 SC	24.23Vdc	5s	3.9	8	91.43	100
	Single fault: R30 SC	24.23Vdc	5s	3.9	8	91.43	100
Supplementary Information:							
SC: Short circuit, OC: Open circuit.							

T.2, T.3, T.4, T.5	**TABLE: Steady force test**					**P**
Location/Part	Material	Thickness (mm)	Probe	Force (N)	Test Duration (s)	Observation
Enclosure	Thermoplastic	Min 2.0	--	250	5	Safeguards remained effective.
Metal frame, CY1, CY2, C9 and internal wiring	--	--	--	10	5	Safeguards remained effective.
Supplementary information:						

T.6, T.9	**TABLE: Impact test**			**P**
Location/Part	Material	Thickness (mm)	Height (mm)	Observation
Enclosure	Thermoplatic	Min 2.0	1300	Energy source did not become accessible, equipment safeguards were not defeated.

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

Supplementary information:

T.7	TABLE: Drop test				P
Location/Part	Material	Thickness (mm)	Height (mm)	Observation	
Enclosure	Thermoplatic	Min 2.0	1000	Energy source did not become accessible, equipment safeguards were not defeated.	

Supplementary information:

T.8	TABLE: Stress relief test				P
Location/Part	Material	Thickness (mm)	Oven Temperature (°C)	Duration (h)	Observation
Enclosure	Thermoplatic	Min 2.0	84	7	No risk of shrinkage or distortion on material.

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[1)]
Plastic enclosure	SABIC JAPAN L L C	945(GG), 915R (GG)	V-0,120 °C, Min. 2.0mm thickness	UL 94	UL
Alternative	SABIC INNOVATIVE PLASTICS US L L C	945(GG), 915R (GG)	V-0,120 °C, Min. 2.0mm thickness	UL 94	UL
Alternative	SABIC INNOVATIVE PLASTICS B V	945(GG), 915R(GG)	V-0,120 °C, Min. 2.0mm thickness	UL 94	UL
Alternative	LG CHEM (GUANGZHOU) ENGINEERING PLASTIC CO LTD	LUPOY EF-1006F(m)	V-0,115°C, Min. 2.0mm thickness	UL 94	UL
Alternative	COVESTRO DEUTSCHHLAND AG [PC RESINS]	FR6005+(z)	V-0, 105 °C, Min. 2.0mm thickness	UL 94	UL
Alternative	SILVER AGE ENGINEERING PLASTICS (DONGGUAN) CO LTD	PC2330	V-0, 115 °C, Min. 2.0mm thickness	UL 94	UL
LED Barrier	SABIC JAPAN L L C	945(GG), 915R (GG)	V-0, 120 °C, Min. 2.0mm thickness	UL 94	UL
Alternative	SABIC INNOVATIVE PLASTICS US L L C	945(GG), 915R (GG)	V-0, 120 °C, Min. 2.0mm thickness	UL 94	UL
Alternative	SABIC INNOVATIVE PLASTICS B V	945(GG), 915R(GG)	V-0, 120 °C, Min. 2.0mm thickness	UL 94	UL
PCB	Interchangeable	Interchangeable	Min. V-0, 105° C	UL 796	UL

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

Appliance inlet (CON1) (C14 type) (for Class I equipment)	TECX-UNIONS	TU-301-SP, TU-301 series including TU-301-A, TU-301- AP, TU-301-S, TU-301-AP-A and TU-301-AL	10A, 250Vac	IEC/EN 60320-1, UL 498	ENEC 15, UL
Alternative	Zhejiang LECI	DB-14, DB-14-1, DB-14-2, DB-14-3, DB-14-5, DB-14-6, DB-14-1-7, DB-14-8, DB-14-10	10A, 250Vac	IEC/EN 60320-1, UL 498	VDE, UL
Alternative	Zhe Jiang Bei Er Jia Electronic Co., Ltd.	ST-A01-003J, ST-A01-001L, ST-A01-002L, ST-A01-003K	10A, 250Vac	IEC/EN 60320-1, UL 498	VDE, UL
Alternative	Sun Fair	S-03	10A, 250Vac	IEC/EN 60320-1, UL 498	VDE, UL
Alternative	Echo	AC-P01, AC-P03, AC-P06, AC-P07	10A, 250Vac	IEC/EN 60320-1, UL 498	VDE, UL
Appliance inlet (CON1) (C6 type) (for Class I equipment)	TECX-UNIONS	TU-333	2.5A, 250Vac	IEC/EN 60320-1, UL 498	ENEC 15, UL
Alternative	Sun Fair	S-02	2.5A, 250Vac	IEC/EN 60320-1, UL 498	ENEC 15, UL

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

Alternative	Zhejiang LECI	DB-6, DB-6-2, DB-6-3, DB-6-4, DB-14-5, DB-14-6, DB-6-5, DB-6-2BP27P27	2.5A, 250Vac	IEC/EN 60320-1, UL 498	VDE, UL
Alternative	Zhe Jiang Bei Er Jia Electronic Co., Ltd.	ST-A04-002, ST-A04-001	2.5A, 250Vac	IEC/EN 60320-1, UL 498	VDE, UL
Appliance inlet (CON1) (C8 type) (for Class II equipment)	TECX-UNIONS	SO-222	2.5A, 250Vac	IEC/EN 60320-1, UL 498	ENEC 15, UL
Alternative	Zhejiang LECI	DB-8	2.5A, 250Vac	IEC/EN 60320-1, UL 498	VDE, UL
Alternative	Zhe Jiang Bei Er Jia Electronic Co., Ltd.	ST-A03-005, ST-A03-002, ST-A03-004	2.5A, 250Vac	IEC/EN 60320-1, UL 498	VDE, UL
Alternative	Sun Fair	S-01	2.5A, 250Vac	IEC/EN 60320-1, UL 498	VDE, UL
Fuse (F1)	Das & Sons	385 t series	250Vac, T3.15AL	IEC/EN 60127-1 IEC/EN 60127-2 ANSI/UL 248-1 ANSI/UL 248-14	VDE, UL
Alternative	Suzhou Walter	2010, ICP	250Vac, T3.15AL	IEC/EN 60127-1 IEC/EN 60127-2 ANSI/UL 248-1 ANSI/UL 248-14	VDE, UL
Alternative	Conquer	PTU, MST	250Vac, T3.15AL	IEC/EN 60127-1 IEC/EN 60127-2 ANSI/UL 248-1 ANSI/UL 248-14	VDE, UL
Alternative	Dongguan Better	932, 334	250Vac, T3.15AL	IEC/EN 60127-1 IEC/EN 60127-2 ANSI/UL 248-1 ANSI/UL 248-14	VDE, UL
Alternative	BEL	RST	250Vac, T3.15AL	IEC/EN 60127-1	VDE, UL

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

Alternative	Cooper Bussmann	SS-5	250Vac, T3.15AL	IEC/EN 60127-1 IEC/EN 60127-2 ANSI/UL 248-1 ANSI/UL 248-14	VDE, UL
Alternative	Zhongshan Lanbao	RTI-10	250Vac, T3.15AL	IEC/EN 60127-1 IEC/EN 60127-2 ANSI/UL 248-1 ANSI/UL 248-14	VDE, UL
Varistor (MOV1) (Optional)	Thinking Electronic Industrial Co., Ltd	TVR14511	320Vac, 410Vdc, 125°C, Min V-1	DIN EN 61051-1:2009 IEC 61051-1:2007 IEC 61051-2:1991 IEC 61051-2:1991/AMD1:2009 IEC 61051-2-2:1991	VDE
Choke (LF1) ***)**	GlobTek / ENG	NF00025	105 °C	IEC 62368-1	Test with equipment
X-Capacitor (CX1) (optional)	Cheng Tung Industrial Co Ltd	CTX	Max. 0.33uF, Min. 250V, 110 °C, X1 or X2	IEC/EN 60384-14:2013, UL 60384-14	ENEC 15, UL
Alternative	Ultra Tech Xiphi Enterprise Co. Ltd.	HQX	Max. 0.33uF, Min. 250V, 100 °C, X1 or X2	IEC/EN 60384-14:2013, UL 60384-14	VDE, UL
Alternative	Tenta Electric Industrial Co. Ltd.	MEX	Max. 0.33uF, Min. 250V, 100 °C, X1 or X2	IEC/EN 60384-14:2013, UL 60384-14	VDE, UL
Alternative	Joey Electronics (Dongguan) Co Ltd	MPX	Max. 0.33uF, Min. 250V, 105 °C, X1 or X2	IEC/EN 60384-14:2013, UL 60384-14	VDE, UL
Alternative	Xiangtai Electronic (Shenzhen) Co Ltd	MPK, MPX	Max. 0.33uF, Min. 250V, 110 °C, X1 or X2	IEC/EN 60384-14:2013, UL 60384-14	VDE, UL
Alternative	Carli Electronics Co Ltd	MPX	Max. 0.33uF, Min. 250V, 110 °C, X1 or X2	IEC/EN 60384-14:2013, UL 60384-14	VDE, UL

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

Alternative	Dain	MPX, NPX, MEX	Max. 0.33uF, Min. 250V, 100 °C, X1 or X2	IEC/EN 60384-14:2013, UL 60384-14	VDE, UL
Bleeder resistor (RX1, RX2)	Tzai Yuan	HSMD*********, SMD*********	Max.1.5MΩ, min. 1/4 W	IEC 62368-1 (ed.1), UL 62368-1	CB by UL, UL
Alternative	Prosperity	FVS03, TF06V, FVS05, TF08V, FVS06, TF12V, FVS20, TF20V, FVS25, TF25V	Max.1.5MΩ, min. 1/4 W	IEC 62368-1:2014, UL 62368-1	CB by UL, UL
Alternative	Ralec	RTV05, RTV06, RTV12, RTV20, RTV25,	Max.1.5MΩ, min. 1/4 W	IEC 62368-1:2014	CB by UL, UL
Alternative	Futaba	RM	Max.1.5MΩ, min. 1/4 W	EN 60065:2014	VDE
Alternative	Yageo Components (Suzhou)	HHV series	Max.1.5MΩ, min. 1/4 W	IEC 62368-1:2018	VDE
Choke (LF2) ***)**	GlobTek / ENG	NF00123	105 °C	IEC 62368-1	Test with equipment
Bridge Rectifier (BD1)	Interchangeable	Interchangeable	Min. 4A, min. 600V	IEC 62368-1	Test with equipment
Storage Capacitor (C1)	Interchangeable	Interchangeable	120uF, min. 400V, min. 105 °C	IEC 62368-1	Test with equipment
Transistor (Q1)	Interchangeable	Interchangeable	Min. 10A, min. 600V	IEC 62368-1	Test with equipment
Photo Coupler (PC1)	Everlight Electronics Co., Ltd	EL817	Dti=0.5mm, Int. dcr=6.0mm, Ext. dcr=7.7mm, Thermal cycling test, 110 °C	IEC/EN 60950-1, IEC/EN 60747-5-5, UL 1577	VDE, FINKO, UL

