Ref. Certif. No.

JPTUV-111313

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	Zippy Technology Corp 10F., No. 50, Minquan Rd, Xindian District, New Taipei 231 Taiwan
Name and address of the manufacturer	Zippy Technology Corp 10F., No. 50, Minquan Rd, Xindian District, New Taipei 231 Taiwan
Name and address of the factory	ZIPPY TECHNOLOGY CORP 4F., No. 48, Wucyuan Rd. Wugu Dist., New Taipei City 24886 Taiwan
Ratings and principal characteristics	Input: 1) DC 10-36V; 14.5-4A; Class I 2) DC 18-36V; 10-5A; Class I Output: refer to the test report
Trademark (if any)	EMACS
Customer's Testing Facility (CTF) Stage used	N/A
Model / Type Ref.	1) AB1U-5120V 2) BB1U-6150V
Additional information (if necessary may also be reported on page 2)	For model differences, refe to the test report.
A sample of the product was tested and found to be in conformity with	IEC 62368-1:2014 See Test Report for National Differences
As shown in the Test Report Ref. No. which forms part of this Certificate	60391663 001

This CB Test Certificate is issued by the National Certification Body

TÜVRheinland®

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Global Technology Assessment Center
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Date: 2020-08-24

Signature:

Dipl.-Ing. F. Stoelzel

10/0861 CB 06/2009 rk

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Test Report issued under the responsibility of:

TÜVRheinland®

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

Report Number ..... :	60391663 001
Date of issue ..... :	August 19, 2020
Total number of pages ..... :	80
Applicant's name ..... :	Zippy Technology Corp
Address ..... :	10F., No. 50, Minquan Rd, Xindian District, New Taipei 231, Taiwan
Test specification:	
Standard..... :	IEC 62368-1:2014 (Second Edition)
Test procedure ..... :	CB Scheme
Non-standard test method ..... :	N/A
Test Report Form No. ..... :	IEC62368_1B
Test Report Form(s) Originator..... :	UL(US)
Master TRF ..... :	2014-03

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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 ..... :			
Manufacturer ..... :	Same as Applicant		
Model/Type reference ..... :	AB1U-5120V, BB1U-6150V		
Ratings ..... :	See **General product information** for details.		
Testing procedure and testing location:			
☒ CB Testing Laboratory:			
Testing location/ address ..... :	**Dongguan Lepont Testing Service Co., Ltd. (China)** 1/F., Building B, No.117 Ting Shan Industrial Zone, Houjie Town, Dongguan, Guangdong China		
☐ Associated CB Testing Laboratory:			
Testing location/ address ..... :			
Tested by (name + signature) ..... :	Paul Zou Project Engineer	Paul Zou	
Approved by (name + signature) ..... :	SW Chang Reviewer	SW Chang	
☐ Testing procedure: CTF Stage 1			
Testing location/ address ..... :			
Tested by (name + signature) ..... :			
Approved by (name + signature) ..... :			
☐ Testing procedure: CTF Stage 2			
Testing location/ address ..... :			
Tested by (name + signature) ..... :			
Witnessed by (name + signature) ..... :			
Approved by (name + signature) ..... :			
☐ Testing procedure: CTF Stage 3			
☐ Testing procedure: CTF Stage 4			
Testing location/ address ..... :			
Tested by (name + signature) ..... :			
Approved by (name + signature) ..... :			
Supervised by (name + signature) ..... :			

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

- National Differences (36 pages)
- Photo Documentation (5 pages)

Summary of testing:

This CB standard updated test report is based on the previous IEC 60950-1:2005+A1:2009+A2:2013 CB test report issued by NCB TÜV Rheinland Japan, details as below:

Test report number	Certification number	Testing procedure	Date of receipt of test item	Date (s) of performance of tests
11037465 001	JPTUV-057502	CBTL	July.2015	July.2015

No technical changes have been found by construction review at the provided sample and/or other administrative modifications.

Following additional tests and evaluations per the requirements of the new standard and/or considered necessary were conducted in this report:

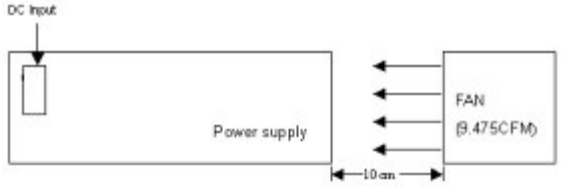
- Check and update certificate validity of critical components (Cl. 4.1.2),
- Steady State Voltage and Current conditions (Cl. 5.2.2.2),
- Highest working frequency measurement (Cl. 5.4.1.8),
- Minimum Clearance/Creepage distance (Cl. 5.4.2.2, 5.4.2.4 and 5.4.3),
- Solid insulation (Cl. 5.4.4.9),
- Humidity conditioning (Cl. 5.4.8),
- Electric strength test (Cl. 5.4.9),
- Thermal burn tests in normal, abnormal and single fault conditions (Cl. 9, B.3, B.4).
- Stress relief test (Annex T.8).

