Ref. Certif. No.

DK-173678-UL

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

CB TEST CERTIFICATE

Product	Switching Power Supply
Name and address of the applicant	MEAN WELL ENTERPRISES CO., LTD. No 28 Wuquan 3rd Rd, Wugu District New Taipei City 24891 Taiwan
Name and address of the manufacturer	MEAN WELL ENTERPRISES CO., LTD. No 28 Wuquan 3rd Rd, Wugu District New Taipei City 24891 Taiwan
Name and address of the factory Note: *When more than one factory, please report on page 2*	MEAN WELL Enterprises Co., Ltd. No.28, Wuquan 3rd Rd., Wugu District, New Taipei City 24891, Taiwan ☒ Additional Information on page 2
Ratings and principal characteristics	I/P: 100-240 Vac, 50/60Hz, 0.7 A. O/P: See test report for details.
Trademark / Brand (if any)	MEAN WELL
Customer's Testing Facility (CTF) Stage used	CTF Stage 2
Model / Type Ref.	RS-25-x ☒ Additional Information on page 2
Additional information (if necessary may also be reported on page 2)	National Differences: EU Group Differences, AU, CA, CN, JP, KR, NZ, SA, GB, US ☒ Additional Information on page 2
A sample of the product was tested and found to be in conformity with	IEC 62368-1:2018
As shown in the Test Report Ref. No. which forms part of this Certificate	E183223-4791975971-1 Original issued on 2025-11-21

This CB Test Certificate is issued by the National Certification Body

UL Solutions

☐ UL Solutions (US), 333 Pfingsten Rd IL 60062, Northbrook, USA
☒ UL Solutions (Demko), Borupvang 5A DK-2750 Ballerup, DENMARK
☐ UL Solutions (JP), Marunouchi Trust Tower Main Building 6F, 1-8-3 Marunouchi, Chiyoda-ku, Tokyo 100-0005, JAPAN
☐ UL Solutions (CA), 7 Underwriters Road, Toronto, M1R 3B4 Ontario, CANADA

For full legal entity names see www.ul.com/ncbnames

Date: 2025-11-25

Signature:
Thomas Wilson

Ref. Certif. No.

DK-173678-UL

Factory(ies):
SuZhou MEAN WELL Technology Co., Ltd.
No. 77, Jian-min Road, Dong-qiao, Pan-yang Ind. Park, Huang-dai Town, Xiang-cheng District, Suzhou, Jiangsu 215152, China

MEAN WELL (GUANGZHOU) ELECTRONICS CO., LTD
No.11 Jingu South Road, Huadu District, Guangzhou Guangdong 510890,
China

YONGDEN TECHNOLOGY CORPORATION
345 MacArthur HighWay Tabang, Guiguinto, Bulacan 3015,
Philippines

SuZhou MEAN WELL Technology Co., Ltd.
No.269, Changping Rd, Huangdai Town Xiangcheng District, Suzhou, Jiangsu, 215152,
China

MEAN WELL INDIA ELECTRONICS PRIVATE LIMITED
9C, Peenya industrial area, Chokkasandra, 2ND PHASE, PEENYA, Bengaluru (Bangalore) Urban, Karnataka, 560058,
India

Additional Model Detail(s):
RS-25-x, (where x can be 3.3, 5, 12, 15, 24, 48.)

Additionally evaluated to:
EN IEC 62368-1:2020, EN IEC 62368-1:2020/A11:2020

Additional information (if necessary)

☐ UL Solutions (US), 333 Pfingsten Rd IL 60062, Northbrook, USA
☒ UL Solutions (Demko), Borupvang 5A DK-2750 Ballerup, DENMARK
☐ UL Solutions (JP), Marunouchi Trust Tower Main Building 6F, 1-8-3 Marunouchi, Chiyoda-ku, Tokyo 100-0005, JAPAN
☐ UL Solutions (CA), 7 Underwriters Road, Toronto, M1R 3B4 Ontario, CANADA

For full legal entity names see www.ul.com/ncbnames

Date: 2025-11-25

Signature:

Thomas Wilson

Test Report issued under the responsibility of:

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

Report Number..... :	E183223-4791975971-1 Original
Date of issue ..... :	2025-11-21
Total number of pages ..... :	84
Name of Testing Laboratory preparing the Report ..... :	Underwriters Laboratories Taiwan Co., Ltd
Applicant's name..... :	MEAN WELL Enterprises Co., LTD.
Address ..... :	No.28, Wuquan 3rd Rd., Wugu District, New Taipei City 24891, Taiwan
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.1.4
Test Report Form No. ..... :	IEC62368_1E
Test Report Form(s) Originator.... :	UL(US)
Master TRF ..... :	Dated 2022-04-14

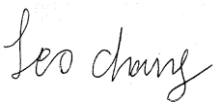
If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.

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 .....:	Switching Power Supply
Trade Mark .....:	MEAN WELL
Manufacturer.....:	Same as Applicant
Model/Type reference .....:	RS-25-x (where x can be 3.3, 5, 12, 15, 24, 48.)
Ratings .....:	I/P: 100-240 Vac, 50/60Hz, 0.7 A. O/P: See General Product Information

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):			
☒	**CB Testing Laboratory:**	Underwriters Laboratories Taiwan Co., Ltd	
Testing location/ address ..... :		No. 260, Daye Rd., Beitou Dist. TW-112 Taipei City Chinese Taipei	
Tested by (name, function, signature) ..... :		Sam Fu / Project Handler	
Approved by (name, function, signature) .. :		Patrick Tsai / Reviewer	
☒	**Testing procedure: CTF Stage 1:**	MEAN WELL Enterprises Co., Ltd.	
Testing location/ address ..... :		No.28, Wuquan 3rd Rd., Wugu District, New Taipei City 24891, Taiwan	
Tested by (name, function, signature) ..... :		Ryan Huang / Project Handler	See the previous CBTR for signature
Approved by (name, function, signature) .. :		David Tsou / Reviewer	See the previous CBTR for signature
☒	**Testing procedure: CTF Stage 2:**	MEAN WELL Enterprises Co., Ltd.	
Testing location/ address ..... :		No.28, Wuquan 3rd Rd., Wugu District, New Taipei City 24891, Taiwan	
Tested by (name, function, signature) ..... :		Leo Chang / Taster	
Witnessed by (name, function, signature) . :		Sam Fu / Project Handler	
Approved by (name, function, signature) .. :		Patrick Tsai / Reviewer	
☐	**Testing procedure: CTF Stage 3:**		
☐	**Testing procedure: CTF Stage 4:**		
Testing location/ address ..... :			
Tested by (name, function, signature) ..... :			
Witnessed by (name, function, signature) . :			

Approved by (name, function, signature) .. :		
Supervised by (name, function, signature) :		

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

- Attachment 1 (23 pages) – EU group differences
- Attachment 2 (29 pages) – National differences
- Attachment 3 (19 pages) – Enclosures

Summary of testing:

See below for summary and applicable clauses.

Testing conditions:
Maximum normal load: +3.3Vdc, 6.0A for Model RS-25-3.3;
Maximum normal load: +5Vdc, 5.0A for Model RS-25-5;
Maximum normal load: +12Vdc, 2.1A for Model RS-25-12;
Maximum normal load: +15Vdc, 1.7A for Model RS-25-15;
Maximum normal load: +24Vdc, 1.1A for Model RS-25-24;
Maximum normal load: +48Vdc, 0.57A for Model RS-25-48.

For Tma = 70°C (Only for model RS-25-12 with 60% Output Load):

Unless special specified, all tests were performed on model RS-25-12.

Testing conditions for (Tma = 70°C, 60 % Normal Load)

Maximum normal load was defined as below:

60% Normal Load: +12Vdc, 1.26A for Model RS-25-12.

Tests performed (name of test and test clause):	**Testing location:**
- Protective Bonding Conductors: Limited Short Circuit Test (5.6.4, 5.6.5, Annex R)	CBTL: Underwriters Laboratories Taiwan Co., Ltd. No. 35, Sec. 2, ChungYang S. Road, Peitou, Taipei City 112, Taiwan

Tests performed (name of test and test clause):	**Testing location:**
- Steady Force Test, 250 N (4.4.3.2, T.5) - Classification of Electrical Energy Sources (5.2) - Temperature Measurement (5.4.1.4, 9.3, B.1.5, B.2.6) - Determination of Working Voltage (5.4.1.8) - Ball Pressure Test (5.4.1.10.3) - Clearance and Creepage Distance Measurement (5.4.2, 5.4.3, T.2) - Separable Thin Sheet Material (5.4.4.6) - Humidity Conditioning (5.4.8) - Electric Strength (5.4.9) - Stored Discharge on Capacitors (5.5.2.2) - Resistance of the Protective Bonding System (5.6.6.2) - Touch Current Measurement – Earthed Accessible Conductive Parts (5.7.5) - Power Source Measurement (6.2.2.2) - Input Current (B.2.5) 1) - Abnormal Operating and Fault Conditions (B.3, B.4) - Test for the permanence of Markings (F.3.10) 1) - Transformer Overload (G.5.3.3)	CTF Stage 1: MEAN WELL Enterprises Co., Ltd. No. 28, Wuquan 3rd Rd., Wugu Dist., New Taipei City, 248 Taiwan
Tests performed (name of test and test clause):	**Testing location:**
- Normal Operating Conditions Temperature Measurement (B.2.6, 5.4.1.4, 6.3, 9.3, B.1.5) - Abnormal Operating and Fault Conditions (B.3, B.4)	CTF Stage 2: MEAN WELL Enterprises Co., Ltd. No. 28, Wuquan 3rd Rd., Wugu Dist., New Taipei City, 248 Taiwan

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

EU group differences, United Kingdom (per customer's request shown separately), Canada, United States, Australia / New Zealand, China, Saudi Arabia, Japan, Korean

☒ **The product fulfils the requirements of EN IEC 62368-1:2020+A11:2020 and BS EN IEC62368-1:2020+A11:2020**

☒ **The product fulfils the requirements of CSA/UL 62368-1:2019**

☒ **The product fulfils the requirements of AS/NZS 62368.1:2022**

☒ **The product fulfils the requirements of GB 4943.1-2022**

☒ **The product fulfils the requirements of SASO-IEC 62368-1:2020**

☒ **The product fulfils the requirements of J62368-1(2023)**

☒ **The product fulfils the requirements of KC 62368-1(2021-08)**

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

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

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

Information on uncertainty of measurement:

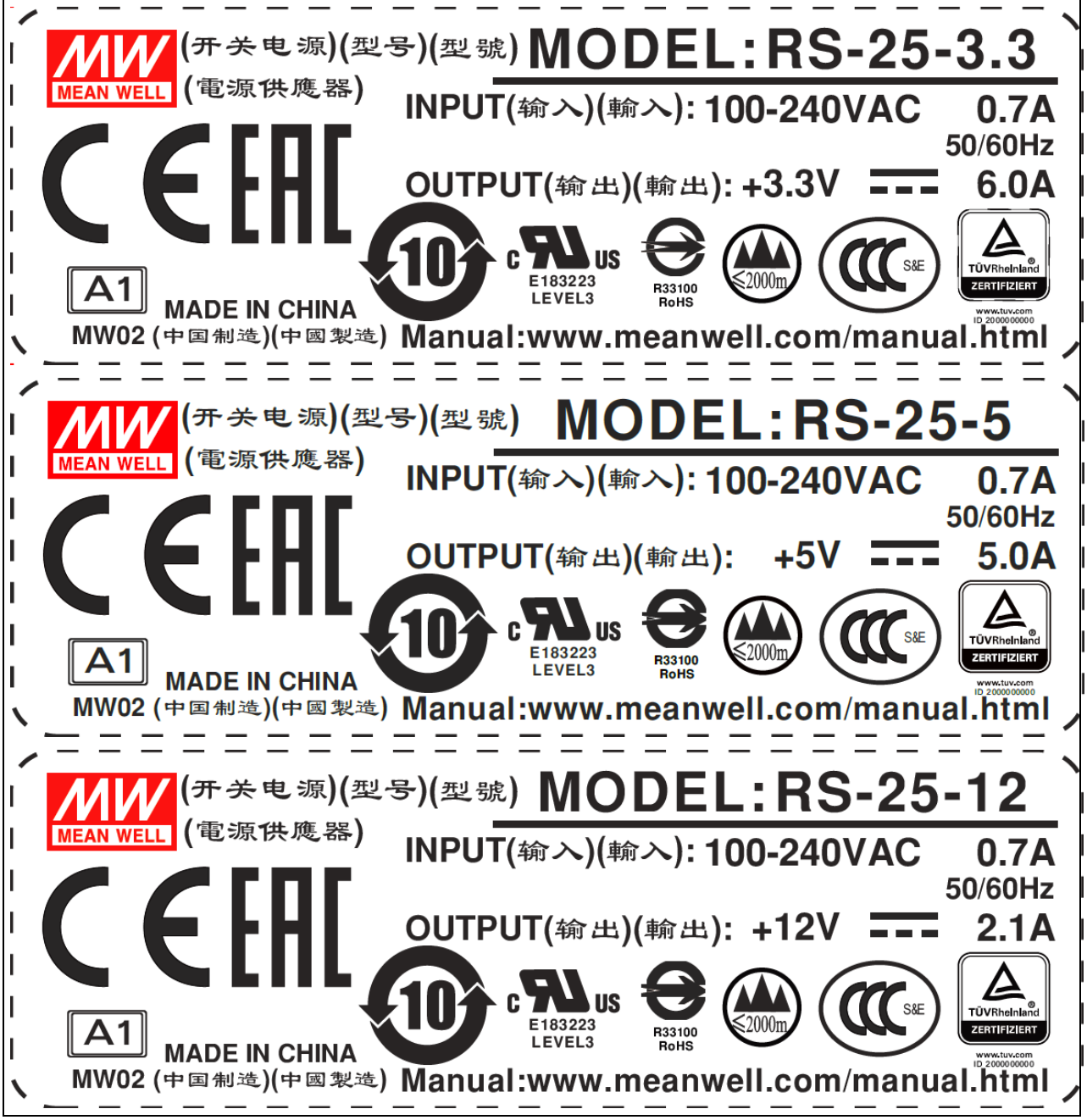
The uncertainties of measurement are calculated by the laboratory based on application of criteria given by OD-5014 for test equipment and application of test methods, decision sheets and operational procedures of IECEE.

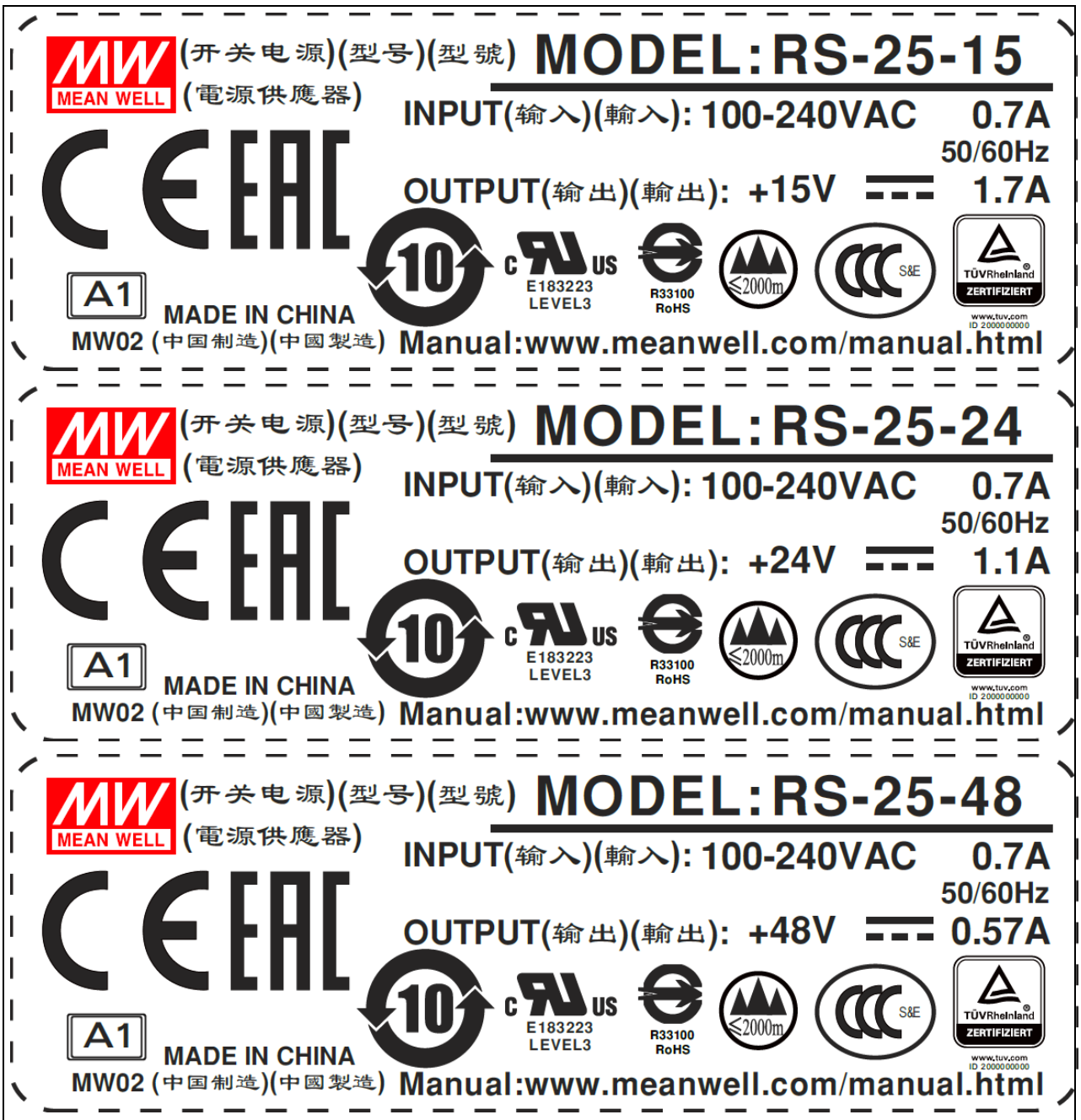
IEC Guide 115 provides guidance on the application of measurement uncertainty principles and applying the decision rule when reporting test results within IECEE scheme, noting that the reporting of the measurement uncertainty for measurements is not necessary unless required by the test standard or customer.

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

Copy of marking plate:

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





Note: The above markings are the minimum requirements required by the safety lab. For the final production samples, the additional markings which do not give rise to misunderstanding may be added.

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: Determined in the end product
Considered current rating of protective device.....:	☒ 16 or 20 A (for US) or 13A (for UK)(for building); 2A for Model RS-15-x (for equipment) 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; 70°C (Only for model RS-25-12 with 60% Output Load) ☐ Outdoor: minimum °C
IP protection class .....:	☒ IPX0 ☐ IP___
Power systems .....:	☒ TN ☐ TT ☐ IT - V_{L-L} ☐ 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) .....:	0.2 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 .....:	2018-10-24, 2025-09-19
Date (s) of performance of tests .....:	2018-11-08, 2025-09-25 to 2025-11-20
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.**	
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) ..... :	1) MEAN WELL Enterprises Co., Ltd. No.28, Wuquan 3rd Rd., Wugu District, New Taipei City 24891, Taiwan 2) SuZhou MEAN WELL Technology Co., Ltd. No. 77, Jian-min Road, Dong-qiao, Pan-yang Ind. Park, Huang-dai Town, Xiang-cheng District, Suzhou, Jiangsu 215152, China. 3) MEAN WELL (GUANGZHOU) ELECTRONICS CO., LTD No.11 Jingu South Road, Huadu District, Guangzhou Guangdong 510890, China 4) YONGDEN TECHNOLOGY CORPORATION 345 MacArthur HighWay Tabang, Guiguinto, Bulacan 3015, Philippines 5) SuZhou MEAN WELL Technology Co., Ltd. No.269, Changping Rd, Huangdai Town Xiangcheng District, Suzhou, Jiangsu, 215152, China 6) MEAN WELL INDIA ELECTRONICS PRIVATE LIMITED 9C, Peenya industrial area, Chokkasandra, 2ND PHASE, PEENYA, Bengaluru (Bangalore) Urban, Karnataka, 560058, India

General product information and other remarks:

Product Description –

The equipment under test (EUT) is a switching mode power supply intended for building-in as a component/assembly used in audio/video, information and communication technology equipment.

Reinforced insulation is provided between AC input and output circuit. Basic insulation is provided between AC input and metal chassis.

Report Summary:

This report is a reissue of CBTR Ref. No. E183223-4788751092-1 original, issued on 2019-05-28, CB Test Certificate Ref. No. DK-84576-UL, issued on 2019-06-13; based on previously conducted testing and the review of product construction, only limited tests were deemed necessary.

This test report has been reissued to include the following changes/additions:
- Add Tma = 70°C (Only for model RS-25-12 with 60% Output Load).
- Add an alternate Fuse source (Ever Island, Model 2000, Rated T2A, 250V).
- Update National Differences.
- Upgrade Standard to IEC 62368-1:2018.

Only limited tests were deemed to consider necessary based on the previous tests. Additional testing was

conducted as reported under Summary of testing.

Model Differences:

All models are similar to each other except for the model designation, output wattage, maximum ambient temperature (Tma), output ratings, transformer (T1) source and the ratings and type number of some primary and secondary components.

Electric output rating:

Model	Input rating	Output rating	Xfmr P/N
RS-25-3.3	100-240Vac, 50/60Hz, 0.7A	+3.3Vdc, 6.0A (19.8W)	TF-991
RS-25-5		+5Vdc, 5.0A (25W)	TF-992
RS-25-12		+12Vdc, 2.1A (25.2W)	TF-993
RS-25-15		+15Vdc, 1.7A (25.5W)	TF-994
RS-25-24		+24Vdc, 1.1A (26.4W)	TF-995
RS-25-48		+48Vdc, 0.57A (27.36W)	TF-996

Definition of variable(s):

Viriable:	Range of variable:	Content:
x	3.3, 5, 12, 15, 24 or 48	To denote the different output voltage. "3.3" means 3.3 Vdc; "48" means 48 Vdc.