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

Alternative	Lite-On Technology Corporation	LTV-817	Dti=0.8mm, Ext. dcr=7.8mm, Thermal cycling test, 100 °C	IEC/EN 60950-1, IEC/EN 60747-5-5, UL 1577	VDE, FINKO, UL
Alternative	Bright Led Electronics Corp.	BPC-817A/B/C/D/L, BPC-817 S, BPC-817 M	Dti=0.4mm, Ext. dcr=7.0mm, Thermal cycling test, 100 °C	IEC/EN 60950-1, IEC/EN 60747-5-5, UL 1577	VDE, FINKO, UL
Alternative	COSMO	K1010, KP1010	Dti=0.6mm, Int. dcr=4.0mm, Ext. dcr=5.0mm, Thermal cycling test, 115 °C	IEC/EN 60950-1, IEC/EN 60747-5-5, UL 1577	VDE, FINKO, UL
Alternative	Renesas Electronics Corporation	PS2561-1	Dti=0.4mm, Ext. dcr=7.0mm, Thermal cycling test, 5000V, 100 °C	IEC/EN 60950-1, IEC/EN 60747-5-5, UL 1577	VDE, FINKO, UL
Alternative	SHENZHEN ORIENT COMPONENTS CO LTD	ORPC817 x, ORPC817M x ORPC817S x	Dti=0.4mm, Ext. dcr=7.6mm, Thermal cycling test, 100 °C	IEC/EN 60950-1, IEC/EN 60747-5-5, UL 1577	VDE, FINKO, UL
Alternative	Fairchild	H11A817B, FOD817B	Dti=0.4mm, Ext. dcr=7.0mm, Thermal cycling test, 115 °C	IEC/EN 60950-1, IEC/EN 60747-5-5, UL 1577	VDE, UL
Y-Capacitor (CY1, CY2) (two in series) (Optional)	Walsin Technology Corp	AH	Max. 2200pF, Min. 250Vac, 125 °C, Y1 type	IEC/EN 60384-14, UL 60384-1	VDE, UL
Alternative	Success Electronics Co., Ltd.	SE, SB, SF	Max. 2200pF, Min. 250Vac, 125 °C, Y1 type	IEC/EN 60384-14, UL 60384-1	VDE, UL
Alternative	TDK Corporation	CD	Max. 2200pF, Min. 250Vac, 125 °C, Y1 type	IEC/EN 60384-14, UL 60384-1	VDE, UL

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

Alternative	Haohua Electronic Co	CT7	Max. 2200pF, Min. 250Vac, 125 °C, Y1 type	IEC/EN 60384-14, UL 60384-1	VDE, UL
Alternative	Xiangtail Electronic (Shenzhen) Co Ltd	YO series	Max. 2200pF, Min. 250Vac, 125 °C, Y1 type	IEC/EN 60384-14, UL 60384-1	VDE, UL
Alternative	Juhong ELE company	JB series	Max. 2200pF, Min. 250Vac, 85 °C, Y1 type	IEC/EN 60384-14, UL 60384-1	VDE, UL
Alternative	Murata Mfg. Co., Ltd.	KX	Max. 2200pF, Min. 250Vac, 125 °C, Y1 type	IEC/EN 60384-14, UL 60384-1	VDE, UL
Current sensor Resistor (R10)	Interchangeable	Interchangeable	0.39Ω ±1%, 1W	IEC 62368-1	Test with equipment
Transformer (T1) ***)** (for 12V-16V)	GLOBTEK	XF00927	Class B, UL insulation system GTX-130-TM (E243347)	IEC 62368-1 and evaluated acco. to IEC 60085, UL 1446	Test with equipment
Alternative	HAO PU WEI	XF00927	Class B, UL insulation system ZT-130 (E315275)	IEC 62368-1 and evaluated acco. to IEC 60085, UL 1446	Test with equipment
Alternative	ENG	XF00927	Class B, UL insulation system ENG130-1 (E308897)	IEC 62368-1 and evaluated acco. to IEC 60085, UL 1446	Test with equipment
Alternative	BOAM	XF00927	Class B, UL insulation system BOAM-01 or B1 (E252329)	IEC 62368-1 and evaluated acco. to IEC 60085, UL 1446	Test with equipment

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

Transformer (T1) ***)** (for 16.1V-24V)	GLOBTEK	XF00947	Class B, UL insulation system GTX-130-TM (E243347)	IEC 62368-1 and evaluated acco. to IEC 60085, UL 1446	Test with equipment
Alternative	HAO PU WEI	XF00947	Class B, UL insulation system ZT-130 (E315275)	IEC 62368-1 and evaluated acco. to IEC 60085, UL 1446	Test with equipment
Alternative	ENG	XF00947	Class B, UL insulation system ENG130-1 (E308897)	IEC 62368-1 and evaluated acco. to IEC 60085, UL 1446	Test with equipment
Alternative	BOAM	XF00947	Class B, UL insulation system BOAM-01 or B1 (E252329)	IEC 62368-1 and evaluated acco. to IEC 60085, UL 1446	Test with equipment
-Bobbin for all the transformer	CHANG CHUN PLASTICS CO LTD	T375J, T375HF	Phenolic, V-0, 150 °C, Min. 0.71mm thickness	UL 94	UL
Alternative	SUMITOMO BAKELITE CO LTD	PM-9820	Phenolic, V-0, 150 °C, Min. 0.71mm thickness	UL 94	UL
- Insulation tape for all the transformer	3M	1350F-1	130 °C	UL 510	UL
Alternative	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	CT	130 °C	UL 510	UL

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

- TIW for all the transformer	GREAT LEOFLON INDUSTRIAL CO LTD	TRW(B)	130 °C	IEC 60950-1 60950-1, UL 2353	VDE, UL
Output wire	Interchangeable	Interchangeable	Marked VW-1, min. 24AWG, min. 60V, 80 °C, max. 3.05m long	UL 758	UL
Strain relief	Interchangeable	Interchangeable	V-1 or better	UL 94, UL 746C	UL
Mylar sheet (between PCB trace side and EMI shield)	ITW	Formex GK-17, Formex GK-10 Formex GK-5BK	V-0, min. 115 °C, min. 0.4mm thickness	UL 94	UL
Alternative	ITW	Formex -18	V-0, min. 95 °C, min. 0.4mm thickness	UL 94	UL
Alternative	SICHUAN LONGHUA	PP-WT17, PP-BK18	V-0, min. 100 °C, min. 0.4mm thickness	UL 94	UL
Alternative	Sabic	FR700, FR60, FR1	V-0, min. 125 °C, min. 0.4mm thickness	UL 94	UL
Insulation tape (provided on HS2)	3M	1350T-1	Min. 130 °C, min. 2 layers	UL 510	UL
Alternative	3M COMPANY ELECTRICAL MARKETS DIV (EMD)	1350F-1(b)	Min.130°C	UL 510	UL
Alternative	BONDTEC PACIFIC CO LTD	370S(b)	Min.130°C	UL 510	UL
Alternative	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	PZ*(b) CT*(c)(g) CT(b)(g)	Min.130°C	UL 510	UL
Alternative	HUIZHOU YAHUA ELECTRONIC TECHNOLOGY CO LTD	CT	Min.130°C	UL 510	UL

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Clause	Requirement + Test	Result - Remark	Verdict

Alternative	JINGJIANG JINGYI ADHESIVE PRODUCT CO LTD	JY25-A(b)	Min.130°C	UL 510	UL
Alternative	CHANG SHU LIANG YI TAPE INDUSTRY CO LTD	LY-XX*	Min.130°C	UL 510	UL
Protective bonding conductor (Green/Yellow) (for Class I equipment)	Interchangeable	Interchangeable	Marked VW-1 or FT-1, min. 18AWG, min. 300V, min. 85°C	UL 758	UL
Supplementary information:					
1) Provided evidence ensures the agreed level of compliance. See OD-CB2039. ***)** All sources share the same construction from different vendors.					

Product photos

Photo 1 Overall view (Class I equipment)

Photo 2 Overall view (Class I equipment with C14 type inlet)

Product photos

Photo 3 Overall view (Class I equipment with C6 type inlet)

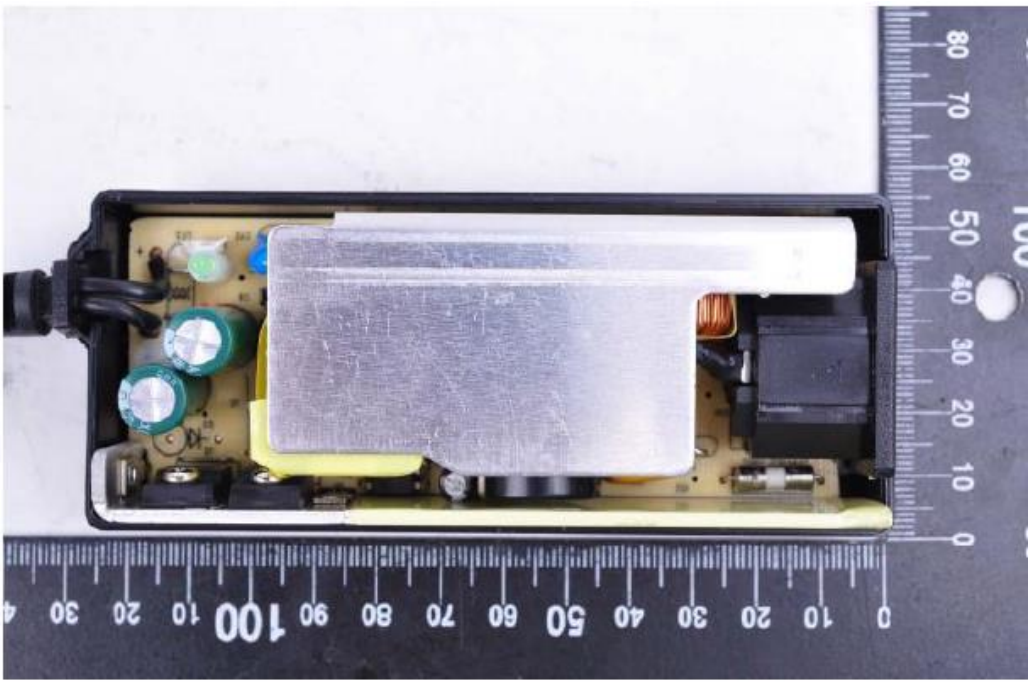

Photo 4 Internal view (Class I equipment with C14 type inlet)