Except stated above, all test data are derived from original CB test report.

Tests performed (name of test and test clause):

All applicable tests as described in Test Case and Measurement Sections were performed.

- The test samples are pre-production without serial numbers.
- The equipment operated at maximum specified DC-load with maximum power condition.
- The decision rule of conformity of this test report is following the requirements of the requested standard in this test report, and agreed among testing laboratory and manufacturer (applicant) to exclude the consideration of Measurement Uncertainty.
- During the tests, equipment provided with an external DC fan, rated air flow 9.475CFM. The fan is located adjacent to output side of the power supply, details see below illustration.



Testing location:

All tests as described in Test Case were Measurement Sections were performed at the laboratory described on page 2.

Summary of compliance with National Differences:

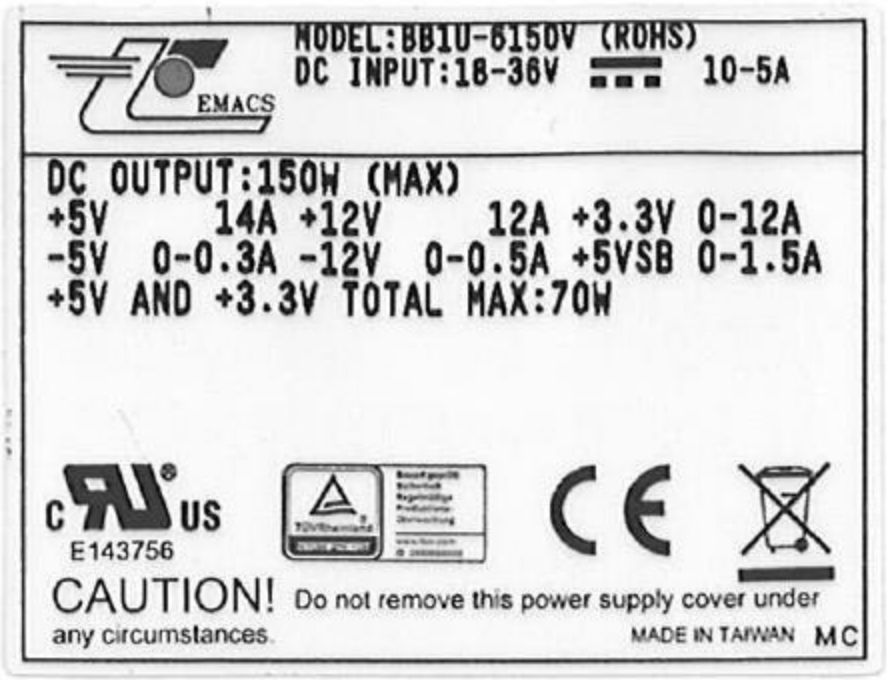
List of countries addressed

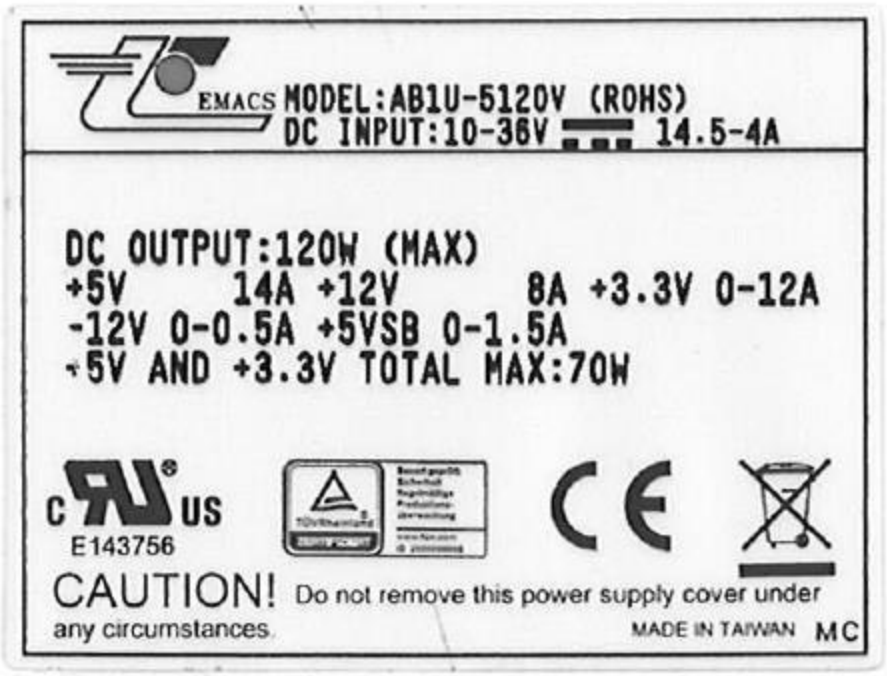
EU Group Differences, EU Special National Conditions, DK, JP, AU, NZ, US, IT.
Explanation of used codes: DK=Denmark, JP=Japan, AU=Australia, NZ=New Zealand, US=United States of America, IT=Italy.