Additional application considerations – (Considerations used to test a component or sub-assembly) –

Enclosure of inlet side has been evaluated as electrical enclosure (for ES safeguard), fire enclosure (for PS safeguard) and safeguard for thermal burn injury (for TS safeguard) and mechanical enclosure (for MS safeguard), all other side enclosure shall be evaluated in end product application.

The following secondary output circuits are ES1: all outputs.

The power supply terminals and/or connectors are: Suitable for factory wiring only

The maximum investigated branch circuit rating is: 20 A

The following magnetic devices (e.g. transformers or inductor) are provided with an OBJY2 insulation system with the indicated rating greater than Class A (105°C): T1 (Class B)

The equipment is suitable for direct connection to: AC mains supply

The means of connection to the mains supply is: to be determined in the end product

The equipment disconnect devices is considered: to be determined in the end product

The following secondary output circuits are supplied by a Limited Power Source: No LPS.

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: The circuit connected to AC mains	Assumed to be accessible by ordinary person in end product	N/A	N/A	Enclosure See 5.4.2, 5.4.3, 5.5.3 and 5.5.4
ES3: X capacitor connected between L and N	Assumed to be accessible by ordinary person in end product	N/A	N/A	See 5.5.2.2
ES1: Output circuit	Assumed to be accessible by ordinary person in end product	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 circuits	PCB	See 6.3	V-0	N/A
PS3 circuits	Plastic materials not part of PS3 circuit	See 6.3	V-2 or better	N/A
PS3 circuits	The other components/materials	See 6.3	See 6.4.5, 6.4.6	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	--	--	--	--
8	Mechanically-caused injury			
Class and Energy Source (e.g. MS3: Plastic fan blades)	Body Part (e.g. Ordinary)	Safeguards		
		B	S	R
N/A	--	--	--	--
9	Thermal burn			
Class and Energy Source (e.g. TS1: Keyboard caps)	Body Part (e.g., Ordinary)	Safeguards		
		B	S	R
N/A	--	--	--	--
10	Radiation			
Class and Energy Source (e.g. RS1: PMP sound output)	Body Part (e.g., Ordinary)	Safeguards		
		B	S	R
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 **See "OVERVIEW OF ENERGY SOURCES AND SAFEGUARDS"**

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		N/A
4.1.8	Liquids and liquid filled components (LFC)		N/A
4.1.15	Markings and instructions	(see Annex F)	P
4.4.3	Safeguard robustness		P
4.4.3.1	General		P
4.4.3.2	Steady force tests	(see Annex T.5)	P
4.4.3.3	Drop tests		N/A
4.4.3.4	Impact tests	(see Annex T.6)	P
4.4.3.5	Internal accessible safeguard tests		P
4.4.3.6	Glass impact tests		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 Annex 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		N/A
4.5	**Explosion**		P
4.5.1	General		P
4.5.2	No explosion during normal/abnormal operating condition		P
	No harm by explosion during single fault conditions		P
4.6	**Fixing of conductors**		P
	Fix conductors not to defeat a safeguard		P
	Compliance is checked by test ..... :	Checked by inspection	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

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
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
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**		P
4.10	**Component requirements**		P
4.10.1	Disconnect Device	(see Annex L)	P
4.10.2	Switches and relays		N/A
5	**ELECTRICALLY-CAUSED INJURY**		P
5.2	**Classification and limits of electrical energy sources**		P
5.2.2	ES1, ES2 and ES3 limits		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 5.5.2.2)	P
5.2.2.4	Single pulse limits .....:		N/A
5.2.2.5	Limits for repetitive pulses .....:		N/A
5.2.2.6	Ringing signals		N/A
5.2.2.7	Audio signals		N/A
5.3	**Protection against electrical energy sources**		P
5.3.1	General Requirements for accessible parts to ordinary, instructed and skilled persons	EUT is for building-in, the overall compliance shall be investigated in end products.	P

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.3.1 a)	Accessible ES1/ES2 derived from ES2/ES3 circuits	Evaluated for the output circuits which is power delivered from a circuit located after transformer (T1) and details of test data see Table 5.2.	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		N/A
	Test with test probe from Annex V		—
5.3.2.2 a)	Air gap – electric strength test potential (V) .....:		N/A
5.3.2.2 b)	Air gap – distance (mm) .....:		N/A
5.3.2.3	Compliance		N/A
5.3.2.4	Terminals for connecting stripped wire		N/A
5.4	**Insulation materials and requirements**		P
5.4.1.2	Properties of insulating material		P
5.4.1.3	Material is non-hygroscopic	(see sub-clause 5.4.8)	P
5.4.1.4	Maximum operating temperature for insulating materials.....:	(see appended table 5.4.1.4, 9.3, B.1.5, B.2.6)	P
5.4.1.5	Pollution degrees .....:	2	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		N/A
5.4.1.10	Thermoplastic parts on which conductive metallic parts are directly mounted	Phenolic material used in transformers without further test, other material see appended table.	P
5.4.1.10.2	Vicat test.....:		N/A
5.4.1.10.3	Ball pressure test .....:	(See appended table 5.4.1.10.3)	P
5.4.2	Clearances		P
5.4.2.1	General requirements	(See appended table 5.4.2.2)	P

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Clause	Requirement + Test	Result - Remark	Verdict
	Clearances in circuits connected to AC Mains, Alternative method		N/A
5.4.2.2	Procedure 1 for determining clearance		P
	Temporary overvoltage .....:	2000 Vpeak	—
5.4.2.3	Procedure 2 for determining clearance		P
5.4.2.3.2.2	a.c. mains transient voltage.....:	2500 Vpeak	—
5.4.2.3.2.3	d.c. mains transient voltage .....:	N/A	—
5.4.2.3.2.4	External circuit transient voltage.....:	N/A	—
5.4.2.3.2.5	Transient voltage determined by measurement .....:	N/A	—
5.4.2.4	Determining the adequacy of a clearance using an electric strength test .....:		N/A
5.4.2.5	Multiplication factors for clearances and test voltages .....:		N/A
5.4.2.6	Clearance measurement .....:	(see appended table 5.4.2, 5.4.3)	P
5.4.3	Creepage distances		P
5.4.3.1	General		P
5.4.3.3	Material group .....:	IIIa or IIIb	—
5.4.3.4	Creepage distances measurement .....:	(see appended table 5.4.2, 5.4.3)	P
5.4.4	Solid insulation		P
5.4.4.1	General requirements		P
5.4.4.2	Minimum distance through insulation .....:	(see appended table 5.4.4.2)	P
5.4.4.3	Insulating compound forming solid insulation	Certified optocouplers used.	P
5.4.4.4	Solid insulation in semiconductor devices		P
5.4.4.5	Insulating compound forming cemented joints	Certified optocouplers used.	P
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 tables 5.4.4.2 and 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 .....:		N/A
5.4.4.6.5	Mandrel test		N/A
5.4.4.7	Solid insulation in wound components		P

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Clause	Requirement + Test	Result - Remark	Verdict
5.4.4.9	Solid insulation at frequencies >30 kHz, E_P, K_R, d, V_{PW} (V) ..... :	Alternative method used.	P
	Alternative by electric strength test, tested voltage (V), K_R ..... :	(see appended table 5.4.4.9 and 5.4.9)	P
5.4.5	Antenna terminal insulation		N/A
5.4.5.1	General		N/A
5.4.5.2	Voltage surge test		N/A
5.4.5.3	Insulation resistance (MΩ)..... :		N/A
	Electric strength test .....:		N/A
5.4.6	Insulation of internal wire as part of supplementary safeguard		N/A
5.4.7	Tests for semiconductor components and for cemented joints	Certified optocouplers used.	N/A
5.4.8	Humidity conditioning		P
	Relative humidity (%), temperature (°C), duration (h) ..... :	95%, 40°C, 120h	—
5.4.9	Electric strength test	Electric strength tests were conducted after 5.4.8 humidity conditioning test for each manufacturer source in table 4.1.2. The transformers also tested with 120 hours (see Table 4.1.2 for the mfr. and type)	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 ..... :		N/A
5.4.10.2.3	Steady-state test..... :		N/A
5.4.10.3	Verification for insulation breakdown for impulse test ..... :		N/A
5.4.11	Separation between external circuits and earth		N/A
5.4.11.1	Exceptions to separation between external circuits and earth		N/A
5.4.11.2	Requirements		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	SPDs bridge separation between external circuit and earth		N/A
	Rated operating voltage U_{op} (V) ..... :		—
	Nominal voltage U_{peak} (V) ..... :		—
	Max increase due to variation ΔU_{sp} ..... :		—
	Max increase due to ageing ΔU_{sa} ..... :		—
5.4.11.3	Test method and compliance ..... :		N/A
5.4.12	Insulating liquid		N/A
5.4.12.1	General requirements		N/A
5.4.12.2	Electric strength of an insulating liquid ..... :		N/A
5.4.12.3	Compatibility of an insulating liquid ..... :		N/A
5.4.12.4	Container for insulating liquid ..... :		N/A
5.5	**Components as safeguards**		P
5.5.1	General		P
5.5.2	Capacitors and RC units		P
5.5.2.1	General requirement		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	Approved bleeding resistors used.	P
5.5.7	SPDs		N/A
5.5.8	Insulation between the mains and an external circuit consisting of a coaxial cable ..... :		N/A
5.5.9	Safeguards for socket-outlets in outdoor equipment		NA
	RCD rated residual operating current (mA) ..... :		—
5.6	**Protective conductor**		P
5.6.2	Requirement for protective conductors	EUT is for building-in, the overall compliance shall be investigated in end products.	P
5.6.2.1	General requirements		P
5.6.2.2	Colour of insulation		N/A
5.6.3	Requirement for protective earthing conductors		N/A
	Protective earthing conductor size (mm^2) ..... :		—

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Clause	Requirement + Test	Result - Remark	Verdict
	Protective earthing conductor serving as a reinforced safeguard		N/A
	Protective earthing conductor serving as a double safeguard		N/A
5.6.4	Requirements for protective bonding conductors		P
5.6.4.1	Protective bonding conductors		P
	Protective bonding conductor size (mm^2). ..... :	Complied with table 31, see Enclosure Diagram for conductor size.	—
5.6.4.2	Protective current rating (A)..... :	20	P
5.6.5	Terminals for protective conductors		P
5.6.5.1	Terminal size for connecting protective earthing conductors (mm)..... :		P
	Terminal size for connecting protective bonding conductors (mm) .....:	For input terminal, not smaller than the terminal sizes supplying power to the component. For bonding screw, comply with limited short-circuit test of Annex R (Measured thread diameter: 2.8 mm)	P
5.6.5.2	Corrosion		P
5.6.6	Resistance of the protective bonding system		P
5.6.6.1	Requirements		P
5.6.6.2	Test Method..... :	200% of the protective current rating was applied for 2 minutes.	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	Instrument indicating peak voltage used.	P
5.7.2.2	Measurement of voltage		P
5.7.3	Equipment set-up, supply connections and earth connections		P

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Clause	Requirement + Test	Result - Remark	Verdict
5.7.4	Unearthed accessible parts ..... :	(see appended table 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
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.....:		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.....:	All circuits are considered PS3 Output circuits are considered PS2.	P
6.2.3	Classification of potential ignition sources	All conductors and devices are considered as PIS directly	P
6.2.3.1	Arcing PIS .....:	See 6.2.3	N/A
6.2.3.2	Resistive PIS .....:	See 6.2.3	N/A
6.3	**Safeguards against fire under normal operating and abnormal operating conditions**		P
6.3.1	No ignition and attainable temperature value less than 90 % defined by ISO 871 or less than 300 °C for unknown materials ..... :	(see appended table 5.4.1.4, 9.3, B.1.5, B.2.6 and appended table B.3, B.4)	P
	Combustible materials outside fire enclosure .....:	External plastic part of the handle and latch less than 4g.	P
6.4	**Safeguards against fire under single fault conditions**		P
6.4.1	Safeguard method	Control of fire spread.	P

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Clause	Requirement + Test	Result - Remark	Verdict
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 ..... :		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	Components are: - mounted on PWB rated V-1 or better, or - made of V-2/VTM-2 or better. (see appended table 4.1.2 and Annex G)	P
6.4.6	Control of fire spread in PS3 circuits		P
6.4.7	Separation of combustible materials from a PIS		N/A
6.4.7.2	Separation by distance		N/A
6.4.7.3	Separation by a fire barrier		N/A
6.4.8	Fire enclosures and fire barriers	EUT is for building-in, the overall compliance of fire enclosure shall be investigated in end products.	N/A
6.4.8.2	Fire enclosure and fire barrier material properties		N/A
6.4.8.2.1	Requirements for a fire barrier		N/A
6.4.8.2.2	Requirements for a fire enclosure		N/A
6.4.8.3	Constructional requirements for a fire enclosure and a fire barrier		N/A
6.4.8.3.1	Fire enclosure and fire barrier openings		N/A
6.4.8.3.2	Fire barrier dimensions		N/A
6.4.8.3.3	Top openings and properties		N/A
	Openings dimensions (mm)..... :	Shall be evaluated in the end use installation.	N/A
6.4.8.3.4	Bottom openings and properties		N/A
	Openings dimensions (mm)..... :		P
	Flammability tests for the bottom of a fire enclosure		N/A
	Instructional Safeguard.....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
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**		N/A
6.5.1	General requirements	No wires are used.	N/A
6.5.2	Requirements for interconnection to building wiring ..... :		N/A
6.5.3	Internal wiring size (mm^2) for socket-outlets..... :		N/A
6.6	**Safeguards against fire due to the connection to additional equipment**		N/A
7	**INJURY CAUSED BY HAZARDOUS SUBSTANCES**		N/A
7.2	**Reduction of exposure to hazardous substances**		N/A
7.3	**Ozone exposure**		N/A
7.4	**Use of personal safeguards or personal protective equipment (PPE)**		N/A
	Personal safeguards and instructions ..... :		—
7.5	**Use of instructional safeguards and instructions**		N/A
	Instructional safeguard (ISO 7010)..... :		—
7.6	**Batteries and their protection circuits**		N/A
8	**MECHANICALLY-CAUSED INJURY**		N/A
8.2	**Mechanical energy source classifications**		N/A
8.3	**Safeguards against mechanical energy sources**		N/A
8.4	**Safeguards against parts with sharp edges and corners**		N/A
8.4.1	Safeguards		N/A
	Instructional Safeguard.....:		N/A
8.4.2	Sharp edges or corners		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

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Clause	Requirement + Test	Result - Remark	Verdict
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
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

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Clause	Requirement + Test	Result - Remark	Verdict
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
	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

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Clause	Requirement + Test	Result - Remark	Verdict
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**		N/A
9.3.1	Touch temperatures of accessible parts .....:	(see appended table 5.4.1.4, 9.3, B.1.5, B.2.6)	N/A
9.3.2	Test method and compliance	EUT is for building-in, the overall compliance shall be investigated in end products.	N/A
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 .....:		N/A
10	**RADIATION**		P
10.2	**Radiation energy source classification**		P
10.2.1	General classification		P
	Lasers ..... :		—
	Lamps and lamp systems ..... :	LED indicator is considered as RS1.	—
	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 .....:		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)..... :		—
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

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Clause	Requirement + Test	Result - Remark	Verdict
10.6.6.3	Cordless listening devices		N/A
	Max. acoustic output $L_{Aeq,T}$, dB(A) .....:		N/A
B	**NORMAL OPERATING CONDITION TESTS, ABNORMAL OPERATING CONDITION TESTS AND SINGLE FAULT CONDITION TESTS**		P
B.1	**General**		P
B.1.5	Temperature measurement conditions		P
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 ..... :		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	(see appended table B.3, B.4)	P
	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	(see appended table B.3, B.4)	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, B.4)	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	(see appended table B.3, B.4)	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	(see appended table B.3, B.4)	P

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Clause	Requirement + Test	Result - Remark	Verdict
B.4.6	Short circuit or disconnection of passive components	(see appended table B.3, B.4)	P
B.4.7	Continuous operation of components		N/A
B.4.8	Compliance during and after single fault conditions ..... :	(see appended table B.3, B.4)	P
B.4.9	Battery charging and discharging under single fault conditions		N/A
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**		N/A
D.1	**Impulse test generators**		N/A
D.2	**Antenna interface test generator**		N/A
D.3	**Electronic pulse generator**		N/A
E	**TEST CONDITIONS FOR EQUIPMENT CONTAINING AUDIO AMPLIFIERS**		N/A
E.1	**Electrical energy source classification for audio signals**		N/A
	Maximum non-clipped output power (W)..... :		—
	Rated load impedance (Ω) ..... :		—
	Open-circuit output voltage (V)..... :		—
	Instructional safeguard ..... :		—
E.2	**Audio amplifier normal operating conditions**		N/A
	Audio signal source type ..... :		—
	Audio output power (W)..... :		—
	Audio output voltage (V) ..... :		—
	Rated load impedance (Ω) ..... :		—
	Requirements for temperature measurement		N/A
E.3	Audio amplifier abnormal operating conditions		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
F	**EQUIPMENT MARKINGS, INSTRUCTIONS, AND INSTRUCTIONAL SAFEGUARDS**		P
F.1	**General**		P
	Language ..... :	Only English was reviewed	—
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		P
F.3.2	Equipment identification markings		P
F.3.2.1	Manufacturer identification ..... :	See copy of marking plate	P
F.3.2.2	Model identification ..... :	See copy of marking plate	P
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..... :	See copy of marking plate	P
F.3.3.4	Rated voltage..... :	See copy of marking plate	P
F.3.3.5	Rated frequency ..... :	See copy of marking plate	P
F.3.3.6	Rated current or rated power..... :	See copy of marking plate	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		P
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 ..... :	EUT is for build-in; however, fuse marking on PCB adjacent to fuse: FS1 T2AL/250VAC	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		P
F.3.6	Equipment markings related to equipment classification		P
F.3.6.1	Class I equipment		P

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Clause	Requirement + Test	Result - Remark	Verdict
F.3.6.1.1	Protective earthing conductor terminal ..... :	EUT is for building-in, the overall compliance shall be investigated in end products	N/A
F.3.6.1.2	Protective bonding conductor terminals ..... :	Not permanently connected equipment.	N/A
F.3.6.2	Equipment class marking ..... :	Class I	N/A
F.3.6.3	Functional earthing terminal marking ..... :		N/A
F.3.7	Equipment IP rating marking ..... :		N/A
F.3.8	External power supply output marking ..... :		N/A
F.3.9	Durability, legibility and permanence of marking		P
F.3.10	Test for permanence of markings	Approved label used.	P
F.4	**Instructions**		N/A
	a) Information prior to installation and initial use..... :	EUT is for building in and shall be evaluated in final system.	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
	g) Protective earthing used as a safeguard ..... :	EUT is for building-in.	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
	k) 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

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Clause	Requirement + Test	Result - Remark	Verdict
G.2	**Relays**		P
G.2.1	Requirements		P
G.2.2	Overload test		P
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 ..... :		N/A
G.4	**Connectors**		N/A
G.4.1	Spacings	EUT is for building-in, the overall compliance shall be investigated in end products.	N/A
G.4.2	Mains connector configuration..... :		N/A
G.4.3	Plug is shaped that insertion into mains socket-outlets or appliance coupler is unlikely		N/A
G.5	**Wound components**		P
G.5.1	Wire insulation in wound components	(see Annex J)	P
G.5.1.2	Protection against mechanical stress	The tube and insulation tape is provided for secondary winding of transformer to protect against mechanical stress.	P

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Clause	Requirement + Test	Result - Remark	Verdict
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..... :	See G.5.3.2 and G.5.3.3.	P
	Position ..... :	(see appended table 4.1.2)	P
	Method of protection ..... :	Over current protection by circuit design.	P
G.5.3.2	Insulation		P
	Protection from displacement of windings..... :	Tube and tapes used.	—
G.5.3.3	Transformer overload tests	(see appended table B.3, B.4)	P
G.5.3.3.1	Test conditions		P
G.5.3.3.2	Winding temperatures		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
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) ..... :		—

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Clause	Requirement + Test	Result - Remark	Verdict
G.5.4.5	Running overload test for DC motors		N/A
G.5.4.5.2	Tested in the unit		N/A
G.5.4.5.3	Alternative method		N/A
G.5.4.6	Locked-rotor overload test for DC motors		N/A
G.5.4.6.2	Tested in the unit		N/A
	Maximum Temperature ..... :		N/A
G.5.4.6.3	Alternative method		N/A
G.5.4.7	Motors with capacitors		N/A
G.5.4.8	Three-phase motors		N/A
G.5.4.9	Series motors		N/A
	Operating voltage ..... :		—
G.6	**Wire Insulation**		N/A
G.6.1	General		N/A
G.6.2	Enamelled winding wire insulation	Solvent-based enamel winding is not considered basic insulation.	N/A
G.7	**Mains supply cords**		N/A
G.7.1	General requirements	No power supply cord provided.	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
	Overall diameter or minor overall dimension, *D* (mm) ..... :		—
	Radius of curvature after test (mm) ..... :		—

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Clause	Requirement + Test	Result - Remark	Verdict
G.7.6	Supply wiring space		N/A
G.7.6.1	General requirements		N/A
G.7.6.2	Stranded wire		N/A
G.7.6.2.1	Requirements		N/A
G.7.6.2.2	Test with 8 mm strand		N/A
G.8	**Varistors**		N/A
G.8.1	General requirements		N/A
G.8.2	Safeguards against fire		N/A
G.8.2.1	General		N/A
G.8.2.2	Varistor overload test		N/A
G.8.2.3	Temporary overvoltage test		N/A
G.9	**Integrated circuit (IC) current limiters**		N/A
G.9.1	Requirements		N/A
	IC limiter output current (max. 5A)..... :		—
	Manufacturers' defined drift ..... :		—
G.9.2	Test Program		N/A
G.9.3	Compliance		N/A
G.10	**Resistors**		N/A
G.10.1	General		N/A
G.10.2	Conditioning		N/A
G.10.3	Resistor test		N/A
G.10.4	Voltage surge test		N/A
G.10.5	Impulse test		N/A
G.10.6	Overload test		N/A
G.11	**Capacitors and RC units**		P
G.11.1	General requirements		P
G.11.2	Conditioning of capacitors and RC units		P
G.11.3	Rules for selecting capacitors		P
G.12	**Optocouplers**		P
	Optocouplers comply with IEC 60747-5-5 with specifics	Certified optocoupler used. See 5.5.4	P
	Type test voltage $V_{ini,a}$..... :	Minimum 4000 Vdc or Vpeak	—
	Routine test voltage, $V_{ini,b}$ ..... :	Minimum 4000 Vdc or Vpeak	—
G.13	**Printed boards**		P