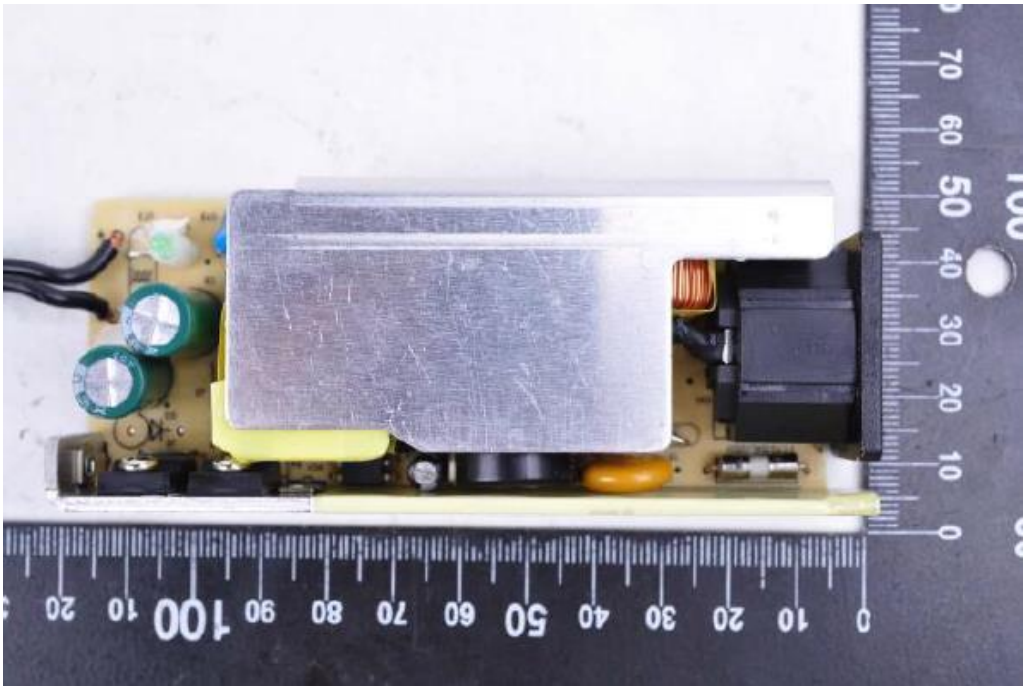

Photo 5 Internal view (Class I equipment with C14 type inlet)

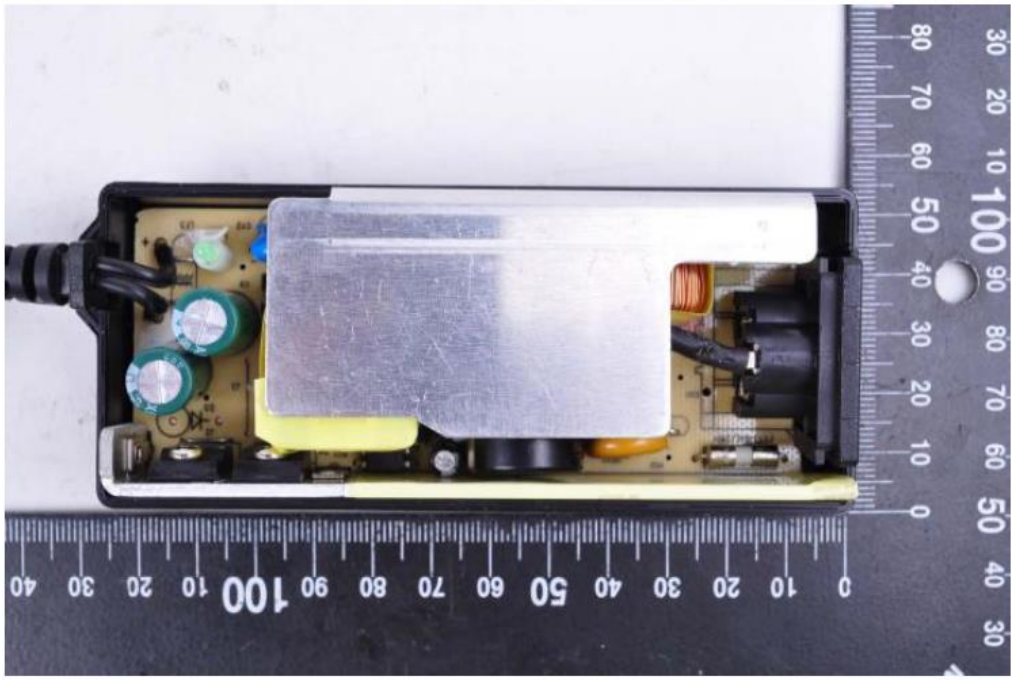

Photo 6 Internal view (Class I equipment with C6 type inlet)

Product photos

Photo 7 Internal view (Class I equipment with C6 type inlet)

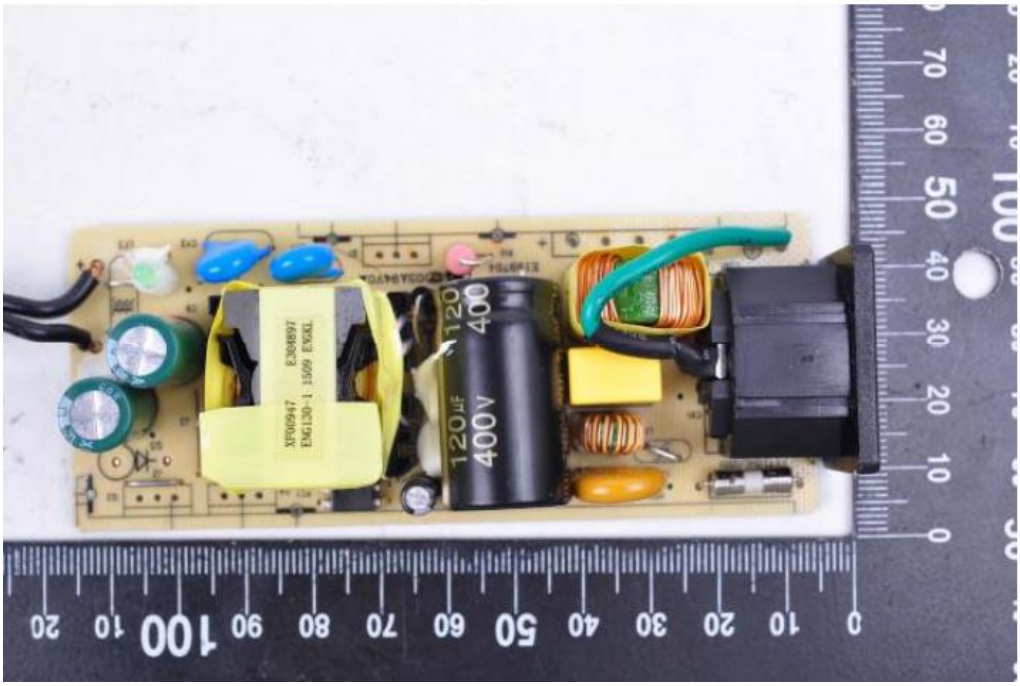

Photo 8 Internal view (Class I equipment with C14 type inlet)

Product photos

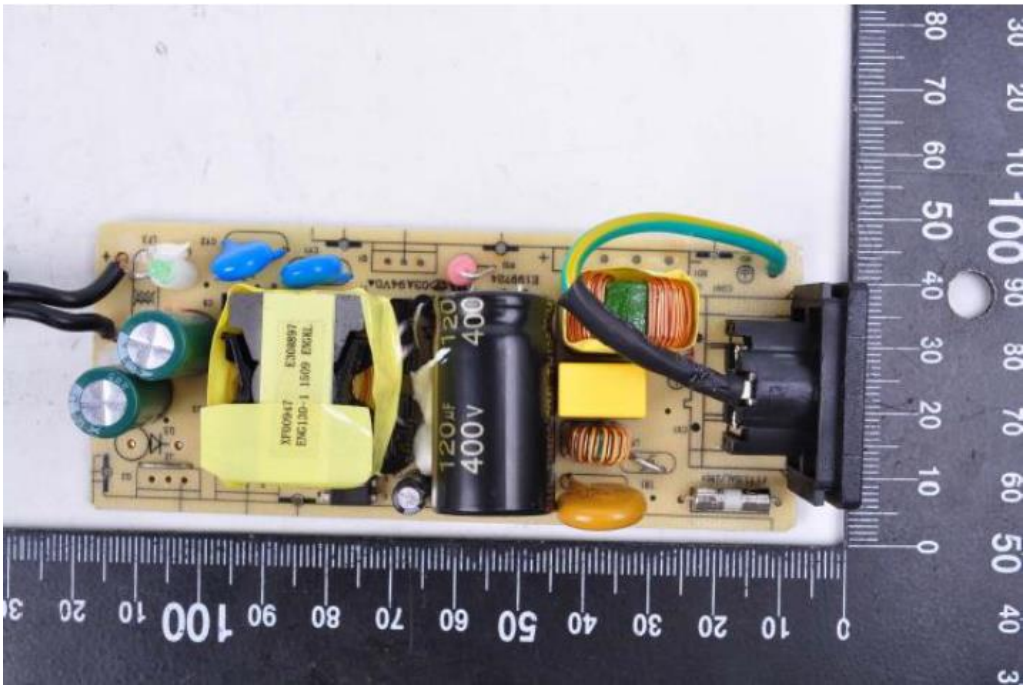

Photo 9 Internal view (Class I equipment with C6 type inlet)

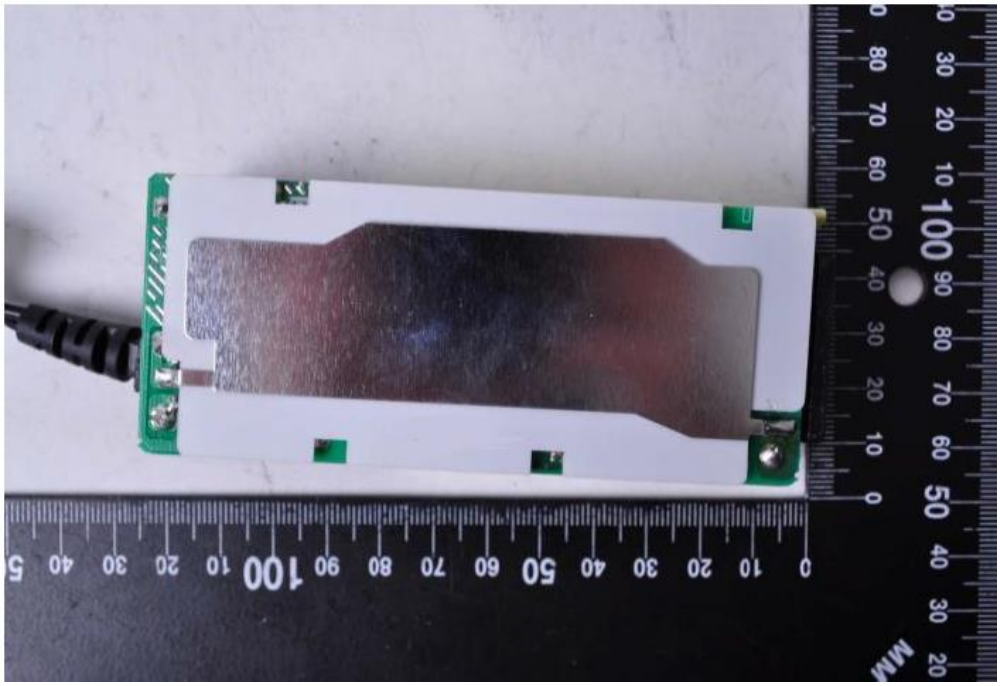

Photo 10 Internal view (Class I equipment)