☒ **The product fulfils the requirements of EN 62368-1:2014 + A11: 2017**

Copy of marking plate:

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





TEST ITEM PARTICULARS:	
Classification of use by..... :	☐ Ordinary person ☐ Instructed person ☐ Skilled person ☐ Children likely to be present
Supply Connection ..... :	☐ AC Mains ☐ DC Mains ☒ External Circuit - not Mains connected - ☒ ES1 ☐ ES2 ☐ ES3
Supply % Tolerance ..... :	☐ +10%/-10% ☐ +20%/-15% ☐ +15 %/-15 % ☒ None
Supply Connection – Type ..... :	☐ pluggable equipment type A - ☐ non-detachable supply cord ☐ appliance coupler ☐ direct plug-in ☐ mating connector ☐ pluggable equipment type B - ☐ non-detachable supply cord ☐ appliance coupler ☐ permanent connection ☐ mating connector ☒ other: To be determined in the end product
Considered current rating of protective device as part of building or equipment installation..... :	15A Installation location: ☐ building; ☒ equipment
Equipment mobility..... :	☐ movable ☐ hand-held ☐ transportable ☐ stationary ☒ for building-in ☐ direct plug-in ☐ rack-mounting ☐ wall-mounted
Over voltage category (OVC) ..... :	☐ OVC I ☒ OVC II ☐ OVC III ☐ OVC IV ☐ other: _____
Class of equipment ..... :	☒ Class I ☐ Class II ☐ Class III
Access location ..... :	☐ restricted access location ☒ N/A
Pollution degree (PD) ..... :	☐ PD 1 ☒ PD 2 ☐ PD 3
Manufacturer's specified maximum operating ambient ..... :	50°C
IP protection class ..... :	☒ IPX0 ☐ IP___
Power Systems ..... :	☒ TN ☐ TT ☐ IT - 230 V $_{L-L}$
Altitude during operation (m) ..... :	☐ 2000 m or less ☒ 3100 m
Altitude of test laboratory (m) ..... :	☒ 2000 m or less ☐ _____ m
Mass of equipment (kg) ..... :	Max. 0.68
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 .....:	November 26, 2019
Date (s) of performance of tests .....:	November 26, 2019 – August 19, 2020
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).....:	ZIPPY TECHNOLOGY CORP 4F., No. 48, Wucyuan Rd., Wugu Dist., New Taipei City 24886 Taiwan

GENERAL PRODUCT INFORMATION:

Product Description –

- The equipment is a switching mode power supply intended for general office use with Audio/video information and communication technology equipment in the scope of this standard.
- Model and rating details:

Model	DC input rating	DC output rating						
		+5V	+3.3V	+12V	-12V	+5VSB	-5V	Total max power
AB1U-5120V	10-36Vdc, 14.5-4A	14A	0-12A	8A	0-0.5A	0-1.5A	--	120W
		+5V AND +3.3V MAX. 70W						
BB1U-6150V	18-36Vdc, 10-5A	14A	0-12A	12A	0-0.5A	0-1.5A	0-0.3A	150W
		+5V AND +3.3V MAX. 70W						

- DC in power is from an external power source that isolated from primary by double or reinforced insulation.
- The equipment is intended to be installed into a class I system and shall be connected to protective earth properly.
- Model difference:

  These 2 models are similar except for input rating, output rating and model BB1U-6150V with additional -5V board that attached on output wire for providing the additional output voltage.