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Clause	Requirement + Test	Result - Remark	Verdict
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 ..... :		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)**		N/A
G.16.1	Condition for fault tested is not required		N/A
	ICX with associated circuitry tested in equipment		N/A
	ICX tested separately		N/A
G.16.2	Tests		N/A
	Smallest capacitance and smallest resistance specified by ICX manufacturer for impulse test ..... :		—
	Mains voltage that impulses to be superimposed on ..... :		—
	Largest capacitance and smallest resistance for ICX tested by itself for 10000 cycles test ..... :		—
G.16.3	Capacitor discharge test..... :		N/A

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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 ..... :	Certified triple insulation wire used.	—
	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		—
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

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Clause	Requirement + Test	Result - Remark	Verdict
K.7.1	Separation distance for contact gaps & interlock circuit elements		N/A
	In circuit connected to mains, separation distance for contact gaps (mm)..... :		N/A
	In circuit isolated from mains, separation distance for contact gaps (mm)..... :		N/A
	Electric strength test before and after the test of K.7.2 ..... :		N/A
K.7.2	Overload test, Current (A) ..... :		N/A
K.7.3	Endurance test		N/A
K.7.4	Electric strength test		N/A
L	**DISCONNECT DEVICES**		N/A
L.1	**General requirements**	EUT is for building-in, the overall compliance shall be investigated in end products	N/A
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**		N/A
L.8	**Multiple power sources**		N/A
	Instructional safeguard ..... :		N/A
M	**EQUIPMENT CONTAINING BATTERIES AND THEIR PROTECTION CIRCUITS**		N/A
M.1	**General requirements**		N/A
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

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Clause	Requirement + Test	Result - Remark	Verdict
M.3.3	Compliance		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 ..... :		N/A
M.4.3	Fire enclosure ..... :		N/A
M.4.4	Drop test of equipment containing a secondary lithium battery		N/A
M.4.4.2	Preparation and procedure for the drop test		N/A
M.4.4.3	Drop, Voltage on reference and dropped batteries (V); voltage difference during 24 h period (%): ..... :		N/A
M.4.4.4	Check of the charge/discharge function		N/A
M.4.4.5	Charge / discharge cycle test		N/A
M.4.4.6	Compliance		N/A
M.5	**Risk of burn due to short-circuit during carrying**		N/A
M.5.1	Requirement		N/A
M.5.2	Test method and compliance		N/A
M.6	**Safeguards against short-circuits**		N/A
M.6.1	External and internal faults		N/A
M.6.2	Compliance		N/A
M.7	**Risk of explosion from lead acid and NiCd batteries**		N/A
M.7.1	Ventilation preventing explosive gas concentration		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

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Clause	Requirement + Test	Result - Remark	Verdict
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
M.10	Instructions to prevent reasonably foreseeable misuse		N/A
	Instructional safeguard ..... :		N/A
N	**ELECTROCHEMICAL POTENTIALS**		P
	Material(s) used ..... :	Metal alloy utilized and electrochemical potention is less than 0.6V.	—
O	**MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES**		P
	Value of *X* (mm)..... :	1.0	—
P	**SAFEGUARDS AGAINST CONDUCTIVE OBJECTS**		N/A
P.1	**General**	EUT is for building-in, the overall compliance shall be investigated in end products.	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

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Clause	Requirement + Test	Result - Remark	Verdict
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**		N/A
Q.1	**Limited power sources**		N/A
Q.1.1	Requirements		N/A
	a) Inherently limited output		N/A
	b) Impedance limited output		N/A
	c) Regulating network limited output		N/A
	d) Overcurrent protective device limited output		N/A
	e) IC current limiter complying with G.9		N/A
Q.1.2	Test method and compliance ..... :		N/A
	Current rating of overcurrent protective device (A) ..... :		N/A
Q.2	**Test for external circuits – paired conductor cable**		N/A
	Maximum output current (A) ..... :		N/A
	Current limiting method ..... :		—
R	**LIMITED SHORT CIRCUIT TEST**		P
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..... :		—

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Clause	Requirement + Test	Result - Remark	Verdict
	Wall thickness (mm) ..... :		—
	Conditioning (°C) ..... :		—
	Test flame according to IEC 60695-11-5 with conditions as set out		N/A
	- Material not consumed completely		N/A
	- Material extinguishes within 30s		N/A
	- No burning of layer or wrapping tissue		N/A
S.2	**Flammability test for fire enclosure and fire barrier integrity**		N/A
	Samples, material ..... :		—
	Wall thickness (mm) ..... :		—
	Conditioning (°C) ..... :		—
S.3	**Flammability test for the bottom of a fire enclosure**		N/A
S.3.1	Mounting of samples		N/A
S.3.2	Test method and compliance		N/A
	Mounting of samples ..... :		—
	Wall thickness (mm) ..... :		—
S.4	**Flammability classification of materials**		N/A
S.5	**Flammability test for fire enclosures and fire barrier materials of equipment where the 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 5.4.2.2, 5.4.2.4 and 5.4.3)	P
T.3	**Steady force test, 30 N ..... :**	Equipment is for building-in. Compliance has to be evaluated when installed into the final system.	N/A
T.4	**Steady force test, 100 N ..... :**		N/A
T.5	**Steady force test, 250 N ..... :**		N/A
T.6	**Enclosure impact test**		N/A
	Fall test		N/A
	Swing test		N/A
T.7	**Drop test ..... :**		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
T.8	**Stress relief test..... :**		N/A
T.9	**Glass Impact Test .....:**		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**		N/A
V.1	**Accessible parts of equipment**		N/A
V.1.1	General	EUT is for building-in, the overall compliance shall be investigated in end products.	N/A
V.1.2	Surfaces and openings tested with jointed test probes		N/A
V.1.3	Openings tested with straight unjointed test probes		N/A
V.1.4	Plugs, jacks, connectors tested with blunt probe		N/A
V.1.5	Slot openings tested with wedge probe		N/A
V.1.6	Terminals tested with rigid test wire		N/A
V.2	**Accessible part criterion**		N/A
X	**ALTERNATIVE METHOD FOR DETERMINING CLEARANCES FOR INSULATION IN CIRCUITS CONNECTED TO AN AC MAINS NOT EXCEEDING 420 V PEAK (300 V RMS)**		N/A
	Clearance .....:		N/A
Y	**CONSTRUCTION REQUIREMENTS FOR OUTDOOR ENCLOSURES**		N/A
Y.1	**General**		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

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Clause	Requirement + Test	Result - Remark	Verdict
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		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 ..... :		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 For Model RS-25-3.3	Output connector "+V" to "-V"	Normal	3.33Vdc	--	SS	--	1
264Vac For Model RS-25-3.3	Output connector "+V" to "-V"	Abnormal (when unit shutdown)	0Vdc	--	SS	--	1
264Vac For Model RS-25-3.3	Output connector "+V" to "-V"	Single fault – SC/OC (when unit shutdown)	3.33Vdc	--	SS	--	1
264Vac For Model RS-25-3.3	Output connector "+V" to "-V"	Single fault – SC/OC (when Fuse open)	0Vdc	--	SS	--	1
264Vac For Model RS-25-5	Output connector "+V" to "-V"	Normal	5.05Vdc	--	SS	--	1
264Vac For Model RS-25-5	Output connector "+V" to "-V"	Abnormal (when unit shutdown)	0Vdc	--	SS	--	1
264Vac For Model RS-25-5	Output connector "+V" to "-V"	Single fault – SC/OC (when unit shutdown)	5.05Vdc	--	SS	--	1
264Vac For Model RS-25-5	Output connector "+V" to "-V"	Single fault – SC/OC (when Fuse open)	0Vdc	--	SS	--	1
264Vac For Model RS-25-48	Output connector "+V" to "-V"	Normal	48.1Vdc	--	SS	--	1
264Vac For Model RS-25-48	Output connector "+V" to "-V"	Abnormal (when unit shutdown)	0Vdc	--	SS	--	1
264Vac For Model RS-25-48	Output connector "+V" to "-V"	Single fault – SC/OC (when unit shutdown)	48.1Vdc	--	SS	--	1

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Clause	Requirement + Test	Result - Remark	Verdict

264Vac For Model RS-25-48	Output connector “+V” to “-V“	Single fault – SC/OC (when Fuse open)	0Vdc	--	SS	--	1
264Vac For Model RS-25-48	Output connector “+V” to “-V“	Single fault – SC/OC (D55 short)	0Vdc	--	SS	--	1
264Vac For Model RS-25-48	Output connector (“+V” / “-V” to Earth“)	Normal	--	0.021mApk	SS	--	1
264Vac For Model RS-25-48	Output connector (“+V” / “-V” to Earth“)	Abnormal (when unit shutdown)	--	0.021mApk	SS	--	1
264Vac For Model RS-25-48	Output connector (“+V” / “-V” to Earth“)	Single fault – SC/OC (when unit shutdown))	--	0.021mApk	SS	--	1
264Vac For Model RS-25-48	Output connector (“+V” / “-V” to Earth“)	Single fault – SC/OC (Result - Fuse open)	--	0.018mApk	SS	--	1
264Vac	C1	Normal	369Vpk	1200nF(*)			

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.

3) The details of output voltage status for other single fault conditions did not describe here refer to Table B.3, B.4.

(*): Considering 20% Tolerance of C1= 1000uF x 1.2 = 1200nF

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Clause	Requirement + Test	Result - Remark	Verdict

5.4.1.8	**TABLE: Working voltage measurement**			P
Location	RMS voltage (V)	Peak voltage (V)	Frequency (Hz)	Comments
Model: RS-25-3.3	**--**	--	--	--
T1 pin 2 to 7, 8, RTN	**221**	**448**	60kHz	* Highest Vpeak and Vrms of T1
T1 pin 2 to 9, 10	217	448	--	--
T1 pin 3 to 7, 8, RTN	174	400	--	--
T1 pin 3 to 9, 10	173	384	--	--
T1 pin 4 to 7, 8, RTN	171	344	--	--
T1 pin 4 to 9, 10	172	352	--	--
T1 pin 5 to 7, 8, RTN	177	360	--	--
T1 pin 5 to 9, 10	177	368	--	--
Model: RS-25-5	--	--	--	--
T1 pin 2 to 7, 8, RTN	**223**	**440**	60kHz	* Highest Vpeak and Vrms of T1
T1 pin 2 to 9, 10	216	440	--	--
T1 pin 3 to 7, 8, RTN	174	400	--	--
T1 pin 3 to 9, 10	173	376	--	--
T1 pin 4 to 7, 8, RTN	172	344	--	--
T1 pin 4 to 9, 10	172	352	--	--
T1 pin 5 to 7, 8, RTN	175	352	--	--
T1 pin 5 to 9, 10	176	376	60kHz	--
Model: RS-25-12	--	--	--	--
T1 pin 2 to 7, 8, RTN	**232**	474	60kHz	* Highest Vrms in T1
T1 pin 2 to 9, 10	204	**506**	60kHz	* Highest Vpeak in T1
T1 pin 3 to 7, 8, RTN	171	319	--	--
T1 pin 3 to 9, 10	183	308	--	--
T1 pin 4 to 7, 8, RTN	175	319	--	--
T1 pin 4 to 9, 10	174	308	--	--
T1 pin 5 to 7, 8, RTN	202	343	--	--
T1 pin 5 to 9, 10	183	404	--	--
U2 pin 3 – 1	197	344	--	--
U2 pin 3 – 2	197	344	--	--
U2 pin 4 – 1	197	344	--	--

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Clause	Requirement + Test	Result - Remark	Verdict

U2 pin 4 – 2	197	344	--	--
Model: RS-25-48	--	--	--	--
T1 pin 2 to 7, 8, RTN	**255**	496	60kHz	* Highest Vrms in T1
T1 pin 2 to 9, 10	211	596	--	--
T1 pin 3 to 7, 8, RTN	186	332	--	--
T1 pin 3 to 9, 10	208	384	--	--
T1 pin 4 to 7, 8, RTN	187	344	--	--
T1 pin 4 to 9, 10	222	404	--	--
T1 pin 5 to 7, 8, RTN	204	352	--	--
T1 pin 5 to 9, 10	224	**632**	60kHz	* Highest Vpeak in T1
U2 Pin 3 to 1	208	356	--	--
U2 Pin 3 to 2	207	356	--	--
U2 Pin 4 to 1	205	356	--	--
U2 Pin 4 to 2	205	356	--	--
Supplementary information: Test Voltage: 240 Vac, 60Hz				

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

5.4.1.10.3	**TABLE: Ball pressure test of thermoplastics**			N/A
Allowed impression diameter (mm).....:	≤ 2 mm			—
Object/Part No./Material	Manufacturer/trademark	Thickness (mm)	Test temperature (°C)	Impression diameter (mm)
Terminal block TB1	Dinkle / Type: DT-25 series	See 4.1.2	125	1.1
Terminal block TB1	Dinkle / Type: DT-2 series	See 4.1.2	125	1.1
Terminal block TB1	Dinkle / Type: DT-2G series	See 4.1.2	125	1.0
Terminal block TB1	Switchlab / Type: T31 series	See 4.1.2	125	1.1

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Clause	Requirement + Test	Result - Remark	Verdict

Terminal block TB1	Switchlab / Type: T21 series	See 4.1.2	125	1.0
Bobbin of T1	E I DUPONT / Type: FR-530	See 4.1.2	125	1.5
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)
Functional:	--	--	--	--	--	--	--	--
Distance under fuse or Distance between Line and neutral before fuse	420	250	--	1.27	See below	--	2.5	See below
- Line to Neutral trace before fuse	420	250	--	1.27	2.5	--	2.5	2.5
- Trace under fuse	420	250	--	1.27	3.0	--	2.5	3.0
Basic / supplementary:	--	--	--	--	--	--	--	--
Primary components (with 10N) to earth parts	420	250	--	1.27	See below	--	2.5	See below
- C5 to top metal chassis (PE)	420	250	--	1.27	3.0	--	2.5	3.0
- LF1 to side metal chassis (PE)	420	250	--	1.27	2.5	--	2.5	2.5
- HS1 to top metal chassis (PE)	420	250	--	1.27	2.8	--	2.5	2.8
- HS1 to bottom metal chassis (PE)	420	250	--	1.27	3.8	--	2.5	3.8
- C10 to bottom metal chassis (PE)	420	250	--	1.27	2.5	--	2.5	2.5
- BD1 to PE screw	420	250	--	1.27	2.5	--	2.5	2.5
- C1 to C57/C60	420	250	--	1.27	4.9	--	2.5	4.9
Primary trace to earthed trace	420	250	--	1.27	See below	--	2.5	See below
- Under C3	420	250	--	1.27	2.1	--	2.5	2.6
- Under C4	420	250	--	1.27	2.3	--	2.5	2.9
- Under C6	420	250	--	1.27	2.7	--	2.5	2.7

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Clause	Requirement + Test				Result - Remark			Verdict
- Line trace to PE trace	420	250	--	1.27	2.7	--	2.5	2.7
Reinforced:	--	--	--	--	--	--	--	--
Primary trace to secondary trace	420	250	--	2.54	See below	--	5.0	See below
- R9 to U2 pin 2	420	250	--	2.54	5.9	--	5.0	5.9
- R9 trace to R66 trace with cut slot	420	250	--	2.54	6.3	--	5.0	6.3
- C1 to R61	420	250	--	2.54	4.2	--	5.0	6.4
- LF1 to T1 pin 6	420	250	--	2.54	5.6	--	5.0	5.6
Primary components (with 10N) to secondary components (with 10N)	420	250	--	2.54	See below	--	5.0	See below
- LF1 to C57	420	250	--	2.54	5.8	--	5.0	5.8
Under T1	632	255	60	See below	See below	--	See below	See below
T1 primary winding to secondary winding	632	255	60	2.54	6.0	--	5.2	6.0
T1 primary winding to core	632	255	60	1.27	3.0	--	2.6	3.0
T1 secondary winding to core	632	255	60	1.27	3.0	--	2.6	3.0
T1 primary pin to secondary pin	632	255	60	2.54	20.0	--	5.2	20.0
T1 primary pin to core	632	255	60	1.27	4.5	--	2.6	4.5
T1 primary pin to secondary winding	632	255	60	2.54	5.3	--	5.2	5.3
T1 secondary pin to core	632	255	60	1.27	4.5	--	2.6	4.5
T1 secondary pin to primary winding	632	255	60	2.54	5.3	--	5.2	5.3

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Clause	Requirement + Test	Result - Remark	Verdict

Supplementary information:

Note 1: Only for frequency above 30 kHz

Note 2: See table 5.4.2.4 if this is based on electric strength test

Note 3: Provide Material Group

1. Functional insulation shorted, see sub-clause B.4.4.

2. For clearance and creepage did not describe as above are far larger than limit.

3. All of the measurements for component side, applied with 10N force on components.

4. Glued components (safety relevant): CY3, CY4, C10, D1, D2, C56, C57, C60, L51, TIW wire.

5. Tubed components (safety relevant): RTH1, C10.

7. One Mylar sheet is placed between side/bottom metal chassis and main board to keep basic insulation.

8. Both terminals of PE wire are fixed in PCB reliable by the soldering-pin.

9. One cut slot (1.0mm width) is present between C1 body and C57/C60. And there is “L-shape” mylar sheet (thickness spec., see table 4.1.2 for detail) is insert into the PCB board between C1 and C57/C60 to keep reinforced insulation.

10. One cut slot (1.0mm width) is present under C3 and C4.

11. One circle shape Mylar sheet is stick on the C5 top body.

12. The core of T1 is considered as floating part.

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)	
Optical Isolator (Reinforced insulation) (for all sources)	420	Reinforced	0.4	See Table 4.1.2	
One layer of insulation tape (used on T1) (Reinforced insulation) (for all source)	632	Reinforced	Two layers minimum	See Table 4.1.2	
Mylar sheet (Provided between side/bottom metal chassis and main board) (used on C5) (insert into the PCB board between C1 and C57/C60) (Basic insulation) (for all source)	632	Reinforced	--	See Table 4.1.2	
Supplementary information: See Table 4.1.2 for details of all sources.					

5.4.4.9	**TABLE: Solid insulation at frequencies >30 kHz**						P
Insulation material	E_P	Frequency (kHz)	K_R	Thickness d (mm)	Insulation	V_{PW} (Vpk)	
Insulation sheet	--	<100	0.35	See	Basic	632	

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Clause	Requirement + Test	Result - Remark	Verdict

				appended table 4.1.2		
Insulation tape for	--	60	0.46	See appended table 4.1.2	Reinforced	632
Triple insulation wire	--	60	0.46	See appended table 4.1.2	Reinforced	632
Tubing	--	<100	0.35	See appended table 4.1.2	Reinforced	632

Supplementary information:

Note 1: Only for frequency above 30 kHz.

Note 2: Electric strength tests are also conducted after sub-clause 5.4.8 for all sources.

For thin materials:

KR = 0.46 (>30kHz, <100kHz);

BI= 1.2 * peak voltage / KR = 1.2*632/0.46 = 1649V ;

RI= 1.2 * 2 * peak voltage / KR = 1.2*2*632/0.46 = 3298V, See table 5.4.9 for relative test details.

For other than think sheet materials: KR = 0.35 (>30kHz, <100kHz);
BI= 1.2 * peak voltage / KR = 1.2*632/0.35 = 2167V;
RI= 1.2 * 2 * peak voltage / KR = 1.2*2*632/0.35 = 4334V, See table 5.4.9 for relative test detail.

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
Functional:	--	--	--
--	--	--	--
Basic/Supplementary:	--	--	--
Unit: Primary to Earth (metal chassis) (for all models)	DC	2500	No
Mylar sheet (Provided between side/bottom metal chassis and main board) (used on C5) (insert into the PCB board between C1 and C57/C60) (for all source) (BI)	DC	2500	No
T1: core to primary/secondary	DC	2500	No
Reinforced/Double:	--	--	--
Unit: Primary to secondary (for all models)	DC	4000	No
T1: Primary winding to secondary winding	DC	4000	No
One layer of insulation tape (used on T1) (for all source)	DC	4000	No

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Clause	Requirement + Test	Result - Remark	Verdict

Supplementary information:

Note 1: See Table 4.1.2 for all sources.

Note 2: Applied d.c. voltage in one polarity for 60 seconds and then repeated it in reverse polarity.

1) All source of Transformers (T1) which performed the electric strength test before and after humidity test are including all manufactures and all factories as below

2) Transformers (T1) used in below factories are identical in electrical characteristics, physical construction in clearance, creepage distance and distance through insulation.