Product photos

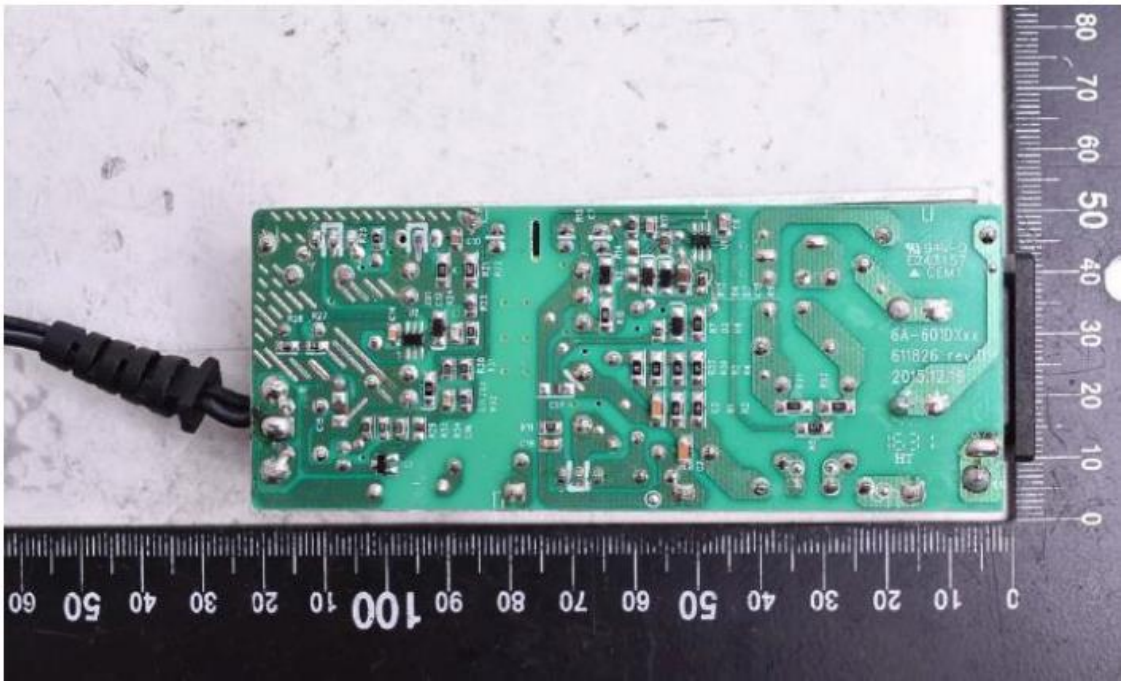

Photo 11 Internal view (Class I equipment)

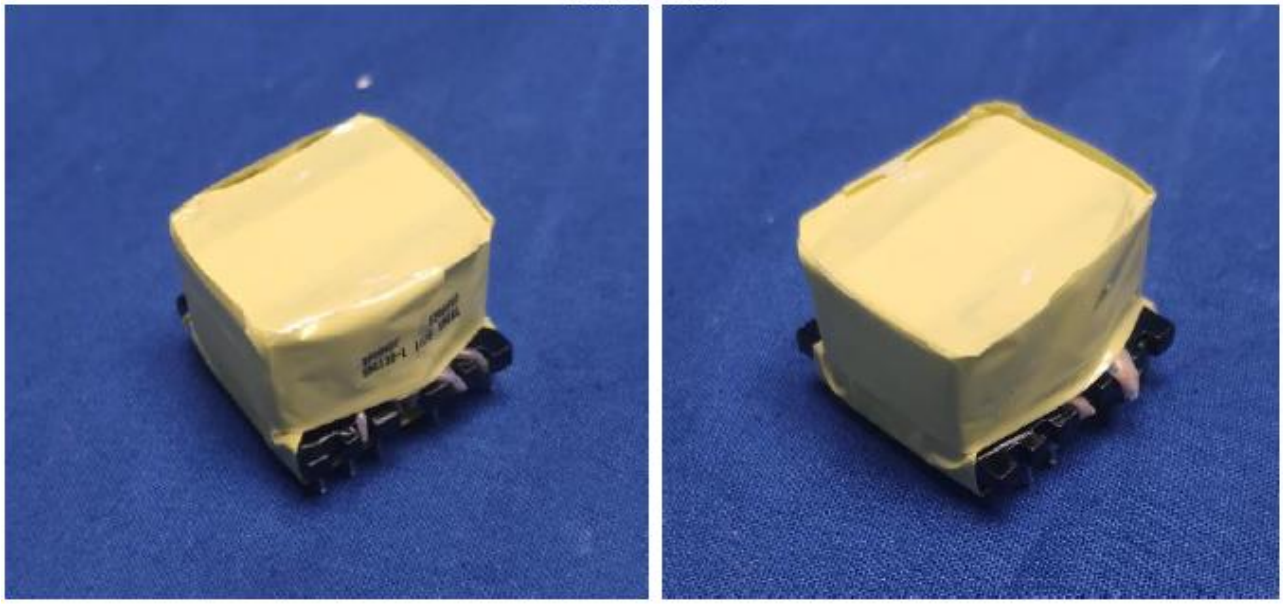

Photo 12 Over view of Transformer

Product photos

Photo 13 Over view (Class II equipment)

Photo 14 Over view (Class II equipment)

Product photos

Photo 15 Internal view (Class II equipment)

Photo 16 Internal view (Class II equipment)

Product photos

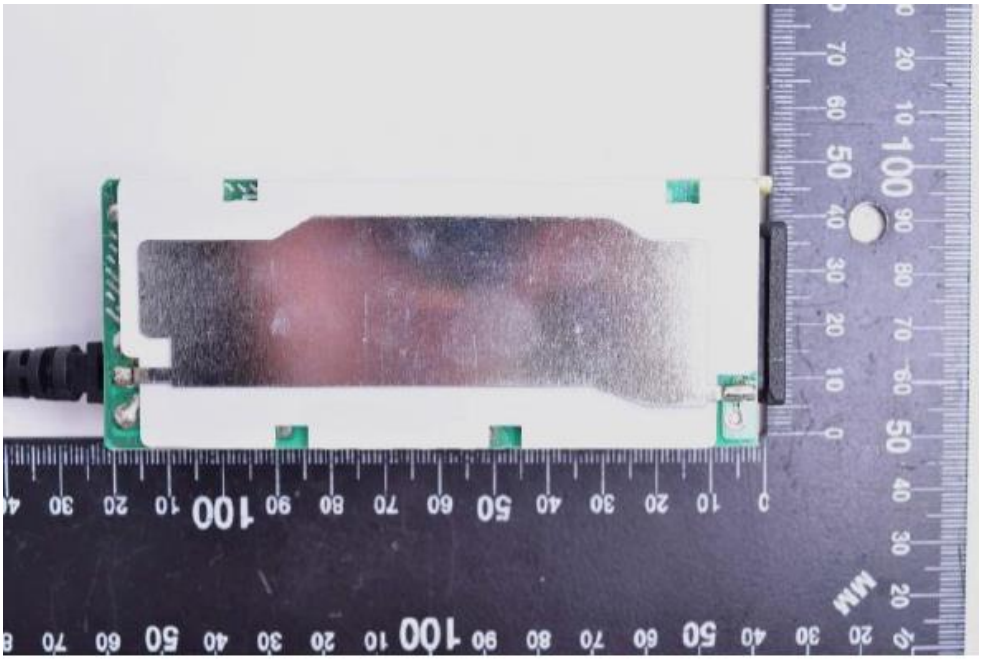

Photo 17 Internal view (Class II equipment)

Photo 18 Internal view (Class II equipment)

Product photos

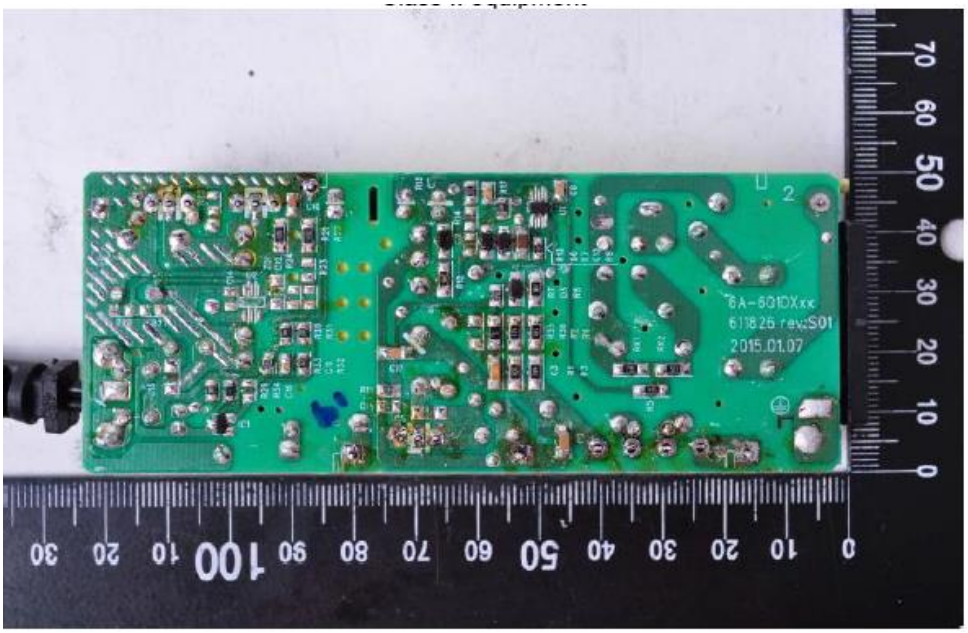

Photo 19 Internal view (Class II equipment)

EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT

IEC 62368-1

EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES

(AUDIO/VIDEO, INFORMATION AND COMMUNICATION TECHNOLOGY EQUIPMENT - PART 1: SAFETY REQUIREMENTS)

Differences according to.....: EN IEC 62368-1:2020+A11:2020

Attachment Form No.....: EU_GD_IEC62368_1E

Attachment Originator .....: UL(Demko)