ENERGY SOURCE IDENTIFICATION AND CLASSIFICATION TABLE:	
(Note 1: Identify the following six (6) energy source forms based on the origin of the energy.) (Note 2: The identified classification e.g., ES2, TS1, should be with respect to its ability to cause pain or injury on the body or its ability to ignite a combustible material. Any energy source can be declared Class 3 as a worse case classification e.g. PS3, ES3.	
Electrically-caused injury (Clause 5): (Note: Identify type of source, list sub-assembly or circuit designation and corresponding energy source classification) Example: +5 V dc input ES1	
Source of electrical energy	**Corresponding classification (ES)**
All circuits between transformer	ES2
Accessible part of input terminal	ES1
Output connector	ES1
Electrically-caused fire (Clause 6): (Note: List sub-assembly or circuit designation and corresponding energy source classification) Example: Battery pack (maximum 85 watts): PS2	
Source of power or PIS	**Corresponding classification (PS)**
All circuits (over 100W)	PS3
Output (over 100W)	PS3
Injury caused by hazardous substances (Clause 7) (Note: Specify hazardous chemicals, whether produces ozone or other chemical construction not addressed as part of the component evaluation.) Example: Liquid in filled component Glycol	
Source of hazardous substances	**Corresponding chemical**
N/A	N/A
Mechanically-caused injury (Clause 8) (Note: List moving part(s), fan, special installations, etc. & corresponding MS classification based on Table 35.) Example: Wall mount unit MS2	
Source of kinetic/mechanical energy	**Corresponding classification (MS)**
Evaluated in the end product	N/A
Thermal burn injury (Clause 9) (Note: Identify the surface or support, and corresponding energy source classification based on type of part, location, operating temperature and contact time in Table 38.) Example: Hand-held scanner – thermoplastic enclosure TS1	
Source of thermal energy	**Corresponding classification (TS)**
Evaluated in the end product	N/A
Radiation (Clause 10) (Note: List the types of radiation present in the product and the corresponding energy source classification.) Example: DVD – Class 1 Laser Product RS1	
Type of radiation	**Corresponding classification (RS)**
N/A	N/A

ENERGY SOURCE DIAGRAM
Indicate which energy sources are included in the energy source diagram. Insert diagram below
• **ES2 (all circuits between transformer), ES1 (DC input), ES1 (DC output)** • **PS3 (all circuits)**
■ ES ■ PS ☐ MS ☐ TS ☐ RS

OVERVIEW OF EMPLOYED SAFEGUARDS				
Clause	**Possible Hazard**			
5.1	Electrically-caused injury			
Body Part (e.g. Ordinary)	Energy Source (ES3: Primary Filter circuit)	Safeguards		
		Basic	Supplementary	Reinforced (Enclosure)
Ordinary	ES2: All circuits between transformer	5.4.2.2, 5.4.2.4 and 5.4.3	N/A	N/A
Ordinary	ES1: Accessible part of input terminal	N/A	N/A	N/A
Ordinary	ES1: Output connector	N/A	N/A	N/A
6.1	Electrically-caused fire			
Material part (e.g. mouse enclosure)	Energy Source (PS2: 100 Watt circuit)	Safeguards		
		Basic	Supplementary	Reinforced
Combustible materials within equipment fire enclosure	PS3: > 100 Watt circuit (all circuits)	N/A	To be evaluated in final system	N/A
Internal wiring material	PS3: > 100 Watt circuit	N/A	Equipment safeguard	N/A
Output connector and wiring material	PS3: > 100 Watt circuit	N/A	To be evaluated in final system	N/A
7.1	Injury caused by hazardous substances			
Body Part (e.g., skilled)	Energy Source (hazardous material)	Safeguards		
		Basic	Supplementary	Reinforced
N/A	N/A	N/A	N/A	N/A
8.1	Mechanically-caused injury			
Body Part (e.g. Ordinary)	Energy Source (MS3: High Pressure Lamp)	Safeguards		
		Basic	Supplementary	Reinforced (Enclosure)
N/A	N/A	N/A	N/A	N/A
9.1	Thermal Burn			
Body Part (e.g., Ordinary)	Energy Source (TS2)	Safeguards		
		Basic	Supplementary	Reinforced
N/A	N/A	N/A	N/A	N/A

10.1	Radiation			
Body Part (e.g., Ordinary)	Energy Source (Output from audio port)	Safeguards		
		Basic	Supplementary	Reinforced
N/A	N/A	N/A	N/A	N/A
Supplementary information: (1) See attached energy source diagram for additional details. (2) “N” – Normal Condition; “A” – Abnormal Condition; “S” – Single Fault.				