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
Phase to Neutral	264V, 60Hz	Normal	No switch	22.9 V	1
Phase to Neutral	264V, 60Hz	LF1 OC	No switch	12.5 V	1

Supplementary information:

X-capacitors installed for testing: See appended tables 4.1.2

☒ bleeding resistor rating: See appended tables 4.1.2

☐ 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)
Grounding pin of terminal block (TB1) to the farthest earthed part of metal chassis	40	2	0.64	0.016

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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Clause	Requirement + Test	Result - Remark	Verdict

5.7.5	TABLE: Earthed accessible conductive part			P
Supply voltage (V) ..... :	264V			—
Phase(s) ..... :	[X] Single Phase; [ ] Three Phase: [ ] Delta [ ] Wye			
Power Distribution System ..... :	☒ TN ☐ TT ☐ IT			
Location	Fault Condition No in IEC 60990 clause 6.2.2	Touch current (mA)	Comment	
Line/Neutral to metal chassis	1 (switch e, open; switch p normal/reverse)	1.6mAp max.	--	
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
Output (+5Vdc, 5.0A)	Worst case load fault	5.09	7.02	34.17	5	PS2
Output (+5Vdc, 5.0A)	Power source fault (U2B Pin 1&2) Short	0	0	0	5	--
Output (+5Vdc, 5.0A)	Power source fault (L51) Short	5.08	7.35	37.338	5	PS2
Output (+5Vdc, 5.0A)	Power source fault (R57) Short	5.04	7.36	37.094	5	PS2
Output (+5Vdc, 5.0A)	Power source fault (C55) Short	5.05	7.30	36.865	5	PS2
Output (+5Vdc, 5.0A)	Power source fault (D55) Short	0	0	0	5	--
Output (+5Vdc, 5.0A)	Power source fault (R8) Short	0	0	0	5	--
Output (+15Vdc, 1.7A)	Worst case load fault	15.1	2.42	36.542	5	PS2
Output	Power source fault	0	0	0	5	--

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Clause	Requirement + Test	Result - Remark	Verdict

(+15Vdc, 1.7A)	(U2B Pin 1&2) Short					
Output (+15Vdc, 1.7A)	Power source fault (L51) Short	15.1	2.44	36.844	5	PS2
Output (+15Vdc, 1.7A)	Power source fault (R57) Short	15.1	2.44	36.844	5	PS2
Output (+15Vdc, 1.7A)	Power source fault (C55) Short	15.1	2.44	36.844	5	PS2
Output (+15Vdc, 1.7A)	Power source fault (D55) Short	0	0	0	5	--
Output (+15Vdc, 1.7A)	Power source fault (R8) Short	0	0	0	5	--
Output (+48Vdc, 0.57A)	Worst case load fault	48.04	0.94	44.90	5	PS2
Output (+48Vdc, 0.57A)	Power source fault (U2B Pin 1&2) Short	0	0	0	5	--
Output (+48Vdc, 0.57A)	Power source fault (L51) Short	47.9	0.95	45.505	5	PS2
Output (+48Vdc, 0.57A)	Power source fault (R57) Short	47.9	0.96	45.984	5	PS2
Output (+48Vdc, 0.57A)	Power source fault (C55) Short	47.6	0.95	45.22	5	PS2
Output (+48Vdc, 0.57A)	Power source fault (D55) Short	0	0	0	5	--
Output (+48Vdc, 0.57A)	Power source fault (R8) Short	0	0	0	5	--

Supplementary information:

Abbreviation: SC= short circuit; OC= open circuit

1) Measured after 3 s for PS1 and measured after 5 s for PS2 and PS3.

6.2.3.1	**TABLE: Determination of Arcing PIS**	N/A

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Clause	Requirement + Test	Result - Remark	Verdict

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

6.2.3.2	TABLE: Determination of resistive PIS		N/A
Location	Operating and fault condition	Dissipate power (W)	Arcing PIS? Yes / No
Supplementary information: Abbreviation: SC= short circuit; OC= open circuit A combination of voltmeter, VA and ammeter IA may be used instead of a wattmeter. If a separate voltmeter and ammeter are used, the product of (VA x IA) is used to determine Resistive PIS classification. A Resistive PIS: (a) dissipates more than 15 W, measured after 30 s of normal operation, or (b) under single fault conditions has either a power exceeding 100 W measured immediately after the introduction of the fault if electronic circuits, regulators or PTC devices are used, or has an available power exceeding 15 W measured 30 s after introduction of the fault.			

8.5.5	TABLE: High pressure lamp				N/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).....:								—
	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	
Foreign objects	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)
Supplementary information:								

5.4.1.4, 9.3, B.1.5, B.2.6	TABLE: Temperature measurements	P

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Clause	Requirement + Test	Result - Remark	Verdict

Supply voltage (V) ..... :	--	--	--	--	—
Ambient temperature during test T_{amb} (°C) ..... :	--	--	--	--	—
Maximum measured temperature *T* of part/at:	*T* (°C)				Allowed T_{max} (°C)
Models:	RS-25-3.3	RS-25-3.3	RS-25-5	RS-25-5	--
Supply voltage	90Vac	264Vac	90Vac	264Vac	--
TB1 terminal	66.9	64.7	64.9	62.8	105
PCB under BD1	73.8	67.5	74.1	66.0	130
LF1 coil	95.7	74.5	104	76.2	130
C5 body	77.9	70.3	79.4	70.3	105
Heat Sink (for Q1) near PCB	85.3	79.2	80.0	74.9	130
U2 body	98.3	92.5	99.5	92.8	100
T1 Top-side coil	98.0	92.0	101	93.6	110
T1 Bottom-side coil	103	96.2	107	98.4	110
T1 core	86.0	80.5	97.2	89.5	130
C1 body	78.8	65.2	79.3	68.5	100
C4 body	82.5	67.4	84.4	70.3	125
Max. ambient temperature (Tma)	40.0	40.0	40.0	40.0	--
Models:	RS-25-48	RS-25-48	--	--	--
Supply voltage	90Vac	264Vac	--	--	--
TB1 terminal	57.4	58.1	--	--	105
PCB under BD1	63.7	58.7	--	--	130
LF1 coil	90.2	68.2	--	--	130
C5 body	67.5	62.9	--	--	105
Heat Sink (for Q1) near PCB	72.2	79.6	--	--	130
U2 body	75.9	79.5	--	--	100
T1 Top-side coil	79.5	82.1	--	--	110
T1 Bottom-side coil	82.5	85.5	--	--	110
C1 body	77.1	64.0	--	--	100
C4 body	81.4	66.3	--	--	125
Max. ambient temperature (Tma)	40.0	40.0	--	--	--
For Tma = 70°C (Only for model RS-25-12 with 60% Output Load): Test on Model: RS-25-12, Load condition: +12Vdc/1.26A	90Vac / 60Hz	264 Vac / 60Hz	--	--	--
TB1 terminal block	70.0	70.4	--	--	105

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Clause	Requirement + Test	Result - Remark	Verdict

PCB Near RTH1	77.2	75.9	--	--	130
PCB near BD1	84.5	81.3	--	--	130
LF1 Coil	90.0	81.6	--	--	130
C5 Body	80.8	79.9	--	--	105
PCB near Heat Sink (for Q1)	86.6	91.5	--	--	130
U2 Body	85.2	90.3	--	--	100
T1 Top-Side Coil	85.2	88.2	--	--	110
T1 Bottom-Side Coil	89.5	94.0	--	--	110
T1 Core	87.3	92.1	--	--	130
C1 Body	76.6	75.8	--	--	100
C4 Body	84.0	81.7	--	--	125
Ambient	70.0	70.0	--	--	--

Temperature T of winding:	t_1 (°C)	R_1 (Ω)	t_2 (°C)	R_2 (Ω)	T (°C)	Allowed T_{max} (°C)	Insulation class
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Supplementary information:

1. With a specified maximum ambient temperature of 40°C, however, the maximum permitted temperatures are calculated as follows:
2. Winding components (providing safety isolation):
   Class 130 (B) Tmax = 120°C – 10°C = 110°C
3. During the test, the sealing compound did not soften or melt.

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
--	--	--	--	--	--	--	--	Model RS-25-3.3, Maximum normal load at +3.3Vdc, 6.0A.
90Vac	50	0.52	--	29	--	FS1	0.52	Maximum Normal Load
100Vac	50	0.48	0.7	29	--	FS1	0.48	Maximum Normal Load
240Vac	50	0.26	0.7	28	--	FS1	0.26	Maximum Normal Load
264Vac	50	0.25	--	28	--	FS1	0.25	Maximum Normal Load
90Vac	60	0.53	--	29	--	FS1	0.53	Maximum Normal Load

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Clause	Requirement + Test	Result - Remark	Verdict

100V ac	60	0.49	0.7	29	--	FS1	0.49	Maximum Normal Load
240V ac	60	0.26	0.7	28	--	FS1	0.26	Maximum Normal Load
264V ac	60	0.25	--	28	--	FS1	0.25	Maximum Normal Load
--	--	--	--	--	--	--	--	Model RS-25-5, Maximum normal load at +5Vdc, 5.0A.
90Vac	50	0.61	--	34	--	FS1	0.61	Maximum Normal Load
100V ac	50	0.55	0.7	33	--	FS1	0.55	Maximum Normal Load
240V ac	50	0.30	0.7	32	--	FS1	0.30	Maximum Normal Load
264V ac	50	0.28	--	32	--	FS1	0.28	Maximum Normal Load
90Vac	60	0.61	--	34	--	FS1	0.61	Maximum Normal Load
100V ac	60	0.56	0.7	33	--	FS1	0.56	Maximum Normal Load
240V ac	60	0.30	0.7	32	--	FS1	0.30	Maximum Normal Load
264V ac	60	0.28	--	32	--	FS1	0.28	Maximum Normal Load
--	--	--	--	--	--	--	--	Model RS-25-12, Maximum Normal Load at +12Vdc, 2.1A
90Vac	50	0.56	--	32	--	FS1	0.56	Maximum Normal Load
100V ac	50	0.51	0.7	31	--	FS1	0.51	Maximum Normal Load
240V ac	50	0.28	0.7	31	--	FS1	0.28	Maximum Normal Load
264V ac	50	0.26	--	31	--	FS1	0.26	Maximum Normal Load
90Vac	60	0.57	--	32	--	FS1	0.57	Maximum Normal Load
100V ac	60	0.52	0.7	31	--	FS1	0.52	Maximum Normal Load
240V ac	60	0.28	0.7	31	--	FS1	0.28	Maximum Normal Load

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Clause	Requirement + Test	Result - Remark	Verdict

264V ac	60	0.26	--	31	--	FS1	0.26	Maximum Normal Load
--	--	--	--	--	--	--	--	Model RS-25-15, Maximum Normal Load at +15Vdc, 1.7A
90Vac	50	0.56	--	31	--	FS1	0.56	Maximum Normal Load
100V ac	50	0.51	0.7	31	--	FS1	0.51	Maximum Normal Load
240V ac	50	0.28	0.7	31	--	FS1	0.28	Maximum Normal Load
264V ac	50	0.26	--	31	--	FS1	0.26	Maximum Normal Load
90Vac	60	0.57	--	31	--	FS1	0.57	Maximum Normal Load
100V ac	60	0.52	0.7	31	--	FS1	0.52	Maximum Normal Load
240V ac	60	0.28	0.7	31	--	FS1	0.28	Maximum Normal Load
264V ac	60	0.26	--	31	--	FS1	0.26	Maximum Normal Load
--	--	--	--	--	--	--	--	Model RS-25-24, Maximum Normal Load at +24Vdc, 1.1A
90Vac	50	0.57	--	32	--	FS1	0.57	Maximum Normal Load
100V ac	50	0.52	0.7	31	--	FS1	0.52	Maximum Normal Load
240V ac	50	0.29	0.7	31	--	FS1	0.29	Maximum Normal Load
264V ac	50	0.27	--	31	--	FS1	0.27	Maximum Normal Load
90Vac	60	0.57	--	32	--	FS1	0.57	Maximum Normal Load
100V ac	60	0.53	0.7	31	--	FS1	0.53	Maximum Normal Load
240V ac	60	0.29	0.7	31	--	FS1	0.29	Maximum Normal Load
264V ac	60	0.27	--	31	--	FS1	0.27	Maximum Normal Load

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Clause	Requirement + Test	Result - Remark	Verdict

--	--	--	--	--	--	--	--	Model RS-25-48, Maximum Normal Load at +48Vdc, 0.57A
90Vac	50	0.58	--	33	--	FS1	0.58	Maximum Normal Load
100V ac	50	0.53	0.7	32	--	FS1	0.53	Maximum Normal Load
240V ac	50	0.29	0.7	32	--	FS1	0.29	Maximum Normal Load
264V ac	50	0.27	--	32	--	FS1	0.27	Maximum Normal Load
90Vac	60	0.58	--	33	--	FS1	0.58	Maximum Normal Load
100V ac	60	0.54	0.7	32	--	FS1	0.54	Maximum Normal Load
240V ac	60	0.29	0.7	32	--	FS1	0.29	Maximum Normal Load
264V ac	60	0.27	--	32	--	FS1	0.27	Maximum Normal Load

Supplementary information:

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

B.3, B.4	**TABLE: Abnormal operating and fault condition tests**	P
Ambient temperature T_{amb} (°C).....:	25 if not else specified	—
Power source for EUT: Manufacturer, model/type, outputrating ...:	See cover page for details	—

Component No.	Condition	Supply voltage (V)	Test time	Fuse no.	Fuse current (A)	Observation
Model RS-25-3.3	--	--	--	--	--	--
Ventilations Opening	Blocked	240	1 hrs	FS1	0.27	Unit operation normally, no hazards., NC, NT, NB, ASRE. 1. T1 coil = 99.2 °C 2. Ambient= 24.9 °C
+3.3V Output	Overload	240	30 mins	FS1	0.28	After output overload to 7A, then unit shut down at 8A, no hazards, NC, NT, NB, NI, ASRE. 1. T1 coil = 108.2 °C

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Clause	Requirement + Test	Result - Remark	Verdict

						2. Ambient= 26.8 °C
+3.3V Output	Short	240	2 hrs	FS1	0.02-0.04	Unit shut down, no hazards, NC, NT, NB, ASRE.
Model RS-25-5	--	--	--	--	--	--
Ventilations Opening	Blocked	240	1 hrs	FS1	0.3	Unit operation normally, no hazards., NC, NT, NB, ASRE. 1. T1 coil = 94.2 °C 2. Ambient= 24.9 °C
+5V Output	Overload	240	1.5 hrs	FS1	0.35	After output overload to 6A, then unit shut down at 7A, no hazards, NC, NT, NB, NI, ASRE. 1. T1 coil = 116.2 °C 2. Ambient= 26.8 °C
+5V Output	Short	240	2 hrs	FS1	0.02-0.04	Unit shut down, no hazards, NC, NT, NB, NI, ASRE.
Model RS-25-48	--	--	--	--	--	--
Ventilations Opening	Blocked	240	1 hrs	FS1	0.3	Unit operation normally, no hazards., NC, NT, NB, ASRE. 1. T1 coil = 77.3 °C 2. Ambient= 24.9 °C
+48V Output	Overload	240	1.5 hrs	FS1	0.34	After output overload to 0.7A, then unit shut down at 0.9, no hazards, NC, NT, NB, NI, ASRE. 1. T1 coil = 86.2 °C 2. Ambient= 26.8 °C
+48V Output	Short	240	2 hrs	FS1	0.03-0.09	Unit shut down, no hazards, NC, NT, NB, NI, ASRE.
Model RS-25-3.3	--	--	--	--	--	--
T1 (9/10) after D55 to RTN	Overload	240	8.5 hrs	FS1	0.26 to 0.2	After output overload to 7.5A, then unit shut down at 8A, no hazards, NC, NT, NB, NI, ASRE. 1. T1 coil = 110.2 °C 2. Ambient= 25.0 °C
BD1 (L to +)	Short	240	1 sec	FS1	0	Fuse opened (FS1) immediately, CD(BD1), no

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Clause	Requirement + Test	Result - Remark	Verdict

						hazards, NC, NT, NB, NI, ASRE.
C5	Short	240	1 sec	FS1	0	Fuse opened (FS1) immediately, no hazards, NC, NT, NB, NI, ASRE.
Q1 (G-S)	Short	240	10 mins	FS1	0.04	EUT shutdown, no hazards, NC, NT, NB, NI, ASRE.
Q1 (G-D)	Short	240	1 sec	FS1	0	Fuse opened (FS1) immediately, CD(Q1), no hazards, NC, NT, NB, NI, ASRE.
Q1 (D-S)	Short	240	1 sec	FS1	0	Fuse opened (FS1) immediately, CD(Q1), no hazards, NC, NT, NB, NI, ASRE.
U2 Pin 1 – Pin 2	Short	240	40 mins	FS1	0.04 to 0.1	EUT shutdown, no hazards, NC, NT, NB, NI, ASRE.
U2 Pin 3 – Pin 4	Short	240	10 mins	FS1	0.04	EUT shutdown, no hazards, NC, NT, NB, NI, ASRE.
U1 Pin 6 – Pin 2	Short	240	10 mins	FS1	0.04	EUT shutdown, no hazards, NC, NT, NB, NI, ASRE.
T1 Pin 3 – Pin 4	Short	240	40 mins	FS1	0.04 to 0.1	EUT shutdown, no hazards, NC, NT, NB, NI, ASRE.
T1 Pin 7/8 – Pin 9/10	Short	240	40 mins	FS1	0.04 to 0.14	EUT shutdown, no hazards, NC, NT, NB, NI, ASRE.
T1 (2-5)	Short	240	1	FS1	0.04 to 0.1	Fuse opened, no hazards
U2 Pin 1	Open	240	1	FS1	0.04 to 0.1	Unit shutdown, no hazards
current resistor R8	Short	240	1	FS1	0.04 to 0.1	Unit shutdown, no hazards
Model RS-25-5	--	--	--	--	--	--
T1 (9/10) after D55 to RTN	Overload	240	2 hrs	FS1	0.3 to 0.37	After output overload to 6.4A, then unit shut down at 7A, no hazards, NC, NT, NB, NI, ASRE. 1. T1 coil = 120 °C 2. Ambient= 25 °C
T1 Pin 3 – Pin 4	Short	240	40 mins	FS1	0.04 to 0.1	EUT shutdown, no hazards, NC, NT, NB, NI, ASRE.
T1 Pin 7/8 – Pin 9/10	Short	240	40 mins	FS1	0.04 to 0.14	After output overload to 6.4A, then unit shut down at 7A, no hazards, NC, NT, NB, NI, ASRE.

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T1 Pin 7/8 – Pin 9/10	Short	240	40 mins	FS1	0.04 to 0.14	EUT shutdown, no hazards, NC, NT, NB, NI, ASRE.
T1 Pin 2 – Pin 5	Short	240	1	FS1	0.1	Fuse opened, no hazards
U2 open	Open	240	1	FS1	0.1	Unit shutdown, no hazards
current resistor R8	Short	240	1	FS1	0.1	Unit shutdown, no hazards
Model RS-25-48	--	--	--	--	--	--
T1 Pin 9/10 after D55 to RTN	Overload	240	2 hrs	FS1	0.29 to 0.36 to 0.1	After output overload to 0.8A, then unit shut down at 0.9A, no hazards, NC, NT, NB, NI, ASRE. 1. T1 coil = 91 °C 2. Ambient= 25 °C
T1 Pin 3 – Pin 4	Short	240	40 mins	FS1	0.04 to 0.1	EUT shutdown, no hazards, NC, NT, NB, NI, ASRE.
T1 Pin 7/8 – Pin 9/10	Short	240	40 mins	FS1	0.04 to 0.14	EUT shutdown, no hazards, NC, NT, NB, NI, ASRE.
T1 Pin 2-5	Short	240	1	FS1	0.04 to 0.1	Fuse opened, no hazards
U2 Pin 1	Open	240	1	FS1	0.04 to 0.1	Unit shutdown, no hazards
current resistor R8	Short	240	1	FS1	0.04 to 0.1	Unit shutdown, no hazards
Model RS-25-3.3	--	--	--	--	--	Test conducted with alternate Fuse source (Ever Island, Model 2000, Rated T2A, 250V) installed in the power unit.
BD1 (L to +)	Short	240	1 sec	FS1	0	Fuse opened (FS1) immediately, CD(BD1), no hazards, NC, NT, NB, NI, ASRE.
C5	Short	240	1 sec	FS1	0	Fuse opened (FS1) immediately, no hazards, NC, NT, NB, NI, ASRE.
Q1 (G-D)	Short	240	1 sec	FS1	0	Fuse opened (FS1), immediately, CD(Q1), no hazards, NC, NT, NB, NI, ASRE.
Q1 (D-S)	Short	240	1 sec	FS1	0	Fuse opened (FS1) immediately, CD(Q1), no hazards, NC,NT, NB, NI, ASRE.

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T1 Pin 2 to 5	Short	240	1 sec	FS1	0	Fuse opened, no hazards.

Supplementary information:

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

Abbreviations used:
NC: Cheesecloth remain intact
NT: Tissue paper remains intact
NB: No indication of dielectric breakdown
CT: Constant temperatures were obtained
ASRE: All safeguards remained effectively
All ES measurement refer to table 5.2

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

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) .....:		

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

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

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

T.6, T.9	**TABLE: Impact test**				N/A
Location/part	Material	Thickness (mm)	Height (mm)	Observation	
Supplementary information:					

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

T.8	**TABLE: Stress relief test**					N/A
Location/Part	Material	Thickness (mm)	Oven Temperature (°C)	Duration (h)	Observation	

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Clause	Requirement + Test	Result - Remark	Verdict

Supplementary information: Results Key: NB=No indication of dielectric breakdown.					