Master Attachment.....: 2021-02-04

	CENELEC COMMON MODIFICATIONS (EN)		--
	Clause numbers in the cells that are shaded light grey are clause references in EN IEC 62368-1:2020+A11:2020. All other clause numbers in that column, except for those in the paragraph below, refers to IEC 62368-1:2018. Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 62368-1:2018 are prefixed “Z”.		--
	Add the following annexes: Annex ZA (normative) Normative references to international publications with their corresponding European publications Annex ZB (normative) Special national conditions Annex ZC (informative) A-deviations Annex ZD (informative) IEC and CENELEC code designations for flexible cords		--
1	**Modification to Clause 3 .**		N/A
3.3.19	**Sound exposure** *Replace 3.3.19 of IEC 62368-1 with the following definitions:*		N/A
3.3.19.1	**momentary exposure level, MEL** metric for estimating 1 s sound exposure level from the HD 483-1 S2 test signal applied to both channels, based on EN 50332-1:2013, 4.2. Note 1 to entry: MEL is measured as A-weighted levels in dB. Note 2 to entry: See B.3 of EN 50332-3:2017 for additional information.		N/A

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3.3.19.3	**sound exposure, *E*** A-weighted sound pressure (*p*) squared and integrated over a stated period of time, *T* Note 1 to entry: The SI unit is Pa^2 s. $E = \int_0^T p(t)^2 \, dt$		N/A
3.3.19.4	**sound exposure level, *SEL*** logarithmic measure of sound exposure relative to a reference value, E_0, typically the 1 kHz threshold of hearing in humans. Note 1 to entry: *SEL* is measured as A-weighted levels in dB. $SEL = 10 \lg \left(\frac{E}{E_0}\right)$ dB Note 2 to entry: See B.4 of EN 50332-3:2017 for additional information.		N/A
3.3.19.5	**digital signal level relative to full scale, dBFS** levels reported in dBFS are always r.m.s. Full scale level, 0 dBFS, is the level of a dc-free 997-Hz sine wave whose undithered positive peak value is positive digital full scale, leaving the code corresponding to negative digital full scale unused Note 1 to entry: It is invalid to use dBFS for non-r.m.s. levels. Because the definition of full scale is based on a sine wave, the level of signals with a crest factor lower than that of a sine wave may exceed 0 dBFS. In particular, square wave signals may reach +3,01 dBFS.		N/A

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2	**Modification to Clause 10**		N/A
10.6	**Safeguards against acoustic energy sources** Replace 10.6 of IEC 62368-1 with the following:		N/A
10.6.1.1	**Introduction** **Safeguard** requirements for protection against long-term exposure to excessive sound pressure levels from personal music players closely coupled to the ear are specified below. Requirements for earphones and headphones intended for use with personal music players are also covered. A personal music player is a portable equipment intended for use by an **ordinary person**, that: – is designed to allow the user to listen to audio or audiovisual content / material; and – uses a listening device, such as headphones or earphones that can be worn in or on or around the ears; and – has a player that can be body worn (of a size suitable to be carried in a clothing pocket) and is intended for the user to walk around with while in continuous use (for example, on a street, in a subway, at an airport, etc.). EXAMPLES Portable CD players, MP3 audio players, mobile phones with MP3 type features, PDAs or similar equipment. Personal music players shall comply with the requirements of either 10.6.2 or 10.6.3. NOTE 1 Protection against acoustic energy sources from telecom applications is referenced to ITU-T P.360. NOTE 2 It is the intention of the Committee to allow the alternative methods for now, but to only use the dose measurement method as given in 10.6.5 in future. Therefore, manufacturers are encouraged to implement 10.6.5 as soon as possible. Listening devices sold separately shall comply with the requirements of 10.6.6. These requirements are valid for music or video mode only. The requirements do not apply to: – professional equipment; NOTE 3 Professional equipment is equipment sold through special sales channels. All products sold through normal electronics stores are considered not to be professional equipment. – hearing aid equipment and other devices for assistive listening; – the following type of analogue personal music players: • long distance radio receiver (for example, a multiband radio receiver or world band radio receiver, an AM radio receiver), and		N/A

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	• cassette player/recorder;		
Cont'd	NOTE 4 This exemption has been allowed because this technology is falling out of use and it is expected that within a few years it will no longer exist. This exemption will not be extended to other technologies. – a player while connected to an external amplifier that does not allow the user to walk around while in use. For equipment that is clearly designed or intended primarily for use by children, the limits of the relevant toy standards may apply. The relevant requirements are given in EN 71-1: 2011, 4.20 and the related tests methods and measurement distances apply.		N/A
10.6.1.2	**Non-ionizing radiation from radio frequencies in the range 0 to 300 GHz** The amount of non-ionizing radiation is regulated by European Council Recommendation 1999/519/EC of 12 July 1999 on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz). For intentional radiators, ICNIRP guidelines should be taken into account for Limiting Exposure to Time-Varying Electric, Magnetic, and Electromagnetic Fields (up to 300 GHz). For hand-held and body mounted devices, attention is drawn to EN 50360 and EN 50566.		N/A
10.6.2	**Classification of devices without the capacity to estimate sound dose**		N/A
10.6.2.1	**General** This standard is transitioning from short-term based (30 s) requirements to long-term based (40 hour) requirements. These clauses remain in effect only for devices that do not comply with sound dose estimation as stipulated in EN 50332-3. For classifying the acoustic output $L_{Aeq,T}$, measurements are based on the A-weighted equivalent sound pressure level over a 30 s period. For music where the average sound pressure (long term $L_{Aeq,T}$) measured over the duration of the song is lower than the average produced by the programme simulation noise, measurements may be done over the duration of the complete song. In this case, *T* becomes the duration of the song. NOTE Classical music, acoustic music and broadcast typically has an average sound pressure (long term $L_{Aeq,T}$) which is much lower than the average programme simulation noise. Therefore, if the player is capable to analyse the content and compare it with the programme simulation noise, the warning does not need to be given as long as the average sound pressure of the song does not exceed the required limit. For example, if the player is set with the programme simulation noise to 85 dB, but the average music level of the song is only 65 dB, there is no need to give a warning or ask an acknowledgement as		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	long as the average sound level of the song is not above the basic limit of 85 dB.		
10.6.2.2	**RS1 limits (to be superseded, see 10.6.3.2)** RS1 is a class 1 acoustic energy source that does not exceed the following: – for equipment provided as a package (player with its listening device), and with a proprietary connector between the player and its listening device, or where the combination of player and listening device is known by other means such as setting or automatic detection, the $L_{Aeq,T}$ acoustic output shall be ≤ 85 dB when playing the fixed “programme simulation noise” described in EN 50332-1. – for equipment provided with a standardized connector (for example, a 3,5 phone jack) that allows connection to a listening device for general use, the unweighted r.m.s. output voltage shall be ≤ 27 mV (analogue interface) or -25 dBFS (digital interface) when playing the fixed “programme simulation noise” described in EN 50332-1. – The RS1 limits will be updated for all devices as per 10.6.3.2.		N/A
10.6.2.3	**RS2 limits (to be superseded, see 10.6.3.3)** RS2 is a class 2 acoustic energy source that does not exceed the following: – for equipment provided as a package (player with its listening device), and with a proprietary connector between the player and its listening device, or when the combination of player and listening device is known by other means such as setting or automatic 130 detection, the $L_{Aeq,T}$ acoustic output shall be ≤ 100 dB(A) when playing the fixed “programme simulation noise” as described in EN 50332-1. – for equipment provided with a standardized connector (for example, a 3,5 phone jack) that allows connection to a listening device for general use, the unweighted r.m.s. output voltage shall be ≤ 150 mV (analogue interface) or -10 dBFS (digital interface) when playing the fixed “programme simulation noise” as described in EN 50332-1.		N/A
10.6.2.4	**RS3 limits** RS3 is a class 3 acoustic energy source that exceeds RS2 limits.		N/A
10.6.3	**Classification of devices (new)**		N/A
10.6.3.1	**General** Previous limits (10.6.2) created abundant false negative		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	and false positive PMP sound level warnings. New limits, compliant with The Commission Decision of 23 June 2009, are given below.		
10.6.3.2	**RS1 limits (new)** RS1 is a class 1 acoustic energy source that does not exceed the following: – for equipment provided as a package (player with its listening device), and with a proprietary connector between the player and its listening device, or where the combination of player and listening device is known by other means such as setting or automatic detection, the $L_{Aeq,T}$ acoustic output shall be ≤ 80 dB when playing the fixed “programme simulation noise” described in EN 50332-1. – for equipment provided with a standardized connector (for example, a 3,5 phone jack) that allows connection to a listening device for general use, the unweighted r.m.s. output voltage shall be ≤ 15 mV (analogue interface) or -30 dBFS (digital interface) when playing the fixed “programme simulation noise” described in EN 50332-1.		N/A
10.6.3.3	**RS2 limits (new)** RS2 is a class 2 acoustic energy source that does not exceed the following: – for equipment provided as a package (player with its listening device), and with a proprietary connector between the player and its listening device, or where the combination of player and listening device is known by other means such as setting or automatic detection, the weekly sound exposure level, as described in EN 50332-3, shall be ≤ 80 dB when playing the fixed "programme simulation noise" described in EN 50332-1. – for equipment provided with a standardized connector (for example, a 3,5 phone jack) that allows connection to a listening device for general use, the unweighted r.m.s. output level, integrated over one week, as described in EN50332-3, shall be ≤ 15 mV (analogue interface) or -30 dBFS (digital interface) when playing the fixed “programme simulation noise” described in EN 50332-1.		N/A
10.6.4	**Requirements for maximum sound exposure**		N/A
10.6.4.1	**Measurement methods** All volume controls shall be turned to maximum during tests. Measurements shall be made in accordance with EN 50332-1 or EN 50332-2 as applicable.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
10.6.4.2	**Protection of persons** Except as given below, protection requirements for parts **accessible** to **ordinary persons**, **instructed persons** and **skilled persons** are given in 4.3. NOTE 1 Volume control is not considered a **safeguard.** Between RS2 and an **ordinary person**, the **basic safeguard** may be replaced by an **instructional safeguard** in accordance with Clause F.5, except that the **instructional safeguard** shall be placed on the equipment, or on the packaging, or in the instruction manual. Alternatively, the **instructional safeguard** may be given through the equipment display during use. The elements of the **instructional safeguard** shall be as follows: – element 1a: the symbol  , IEC 60417-6044 (2011-01) – element 2: “High sound pressure” or equivalent wording – element 3: “Hearing damage risk” or equivalent wording – element 4: “Do not listen at high volume levels for long periods.” or equivalent wording An **equipment safeguard** shall prevent exposure of an **ordinary person** to an RS2 source without intentional physical action from the **ordinary person** and shall automatically return to an output level not exceeding what is specified for an RS1 source when the power is switched off. The equipment shall provide a means to actively inform the user of the increased sound level when the equipment is operated with an output exceeding RS1. Any means used shall be acknowledged by the user before activating a mode of operation which allows for an output exceeding RS1. The acknowledgement does not need to be repeated more than once every 20 h of cumulative listening time. NOTE 2 Examples of means include visual or audible signals. Action from the user is always needed. NOTE 3 The 20 h listening time is the accumulative listening time, independent of how often and how long the personal music player has been switched off. A **skilled person** shall not be unintentionally exposed to RS3.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
10.6.5	**Requirements for dose-based systems**		N/A
10.6.5.1	**General requirements** Personal music players shall give the warnings as provided below when tested according to EN 50332-3, using the limits from this clause. The manufacturer may offer optional settings to allow the users to modify when and how they wish to receive the notifications and warnings to promote a better user experience without defeating the safeguards. This allows the users to be informed in a method that best meets their physical capabilities and device usage needs. If such optional settings are offered, an administrator (for example, parental restrictions, business/educational administrators, etc.) shall be able to lock any optional settings into a specific configuration. The personal music player shall be supplied with easy to understand explanation to the user of the dose management system, the risks involved, and how to use the system safely. The user shall be made aware that other sources may significantly contribute to their sound exposure, for example work, transportation, concerts, clubs, cinema, car races, etc.		N/A
10.6.5.2	**Dose-based warning and requirements** When a dose of 100 % *CSD* is reached, and at least at every 100 % further increase of *CSD*, the device shall warn the user and require an acknowledgement. In case the user does not acknowledge, the output level shall automatically decrease to compliance with class RS1. The warning shall at least clearly indicate that listening above 100 % *CSD* leads to the risk of hearing damage or loss.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
10.6.5.3	**Exposure-based requirements** With only dose-based requirements, cause and effect could be far separated in time, defying the purpose of educating users about safe listening practice. In addition to dose-based requirements, a PMP shall therefore also put a limit to the short-term sound level a user can listen at. The exposure-based limiter (EL) shall automatically reduce the sound level not to exceed 100 dB(A) or 150 mV integrated over the past 180 s, based on methodology defined in EN 50332-3. The EL settling time (time from starting level reduction to reaching target output) shall be 10 s or faster. Test of EL functionality is conducted according to EN 50332-3, using the limits from this clause. For equipment provided as a package (player with its listening device), the level integrated over 180 s shall be 100 dB or lower. For equipment provided with a standardized connector, the unweighted level integrated over 180 s shall be no more than 150 mV for an analogue interface and no more than -10 dBFS for a digital interface. NOTE In case the source is known not to be music (or test signal), the EL may be disabled.		N/A
10.6.6	**Requirements for listening devices (headphones, earphones, etc.)**		N/A
10.6.6.1	**Corded listening devices with analogue input** With 94 dB L_{Aeq} acoustic pressure output of the listening device, and with the volume and sound settings in the listening device (for example, built-in volume level control, additional sound features like equalization, etc.) set to the combination of positions that maximize the measured acoustic output, the input voltage of the listening device when playing the fixed “programme simulation noise” as described in EN 50332-1 shall be ≥ 75 mV. NOTE The values of 94 dB and 75 mV correspond with 85 dB and 27 mV or 100 dB and 150 mV.		N/A
10.6.6.2	**Corded listening devices with digital input** With any playing device playing the fixed “programme simulation noise” described in EN 50332-1, and with the volume and sound settings in the listening device (for example, built-in volume level control, additional sound features like equalization, etc.) set to the combination of positions that maximize the measured acoustic output, the $L_{Aeq,T}$ acoustic output of the listening device shall be ≤ 100 dB with an input signal of -10 dBFS.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