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

4	**GENERAL REQUIREMENTS**		P
4.1.1	Acceptance of materials, components and subassemblies	See appended table 4.1.2.	P
4.1.2	Use of components	Components which are certified to IEC and/or national standards are used correctly within their ratings. Components not covered by IEC standards are tested under the conditions present in the equipment.	P
4.1.3	Equipment design and construction		P
4.1.15	Markings and instructions .....:	(See Annex F)	P
4.4.4	Safeguard robustness	See below.	P
4.4.4.2	Steady force tests .....:		N/A
4.4.4.3	Drop tests.....:		N/A
4.4.4.4	Impact tests.....:		N/A
4.4.4.5	Internal accessible safeguard enclosure and barrier tests .....:		N/A
4.4.4.6	Glass Impact tests.....:		N/A
4.4.4.7	Thermoplastic material tests .....:	For the all sources of insulation material listed in appended table 4.1.2 are tested for a period of 7 hours (See Annex T.8).	P
4.4.4.8	Air comprising a safeguard .....:	To be evaluated in end system.	N/A
4.4.4.9	Accessibility and safeguard effectiveness	To be evaluated in end system.	N/A
4.5	Explosion	No explosion occurs during normal/abnormal operation and single fault conditions.	P
4.6	Fixing of conductors	See below.	P
4.6.1	Fix conductors not to defeat a safeguard	Compliance checked.	P
4.6.2	10 N force test applied to .....:	10N applied to all components. (See appended table 5.4.2.2, 5.4.2.4 and 5.4.3)	P
4.7	Equipment for direct insertion into mains socket - outlets		N/A
4.7.2	Mains plug part complies with the relevant standard .....:		N/A
4.7.3	Torque (Nm).....:		N/A
4.8	Products containing coin/button cell batteries		N/A
4.8.2	Instructional safeguard		N/A
4.8.3	Battery Compartment Construction		N/A
	Means to reduce the possibility of children		—

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	removing the battery .....:		
4.8.4	Battery Compartment Mechanical Tests.....:		N/A
4.8.5	Battery Accessibility		N/A
4.9	Likelihood of fire or shock due to entry of conductive object .....:	The equipment is a building-in type and evaluation is also to be made during the final system approval	N/A
5	**ELECTRICALLY-CAUSED INJURY**		P
5.2.1	Electrical energy source classifications .....:		P
5.2.2	ES1, ES2 and ES3 limits	See below.	P
5.2.2.2	Steady-state voltage and current .....:	Output voltage complied with ES1 limits. (See appended table 5.2.2.2)	P
5.2.2.3	Capacitance limits.....:		N/A
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	The equipment is a building-in type, overall evaluation shall be made during the final system approval.	N/A
5.3.1	General Requirements for accessible parts to ordinary, instructed and skilled persons		N/A
5.3.2.1	Accessibility to electrical energy sources and safeguards		N/A
5.3.2.2	Contact requirements		N/A
	a) Test with test probe from Annex V.....:		N/A
	b) Electric strength test potential (V) .....:		N/A
	c) Air gap (mm) .....:		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	The choice and application have taken into account as specified in this Clause 5 and Annex T except natural rubber, hygroscopic materials or asbestos are not used as insulation.	P
5.4.1.3	Humidity conditioning .....:	(See subclause 5.4.8)	P
5.4.1.4	Maximum operating temperature for insulating materials .....:	(See appended table 5.4.1.4, 6.3.2, 9.0, B.2.6)	P

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Clause	Requirement + Test	Result - Remark	Verdict
5.4.1.5	Pollution degree ..... :	2	—
5.4.1.5.2	Test for pollution degree 1 environment and for an insulating compound	Pollution degree 2 is applied.	N/A
5.4.1.5.3	Thermal cycling		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 in "**ATTACHMENT**" for working voltage measurement.	P
5.4.1.9	Insulating surfaces		N/A
5.4.1.10	Thermoplastic parts on which conductive metallic parts are directly mounted	The bobbin material of transformer and choke is phenolic. No further test considered necessary.	P
5.4.1.10.2	Vicat softening temperature ..... :		N/A
5.4.1.10.3	Ball pressure ..... :		N/A
5.4.2	Clearances	See below.	P
5.4.2.2	Determining clearance using peak working voltage	(See appended table 5.4.2.2, 5.4.2.4 and 5.4.3.)	P
5.4.2.3	Determining clearance using required withstand voltage ..... :	(See appended table 5.4.2.3.) The DC to DC converter was evaluated clearance distance with transient voltage 1500Vpeak.	P
	a) a.c. mains transient voltage ..... :		—
	b) d.c. mains transient voltage ..... :		—
	c) external circuit transient voltage ..... :		—
	d) transient voltage determined by measurement :		—
5.4.2.4	Determining the adequacy of a clearance using an electric strength test	Not applicable.	N/A
5.4.2.5	Multiplication factors for clearances and test voltages ..... :	The required clearance is multiplied by the Table 17 required altitude correction factor according to specified operation altitude. (See appended table 5.4.2.2, 5.4.2.4 and 5.4.3)	P
5.4.3	Creepage distances ..... :	(See appended table 5.4.2.2, 5.4.2.4 and 5.4.3.)	P
5.4.3.1	General	See below.	P
5.4.3.3	Material Group ..... :	Material group IIIb assumed.	—
5.4.4	Solid insulation	See below.	P
5.4.4.2	Minimum distance through insulation ..... :	(See appended table 5.4.4.2, 5.4.4.5 c) 5.4.4.9)	P