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:			

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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)]
Chassis	Interchangeable	Interchangeable	Metal, minimum 0.5 mm thick.	--	--
Terminal Block (TB1)	DINKLE ENTERPRISE CO LTD	DT-2 series	15A, 300V	UL 1059:2019	UL
(Alternate)	DINKLE ENTERPRISE CO LTD	DT-25 series	15A, 300V	UL 1059:2019	UL
(Alternate)	DINKLE ENTERPRISE CO LTD	DT-2G series	15A, 300V	UL 1059:2019	UL
(Alternate)	SWITCHLAB INC	T31 series	10A, 300V	UL 1059:2019	UL
(Alternate)	SWITCHLAB INC	T21 series	10A, 300V	UL 1059:2019	UL
PCB	Interchangeable	Interchangeable	V-1 or better, 130°C min.	UL 796:2020	UL
Fuse (FS1)	Conquer Electronics Co., Ltd.	MET series, MST	T2AL, 250Vac	IEC/EN 60127-1 :2006+A1:2011+A2 :2015 IEC/EN 60127-3 :2015 UL 248-1:2017 UL 248-14:2020	VDE (40017118), UL
(Alternate)	Ever Island Electric Co., Ltd. and Walter Electric	2010	T2AL, 250Vac	IEC/EN 60127-1 :2006+A1:2011+A2 :2015 IEC/EN 60127-3 :2015 UL 248-1:2017 UL 248-14:2020	VDE (40018781), UL
(Alternate)	Ever Island Electric Co., Ltd. and Walter Electric	2000	T2A, 250Vac	IEC/EN 60127-1 :2006+A1:2011+A2 :2015 IEC/EN 60127-3 :2015 UL 248-1:2017 UL 248-14:2020	VDE (40018790), UL
Thermistor (RTH1) (Optional)	Interchangeable	Interchangeable	Min. 3A, max. 10 ohms at 25°C	--	--

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Clause	Requirement + Test	Result - Remark	Verdict

X-Capacitor (C1) (optional)	KEMET ELECTRONICS ITALIA SRL	R.46, R.49	Rated max. 1.0 µF, min. 250 Vac. Class X1 or X2, min. 100°C	IEC/EN 60384-14:2013+A1: 2016, UL 60384-14:2014	ENEC (DAT97000141, SN.A002N0), UL
(Alternate)	ISKRA KONDENZATORJI D D	KNB1530, KNB1560	Rated max. 1.0 µF, min. 250 Vac. Class X1 or X2, min. 100°C	IEC/EN 60384-14:2013+A1: 2016, UL 60384-14:2014	VDE (139447, 139106), UL
(Alternate)	LIOW GU ELECTRONICS INDUSTRY CO LTD	GS-L	Rated max. 1.0 µF, min. 250 Vac. Class X1 or X2, min. 100°C	IEC/EN 60384-14:2013+A1: 2016, UL 60384-14:2014	ENEC (2016045), UL
(Alternate)	PILKOR ELECTRONICS CO LTD	PCX2 335, PCX2 335M, PCX2 337	Rated max. 1.0 µF, min. 250 Vac. Class X1 or X2, min. 100°C	IEC/EN 60384-14:2013+A1: 2016, UL 60384-14:2014	ENEC (0256-3D, SE/0256-2F, SE/0256-1L), UL
(Alternate)	CHENG TUNG INDUSTRIAL CO LTD	CTX	Rated max. 1.0 µF, min. 250 Vac. Class X1 or X2. 110°C	IEC/EN 60384-14:2013+A1: 2016, UL 60384-14:2014	ENEC (ENEC-01396-A1), UL
(Alternate)	EPCOS ELECTRONIC COMPONENTS S A	B3292#	Rated max. 1.0 µF, min. 250 Vac. Class X1 or X2, min. 100°C	IEC/EN 60384-14:2013+A1: 2016, UL 60384-14:2014	VDE (40005524, 40005536, 40010694, 40019254, 40030986), UL
(Alternate)	ULTRA TECH XIPHI ENTERPRISE CO LTD	HQX	Rated max. 1.0 µF, min. 250 Vac. Class X1 or X2, min. 100°C	IEC/EN 60384-14:2013+A1: 2016, UL 60384-14:2014	VDE (40015608, 40024534), UL
(Alternate)	HUA JUNG COMPONENTS CO LTD	MKP	Rated max. 1.0 µF, min. 250 Vac. Class X1 or X2, min. 100°C	IEC/EN 60384-14:2013+A1: 2016, UL 60384-14:2014	ENEC (S/E0252-5D), UL
(Alternate)	CARLI ELECTRONICS CO LTD	MPX	Rated max. 1.0 µF, min. 250 Vac. Class X1 or X2, min. 100°C	IEC/EN 60384-14:2013+A1: 2016, UL 60384-14:2014	VDE (40008520), ENEC (2015022 M1), UL

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

(Alternate)	SHINY SPACE ENTERPRISE CO LTD	SX1	Rated max. 1.0 µF, min. 250 Vac. Class X1 or X2, min. 100°C	IEC/EN 60384-14:2013+A1:2016, UL 60384-14:2014	ENEC (ENEC-01199), UL
Bleeder resistor (R1, R2)	TZAI YUAN Enterprise Co., Ltd.	SMD*********	Each rated max. 330K ohms, min. 1/4 W.	IEC 62368-1:2014, UL 62368-1:2014	CB by UL Solutions, UL
Line Choke (LF1) (Optional)	MEAN WELL Enterprise Co Ltd	LF-560	Rated min. 130 °C	--	--
Bridge Capacitor (C3, C4, C6) (Optional)	MURATA MFG CO LTD	KX	Rated max. 4700 pF, min. 250 Vac. Class Y1, 125°C	IEC/EN 60384-14:2013+A1:2016, UL 60384-14:2014	VDE (40002831), UL
(Alternate)	WALSIN TECHNOLOGY CORP	AH, AC, AS	Rated max. 4700 pF, min. 250 Vac. Class Y1, 125°C	IEC/EN 60384-14:2013+A1:2016, UL 60384-14:2014	VDE (40001804, 40001829, 40039265), UL
(Alternate)	TDK-EPC CORP.	CD	Rated max. 4700 pF, min. 250 Vac. Class Y1, 125°C	IEC/EN 60384-14:2013+A1:2016, UL 60384-14:2014	VDE (40029780), UL
(Alternate)	WELSON INDUSTRIAL CO LTD	WD	Rated max. 4700 pF, min. 250 Vac. Class Y1, 125°C	IEC/EN 60384-14:2013+A1:2016, UL 60384-14:2014	VDE (40016157), UL
(Alternate)	VISHAY ELECTRONIC GMBH	VY1	Rated max. 4700 pF, min. 250 Vac. Class Y1, 125°C	IEC/EN 60384-14:2013+A1:2016, UL 60384-14:2014	VDE (40012673), UL
(Alternate)	XIAMEN WANMING ELECTRONICS CO LTD	HJ	Rated max. 4700 pF, min. 250 Vac. Class Y1, 125°C	IEC/EN 60384-14:2013+A1:2016, UL 60384-14:2014	VDE (40034438), UL
Bridge Diode (BD1)	Interchangeable	Interchangeable	Rated min. 2 A, min. 600 Vac.	--	--
Electrolytic Capacitor (C5)	Interchangeable	Interchangeable	Rated min. 400 Vac, min. 105°C, 56 µF. Integral pressure relief.	--	--
Transistor (Q1)	Interchangeable	Interchangeable	Rated minimum 5 A, minimum 600V.	--	--

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

Current Resistor (R8)	Interchangeable	Interchangeable	Min. 0.75ohms, min. 1W.	--	--
Optical Isolator (U2)	Everlight Electronics Co., Ltd.	EL817	Dti> 0.6 mm, int. dcr.= thermal cycling test, ext. dcr>8 mm, 115°C	IEC/EN 60747-5-5:2007, UL 1577:2014	VDE (132249), UL
(Alternate)	Everlight Electronics Co., Ltd.	EL1018(TA)-VG	Dti=0.4mm, internal cr.= 5.2 mm (thermal cycling test), external cr.= 8.1mm. 110°C	IEC/EN 60747-5-5:2007+A1:2013, ANSI/UL 1577:2014	VDE (40028391), D (D-05140-M1), UL
(Alternate)	Lite-On Technology Corp	LTV-817S	Dti=0.6mm, internal cr.= 5.2 mm (thermal cycling test), external cr.= 8.0mm. 115°C	DIN IEC/EN 60747-5-5:2007, UL 1577:2014	VDE (40015248), UL
(Alternate)	Vishay Semiconductor Gmbh	TCLT10xx	Dti> 0.4 mm, int. dcr.= thermal cycling test, ext. dcr>8 mm, 110°C	IEC / EN 60747-5-5:2007, UL 1577:2014	VDE (132473), UL
Transformer (T1) (for models RS-25-3.3)	MEAN WELL Enterprise Co Ltd	TF-991	Class B	Applicable parts in IEC/EN 60950-1, IEC/EN 62368-1 and acc. to IEC/EN 60085	--
Transformer (T1) (for models RS-25-5)	MEAN WELL Enterprise Co Ltd	TF-992	Class B	Applicable parts in IEC/EN 60950-1, IEC/EN 62368-1 and acc. to IEC/EN 60085	--
Transformer (T1) (for models RS-25-12)	MEAN WELL Enterprise Co Ltd	TF-993	Class B	Applicable parts in IEC/EN 60950-1, IEC/EN 62368-1 and acc. to IEC/EN 60085	--
Transformer (T1) (for models RS-25-15)	MEAN WELL Enterprise Co Ltd	TF-994	Class B	Applicable parts in IEC/EN 60950-1, IEC/EN 62368-1 and acc. to IEC/EN 60085	--

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Transformer (T1) (for models RS-25-24)	MEAN WELL Enterprise Co Ltd	TF-995	Class B	Applicable parts in IEC/EN 60950-1, IEC/EN 62368-1 and acc. to IEC/EN 60085	--
Transformer (T1) (for models RS-25-48)	MEAN WELL Enterprise Co Ltd	TF-996	Class B	Applicable parts in IEC/EN 60950-1, IEC/EN 62368-1 and acc. to IEC/EN 60085	--
Transformer (T1) (for models RS-25-3.3)	Jet signal	TF-991	Class B	Applicable parts in IEC/EN 60950-1, IEC/EN 62368-1 and acc. to IEC/EN 60085	--
Transformer (T1) (for models RS-25-5)	Jet signal	TF-992	Class B	Applicable parts in IEC/EN 60950-1, IEC/EN 62368-1 and acc. to IEC/EN 60085	--
Transformer (T1) (for models RS-25-12)	Jet signal	TF-993	Class B	Applicable parts in IEC/EN 60950-1, IEC/EN 62368-1 and acc. to IEC/EN 60085	--
Transformer (T1) (for models RS-25-15)	Jet signal	TF-994	Class B	Applicable parts in IEC/EN 60950-1, IEC/EN 62368-1 and acc. to IEC/EN 60085	--
Transformer (T1) (for models RS-25-24)	Jet signal	TF-995	Class B	Applicable parts in IEC/EN 60950-1, IEC/EN 62368-1 and acc. to IEC/EN 60085	--
Transformer (T1) (for models RS-25-48)	Jet signal	TF-996	Class B	Applicable parts in IEC/EN 60950-1, IEC/EN 62368-1 and acc. to IEC/EN 60085	--

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

- Bobbin	Sumitomo Bakelite Co., Ltd.	PM-9820, PM-9630	Phenolic. Min. V-2, min. 0.71 mm thick, 150°C	UL 94:2013	UL
(Alternate)	E I DUPONT DE NEMOURS & CO INC	FR-530	Polyethylene Terephthalate (PET). Min. V-2, min. 0.71 mm thick, 155°C	UL 94:2013	UL
(Alternate)	CHANG CHUN PLASTICS CO LTD	T375J	Phenolic. Min. V-2, min. 0.71 mm thick, 150°C	UL 94:2013	UL
- Margin tape	3M Company Electrical Markets Div (EMD)	44 (a), 44T-A (a)	130°C.	UL 510:2020	UL
(Alternate)	Symbio Inc	35661 (c)	130°C.	UL 510:2020	UL
(Alternate)	Jingjiang Yahua Pressure Sensitive Glue Co Ltd	WF* (c)(h)	130°C.	UL 510:2020	UL
- Insulation tape of T1	3M Company Electrical Markets Div (EMD)	1351T-1 (a) , 1351T-2 (a), 1351T-3 (a), 1318-1 (a), 1350F-1 (b), 1350T-1 (b), 1350T-3 (b), 1351-1 (a), 1351-2 (c)	130°C.	UL 510:2020	UL
(Alternate)	Bondtec Pacific Co., Ltd.	370S(b)	130°C.	UL 510:2020	UL
(Alternate)	Symbio Inc.	35660Y (e), 35660 (a), MY9YAF (h)	130°C.	UL 510:2020	UL
(Alternate)	Jingjiang Yahua Pressure Sensitive Glue Co. Ltd.	CT* (b)(g)	130°C.	UL 510:2020	UL
(Alternate)	E I DUPONT DE NEMOURS & CO INC	410, 411, 414, 418	130°C	UL 94:2013	UL

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

Mylar Sheet (Provided between side/bottom metal chassis and main board) (used on C5) (insert into the PCB board between C1 and C57/C60)	HON TAI MATERIAL CO LTD	HT-E3503	Min. V-0, 130°C, min. 0.63 mm thick.	UL 94: 2013, UL 746C: 2018	UL
(Alternate)	ITW ELECTRONICS COMPONENTS/ PRODUCTS (SHANGHAI) CO LTD	Formex GK-(a)(d)(f2)	Min. V-0 or VTM-0, 115°C, min. 0.25 mm thick.	UL 94: 2013, UL 746C: 2018	UL
(Alternate)	ITW ELECTRONICS COMPONENTS/ PRODUCTS (SHANGHAI) CO LTD	Formex N3-(b)(d)(e)(k)(L)	Min. V-0 or VTM-0, 130°C, min. 0.25 mm thick.	UL 94: 2013, UL 746C: 2018	UL
(Alternate)	KINGBOARD LAMINATES HOLDINGS LTD	KB-6150	Min. V-0, 120°C, min. 0.25 mm thick.	UL 94: 2013, UL 746C: 2018	UL
(Alternate)	KINGBOARD LAMINATES HOLDINGS LTD	KB-6160C	Min. V-0, 130°C, min. 0.38 mm thick.	UL 94: 2013, UL 746C: 2018	UL
(Alternate)	SHENGYI TECHNOLOGY CO LTD	S1141	Min. V-0, 130°C, min. 0.38 mm thick.	UL 94: 2013, UL 746C: 2018	UL
(Alternate)	SHENZHEN BORNSUN INDUSTRIAL CO LTD	BN-FP	Min. V-0, 120°C, min. 0.25 mm thick.	UL 94: 2013, UL 746C: 2018	UL
(Alternate)	SHENZHEN TEESUN TECHNOLOGY CO LTD	TS-FR1370F	Min. V-0, 125°C, min. 0.25 mm thick.	UL 94: 2013, UL 746C: 2018	UL
(Alternate)	CHENGDU KANGLONGXIN PLASTICS CO LTD	KLX FRPC-1860B-YM	Min. V-0 or VTM-0, 125°C, min. 0.25 mm thick.	UL 94: 2013, UL 746C: 2018	UL
(Alternate)	SABIC JAPAN L L C	EFR95	Min. VTM-0 or V-0, 130°C (Elec.), min. 0.25 mm thick.	UL 94: 2013, UL 746C: 2018	UL

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

(Alternate)	SABIC INNOVATIVE PLASTICS US L L C	EFR95	Min. VTM-0 or V-0, 130°C (Elec.), min. 0.25 mm thick.	UL 94: 2013, UL 746C: 2018	UL
(Alternate)	SABIC JAPAN L L C	FR700	Min. V-0 or VTM-0, 130°C (Elec.) min. 0.25 mm thick	UL 94: 2013, UL 746C: 2018	UL
(Alternate)	SABIC INNOVATIVE PLASTICS B V	FR700	Min. V-0 or VTM-0, 130°C (Elec.), min. 0.25 mm thick.	UL 94: 2013, UL 746C: 2018	UL
(Alternate)	SABIC INNOVATIVE PLASTICS US L L C	FR700	Minimum V-0 or VTM-0, 125°C, min. 0.25 mm thick.	UL 94: 2013, UL 746C: 2018	UL

Supplementary information:

1) Provided evidence ensures the agreed level of compliance. See OD-2039.

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

3) The CBTL has verified the component information.

4) License available upon request.

List of test equipment used:

A completed list of used test equipment shall be provided in the Test Reports when a Customer's Testing Facility according to CTF stage 1 or CTF stage 2 procedure has been used.
Note: This page may be removed when CTF stage 1 or CTF stage 2 are not used. See also clause 4.8 in OD 2020 for more details.

ID NO.		DESCRIPTION	MANUF.	MODEL NO.	SERIAL NO.	Range	Reference Standard	CAL. DATE	DUE DATE
☐	2	Steel Sphere	ED&D	ITB-01	I03420273	500g, φ50mm	UL/IEC 60950-1 (4.2.5) IEC 61032 Test Probe 1	2017-10-11	2020-10-09
☐	3	Test Finger	ASIA	UFP-2	1041803	--	UL/IEC 60950-1 (2.1.1.1) IEC 61032 Test Probe 11	2017-10-11	2020-10-09
☐	4	Test Finger	ASIA	TFP-1	1041804	--	UL/IEC 60950-1 (2.1.1.1) IEC 61032 Test Probe B	2017-10-11	2020-10-09
☐	5	Test Pin	ASIA	TPP-1	1041805	--	UL/IEC 60950-1 (2.1.1.1) IEC60950-1 Figure 2C Test Probe	2017-10-11	2020-10-09
☐	7	Push Pull Gauge	ALGOL	HF-50	HF-110367	50KG	UL/IEC 60950-1 (4.2)	2018-04-20	2019-04-19
☒	8	Caliper	Mitutoyo	500-322	SH002	150mm	--	2018-04-20	2019-04-19
☒	12	DC Electronic Load	Chroma	6314A+, 63103A	6314A000187 5	Max.80V, 60A	--	2018-04-23	2019-04-22
☒	13	500VA Dielectric Analyzer	EXTECH	7420	1280884	Hi Pot= 5KVac/ 6Vdc; IR=1000V	--	2018-04-24	2019-04-23
☐	14	Ground Bond Tester	Extech	7316	1370227	40A, 120s	UL/IEC 60950-1 (2.6)	2018-04-24	2019-04-23
☒	15	Oscilloscope	LECROY	WJ-314A	LCRY0102J21 159	10V, 5s	--	2018-04-18	2019-04-17
☒	16	Digital Power Meter	IRDC	CP-268	268121	600V, 50A, 50/60Hz, 2400W	--	2018-04-24	2019-04-23
☒	17	Digital Power Meter	Chroma	66202	662022004344	500V, 20A, 50/60Hz, 2400W	--	2018-04-23	2019-04-22
☐	18	Leakage Current Meter	Simpson	228	20689	10mA, 50/60Hz	--	2018-04-24	2019-04-23
☒	19	Timekeeper	Every day	C-518	N/A	24hr	--	2018-04-24	2019-04-23
☒	20	Leakage Current Meter	EXTECH	7630	1330708	277Vac, 50/60/1KHz, 10mA	IEC 60990, Figure 4, Figure 5	2018-04-24	2019-04-23
☐	21	Chamber	K. SON	THS-C4L+100	1397	-40~100℃, max. 95% RH	--	2018-04-18	2019-04-17
☐	21	Chamber	K. SON	THS-C4L+100	1397	Hr	--	2018-05-21	2019-05-20
☒	22	POWER ANALYZER	Chroma	6630	0973	600V, 20A, 50/60Hz, 2400W	--	2018-04-24	2019-04-23
☐	23	Hybrid Recorder 24CH	Yokogawa	Mx100-E-1D	91L335491	300℃,	--	2018-04-23	2019-04-22
☐	24	Hybrid Recorder 24CH	Yokogawa	Mx100-E-1D	91L335492	300℃,	--	2018-04-23	2019-04-22

ID NO.		DESCRIPTION	MANUF.	MODEL NO.	SERIAL NO.	Range	Reference Standard	CAL. DATE	DUE DATE
☐	25	Frequency Converter	Chroma	6530	ACS002 (4904)	47/50/60/120/240/400/450 Hz	--	2018-04-25	2019-04-24
☐	26	Anemometer	Lutron	AM-4214SD	Q887652	0.2m/s	--	2018-04-26	2019-04-25
☐	27	Thermo-Hygrograph	OMEGA	iTHX-SD	15250924	10℃~ +40℃ 30%~80%RH	--	2018-04-24	2019-04-23
☐	28	Digital power meter	YOKOGAWA	WT-210	27DB37627	15V~600V 1mA~20A	--	2018-04-26	2019-04-25
☐	29	DC Electronic Load	Chroma	63103A	6314A003645	1V~60V 40mA~60.12A	--	2018-04-17	2019-04-16
☐	30	DC Electronic Load	Chroma	6314A+, 63103A	6314A003646	1V~60V 40mA~60.14A	--	2018-04-17	2019-04-16
☐	31	DC Electronic Load	Chroma	6314A+, 63103A	6314A003688	1V~60V 0.4004A~60.19A	--	2018-04-17	2019-04-16
☐	32	DC Electronic Load	Chroma	6314A+, 63103A	6314A003689	1V~60V 40.5mA~60.14A	--	2018-04-17	2019-04-16
☐	33	Example of electric strength test	ASIA	HPA-1	7051802	--	IEC/UL 62368 Figure 29 for electric strength test	2017-05-19	2020-05-18
☐	34	Blunt probe	ASIA	TTP-1	7051801	--	IEC 62368 Figure V.3 (Blunt probe)	2017-05-19	2020-05-18
☒	35	High Voltage Probe	HP	9258	HP-9258-MW001	--	IEC 62368 Clause 5.5.5.2 (100MOhm probe)	2018-04-19	2019-04-18

TABLE: EQUIPMENT LIST									P
ID NO.		DESCRIPTION	MANUF.	MODEL NO.	SERIAL NO.	Range	Reference Standard	CAL. DATE	DUE DATE
☐	~~18~~	~~Leakage Current Meter~~	~~Simpson~~	~~228~~	~~20689~~	~~10mA, 50/60/100Hz~~	--	~~2021-04-29~~	~~2022-04-28~~
☒	19	Timekeeper	Every day	C-518	N/A	24hour	--	2024-12-22	2025-12-21
☐	20	Leakage Current Meter	EXTECH	7630	1330708	277Vac, 1MHz, 10mA	IEC 60601	2024-12-13	2025-12-12
☐	~~21~~	~~Chamber~~	~~K. SON~~	~~THS-C4L-100~~	~~1397~~	~~-40 to 100℃, max. 95% RH~~	--	~~2022-12-15~~	~~2023-12-14~~
☐	~~22~~	~~POWER ANALYER~~	~~Chroma~~	~~6630~~	~~0973~~	~~600V, 20A, 50/60Hz, 2400W~~	--	~~2021-04-21~~	~~2022-04-20~~
☒	23	DATA ACQUISITION UNIT	Yokogawa	Mx100-E-1D	91L335491	200℃	--	2024-12-17	2025-12-16
☐	~~24~~	~~DATA ACQUISITION UNIT~~	~~Yokogawa~~	~~Mx100-E-1D~~	~~91L335492~~	~~200℃~~	--	~~2022-12-15~~	~~2023-12-14~~
☐	~~25~~	~~Frequency Converter~~	~~Chroma~~	~~6530~~	~~ACS002 (4904)~~	~~47/50/60/120/240/400/450Hz~~	--	~~2021-04-15~~	~~2022-04-14~~
☐	26	Anemometer	Lutron	AM-4214SD	Q887652	0 to 19.0m/s	--	2024-12-26	2025-12-25
☐	~~27~~	~~Thermo-Hygrograph~~	~~OMEGA~~	~~iTHX-SD~~	~~15250924~~	~~+10 to +40℃ 15% to 80%RH~~	--	~~2023-12-21~~	~~2024-12-20~~
☐	~~28~~	~~Digital power meter~~	~~YOKOGAWA~~	~~WT-210~~	~~27DB37627~~	~~15V~600V 1mA~20A~~	--	~~2019-06-03~~	~~2020-06-02~~
☐	29	DC Electronic Load	Chroma	63103A	63103A003645	60V, 60A	--	2025-01-24	2026-01-23