10.6.6.3	**Cordless listening devices** In cordless mode, – with any playing and transmitting device playing the fixed programme simulation noise described in EN 50332-1; and – respecting the cordless transmission standards, where an air interface standard exists that specifies the equivalent acoustic level; and – with volume and sound settings in the receiving device (for example, built-in volume level control, additional sound features like equalization, etc.) set to the combination of positions that maximize the measured acoustic output for the above mentioned programme simulation noise, the $L_{Aeq,T}$ acoustic output of the listening device shall be ≤ 100 dB with an input signal of -10 dBFS.		N/A
10.6.6.4	**Measurement method** *Measurements shall be made in accordance with EN 50332-2 as applicable.*		N/A
3	**Modification to the whole document**		P
	Delete all the “country” notes in the reference document according to the following list:		P

0.2.1	Note 1 and 2	1	Note 4 and 5	3.3.8.1	Note 2
3.3.8.3	Note 1	4.1.15	Note	4.7.3	Note 1 and 2
5.2.2.2	Note	5.4.2.3.2.2 Table 12	Note c	5.4.2.3.2.4	Note 1 and 3
5.4.2.3.2.4 Table 13	Note 2	5.4.2.5	Note 2	5.4.5.1	Note
5.4.10.2.1	Note	5.4.10.2.2	Note	5.4.10.2.3	Note
5.5.2.1	Note	5.5.6	Note	5.6.4.2.1	Note 2 and 3 and 4
5.6.8	Note 2	5.7.6	Note	5.7.7.1	Note 1 and Note 2
8.5.4.2.3	Note	10.2.1 Table 39	Note 3 and 4 and 5	10.5.3	Note 2
~~10.6.1~~	Note 3	F.3.3.6	Note 3	Y.4.1	Note
Y.4.5	Note				

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Clause	Requirement + Test	Result - Remark	Verdict
4	**Modification to Clause 1**		P
1	***Add*** *the following note:* *NOTE Z1 The use of certain substances in electrical and electronic equipment is restricted within the EU: see Directive 2011/65/EU.*		P
5	**Modification to 4.Z1**		N/A
4.Z1	***Add*** *the following new subclause after 4.9:* To protect against excessive current, short-circuits and earth faults in circuits connected to an a.c. **mains**, protective devices shall be included either as integral parts of the equipment or as parts of the building installation, subject to the following, a), b) and c): a) except as detailed in b) and c), protective devices necessary to comply with the requirements of B.3.1 and B.4 shall be included as parts of the equipment; b) for components in series with the mains input to the equipment such as the supply cord, appliance coupler, r.f.i. filter and switch, short-circuit and earth fault protection may be provided by protective devices in the building installation; c) it is permitted for **pluggable equipment type B** or **permanently connected equipment**, to rely on dedicated overcurrent and short-circuit protection in the building installation, provided that the means of protection, e.g. fuses or circuit breakers, is fully specified in the installation instructions. If reliance is placed on protection in the building installation, the installation instructions shall so state, except that for **pluggable equipment type A** the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet.		N/A
6	**Modification to 5.4.2.3.2.4**		N/A
5.4.2.3.2.4	***Add*** *the following to the end of this subclause:* The requirement for interconnection with **external circuit** is in addition given in EN 50491-3:2009.		N/A
7	**Modification to 10.2.1**		N/A
10.2.1	Add the following to c) and d) in table 39: For additional requirements, see 10.5.1.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8	**Modification to 10.5.1**		N/A
10.5.1	***Add*** *the following after the first paragraph:* For RS 1 compliance is checked by measurement under the following conditions: In addition to the normal operating conditions, all controls adjustable from the outside by hand, by any object such as a tool or a coin, and those internal adjustments or pre-sets which are not locked in a reliable manner, are adjusted so as to give maximum radiation whilst maintaining an intelligible picture for 1 h, at the end of which the measurement is made. NOTE Z1 Soldered joints and paint lockings are examples of adequate locking. The dose-rate is determined by means of a radiation monitor with an effective area of 10 cm², at any point 10 cm from the outer surface of the apparatus. Moreover, the measurement shall be made under fault conditions causing an increase of the high voltage, provided an intelligible picture is maintained for 1 h, at the end of which the measurement is made. For RS1, the dose-rate shall not exceed 1 µSv/h taking account of the background level. NOTE Z2 These values appear in Directive 96/29/Euratom of 13 May 1996.		N/A
9	**Modification to G.7.1**		N/A
G.7.1	***Add*** *the following note:* NOTE Z1 The harmonized code designations corresponding to the IEC cord types are given in Annex ZD.		N/A

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10	**Modification to Bibliography**		P
	Add the following notes for the standards indicated: IEC 60130-9 NOTE Harmonized as EN 60130-9. IEC 60269-2 NOTE Harmonized as HD 60269-2. IEC 60309-1 NOTE Harmonized as EN 60309-1. IEC 60364 NOTE some parts harmonized in HD 384/HD 60364 series. IEC 60601-2-4 NOTE Harmonized as EN 60601-2-4. IEC 60664-5 NOTE Harmonized as EN 60664-5. IEC 61032:1997 NOTE Harmonized as EN 61032:1998 (not modified). IEC 61508-1 NOTE Harmonized as EN 61508-1. IEC 61558-2-1 NOTE Harmonized as EN 61558-2-1. IEC 61558-2-4 NOTE Harmonized as EN 61558-2-4. IEC 61558-2-6 NOTE Harmonized as EN 61558-2-6. IEC 61643-1 NOTE Harmonized as EN 61643-1. IEC 61643-21 NOTE Harmonized as EN 61643-21. IEC 61643-311 NOTE Harmonized as EN 61643-311. IEC 61643-321 NOTE Harmonized as EN 61643-321. IEC 61643-331 NOTE Harmonized as EN 61643-331.		P
11	**ADDITION OF ANNEXES**		P
ZB	**ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)**		P
4.1.15	**Denmark, Finland, Norway** and **Sweden** To the end of the subclause the following is added: **Class I pluggable equipment type A** intended for connection to other equipment or a network shall, if safety relies on connection to reliable earthing or if surge suppressors are connected between the network terminals and **accessible** parts, have a marking stating that the equipment shall be connected to an earthed **mains** socket-outlet. The marking text in the applicable countries shall be as follows: In **Denmark**: “Apparatets stikprop skal tilsluttes en stikkontakt med jord som giver forbindelse til stikproppens jord.” In **Finland**: "Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan" In **Norway**: “Apparatet må tilkoples jordet stikkontakt” In **Sweden**: “Apparaten skall anslutas till jordat uttag”		N/A
4.7.3	**United Kingdom** To the end of the subclause the following is added: The torque test is performed using a socket-outlet complying with BS 1363, and the plug part shall be assessed to the relevant clauses of BS 1363. Also see Annex G.4.2 of this annex		N/A