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.4.3	Insulation compound forming solid insulation	Certified sources of optocoupler used.	P
5.4.4.4	Solid insulation in semiconductor devices	Certified sources of optocoupler used.	P
5.4.4.5	Cemented joints	Certified sources of optocoupler used. See appended table 4.1.2.	P
5.4.4.6	Thin sheet material	See below.	P
5.4.4.6.1	General requirements	Insulation tape are used for double/reinforced insulation and not subjected to handling or abrasion during ordinary or instructed person servicing.	P
5.4.4.6.2	Separable thin sheet material	Two layers of insulating tape provided as double/reinforced insulation and each layer passed the electric strength test for reinforced insulation.	P
	Number of layers (pcs) .....:	2	P
5.4.4.6.3	Non-separable thin sheet material		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	Certified triple insulated wire used. See annex G.5.	P
5.4.4.9	Solid insulation at frequencies >30 kHz .....:	See appended table 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
	Insulation resistance (MΩ) .....:		—
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 sources of optocoupler used.	P
5.4.8	Humidity conditioning	See below.	P
	Relative humidity (%) .....:	95	—
	Temperature (°C) .....:	40	—
	Duration (h) .....:	120	—
5.4.9	Electric strength test.....:	(See appended table 5.4.9)	P
5.4.9.1	Test procedure for a solid insulation type test	Compliance was checked immediately following temperature test in subclause 5.4.1.4.	P