TABLE: EQUIPMENT LIST									P
ID NO.		DESCRIPTION	MANUF.	MODEL NO.	SERIAL NO.	Range	Reference Standard	CAL. DATE	DUE DATE
☐	30	DC Electronic Load	Chroma	63103A	63103A003646	60V, 60A	--	2025-01-24	2026-01-23
☐	31	DC Electronic Load	Chroma	63103A	63103A003688	60V, 60A	--	2025-01-24	2026-01-23
☐	32	DC Electronic Load	Chroma	63103A	63103A003689	60V, 60A	--	2025-01-24	2026-01-23
☐	33	Example of electric strength test	ASIA	HPA-1	7051802	--	IEC/UL 62368 Figure 29 for electric strength test	2024-12-17	2025-12-16
☐	34	Blunt probe	ASIA	TTP-1	7051801	--	IEC 62368 Figure V.3 (Blunt probe)	2024-12-17	2025-12-16
☐	35	High Voltage Probe	HP	9258	HP-9258-MW001	--	IEC 62368 Clause 5.5.2.2 (100MOhm probe) (<25pF)	2024-12-20	2025-12-19
☒	36	Thermocouple wire	OMEGA	-	SG00004342-MW001 SG00004342-MW002	J type, 0-200℃	--	2024-12-17	2025-12-16
☒	37	MULTIMETER	GW INSTEK	GDM-452	GUR 150338	600V, 200mA	--	2025-02-04	2026-02-03
☐	38	Digital Torque Meter	KILEWS	KTM-100	049016	96.65kgf.cm	--	2025-04-25	2026-04-24

TABLE: EQUIPMENT LIST									P
ID NO.		DESCRIPTION	MANUF.	MODEL NO.	SERIAL NO.	Range	Reference Standard	CAL. DATE	DUE DATE
☐	~~39~~	~~Thermal Shock Tester~~	~~GIANT~~	~~GTST-150-65~~	~~MAI0304-001~~	~~-10 to 70℃~~	--	~~2020-09-23~~	~~2021-09-30~~
☒	40	Digital power meter	YOKOGAWA	WT310	C3VK16041E	600V, 20A, 4800W, 47-63Hz	--	2025-01-23	2026-01-22
☐	41	Hh3102-000 000-72EC	ECHO CHEMICAL CO.,LTD.	--	--	minimum of 85 %	IEC 62368 Annex F.3.10.3	2024-04-01	2026-11-23
☒	42	Dielectric Analyzer	EXTECH	7140-S8	1349924	Hi Pot= 7000Vac/ 8000Vdc, 60s	--	2025-02-06	2026-02-05
☐	43	Leakage Current Test Box	--	--	TC00419	--	IEC 60990, Figure 4, Figure 5	2024-12-20	2025-12-19
☐	44	Tape Measure	--	--	--	0 to 300 cm	--	2024-12-17	2025-12-16
☐	45	Oven	Giant Force	GTST-150-65-A W-3	MAI1810-003	70 to 140 °C	--	2024-12-31	2025-12-30
☐	46	Resistor	--	--	--	1 kΩ	IEC 60601-1 Clause 8.7.3	2024-12-17	2025-12-16
☐	47	Resistor	--	--	--	10 kΩ	IEC 60601-1 Clause 8.4.2	2024-12-17	2025-12-16
☒	48	DC Electronic Load	Chroma	63224A-600-1 680	63224AM00217	0 to 600 Vdc 0 to 200 Adc	--	2025-01-22	2026-01-21
☐	49	DC Electronic Load	Chroma	63201	632010000749	0 to 80 Vdc 0 to 300 Adc	--	2024-12-21	2025-12-20

TABLE: EQUIPMENT LIST									P
ID NO.		DESCRIPTION	MANUF.	MODEL NO.	SERIAL NO.	Range	Reference Standard	CAL. DATE	DUE DATE
☒	50	Digital Power Meter	Yokogawa	WT500	91J606053	60 to 600 Vac 1.5 to 600Vdc 100 mA to 40 Aac 100 mA to 40 Adc 110 W to 12 kW 47 to 63 Hz 0.1 to 50% (THD)	--	2024-12-21	2025-12-20
☐	51	Optical Measuring Equipment	Peak	25X	2008-25	0-3mm	--	2024-12-17	2025-12-16
☐	52	Precision Electronic Scale	Honder	MX-918-3K	BB1026001	0-3kg	--	2024-12-17	2025-12-16
☒	53	DC Electronic Load	Chroma	63224A-600-1680	63224AM00244	0 to 600 Vdc 0 to 200 Adc	--	2025-01-22	2026-01-21
☐	54	Current Shunt	Yokogawa	2215	--	10-300A	--	2024-12-17	2025-12-16
☐	55	Temperature/Humidity Chamber	K.SON	THS-B6T-100	A0464	-40 to 100℃, max. 95% RH	--	2024-12-25	2025-12-24
☒	56	Thermo-Hygrograph	Dostmann	LOG220	22024020010	15-35℃, 40-80% RH, 800-1100 hPa	--	2024-12-17	2025-12-16

Standard	Test Item	Instrument Code	Test Start Date	Test Finish Date	Use Range
IEC 62368-1:2018	Normal Operating Conditions Temperature Measurement (B.2.6, 5.4.1.4, 6.3, 9.3, B.1.5)	1) 23 2) 36 3) 48 4) 50 5) 53	2025.09.25	2025.09.26	1) 200℃ 2) J type, 0 - 200℃ 3) 0 to 600 Vdc, 0 to 200 Adc 4) 60 to 600 Vac , 1.5 to 600Vdc, 100 mA to 40 Aac, 100 mA to 40 Adc , 110 W to 12 kW , 47 to 63 Hz, 0.1 to 50% (THD). 5) 0 to 600 Vdc, 0 to 200 Adc
IEC 62368-1:2018	Abnormal operating and fault condition tests (B.3, B.4)	1) 40 2) 37 3) 19 4) 48 5) 50 6) 53	2025.11.20	2025.11.20	1) 600V, 20A, 4800W, 47-63Hz 2) 600V, 200mA 3) 24hour 4) 0 to 600 Vdc, 0 to 200 Adc 5) 60 to 600 Vac , 1.5 to 600Vdc, 100 mA to 40 Aac, 100 mA to 40 Adc , 110 W to 12 kW , 47 to 63 Hz, 0.1 to 50% (THD). 6) 0 to 600 Vdc, 0 to 200 Adc
IEC 62368-1:2018	Electric strength tests	1) 42	2025.11.20	2025.11.20	1) Hi Pot= 7000Vac/ 8000Vdc, 60s

See below for summary and applicable clauses.

All tests were conducted in Maximum Normal Load conditions as below, if not specified elsewhere.

MAXIMUM NORMAL LOAD" was defined as follows:

3.3Vdc, 6A for Model RS-25-3.3.

60% Normal Load: +12Vdc, 1.26A for Model RS-25-12.

IEC62368_1E- ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
ATTACHMENT TO TEST REPORT **IEC 62368-1** **EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES** (AUDIO/VIDEO, INFORMATION AND COMMUNICATION TECHNOLOGY EQUIPMENT - PART 1: SAFETY REQUIREMENTS)			
Differences according to ..... : EN IEC 62368-1:2020+A11:2020			
Attachment Form No. ..... : EU_GD_IEC62368_1E **Attachment Originator**..... : UL(Demko) **Master Attachment** ..... : 2021-02-04			
	CENELEC COMMON MODIFICATIONS (EN)		P
	Clause numbers in the cells that are shaded light grey are clause references in EN IEC 62368-1:2020+A11:2020. All other clause numbers in that column, except for those in the paragraph below, refers to IEC 62368-1:2018. Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 62368-1:2018 are prefixed “Z”.		P
	Add the following annexes: Annex ZA (normative) Normative references to international publications with their corresponding European publications Annex ZB (normative) Special national conditions Annex ZC (informative) A-deviations Annex ZD (informative) IEC and CENELEC code designations for flexible cords		P
1	**Modification to Clause 3 .**		
3.3.19	**Sound exposure** *Replace 3.3.19 of IEC 62368-1 with the following definitions:*		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
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
3.3.19.3	**sound exposure, *E*** A-weighted sound pressure (p) squared and integrated over a stated period of time, T Note 1 to entry: The SI unit is Pa^2 s. $E = \int_0^T p(t)^2 \, dt$		N/A
3.3.19.4	**sound exposure level, *SEL*** logarithmic measure of sound exposure relative to a reference value, E_0, typically the 1 kHz threshold of hearing in humans. Note 1 to entry: *SEL* is measured as A-weighted levels in dB. $SEL = 10 \lg\left(\frac{E}{E_0}\right)$ dB Note 2 to entry: See B.4 of EN 50332-3:2017 for additional information.		N/A
3.3.19.5	**digital signal level relative to full scale, dBFS** levels reported in dBFS are always r.m.s. Full scale level, 0 dBFS, is the level of a dc-free 997-Hz sine wave whose undithered positive peak value is positive digital full scale, leaving the code corresponding to negative digital full scale unused Note 1 to entry: It is invalid to use dBFS for non-r.m.s. levels. Because the definition of full scale is based on a sine wave, the level of signals with a crest factor lower than that of a sine wave may exceed 0 dBFS. In particular, square wave signals may reach +3,01 dBFS.		N/A
2	**Modification to Clause 10**		
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		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	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 • cassette player/recorder; NOTE 4 This exemption has been allowed because this technology is falling out of use and it is expected that within a few years it will no longer exist. This exemption will not be extended to other technologies.		

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	– a player while connected to an external amplifier that does not allow the user to walk around while in use. For equipment that is clearly designed or intended primarily for use by children, the limits of the relevant toy standards may apply. The relevant requirements are given in EN 71-1:2011, 4.20 and the related tests methods and measurement distances apply.		
10.6.1.2	**Non-ionizing radiation from radio frequencies in the range 0 to 300 GHz** 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		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	65 dB, there is no need to give a warning or ask an acknowledgement as long as the average sound level of the song is not above the basic limit of 85 dB.		
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 and false positive PMP sound level		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	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
10.6.4.2	**Protection of persons**		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	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.		
10.6.5	**Requirements for dose-based systems**		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
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
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.		N/A

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

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

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
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**		

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

	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				

4	**Modification to Clause 1**		
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

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

5	**Modification to 4.Z1**		
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.		P
6	**Modification to 5.4.2.3.2.4**		
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**		
10.2.1	Add the following to [c] and [d] in table 39: For additional requirements, see 10.5.1.		N/A

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

8	**Modification to 10.5.1**		
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**		
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

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

10	**Modification to Bibliography**		
	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**		
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

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
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
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.		N/A

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

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
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 equipment if the **protective conductor current** exceeds the limits of 3,5 mA a.c. or 10 mA d.c.		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
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.”		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Translation to Swedish: ”Apparater som är kopplad till skyddsjord via jordat vägguttag och/eller via annan utrustning och samtidigt är kopplad till kabel-TV nät kan i vissa fall medföra risk för brand. För att undvika detta skall vid anslutning av apparaten till kabel-TV nät galvanisk isolator finnas mellan apparaten och kabel-TV nätet.”.		
8.5.4.2.3	**United Kingdom** Add the following after the 2nd dash bullet in 3rd paragraph: An emergency stop system complying with the requirements of IEC 60204-1 and ISO 13850 is required where there is a risk of personal injury.		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

IEC 62368-1			
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

IEC 62368-1			
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

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

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

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

ZD **IEC and CENELEC CODE DESIGNATIONS FOR FLEXIBLE CORDS (EN)** P

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

IEC62368_1E ATTACHMENT			
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 2022-03-04		
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

IEC62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
1 (1DV.3)	For protection against direct lightning strikes, reference is made to NFPA 780 and CAN/CSA-B72 for additional requirements.		N/A
1 (DV.5)	Additional requirements apply to some forms of power distribution equipment, including sub-assemblies.		N/A
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.		P
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.		N/A
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.		N/A
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

IEC62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
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
	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

IEC62368_1E ATTACHMENT			
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.		P
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
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

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

IEC62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	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
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

IEC62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
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

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IEC 62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
ATTACHMENT TO TEST REPORT IEC 62368-1 (AUSTRALIA / NEW ZEALAND) NATIONAL DIFFERENCES (**Audio/video, information and communication technology equipment**)			
Differences according to .....:	AS/NZS 62368.1:2022		
TRF template used:.....:	IECEE OD-2020-F3, Ed. 1.1		
Attachment Form No. .....: **Attachment Originator**.....: **Master Attachment** .....:	AU_NZ_ND_IEC62368_1E JAS-ANZ 2025-07-07		
	National Differences		P
Appendix ZZ	Variations to IEC 62368-1:2018 (ED. 3.0) for Australia and New Zealand		P
ZZ1 Scope	This Appendix lists the normative variations to IEC 62368-1:2018 (ED. 3.0)		P
ZZ2 Variations	The following modifications are required for Australian/New Zealand conditions:		P
2	After the first paragraph, *add* the following: The Australian or Australian/New Zealand Standards listed below are modified adoptions of, or not equivalent to, the IEC normative references and are required for the application of this Standard. All references in the source text to those IEC normative references shall be replaced by references to the corresponding Australian or Australian/New Zealand Standards. Australian or Australian/New Zealand Standards that are identical adoptions of international normative references may be used interchangeably -AS/NZS 3112, *Approval and test specification—Plugs and socket-outlets* -AS/NZS 3123, *Approval and test specification—Plugs, socket-outlets and couplers for general industrial application* -AS/NZS 3191, *Electric flexible cords* *-AS/NZS 60884.1.Plugs and socket-outlets for household and similar purposes, Part 1: General requirements* *-IEC 60086-2 Primary batteries — Part 2: Physical and electrical specifications* -AS/NZS 60065, *Audio, video and similar electronic apparatus—Safety requirements (IEC 60065:2015 (ED.8.0) MOD)* -AS/NZS 60320.1, *Appliance couplers for household and similar general purposes, Part 1: General requirements (IEC 60320-1,*	Added	P

IEC 62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	Ed.2.1 (2007) MOD) -AS/NZS 60320.2.2, *Appliance couplers for household and similar general purposes Part 2.2: Interconnection couplers for household and similar equipment (IEC 60320-2-2, Ed.2.0 (1998) MOD)* -AS/NZS 60695.2.11, *Fire hazard testing, Part 2.11: Glowing/hot wire based test methods—Glow-wire flammability test method for end-products* -AS/NZS 60695.11.5, *Fire hazard testing, Part 11.5: Test flames—Needle-flame test method—Apparatus, confirmatory test arrangement and guidance* -AS/NZS 60695.11.10, *Fire hazard testing, Part 11.10: Test flames—50 W horizontal and vertical flame test methods* -AS/NZS 60884.1, *Plugs and socket-outlets for household and similar purposes, Part 1: General requirements* -AS/NZS 60950.1, *Information technology equipment—Safety*, Part 1: *General requirements (IEC 60950-1, Ed.2.2 (2013), MOD)* IEC 61032:1997, *Protection of persons and equipment by enclosures—Probes for verification* -AS/NZS 61558.1, *Safety of Power Transformers, Power Supplies, Reactors and Similar Products, Part 1: General requirements and tests (IEC 61558-1 Ed 3, MOD)* -AS/NZS 61558.2.16, *Safety of transformers, reactors, power supply units and similar products for voltages up to 1 100 V, Part 2.16: Particular requirements and tests for switch mode power supply units and transformers for switch mode power supply units.*		
4.7.2	**Requirements** *Delete* the text of the second paragraph and *replace* with the following: Equipment with a plug portion, suitable for insertion into a 10 A 3-pin flat-pin socket-outlet conforming to AS/NZS 3112, shall conform to the requirements in AS/NZS 3112 for equipment with integral pins for insertion into socket-outlets. Conformity is checked by inspection and, if necessary, by the tests in AS/NZS 3112. NOTE: Equipment with plug portions for use in countries other than Australia and New Zealand will need to conform to other countries' requirements Note Additional AS/NZS 3112 Appendix J,TRF is appended to end of this TRF.		N/A

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<table>
<tr><td colspan="4">IEC 62368_1E ATTACHMENT</td></tr>
<tr><td>Clause</td><td>Requirement + Test</td><td>Result - Remark</td><td>Verdict</td></tr>
<tr><td>4.7.3</td><td>Compliance Criteria
Delete this clause</td><td></td><td>N/A</td></tr>
<tr><td>4.8.1</td><td>General
After second list, add the following:
NOTE: Refer to the Consumer Goods (Products Containing Button/Coin Batteries) Safety Standard 2020 and Consumer Goods (Products Containing Button/Coin Batteries) Information Standard 2020 for more information on button cell batteries in Australia..</td><td></td><td>N/A</td></tr>
<tr><td>5.4.10.2.1</td><td>General
Delete the first paragraph and replace with the following:
In Australia, the separation is checked by the test given in both Clause 5.4.10.2.2 and Clause 5.4.10.2.3.
In New Zealand, the separation is checked by the test given in either 5.4.10.2.2 or 5.4.10.2.3..</td><td></td><td>N/A</td></tr>
<tr><td>Table 28</td><td colspan="2">Delete Table 28 and replace with the following:</td><td>N/A</td></tr>
<tr><td colspan="4">
<table>
<tr><td rowspan="2">Parts</td><td colspan="2">Impulse test</td><td colspan="2">Steady state test</td></tr>
<tr><td>New Zealand</td><td>Australia</td><td>New Zealand</td><td>Australia</td></tr>
<tr><td>Parts indicated in Clause 5.4.10.1 a) [a]</td><td>2.5 kV</td><td>7.0 kV for hand-held telephones and headsets, 2.5 kV for other equipment.</td><td>1.5 kV</td><td>3 kV</td></tr>
<tr><td>Parts indicated in Clause 5.4.10.1 b) and c) [b]</td><td colspan="2">1.5 kV [c]</td><td>1.0 kV</td><td>1.5 kV</td></tr>
<tr><td colspan="5">[a] Surge suppressors shall not be removed.
[b] Surge suppressors may be removed, provided that such devices pass the impulse test of Clause 5.4.10.2.2 when tested as components outside the equipment.
[c] During this test, it is allowed for a surge suppressor to operate and for a sparkover to occur in a GDT.</td></tr>
</table>
</td></tr>
<tr><td>5.4.10.2.2</td><td>Delete “NOTE” and replace with “NOTE 1”.
After NOTE 1, add the following:
NOTE 2: For Australia, the 7 kV impulse simulates lightning surges on typical rural and semi-rural network lines.
NOTE 3: For Australia, the value of 2.5 kV for Clause 5.4.10.1 a) was chosen to ensure the adequacy of the insulation concerned and does not necessarily simulate likely overvoltages.</td><td></td><td>N/A</td></tr>
<tr><td>5.4.10.2.3</td><td>Delete “NOTE” and replace with “NOTE 1”.
After NOTE 1, add the following:
NOTE 2: For Australia, where there are capacitors across the insulation under test, it is recommended that d.c. test voltages are used.
NOTE 3: The 3 kV and 1.5 kV values for Australia have been determined considering the low frequency induced voltages from the power supply distribution system.</td><td></td><td>N/A</td></tr>
</table>

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IEC 62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
6	**Electrically-caused fire**		N/A
6.6	After Clause 6.6, *add* the new Clauses 6.201 as follows: **6.201 External power supplies, docking stations and other similar devices** (see special national conditions)		N/A
8.6	**Stability of equipment**		N/A
Table 36	Footnote [a], after first sentence, *add* the following: Equipment having displays with moving images shall include “television sets and display devices”.		N/A
8.6.1	After Clause 8.6.1 *add* the following new clauses: **8.6.201 Restraining Device fixing point** (see special national conditions) **8.6.202 Restraining device** (see special national conditions)		N/A
Annex F **Paragraph F.3.3.4**	**Rated Voltage** *Delete* “NOTE” and *replace* with NOTE1” After NOTE 1, *add* the following Equipment that is intended for connection to the supply mains in Australia and New Zealand shall be marked with: (a) A rated voltage of: • 230 V for single phase equipment • 400 V for poly phase equipment Or (b) A rated voltage range that includes: • 230 V for single phase equipment • 400 V for poly phase equipment NOTE 2: equipment that is not rated as above is not suitable for direct connection to the supply mains in Australia or new Zealand.		P
Annex F.3.3.5	After the list, *add* the following Equipment that is intended for connection to supply mains in Australia or New Zealand shall be marked with a rated frequency of 50 Hz or a rated frequency range or nominal value which includes 50Hz		P
Annex F.3.8	After “The DC output of an external power supply”, insert ”or docking stations and other similar external devices”		N/A