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

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Clause	Requirement + Test	Result - Remark	Verdict
5.5.2.1	**Norway** After the 3rd paragraph the following is added: Due to the IT power system used, capacitors are required to be rated for the applicable line-to-line voltage (230 V).		N/A
5.5.6	**Finland, Norway** and **Sweden** To the end of the subclause the following is added: Resistors used as **basic safeguard** or bridging **basic insulation** in **class I pluggable equipment type A** shall comply with G.10.1 and the test of G.10.2.		N/A
5.6.1	**Denmark** **Add** to the end of the subclause Due to many existing installations where the socket-outlets can be protected with fuses with higher rating than the rating of the socket-outlets the protection for pluggable equipment type A shall be an integral part of the equipment. *Justification:* In Denmark an existing 13 A socket outlet can be protected by a 20 A fuse.		N/A
5.6.4.2.1	**Ireland and United Kingdom** After the indent for **pluggable equipment type A**, the following is added: – the **protective current rating** is taken to be 13 A, this being the largest rating of fuse used in the **mains** plug.		N/A
5.6.4.2.1	**France** After the indent for **pluggable equipment type A**, the following is added: – in certain cases, the **protective current rating** of the circuit supplied from the mains is taken as 20 A instead of 16 A.		N/A
5.6.5.1	To the second paragraph the following is added: The range of conductor sizes of flexible cords to be accepted by terminals for equipment with a rated current over 10 A and up to and including 13 A is: 1,25 mm^2 to 1,5 mm^2 in cross-sectional area.		N/A
5.6.8	**Norway** To the end of the subclause the following is added: Equipment connected with an earthed mains plug is classified as **class I equipment**. See the Norway marking requirement in 4.1.15. The symbol IEC 60417-6092, as specified in F.3.6.2, is accepted.		N/A
5.7.6	**Denmark** To the end of the subclause the following is added: The installation instruction shall be affixed to the		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	equipment if the **protective conductor current** exceeds the limits of 3,5 mA a.c. or 10 mA d.c.		
5.7.6.2	**Denmark** To the end of the subclause the following is added: The warning (marking safeguard) for high touch current is required if the touch current or the protective current exceed the limits of 3,5 mA.		N/A
5.7.7.1	**Norway and Sweden** To the end of the subclause the following is added: The screen of the television distribution system is normally not earthed at the entrance of the building and there is normally no equipotential bonding system within the building. Therefore the protective earthing of the building installation needs to be isolated from the screen of a cable distribution system. It is however accepted to provide the insulation external to the equipment by an adapter or an interconnection cable with galvanic isolator, which may be provided by a retailer, for example. The user manual shall then have the following or similar information in Norwegian and Swedish language respectively, depending on in what country the equipment is intended to be used in: “Apparatus connected to the protective earthing of the building installation through the mains connection or through other apparatus with a connection to protective earthing – and to a television distribution system using coaxial cable, may in some circumstances create a fire hazard. Connection to a television distribution system therefore has to be provided through a device providing electrical isolation below a certain frequency range (galvanic isolator, see EN 60728-11)” NOTE In Norway, due to regulation for CATV-installations, and in Sweden, a galvanic isolator shall provide electrical insulation below 5 MHz. The insulation shall withstand a dielectric strength of 1,5 kV r.m.s., 50 Hz or 60 Hz, for 1 min. Translation to Norwegian (the Swedish text will also be accepted in Norway): “Apparater som er koplet til beskyttelsesjord via nettplugg og/eller via annet jordtilkoplet utstyr – og er tilkoplet et koaksialbasert kabel-TV nett, kan forårsake brannfare. For å unngå dette skal det ved tilkopling av apparater til kabel-TV nett installeres en galvanisk isolator mellom apparatet og kabel-TV nettet.” Translation to Swedish: ”Apparater som är kopplad till skyddsjord via jordat vägguttag och/eller via annan utrustning och samtidigt är kopplad till kabel-TV nät kan i vissa fall medföra risk för brand. För att undvika detta		N/A

EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES			
Clause	Requirement + Test	Result - Remark	Verdict
	skall vid anslutning av apparaten till kabel-TV nät galvanisk isolator finnas mellan apparaten och kabel-TV nätet.”.		
8.5.4.2.3	**United Kingdom** Add the following after the 2nd dash bullet in 3rd paragraph: An emergency stop system complying with the requirements of IEC 60204-1 and ISO 13850 is required where there is a risk of personal injury.		N/A
B.3.1 and B.4	**Ireland and United Kingdom** The following is applicable: To protect against excessive currents and short-circuits in the primary circuit of **direct plug-in equipment**, tests according to Annexes B.3.1 and B.4 shall be conducted using an external miniature circuit breaker complying with EN 60898-1, Type B, rated 32A. If the equipment does not pass these tests, suitable protective devices shall be included as an integral part of the **direct plug-in equipment**, until the requirements of Annexes B.3.1 and B.4 are met		N/A

EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES			
Clause	Requirement + Test	Result - Remark	Verdict
G.4.2	**Denmark** To the end of the subclause the following is added: Supply cords of single phase appliances having a rated current not exceeding 13 A shall be provided with a plug according to DS 60884-2-D1:2011. CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a. If a single-phase equipment having a RATED CURRENT exceeding 13 A or if a polyphase equipment is provided with a supply cord with a plug, this plug shall be in accordance with the standard sheets DK 6-1a in DS 60884-2-D1 or EN 60309-2. Mains socket outlets intended for providing power to Class II apparatus with a rated current of 2,5 A shall be in accordance DS 60884-2-D1:2011 standard sheet DKA 1-4a. Other current rating socket outlets shall be in compliance with Standard Sheet DKA 1-3a or DKA 1-1c. Mains socket-outlets with earth shall be in compliance with DS 60884-2-D1:2011 Standard Sheet DK 1-3a, DK 1-1c, DK1-1d, DK 1-5a or DK 1-7a *Justification:* Heavy Current Regulations, Section 6c		N/A
G.4.2	**United Kingdom** To the end of the subclause the following is added: The plug part of direct plug-in equipment shall be assessed to BS 1363: Part 1, 12.1, 12.2, 12.3, 12.9, 12.11, 12.12, 12.13, 12.16, and 12.17, except that the test of 12.17 is performed at not less than 125 °C. Where the metal earth pin is replaced by an Insulated Shutter Opening Device (ISOD), the requirements of clauses 22.2 and 23 also apply.		N/A

EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES			
Clause	Requirement + Test	Result - Remark	Verdict
G.7.1	**United Kingdom** To the first paragraph the following is added: Equipment which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord shall be fitted with a 'standard plug' in accordance with the Plugs and Sockets etc. (Safety) Regulations 1994, Statutory Instrument 1994 No. 1768, unless exempted by those regulations. NOTE "Standard plug" is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.		N/A
G.7.1	**Ireland** To the first paragraph the following is added: Apparatus which is fitted with a flexible cable or cord shall be provided with a plug in accordance with Statutory Instrument 525: 1997, "13 A Plugs and Conversion Adapters for Domestic Use Regulations: 1997. S.I. 525 provides for the recognition of a standard of another Member State which is equivalent to the relevant Irish Standard		N/A
G.7.2	**Ireland and United Kingdom** To the first paragraph the following is added: A power supply cord with a conductor of 1,25 mm^2 is allowed for equipment which is rated over 10 A and up to and including 13 A.		N/A

EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES			
Clause	Requirement + Test	Result - Remark	Verdict

ZC	**ANNEX ZC, NATIONAL DEVIATIONS (EN)**		N/A
10.5.2	**Germany** The following requirement applies: For the operation of any cathode ray tube intended for the display of visual images operating at an acceleration voltage exceeding 40 kV, authorization is required, or application of type approval (Bauartzulassung) and marking. *Justification*: German ministerial decree against ionizing radiation (Röntgenverordnung), in force since 2002-07-01, implementing the European Directive 96/29/EURATOM. **NOTE** Contact address: Physikalisch-Technische Bundesanstalt, Bundesallee 100, D-38116 Braunschweig, Tel.: Int+49-531-592-6320, Internet: http://www.ptb.de		N/A

EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES			
Clause	Requirement + Test	Result - Remark	Verdict

ZD	**IEC and CENELEC CODE DESIGNATIONS FOR FLEXIBLE CORDS (EN)**	N/A

N/A

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

U.S.A. AND CANADA NATIONAL DIFFERENCES			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT

IEC 62368-1

U.S.A. AND CANADA NATIONAL DIFFERENCES

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

Differences according to ..... CSA/UL 62368-1:2019

TRF template used: ..... IECEE OD-2020-F3, Ed. 1.1

Attachment Form No. ..... US_CA_ND_IEC62368_1E

Attachment Originator..... UL(US)

Master Attachment ..... Dated 2021-02-04

IEC 62368-1 - US and Canadian National Differences
Special National Conditions based on Regulations and Other National Differences

1 (1DV.1) (1.3)	All equipment is to be designed to allow installation in accordance with the National Electrical Code (NEC), ANSI/NFPA 70, the Canadian Electrical Code (CEC), Part 1, CAN/CSA C22.1, and when applicable, the National Electrical Safety Code, IEEE C2. Also, for such equipment marked or otherwise identified, installation is allowed per the Standard for the Protection of Information Technology Equipment, ANSI/NFPA 75.		P
1 (1DV.2.1)	This standard includes additional requirements for equipment used for entertainment purposes intended for installation in general patient care areas of health care facilities. See Annex DVB.		N/A
1 (1DV.2.2)	This standard includes additional requirements for equipment intended for mounting under cabinets. See Annex DVC.		N/A
1 (1DV.2.3)	IEC 62368-3 clause 5 for DC power transfer at ES1 or ES2 voltage levels is considered informative. IEC 62368-3 clause 6 for remote power feeding telecommunication (RFT) circuits is considered normative (see ITU K.50). Alternatively, equipment with RFT circuits are given in either UL 2391 or CSA/UL 60950-21. RFT-C circuits are not permitted unless the RFT-C circuit complies with RFT-V limits (≤ 200V per conductor to earth).		N/A
1 (1DV.3)	For protection against direct lightning strikes, reference is made to NFPA 780 and CAN/CSA-B72 for additional requirements.		P
1 (DV.5)	Additional requirements apply to some forms of power distribution equipment, including sub-assemblies.		P