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.9.2	Test procedure for routine tests		N/A
5.4.10	Protection against transient voltages between external circuit		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
5.4.11	Insulation between external circuits and earthed circuitry .....:		N/A
5.4.11.1	Exceptions to separation between external circuits and earth		N/A
5.4.11.2	Requirements		N/A
	Rated operating voltage U_{op} (V) .....:		—
	Nominal voltage U_{peak} (V) .....:		—
	Max increase due to variation U_{sp} .....:		—
	Max increase due to ageing ΔU_{sa} .....:		—
	$U_{op} = U_{peak} + \Delta U_{sp} + \Delta U_{sa}$ .....:		—
5.5	Components as safeguards		
5.5.1	General	See the following details.	P
5.5.2	Capacitors and RC units		N/A
5.5.2.1	General requirement		N/A
5.5.2.2	Safeguards against capacitor discharge after disconnection of a connector .....:		N/A
5.5.3	Transformers	(See Annex G.5.3)	P
5.5.4	Optocouplers	(See subclause 5.4 or Annex G.12)	P
5.5.5	Relays		N/A
5.5.6	Resistors		N/A
5.5.7	SPD's	SPD does not connect to earth.	N/A
5.5.7.1	Use of an SPD connected to reliable earthing		N/A
5.5.7.2	Use of an SPD between mains and protective earth		N/A
5.5.8	Insulation between the mains and external circuit consisting of a coaxial cable..... :		N/A
5.6	Protective conductor		P
5.6.2	Requirement for protective conductors	See below.	P
5.6.2.1	General requirements		P
5.6.2.2	Colour of insulation		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.6.3	Requirement for protective earthing conductors	To be evaluated in end system.	N/A
	Protective earthing conductor size (mm^2) .....:		—
5.6.4	Requirement for protective bonding conductors		N/A
5.6.4.1	Protective bonding conductors	To be evaluated in end system.	N/A
	Protective bonding conductor size (mm^2).....:		—
	Protective current rating (A) ..... :		—
5.6.4.3	Current limiting and overcurrent protective devices		N/A
5.6.5	Terminals for protective conductors	To be evaluated in end system.	N/A
5.6.5.1	Requirement		N/A
	Conductor size (mm^2), nominal thread diameter (mm). .....:		N/A
5.6.5.2	Corrosion		N/A
5.6.6	Resistance of the protective system	See below.	P
5.6.6.1	Requirements	Compliance checked.	P
5.6.6.2	Test Method Resistance (Ω) .....:	(See appended tables 5.6.6.2)	P
5.6.7	Reliable earthing		N/A
5.7	Prospective touch voltage, touch current and protective conductor current		N/A
5.7.2	Measuring devices and networks		N/A
5.7.2.1	Measurement of touch current .....:		N/A
5.7.2.2	Measurement of prospective touch voltage		N/A
5.7.3	Equipment set-up, supply connections and earth connections		N/A
	System of interconnected equipment (separate connections/single connection) .....:		—
	Multiple connections to mains (one connection at a time/simultaneous connections).....:		—
5.7.4	Earthed conductive accessible parts.....:		N/A
5.7.5	Protective conductor current		N/A
	Supply Voltage (V) .....:		—
	Measured current (mA) .....:		—
	Instructional Safeguard .....:		N/A
5.7.6	Prospective touch voltage and touch current due to external circuits		N/A
5.7.6.1	Touch current from coaxial cables		N/A
5.7.6.2	Prospective touch voltage and touch current from external circuits		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.7.7	Summation of touch currents from external circuits		N/A
	a) Equipment with earthed external circuits Measured current (mA) .....:		N/A
	b) Equipment whose external circuits are not referenced to earth. Measured current (mA).....:		N/A
6	**ELECTRICALLY- CAUSED FIRE**		P
6.2	Classification of power sources (PS) and potential ignition sources (PIS)		P
6.2.2	Power source circuit classifications	PS (power source) classification determined by measuring the maximum power in Figure 34 and Figure 35 for load and power source circuits.	P
6.2.2.1	General	See the following details.	P
6.2.2.2	Power measurement for worst-case load fault .....:		N/A
6.2.2.3	Power measurement for worst-case power source fault.....:		N/A
6.2.2.4	PS1 .....:		N/A
6.2.2.5	PS2 .....:		N/A
6.2.2.6	PS3 .....:	All circuits within the chassis are treated as PS3	P
6.2.3	Classification of potential ignition sources	See the following details.	P
6.2.3.1	Arcing PIS .....:		N/A
6.2.3.2	Resistive PIS .....:	The available power exceeding 15W and no further test considered necessary (See appended table 6.2.3.2).	P
6.3	Safeguards against fire under normal operating and abnormal operating conditions		P
6.3.1 (a)	No ignition and attainable temperature value less than 90 % defined by ISO 871 or less than 300 °C for unknown materials .....:	No ignition and no such temperature attained (See appended table 5.4.1.4, 6.3.2, 9.0, B.2.6).	P
6.3.1 (b)	Combustible materials outside fire enclosure		N/A
6.4	Safeguards against fire under single fault conditions		P
6.4.1	Safeguard Method	Method by control fire spread.	P
6.4.2	Reduction of the likelihood of ignition under single fault conditions in PS1 circuits		N/A
6.4.3	Reduction of the likelihood of ignition under single fault conditions in PS2 and PS3 circuits		N/A
6.4.3.1	General		N/A
6.4.3.2	Supplementary Safeguards		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Special conditions if conductors on printed boards are opened or peeled		N/A
6.4.3.3	Single Fault Conditions.....:		N/A
	Special conditions for temperature limited by fuse		N/A
6.4.4	Control of fire spread in PS1 circuits		P
6.4.5	Control of fire spread in PS2 circuits	See below.	P
6.4.5.2	Supplementary safeguards .....:	Compliance detailed as follows: − Printed board: rated min. V-1 class material; − Wire insulation and tubing: complying with Clause 6. − All other components: at least V-2 except for mounted on min. V-1 material or small parts of combustible material. − Not ignite during single fault conditions. See appended table B.4. − Components complying with the requirement of the relevant IEC standard. − Isolating transformer: complying with G.5.3. (See appended tables 4.1.2 and Annex G)	P
6.4.6	Control of fire spread in PS3 circuit	− Conductors and devices meet the requirement of 6.4.5 − Devices subject to acring or changing contact resistance: • Material made of V-1, or • Comply with flammability requirement See table 4.1.2 − Fire enclosure/barrier to be evaluated in the end product.	P
6.4.7	Separation of combustible materials from a PIS	See the following details.	P
6.4.7.1	General.....:	See 6.4.8.4.	P
6.4.7.2	Separation by distance	All components and combustible materials other than small parts are either rated at least V-2 class material or mounted on PCB material with rated min. V-1 class material.	P
6.4.7.3	Separation by a fire barrier		N/A
6.4.8	Fire enclosures and fire barriers	The equipment is a building-in type, shall be evaluation during the final system approval.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
6.4.8.1	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 in Fire Enclosure: dimensions (mm) ..... :		N/A
	Needle Flame test		N/A
6.4.8.3.4	Bottom Openings in Fire Enclosure, condition met a), b) and/or c) dimensions (mm) ..... :		N/A
	Flammability tests for the bottom of a fire enclosure ..... :		N/A
6.4.8.3.5	Integrity of the fire enclosure, condition met: a), b) or c) ..... :		N/A
6.4.8.4	Separation of PIS from fire enclosure and fire barrier distance (mm) or flammability rating.....:		N/A
6.5	Internal and external wiring		P
6.5.1	Requirements	The material of VW-1 on internal wiring were considered compliance equivalent to IEC/TS 60695-11-21 relevant standards.	P
6.5.2	Cross-sectional area (mm^2) .....:	See above.	—
6.5.3	Requirements for interconnection to building wiring ..... :		N/A
6.6	Safeguards against fire due to connection to additional equipment		N/A
	External port limited to PS2 or complies with Clause Q.1		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 (PPE)		N/A
	Personal safeguards and instructions.....:		—
7.5	Use of instructional safeguards and instructions		N/A
	Instructional safeguard (ISO 7010) .....:		—
7.6	Batteries ..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