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IEC 62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
Annex G **Paragraph G.4.2**	**Mains connectors** 1 After "IEC 60320", insert "or AS/NZS 60320 series". 2 After "IEC 60906-1", insert"or AS/NZS 3123" 3 *After* first paragraph *add* the following: 10 A or 15 A 250 V flat pin plugs for the connection of equipment to mains-powered socket-outlets for household or similar general use shall comply with AS/NZS 3112 or AS/NZS 60884.1.		N/A
Paragraph G.5.3.1	**Transformers, General** 1 Third dashed point *replace* 'IEC 61558-1 and the relevant parts of IEC 61558-2' with 'AS/NZS 61558-1 and the relevant parts of AS/NZS 61558.2' 2 Fourth dashed point *replace* 'IEC 61558-2-16' with 'AS/NZS 61558.2.16'.		P
Annex G.7.1	**Mains supply cords, General** Fourth dashed paragraph, *replace* 'IEC 60320-1' with 'AS/NZS 60320.1'		N/A
Table G.7	**Sizes of conductors** 1 First column, second row, *delete* "6" and *replace* with "7.5" 2 Second column, second row, *delete* '0,75' and *replace* with '0.75[b] 3 *Delete* NOTE 1. 4 *Replace* 'NOTE 2' with 'NOTE:'. 5 *Delete* 'Footnote b' and *replace* with the following: [b] This nominal cross-sectional area is only allowed for Class II appliances if the length of the power supply cord, measured between the point where the cord, or cord guard, enters the appliance, and the entry to the plug does not exceed 2 m (0.5 mm^2 three-core supply flexible cords are not permitted; see AS/NZS 3191). 6 Footnote c *replace* 'IEC 60320-1' with 'AS/NZS 60320.1' 7 Footnote d *replace* 'IEC 60320-1' with 'AS/NZS 60320.1'		N/A
Annex M **M 2.1**	*Add* "IEC 60086-2" to the list		N/A

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IEC 62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
Annex M **Paragraph M.3.2**	**Test method** Delete"NOTE" and replace with "NOTE 1" After NOTE 1 *add* the following: NOTE 2: In cases where the voltage source is provided by power from an unassociated power source, consideration should be given to the effects of possible single fault conditions in the unassociated equipment. If the power source is unknown then it should be assumed that the maximum limit of ES1 may be applied to the source input under assumed single fault conditions in the source when assessing the charging circuit in the equipment under test.		N/A
			N/A
	Special national conditions (if any)		N/A

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IEC 62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
6.201	**External power supplies, docking stations and other similar devices** For external power supplies, docking stations and other similar devices, during and after abnormal operating conditions and during single fault conditions the output voltage— (a) at all ES1 outlets or connectors shall not increase by more than 10 % of the output rated voltage under normal operating conditions, measured after 3 s of introducing a singlefault condition and after 3 s of introducing abnormal operating conditions; and (b) of a USB outlet or connector shall not increase by more than 3 V or 10 % of the output rated voltage under normal operating conditions, whichever is higher, measured after3 seconds of introducing a single fault condition and after 3 s of introducing abnormal operating conditions For equipment with multiple rated voltages at the output, the requirements apply with the equipment configured for each output rated voltage in turn NOTE: This is intended to reduce the possibility of battery fire or explosion in attached equipment or accessories when charging secondary lithium batteries. The 3 s measurement delay is based on IEC document 108/742/INF, *TC 108, Standards Interpretation Panel Question 15 — Output voltage*, in relation to similar requirements in IEC 62368-3:2017. Conformity shall be checked by measurement, taking into account the abnormal operating conditions of Annex B.3 and the simulated single fault conditions of Annex B.4.		N/A

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IEC 62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
8.6.201	**Restraining device fixing point** Freestanding-capable MS2 and MS3 television sets and display devices shall be provided with a fixing point to facilitate the anchoring of the equipment from toppling The fixing point shall conform to Clause 8.7 where the fixing point uses a wall, ceiling or other structure mount. Alternatively, the fixing point shall be capable of withstanding a pull equal to the mass of the equipment in all directions without damage Instructions for installation or instructions for use shall be provided to specify correct use of the fixing point		N/A
	Describe the Fixing Point		N/A
	Attache Photo of Fixing Point		N/A
8.6.202	**Restraining device** MS2 and MS3 television sets and display devices shall be provided with a restraining device and associated hardware to attach to the television set or display device. The restraining device shall be capable of withstanding a pull equal to the mass of the equipment in all directions. Instructions for installation or instructions for use shall be provided to specify correct use of the fixing point .		N/A
	Describe the Restraining Device		N/A
	Attach a Photo of Restraining Device		N/A

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AS/NZS 3112:2017 Appendix J			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT

AS_NZS_3112:2017_+A1:2021 APPENDIX J
AUSTRALIAN / NEW ZEALAND NATIONAL DIFFERENCES
(APPROVAL AND TEST SPECIFICATION—PLUGS AND SOCKET-OUTLETS)

Differences according to ..... :	AS_NZS_3112:2017_Amendment 1:2021_Appendix J
TRF template used:.....:	IECEE OD-2020-F3, Ed. 1.1
Attachment Form No. ..... :	AS_NZS_3112:2017_Appendix J
Attachment Originator..... :	JAS-ANZ
Master Attachment..... :	2022-06

	Note: AS/NZS 3112 is NOT covered by IECEE Accreditation for Testing / Reporting **Please State Laboratory Accreditation for this Standard**		
	Accreditation		
	Accreditation Stamp		

J1 SCOPE	General: This Appendix specifies additional dimensional and constructional requirements for detachable plug portions, or equipment incorporating integral supply pins or equipment incorporating detachable plug portions. This Appendix shall be read in conjunction with Section 2 of this Standard. For the purposes of this Appendix, where the term 'plug' is used in Section 2 it shall be taken to mean the plug portion of equipment or the detachable plug portion. The equipment shall comply with the relevant product Standard. The tests and requirements specified in this Appendix are in addition to any test and requirements of the relevant product Standard for the equipment. (AS/NZS 3112:2017/A1:2021)	N/A

IEC 62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
ATTACHMENT TO TEST REPORT **IEC 62368-1** **CHINA NATIONAL DIFFERENCES** (**AUDIO/VIDEO, INFORMATION AND COMMUNICATION TECHNOLOGY EQUIPMENT -PART 1: SAFETY REQUIREMENTS**)			
Differences according to ..... :	GB 4943.1-2022		
TRF template used:.....:	IECEE OD-2020-F3, Ed. 1.1		
Attachment Form No. ..... : **Attachment Originator**..... : **Master Attachment**..... :	CN_ND_IEC62368_1E CQC Dated 2025-02-25		
	National Differences		P
4.1.2	**Use of components** Add a paragraph: A component used shall comply with related requirements corresponding altitude of the equipment.		P
4.11	Add clause 4.11,as follows: Protection in PRIMARY CIRCUITS against overcurrent short-circuits and earth faults shall be provided as an integral part of the equipment except the device shall meet the all requirement of Fault conditions. If pluggable equipment type B or permanently connected equipment depends on protective devices outside the equipment for protection, this shall be stated in the installation instructions of the equipment, with requirements for short-circuit protection, over-current protection ,or both if necessary.		P
5.3.2.2	**Contact requirements** Amend the 2nd paragraph of table 8 to be: For equipment intended to be used at altitude of 2000m to 5000m, the values in this table are multiplied by the multiplication factor corresponding altitude of 5000m.		P

IEC 62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.2.5	**Multiplication factors for altitudes higher than 2 000 m above sea level** Amend the 1st paragraph to be: For equipment to be operated at more than 2000 m above sea level and up to 5000m above sea level, the minimum CLEARANCE in tables 10,11 and 14,and resistance test voltages required in table 15, shall meet the requirements of 5000 m above sea level, This is multiplied by the multiplication factor corresponding altitude of 5000m in table 16. For equipment to be used at equal or less than 2000 m above sea level, the minimum CLEARANCE in tables 10, 11 and 14, and resistance test voltages required in table 15, shall meet the requirements of 2000 m above sea level. This is multiplied by the multiplication factor corresponding altitude of 2000m in table 16. Delete note 2 of Clause 5.4.2.5.		N/A
5.4.5.1	**General** Delete the 2nd paragraph of Clause 5.4.5.1: This test does not apply to equipment where one antenna terminal on the equipment is connected to earth in accordance with 5.6.7. Add the following: The Insulation resistance between CATV antenna coaxial sockets and protective earth of apparatus shall comply with BASIC INSULATION. If it's possible that CLASS II apparatus with CATV antenna coaxial sockets connect with protective earth of another CLASS I apparatus by other terminals, the insulation resistance between them shall comply with BASIC INSULATION as well. If antenna cable separated from the protective earth before connection to the apparatus, there is no requirements of Insulation resistance between them but F.4 requirements shall be meet. *Del*ete "NOTE" of Clause 5.4.5.1		N/A

IEC 62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.8	**Humidity conditioning** Amend clause 5.4.8 as follows : The humidity conditioning is conducted for 120 h in a cabinet or room containing air with ambient temperature (40±2) °C and a relative humidity of (93±3)%. During this conditioning, the component or subassembly is not energized. For equipment not to be operated at tropical climatic conditions, humidity conditioning is conducted for 48 h in a cabinet or room containing air with a relative humidity of (93±3) %. The temperature of the air, at all places where samples can be located, is maintained within 2 °C of any convenient value between 20 °C and 30 °C such that condensation does not occur. Add note: For equipment to be operated at 2000 m - 5000m above sea level, assessment and requirement of humidity conditioning for Insulation material properties are considered. Pre-processing conditions and requirements below 2000m can be used until additional data is available.	The Relative humidity (95%), temperature (40°C), duration (120h) are considered.	P
6.4.9 Y.4.3	Delete references to ASTM and NEMA.		N/A
6.5.1	**General requirements** Delete the text of the Note “Wire complying with UL 2556 VW-1 is considered to comply with these requirements”.		N/A
F.1	Amend the second paragraph of annex F.1 to be: Unless symbols are used or otherwise specified, safety related equipment markings, instructions, and instructional safeguards shall be in normative Chinese.	It shall be evaluated during national approval.	N/A

IEC 62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
F.2.2	After the first paragraph of annex F.2.2 ,add the following: For apparatus intended to be used at altitude not exceeding 2000m, a warning label containing the following or a similar appropriate wording or a symbol shown below shall fixed to the equipment at readily visible place. "Only used at altitude not exceeding 2000m."  For apparatus intended to be used in not-tropical climate regions, a warning label containing the following or a similar appropriate wording or a symbol shown below shall fixed to the equipment at readily visible place. "Only used in not-tropical climate regions."  If only symbol used, the explanation of the symbol shall be contained in the instruction manual. The statements above shall be given in a language acceptable to the regions where the apparatus is intended to be used.		N/A
F.3.3.4	After the last paragraph, Added: …for single rated voltage, “220 V” or three-phase “380V” shall be marked only. For a rating voltage range, 220 V or three-phase 380V shall be covered. For multiple rated voltages, one of them shall be 220 V or three-phase 380V and which default setting from manufacture shall be 220 V or three-phase 380V as well.	The single phase for input rating is considered to cover 220V.	P
F.3.3.5	After the last paragraph, Added: Rated frequency shall be 50Hz or frequency range shall cover 50Hz.	Cover 50Hz.	P
F.4	**Instructions** Added: – For apparatus incorporating antenna coaxial sockets which is non-separated with CATV network, a warning wording or a similar shall be given in the instruction manual: “A CATV cable intended to be connected to apparatus shall be separated with the protective earth of the apparatus, otherwise fire hazard might be caused.”		N/A
F.5	**Instructional safeguards** In table F.2， change 230V to 220V，change 400Y/230V 3Ø to 380 Y/220 V 3Ø		N/A

IEC 62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
G.4.2	Amend clause G.4.2 as follows : Plugs connected to the MAINS in apparatus shall comply with GB/T 1002,GB/T 1003,GB/T 2099.1 or GB/T11918（All parts） series. Appliance coupler shall comply with GB/T 17465（All parts） series or GB/T 11918（All parts） series.	It shall be evaluated during national approval.	N/A
	Special national conditions (if any)		P
0.12	Add clause 0.12 Description of relevant information.		P
1	GB 4943.1-2022 applies to equipment used at altitudes not exceeding 5000m above sea level, For apparatus intended to be used at altitude not exceeding 2000m, The requirements can be appropriately reduced, but warning instructions shall be provided.. Revise the sixth paragraph of 1 as: In addition to specified by the manufacturer, this document assumes a maximum altitude of 5000m	The equipment is declared the operation altitude up to 5000m.	N/A
B.2.6.1	Amend T_{ma} as follows: T_{ma} is the maximum ambient temperature permitted by the manufacturer's specification, or 35 °C, whichever is greater. Add note 1: For equipment not to be operated at tropical climatic conditions, T_{ma} is the maximum ambient temperature permitted by the manufacturer's specification, or 25 °C, whichever is greater. Add note 2: For equipment to be operated at 2000m-5000m above sea leave, its temperature test conditions and temperature limits are under consideration. temperature test conditions and temperature limits below 2000m can be used until additional data is available.	Considered	P
Annex Z **(normative)**	Added annex Z: Instructions of the new safety warning labels.		N/A
Annex AA (informative)	Added annex AA: Illustration relative to safety explanation in normative Chinese, Tibetan, Mongolian, Zhuang Language and Uighur.	It shall be evaluated during national approval.	N/A

ATTACHMENT to TRF (IEC62368_1E)			
ATTACHMENT TO TEST REPORT **IEC 62368-1:2018** **(SAUDI ARABIA) NATIONAL DIFFERENCES** **(Audio/Video, Information and Communication Technology equipment Part 1: Safety requirements)**			
Differences according to ..... :	National standard SASO-IEC-62368-1		
TRF template used:.....:	IECEE OD-2020-F3:2024, Ed. 1.3		
Attachment Form No. ..... : **Attachment Originator**..... : **Master Attachment**..... :	SA_ND_IEC62368_1E Saudi Standards, Metrology and Quality Organization (SASO) 2025-07-17		
Clause	Requirement + Test	Result - Remark	Verdict
	National Differences		P
L.7	Plugs used for pluggable equipment comply with standard SASO-2203.		N/A
	Type of plug & socket-outlets: G type		N/A
B.2.2	**Frequency and tolerance (Hz)**		P
	60 Hz ± 0.2	60 Hz	P
B.2.3	**Rated voltage (V)**		P
	Single phase 230 V Three phase 400 V **Voltage tolerance (%) ± 5**	Single phase 230 V	P

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ATTACHMENT to TRF IEC62368_1E			
Clause	Requirement + Test	Result - Remark	Verdict
ATTACHMENT TO TEST REPORT **IEC 62368-1:2018** **JAPAN NATIONAL DIFFERENCES** AUDIO/VIDEO, INFORMATION AND COMMUNICATION TECHNOLOGY EQUIPMENT – PART 1: SAFETY REQUIREMENTS			
Differences according to.....: J62368-1(2023)			
TRF template used: .....: IECEE OD-2020-F3:2022, Ed. 1.2			
Attachment Form No.....: JP_ND_IEC62368_1E **Attachment Originator .....**: UL Solutions (JP) **Master Attachment**.....: Dated 2023-05-12			
	National Differences		P
4.1.2	Where the component, or a characteristic of a component, is a safeguard or a part of a safeguard, components shall comply with the requirements of this document or, where specified in a requirements clause, with the safety aspects of the relevant JIS component standards or IEC component standards, or components shall have properties equivalent to or better than these.		P
5.6.1	Mains socket-outlet and interconnection coupler shall comply with Clause G.4.2A if they are incorporated as part of the equipment.	No Mains socket-outlet and appliance outlet.	N/A

ATTACHMENT to TRF IEC62368_1E			
Clause	Requirement + Test	Result - Remark	Verdict
5.6.2.1	Connection for protective conductor of class 0I equipment provided with instructional safeguard in accordance with Clause F.3.6.1A is considered to make earlier and break later than supply connection. Mains plug having a lead wire for protective earthing connection of class 0I equipment shall comply with all of the following: – Not to be used for equipment having a rated voltage of 150 V or more – Clip is not used for the earthing connection of the lead wire. – The lead wire for earthing is at least 10 cm long If class 0I equipment provides an independent main protective earthing terminal and is intended to be installed by ordinary person, earthing wire shall be provided in the package of the equipment.		N/A
5.6.2.2	Internal earthing conductor of the cord set that is covered by the sheath of mains cord and is formed together with mains plug and appliance connector need not be green-and-yellow.		N/A
5.6.3	In case of class 0I equipment using power supply cord having two conductors (no earthing conductor), the conductor of protective earthing lead wire shall comply with either of the following: – use of annealed copper wire with 1.6 mm diameter or corrosion-inhibiting metal wire having size and strength that are equivalent to or more than the above copper wire – single core cord or single core cab tire cable with 1.25 mm^2 or more cross-sectional area		N/A
5.7.3	For class 0I equipment that is provided with mains socket-outlet in the configuration as specified in JIS C 8282 series, JIS C 8300 or JIS C 8303, or that is provided with mains appliance outlet as specified in JIS C 8283 series for the purpose of interconnection, the measurement is conducted on the system of the interconnected equipment having a single connection to the mains.		N/A
5.7.5	In case of class 0I equipment, touch current shall not exceed 1.41 mA peak or for sinusoidal wave, 1.0 mA r.m.s. when measured using the network specified in Figure 4 of IEC 60990:2016.		N/A

ATTACHMENT to TRF IEC62368_1E			
Clause	Requirement + Test	Result - Remark	Verdict
6.4.3.2	A fuse complying with JIC C 6575 series or a fuse having equivalent characteristics shall open within 1 s. A fuse having time/current characteristics other than those specified in IEC 60127 shall be tested with the characteristics taken into account. In case of Class A fuse of JIS C 6575, replace “2.1 times” by “1.35 times” and in case of Class B fuse of JIS C 6575, replace “2.1 times” by “1.6 times”.		N/A
8.5.4.3.1	Only three-phase stationary equipment rated more than AC 200 V can be considered as being for use in locations where children are not likely to be present, when complying with Clause F.4.		N/A
8.5.4.3.2	For equipment installed where children may be present, an instructional safeguard shall be provided by easily understandable wording in accordance with Clause F.5, except that element 3 is optional.		N/A
8.5.4.3.4	The media destruction device is tested according to Clause V.1.2 with applicable jointed test probes to the opening. And then the wedge probe per Figure V.4 shall not contact any moving part.		N/A
8.5.4.3.5	The wedge probe of Figure V.4 and applicable jointed test probes specified in Clause V.1.2 shall not contact any moving part. Instructional safeguard shall not be used instead of equipment safeguard for preventing access to hazardous moving parts.		N/A
F.3.5.1	When the mains socket-outlet is configured in accordance with JIS C 8282 series, JIS C 8300 or JIS C 8303, the assigned current or power shall be marked. If the voltage of the socket-outlet is the same as the mains voltage, the voltage need not be marked. Instructional safeguard of Class 0I equipment shall be provided with an instructional safeguard in accordance with Clause F.5 when a mains socket-outlet as specified in JIS C 8282 series, JIS C 8300 or JIS C 8303 to which class I equipment can be connected is provided in accordance with Clause G.4.2A except for the cases where the socket-outlet is accessible only to skilled persons.		N/A
F.3.5.3	If the fuse is necessary for the safeguard function, the symbols indicating pre-arcing time-current characteristic shall be included.	Added	P

ATTACHMENT to TRF IEC62368_1E			
Clause	Requirement + Test	Result - Remark	Verdict
F.3.6.1A	Marking for class 0I equipment The requirements of Clauses F.3.6.1.1 and F.3.6.1.2 shall be applied to class 0I equipment. For class 0I equipment, a marking of instructions shall be provided regarding the earthing connection. In addition to the above, for class 0I equipment, an instruction to connect earthing before and disconnect earthing after the connection of supply conductors shall be marked on the visible place of the main body or shall be in the text of an accompanying document.		N/A
F.3.6.2	Symbols, IEC 60417-5172 (2003-02) or IEC 60417-6092 (2011-10), shall not be used for class I equipment or class 0I equipment.		N/A
F.3.8A	Attention marking for aging deterioration of CRT television Year of manufacture, standard usage period by design according to JIS C 9921-5 and cautionary statement for possible risks of aging deterioration when used beyond the specified period shall be marked on CRT television except for industrial use CRT television.		N/A
F.4	For audio equipment with terminals classified as ES3 in accordance with Table E.1, and for other equipment with terminals marked in accordance with F.3.6.1 and F.3.6.1A, the instructions shall require that the external wiring connected to these terminals shall be installed by a skilled person, or shall be connected by means of ready-made leads or cords that are constructed in a way that would prevent contact with any ES3 circuit. For class 0I equipment provided with independent main protective earthing terminal, where the cord for the protective earthing connection is not provided in the package of the equipment, if the protective earthing connection is made by instructed person or skilled person, the suitable installation instruction for the protective earthing connection shall be provided.		N/A
G.3.2.1	The thermal link when tested as a separate component, shall comply with the requirements of JIS C 6691 or have properties equivalent to or better than that.		N/A

ATTACHMENT to TRF IEC62368_1E			
Clause	Requirement + Test	Result - Remark	Verdict
G.3.4	Except for devices covered by Clause G.3.5, overcurrent protective devices used as a safeguard shall comply with the applicable JIS or IEC standard in accordance with 4.1.2 or shall have equivalent or better properties. Such a protective device shall have adequate breaking (rupturing) capacity to interrupt the maximum fault current (including short-circuit current) that can flow.		P
G.4.1	This requirement does not apply to connectors covered in Clauses G.4.2 and G.4.2A.		N/A
G.4.2	Mains connectors, mains plugs and socket-outlets shall comply with JIS C 8283 series, JIS C 8285, IEC 60309 series, JIS C 8282 series, JIS C 8300, JIS C 8303, or have equivalent or better properties. A power supply cord set provided with appliance connector that can fit appliance inlet complying with JIS C 8283-1 shall comply with JIS C 8286. Construction shall prevent mechanical stress not to transmit to the soldering part of appliance inlet terminal. When an equipment is rated not more than 125 V and all of the following are met, Type C14 and C18 appliance inlet complying with JIS C 8283-3 can be considered as rated 15 A. – The temperature of appliance inlet does not exceed the value specified in JIS C 8283-1 under the most unfavourable normal operating condition as specified in Clause B.2.1. – "Use only designated cord set attached in this equipment" or equivalent text is described in the operating instruction. If the cord set is not provided in the package of the equipment, suitable information regarding to the cord set is described in the operating instruction.		N/A
G.4.2A	Mains socket-outlet and interconnection coupler provided with the class II, class I and class 0I equipment respectively		N/A
G.7.1	A mains supply cord need not include the protective earthing conductor for class 0I equipment provided with independent protective earthing conductor.		N/A