U.S.A. AND CANADA NATIONAL DIFFERENCES			
Clause	Requirement + Test	Result - Remark	Verdict
4.1 (4.1.17)	For lengths exceeding 3.05 m, external interconnecting cable assemblies are required to be a suitable cable type (e.g., DP, CL2) specified in the NEC.		N/A
	For lengths 3.05 m or less, external interconnecting cable assemblies that are not types specified in the NEC generally are required to have special construction features and identification markings.		N/A
4.6 (4.6.2)	Wire-wrap terminals have special construction and performance requirements.		N/A
4.8 (4.8.3, 4.8.4.5, 4.8.5)	Coin / button cell batteries have modified special construction and performance requirements.		N/A
5.4.2.3.2 (5.4.2.3.2.1)	Surge Arrestors and Transient Voltage Surge Suppressors installed external to the equipment are required to comply with the appropriate NEC and CEC requirements.		P
5.5.9	Receptacles, rated 125-V, single phase, 15- or 20-A accessible to either ordinary, instructed, or skilled persons are required to be provided with GFCI Protection for Personnel if the equipment containing the receptacles is installed outdoors. The protection devices are required to comply with UL 943, and CAN/CSA C22.2 No.144.		N/A
5.6.3	Protective earthing conductors comply with the minimum conductor sizes in Table G.7, except as required by Table G.7ADV.1 for cord connected equipment, or Annex DVH for permanently connected equipment.		N/A
5.7.8 (5.7.8.1)	Equipment intended to receive telecommunication ringing signals is required to comply with a special touch current measurement tests.		N/A
6.5.1	PS3 wiring outside a fire enclosure is required to comply with single fault testing in B.4, or be current limited per one of the permitted methods.		P
Annex F (F.3.3.9)	Output terminals provided for supply of other equipment, except mains supply, are required to be marked with a maximum rating or reference to equipment permitted to be connected.		P
Annex F (F.3.7)	Outdoor Enclosures are required to be classified and marked in accordance with UL 50 or 50E, or CAN/CSA C22.2 No. 94.1 or 94.2.		N/A
Annex G (G.7)	Permanent connection of equipment to the mains supply by a power supply cord is not permitted, except for certain equipment, such as ATMs.		N/A

U.S.A. AND CANADA NATIONAL DIFFERENCES			
Clause	Requirement + Test	Result - Remark	Verdict
	Power supply cords are required to have attachment plugs rated not less than 125 percent of the rated current of the equipment.		N/A
	Flexible power supply cords are required to be compatible with Article 400 of the NEC, and Tables 11 and 12 of the CEC.		N/A
	Minimum cord length is required to be 1.5 m, with certain constructions such as external power supplies allowed to consider both input and output cord lengths into the requirement. Power supply cords are required to be no longer than 4.5 m in length if used in ITE Rooms.		N/A
	Power supply cords for outdoor equipment are required to be suitable outdoor use type as required by Section 400.4 of the NEC and Rule 4-012 of the CEC, i.e., marked “W.”		N/A
Annex H.2	Continuous ringing signals under normal operating conditions up to 16 mA only are permitted if the equipment is subjected to special installation and performance restrictions.		N/A
Annex H.4	For circuits with other than ringing signals and with voltages exceeding 42.4 Vpeak or 60 Vd.c., the maximum acceptable current through a 2000 ohm resistor (or greater) connected across the voltage source with other loads disconnected is 7.1 mA peak or 30 mA d.c. under normal operating conditions.		N/A
Annex Q (Q.3)	Equipment with paired conductor and/or coax communications cables/wiring connected to building wiring are required to have special voltage, current, power and marking requirements.		N/A
Annex DVA (1)	Equipment that is designed such that it may be powered from a separate electrical service, is required to meet applicable requirements for service equipment for control and protection of services and their installation and complies with Article 230 of the National Electrical Code (NEC), NFPA 70 and Section 6 of the Canadian Electrical Code, Part I, CSA C22.1.		N/A
	Equipment intended for use in spaces used for environmental air (plenums) are subjected to special flammability requirements for heat and visible smoke release.		N/A
	For ITE room applications, automated information storage systems with combustible media greater than 0.76 m^3 (27 cu ft) are required to have a provision for connection of either automatic sprinklers or a gaseous agent extinguishing system with an extended discharge.		N/A

U.S.A. AND CANADA NATIONAL DIFFERENCES			
Clause	Requirement + Test	Result - Remark	Verdict
	Consumer products designed or intended primarily for children 12 years of age or younger are subject to additional requirements in accordance with U.S. and Canadian Regulations.		N/A
	Baby monitors are required to additionally comply with ASTM F2951, Consumer Safety Specification for Baby Monitors.		N/A
	Storage batteries and battery management equipment, other than associated with lead-acid batteries, and including battery backup systems that are not an integral part of stationary AV and ICT equipment, such as provided in separate cabinets, are required to be certified (listed) to the appropriate standard(s) for such storage batteries and equipment.		N/A
Annex DVA (5.6)	For Pluggable Equipment Type A, the protection in the installation is assumed to be 20A.		N/A
Annex DVA (6.3)	The maximum quantity of flammable liquid stored in equipment is required to comply with NFPA 30.		N/A
Annex DVA (6.4.8)	For ITE room applications, enclosures with combustible material measuring greater than 0.9 m^2 (10 sq ft) or a single dimension greater than 1.8 m (6 ft) are required to have a flame spread rating of 50 or less. For equipment with the same dimensions for other applications, an external surface that is not a fire enclosure requires a minimum flammability classification of V-1.		N/A
Annex DVA (10.3)	Equipment with lasers is required to meet the U.S. Code of Federal Regulations 21 CFR 1040 (and the Canadian Radiation Emitting Devices Act, REDR C1370).		N/A
Annex DVA (10.5)	Equipment that produces ionizing radiation is required to comply with the U.S. Code of Federal Regulations, 21 CFR 1020 (and the Canadian Radiation Emitting Devices Act, REDR C1370).		N/A
Annex DVA (F.3.3.4)	Equipment for use on a.c. mains supply systems with a neutral and more than one phase conductor (e.g. 120/240 V, 3-wire) require a special marking format for electrical ratings. Additional considerations apply for voltage ratings that exceed the attachment cap rating or that are lower than the “Normal Operating Condition” in Table 2 of CAN/CSA C22.2 No. 235.”		N/A
Annex DVA (F.3.3.6)	Equipment identified for ITE (computer) room installation is required to be marked with the rated current.		N/A

U.S.A. AND CANADA NATIONAL DIFFERENCES			
Clause	Requirement + Test	Result - Remark	Verdict
Annex DVA (G.1)	Vertically-mounted disconnect switches and circuit breakers are required to have the "on" position indicated by the handle in the up position.		N/A
Annex DVA (G.3.4)	Suitable NEC/CEC branch circuit protection rated at the maximum circuit rating is required for all standard supply outlets and receptacles (such as supplied in power distribution units) if the supply branch circuit protection is not suitable.		N/A
	Where a fuse is used to provide Class 2 or Class 3 current limiting, it is not operator-accessible unless it is non- interchangeable.		N/A
Annex DVA (G.4.2)	Equipment with isolated ground (earthing) receptacles is required to comply with NEC 250.146(D) and CEC 10-400 and 10-612.		N/A
Annex DVA (G.4.3)	Interconnection of units by conductors supplied by a limited power source, or a Class 2 circuit defined in the NEC/CEC may have field wiring connections other than specified in DVH.3, such as wire-wrap and crimp-on types, if the limited power source and Class 2 circuits are separated from all other circuits by barriers, routing or fixing.		N/A
Annex DVA (G.5.3)	Power distribution transformers distributing power at 100 volts or more, and rated 10 kVA or more, require special transformer overcurrent protection.		N/A
Annex DVA (G.5.4)	Motor control devices are required for cord-connected equipment with a mains-connected motor if the equipment is rated more than 12 A, or if the equipment has a nominal voltage rating greater than 120 V, or if the motor is rated more than 1/3 hp (locked rotor current over 43 A).		N/A
Annex DVA (G.7)	Flexible cords used outdoors are required to have the suffix “W” marked on the flexible cord.		
Annex DVA (M)	For ITE room applications, equipment with battery systems capable of supplying 750 VA for five minutes are required to have a battery disconnect means that may be connected to the ITE room remote power-off circuit.		N/A
Annex DVA (Q)	If applicable per NEC 725.121(C), some limited power sources supplied from AV/ICT equipment are required to have a label indicating the maximum voltage and maximum current, or maximum voltage and nominal current output for each connection point. Where multiple connection points have the same rating, a single label is permitted to be used.		N/A

U.S.A. AND CANADA NATIONAL DIFFERENCES			
Clause	Requirement + Test	Result - Remark	Verdict
	Wiring terminals intended to supply Class 2 outputs in accordance with the NEC or CEC Part 1are required to be marked with the voltage rating and “Class 2” or equivalent. The marking is located adjacent to the terminals and visible during wiring.		N/A
	Applicable parts of Chapter 8 of the NEC, and Rules 54 and 60 of the CEC, may be applicable to ITE installed outdoors with connections to communication systems.		N/A
Annex DVB (1)	Additional requirements apply for equipment used for entertainment purposes intended for installation in general patient care areas of health care facilities.		N/A
Annex DVC (1)	Additional requirements apply for equipment intended for mounting under kitchen cabinets.		N/A
Annex DVE (4.1.1)	Some equipment, components, sub-assemblies and materials associated with the risk of fire, electric shock, or personal injury are required to have component or material ratings in accordance with the applicable national (U.S. and Canadian) component or material requirements. These equipment and components include: appliance couplers, attachment plugs, battery backup systems, circuit breakers, communication circuit accessories, connectors (used for current interruption of non-LPS circuits), direct plug-in equipment, electrochemical capacitor modules (energy storage modules with ultracapacitors), enclosures (outdoor), flexible cords and cables, fuses (branch circuit), ground-fault current interrupters, interconnecting cables, modular data centers, power supply cords, some power distribution equipment, printed wiring, protectors for communications circuits, receptacles, surge protective devices, vehicle battery adapters, wire connectors, and wire and cables.		P
Annex DVH	Equipment for permanent connection to the mains supply is subjected to additional requirements.		N/A
Annex DVH (DVH.1)	Wiring methods (terminals, leads, etc.) used for the connection of the equipment to the mains are required to be in accordance with the NEC/CEC.		N/A
Annex DVH (DVH.3.2)	Terminals for permanent wiring, including protective earthing terminals, are required to be suitable for U.S./Canadian wire gauge sizes, rated 125 percent of the equipment rating, and be specially marked when specified.		N/A
	Wire binding screws are not permitted to attach conductors larger than 10 AWG (5.3 mm^2).		N/A

U.S.A. AND CANADA NATIONAL DIFFERENCES			
Clause	Requirement + Test	Result - Remark	Verdict
Annex DVH (DVH.4)	Permanently connected equipment is required to have a suitable wiring compartment and wire bending space.		N/A
Annex DVH (DVH 5.5)	Equipment connected to a centralized d.c. power system, and having one pole of the DC mains input terminal connected to the main protective earthing terminal in the equipment, is required to comply with special earthing, wiring, marking and installation instruction requirements.		N/A
Annex DVI (6.7)	Equipment intended for connection to telecommunication network outside plant cable is required to be protected against overvoltage from power line crosses.		N/A
Annex DVJ (10.6.1)	Equipment connected to a telecommunication and cable distribution networks and supplied with an earphone intended to be held against, or in the ear is required to comply with special acoustic pressure requirements.		N/A

----------End of Report----------