ATTACHMENT to TRF IEC62368_1E			
Clause	Requirement + Test	Result - Remark	Verdict
G.7.2 Table G.7	Cross-sectional area of equipment rated up to and including 3 A shall be 0.75 mm^2.		N/A
G.7.6.1 Table G.9	The cross-sectional area of mains cords according to JIS C 3010 may comply with relevant Japanese wiring regulation. For cables other than those complying with JIS C 3662 series or JIS C 3663 series, the terminals shall be suitable for the size of the intended cables.		N/A

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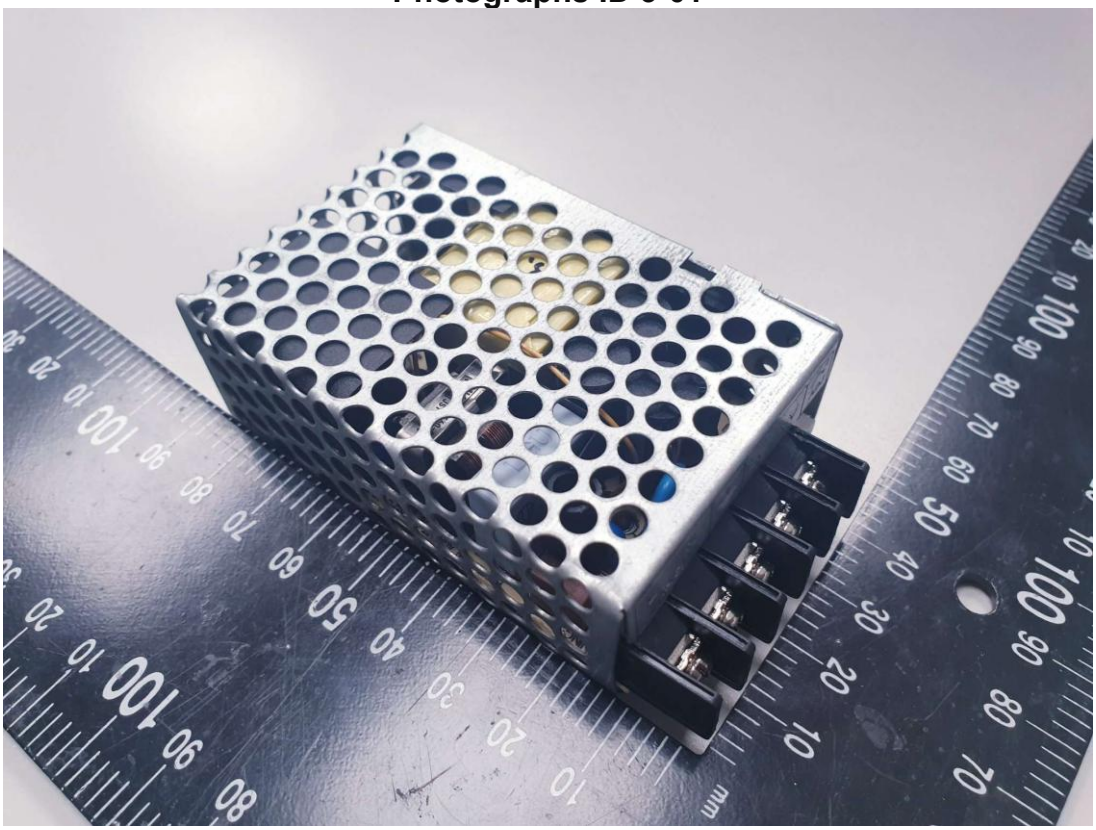
ATTACHMENT to TRF IEC62368_1E			
Clause	Requirement + Test	Result - Remark	Verdict
ATTACHMENT TO TEST REPORT **IEC 62368-1:2018** **REPUBLIC OF KOREA NATIONAL DIFFERENCES** AUDIO/VIDEO, INFORMATION AND COMMUNICATION TECHNOLOGY EQUIPMENT - PART 1: SAFETY REQUIREMENTS			
Differences according to.....: KC 62368-1(2021-08)			
TRF template used: .....: IECEE OD-2020-F3, Ed. 1.2			
Attachment Form No.....: KR_ND_IEC62368_1E **Attachment Originator .....**: KTL **Master Attachment**.....: 2024-09-02			
	National Differences		
4.1.1	As of January 1, 2023, internal and external components and subassemblies that comply with IEC 60950-1 or IEC 60065 are not acceptable if those components and subassemblies mandates KC certification.		P
G.4.2	Plugs for the connection of the apparatus to the supply main shall comply with the Korean requirement (KS C 8305 or KC 60884-1 or KC 60799).	EUT is for building-in, the overall compliance shall be investigated in end products.	N/A
	Special national conditions (if any)		
Voltage	The marking of rated voltage or rated voltage range, for appliances intended to be connected to the supply mains, shall include 110 V, 220 V or 380 V.	Considered.	P
Frequency	Only appliances having supply frequency of 60 Hz or a frequency range including 60 Hz are accepted.	Considered.	P
Instruction	Instruction manuals and appliance marking related safety, including nameplate shall be in Korean		N/A

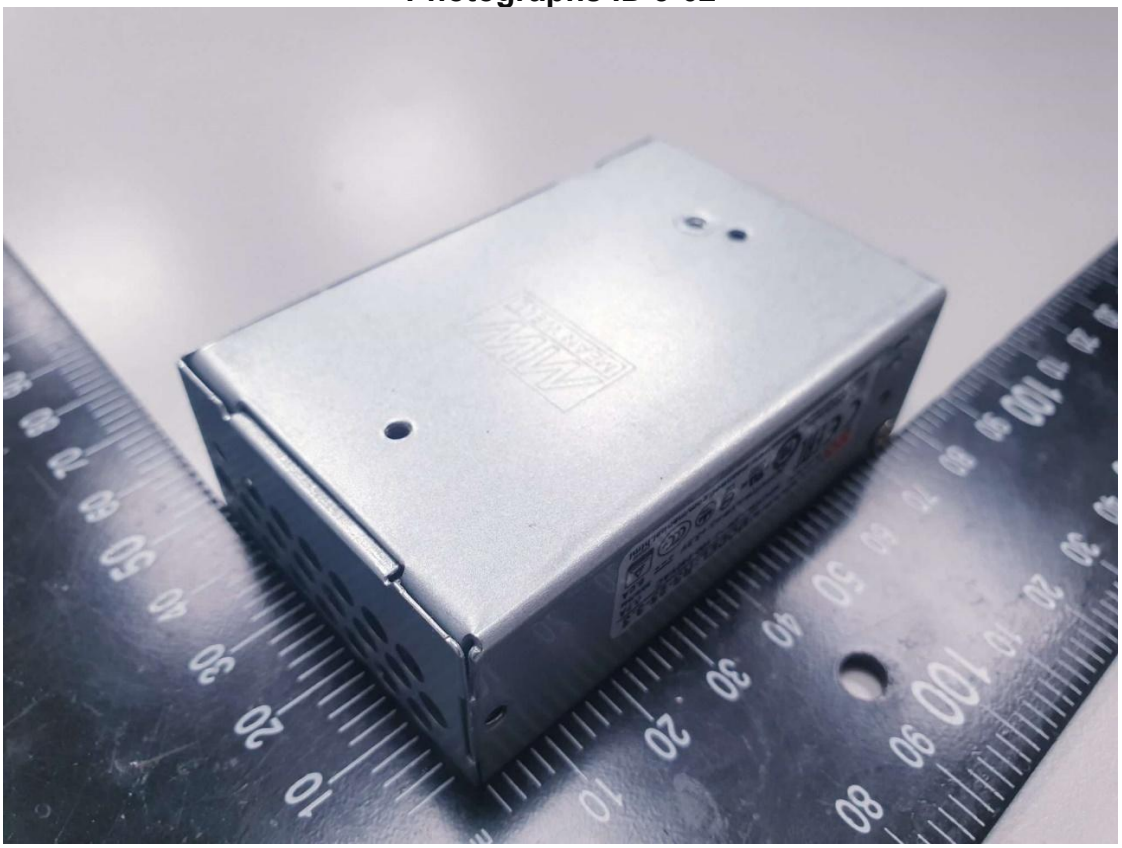
Enclosures

Type	Supplement ID	Description
Photographs	3-01	Overall View-1
Photographs	3-02	Overall View-2
Photographs	3-03	Internal View
Photographs	3-04	Mylar Sheet with Chassis
Photographs	3-05	PWB Component Side View
Photographs	3-06	PWB Trace Side View
Diagrams	4-01	Transformer T1 (TF-991 for Model RS-25-3.3) (TF-992 for Model RS-25-5) (TF-992 for Model RS-25-5) (TF-993 for Model RS-25-12) (TF-994 for Model RS-25-15) (TF-995 for Model RS-25-24) (TF-996 for Model RS-25-48) Spec.
Diagrams	4-02	Mylar Sheet Diagram (unit: mm)
Miscellaneous	7-01	SELV Reliability Table
Miscellaneous	7-02	Layout for Bonding Conductor

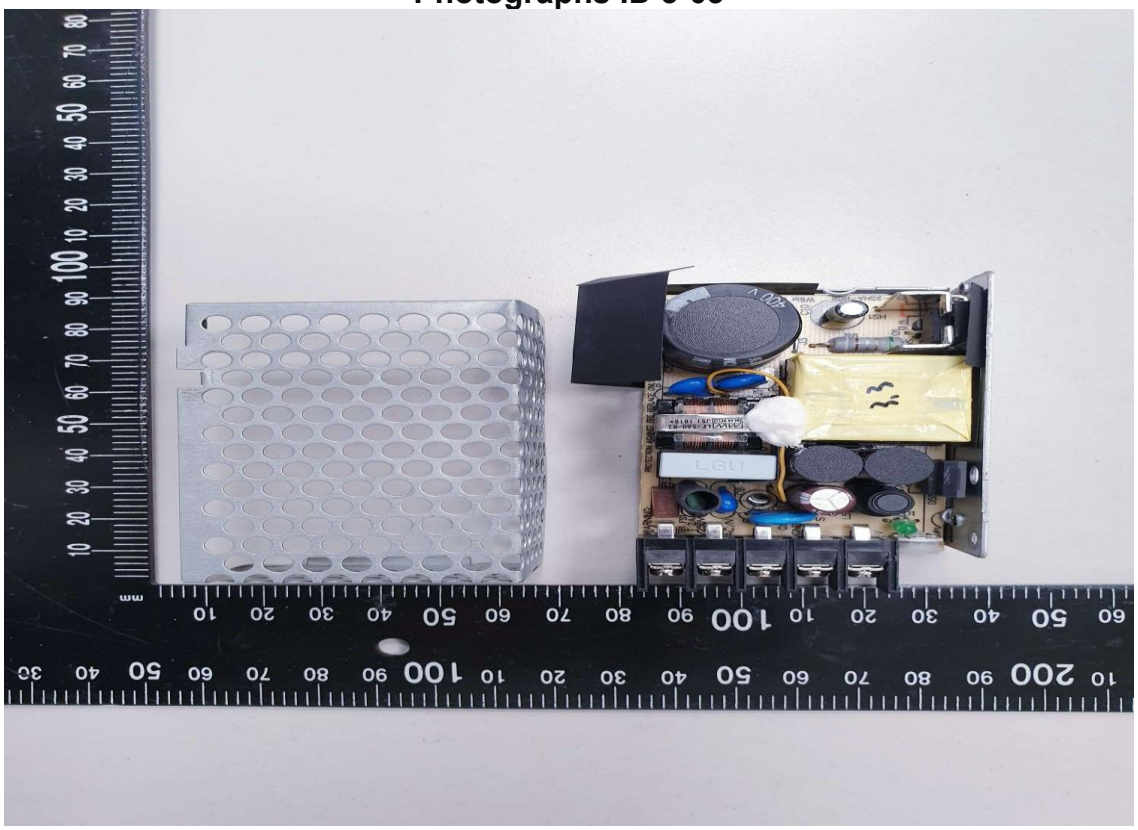
Photographs ID 3-01



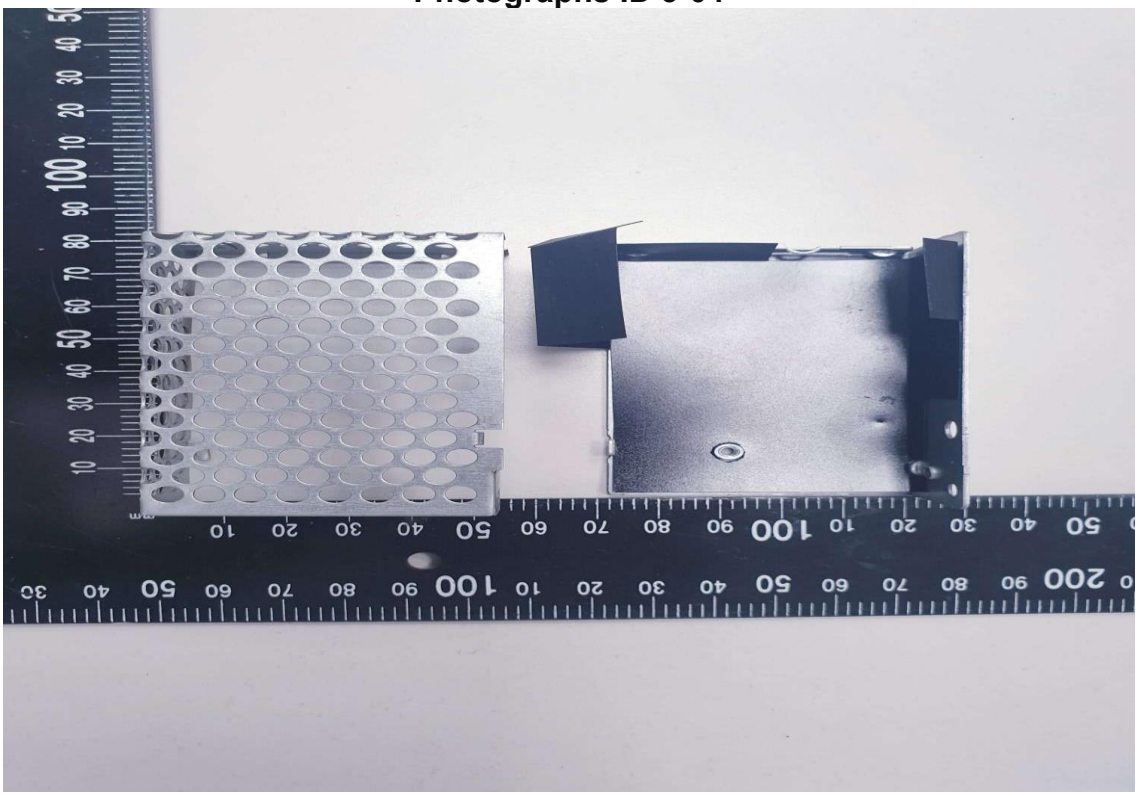
Photographs ID 3-02



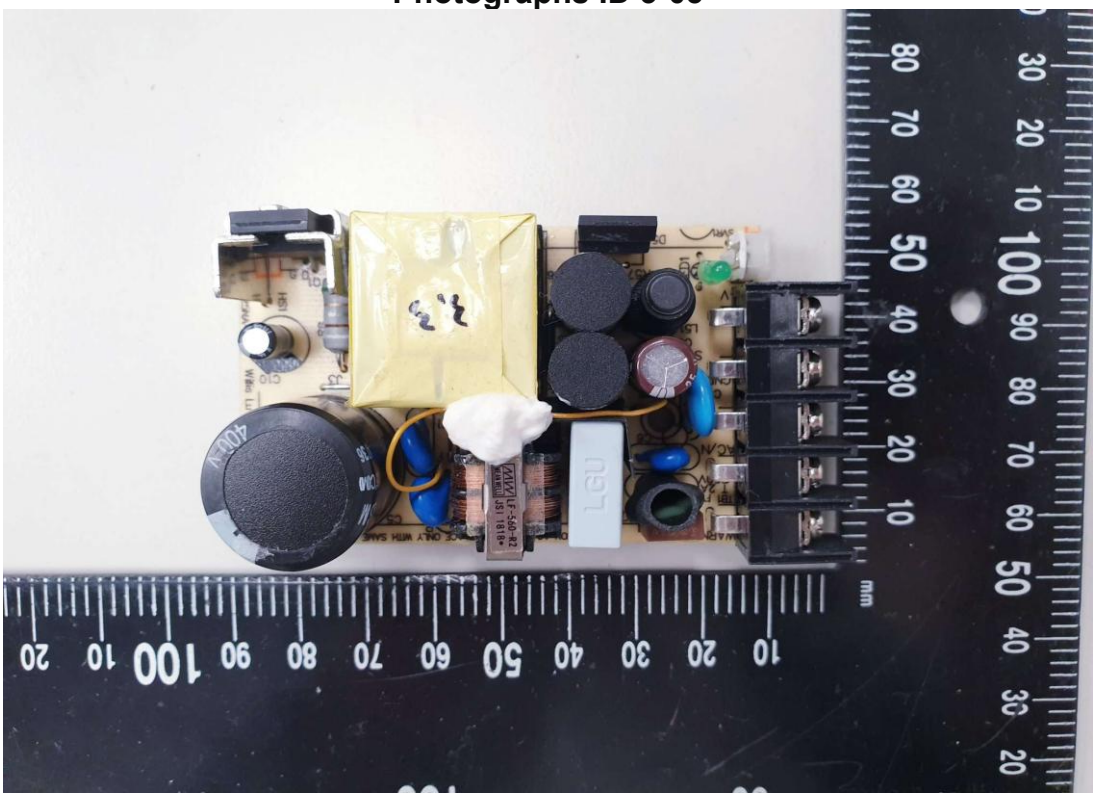
Photographs ID 3-03



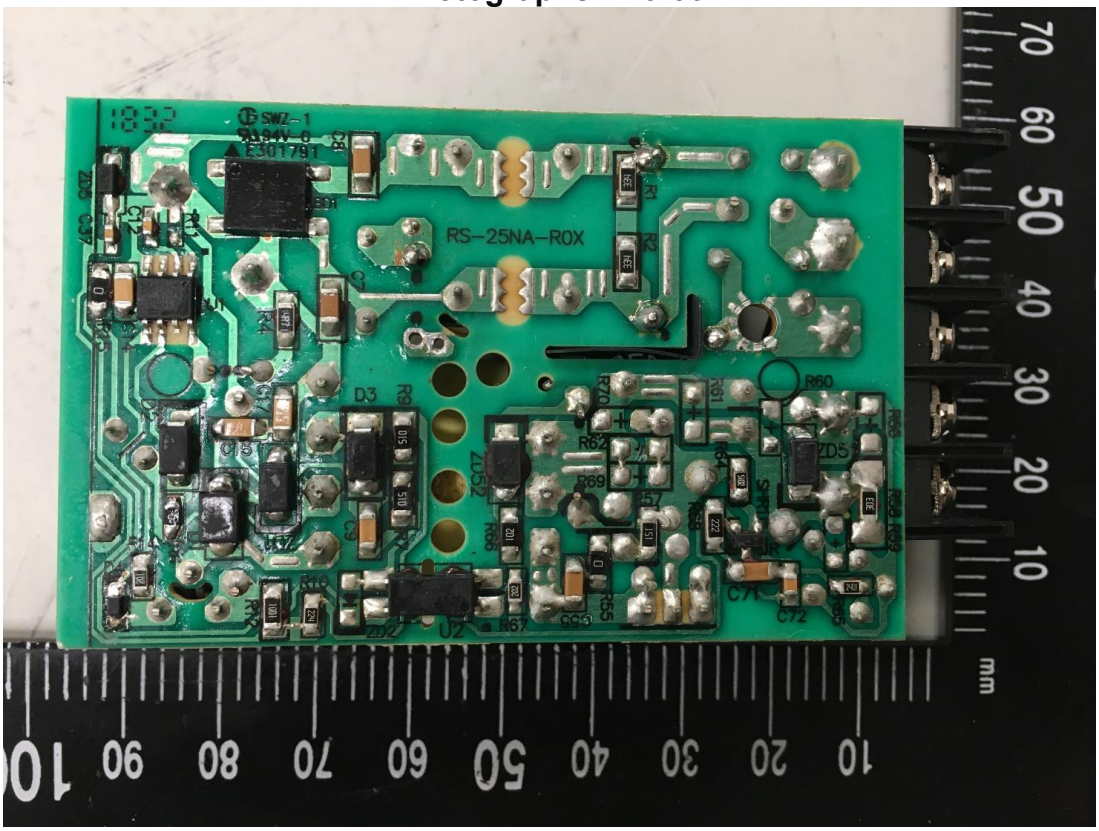
Photographs ID 3-04



Photographs ID 3-05



Photographs ID 3-06



Miscellaneous 7-01

	TABLE: evaluation of voltage limiting components in SELV circuits		
Component (measured between)	max. voltage (V) (normal operation)		Voltage Limiting Components
	V peak	V d.c.	
Model: RS-25-3.3			
T1 Pin 9, 10 to 7, 8, RTN	15.2	--	--
Model: RS-25-5			
T1 Pin 9, 10 to 7, 8, RTN	20.0	--	--
Model RS-25-48			
T1 Pin 9, 10 to 7, 8, RTN	254.0	--	
T1 Pin 9, 10 after D55 to 7, 8, RTN	--	50.0	D55

Fault test performed on voltage limiting components	Voltage measured (V) in SELV circuits (V peak or V d.c.)
Model RS-25-48	
D55 shorted	+48V DC Output: 0V (Unit shut down)

supplementary information:

The unit was connected to 240V ac, 60 Hz and operated normally;
Test on Model RS-25-3.3, RS-25-5 and RS-25-48.

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