8	**MECHANICALLY-CAUSED INJURY**		N/A
8.1	General		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
8.5	Safeguards against moving parts		N/A
8.5.1	MS2 or MS3 part required to be accessible for the function of the equipment		N/A
8.5.2	Instructional Safeguard..... :		—
8.5.4	Special categories of equipment comprising moving parts		N/A
8.5.4.1	Large data storage equipment		N/A
8.5.4.2	Equipment having electromechanical device for destruction of media		N/A
8.5.4.2.1	Safeguards and Safety Interlocks .....:		N/A
8.5.4.2.2	Instructional safeguards against moving parts		N/A
	Instructional Safeguard.....:		—
8.5.4.2.3	Disconnection from the supply		N/A
8.5.4.2.4	Probe type and force (N) .....:		N/A
8.5.5	High Pressure Lamps		N/A
8.5.5.1	Energy Source Classification		N/A
8.5.5.2	High Pressure Lamp Explosion Test .....:		N/A
8.6	Stability		N/A
8.6.1	Product classification		N/A
	Instructional Safeguard.....:		—
8.6.2	Static stability		N/A
8.6.2.2	Static stability test		N/A
	Applied Force.....:		—
8.6.2.3	Downward Force Test		N/A
8.6.3	Relocation stability test		N/A
	Unit configuration during 10° tilt .....:		—
8.6.4	Glass slide test		N/A
8.6.5	Horizontal force test (Applied Force) .....:		N/A
	Position of feet or movable parts.....:		—

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Clause	Requirement + Test	Result - Remark	Verdict
8.7	Equipment mounted to wall or ceiling		N/A
8.7.1	Mounting Means (Length of screws (mm) and mounting surface) ..... :		N/A
8.7.2	Direction and applied force..... :		N/A
8.8	Handles strength		N/A
8.8.1	Classification		N/A
8.8.2	Applied Force ..... :		N/A
8.9	Wheels or casters attachment requirements		N/A
8.9.1	Classification		N/A
8.9.2	Applied force..... :		—
8.10	Carts, stands and similar carriers		N/A
8.10.1	General		N/A
8.10.2	Marking and instructions		N/A
	Instructional Safeguard..... :		—
8.10.3	Cart, stand or carrier loading test and compliance		N/A
	Applied force..... :		—
8.10.4	Cart, stand or carrier impact test		N/A
8.10.5	Mechanical stability		N/A
	Applied horizontal force (N)..... :		—
8.10.6	Thermoplastic temperature stability (°C) ..... :		N/A
8.11	Mounting means for rack mounted equipment		N/A
8.11.1	General		N/A
8.11.2	Product Classification		N/A
8.11.3	Mechanical strength test, variable *N* .....:		N/A
8.11.4	Mechanical strength test 250N, including end stops		N/A
8.12	Telescoping or rod antennas.....:		N/A
	Button/Ball diameter (mm).....:		—
9	**THERMAL BURN INJURY**		N/A
9.2	Thermal energy source classifications		N/A
9.3	Safeguard against thermal energy sources		N/A
9.4	Requirements for safeguards		N/A
9.4.1	Equipment safeguard		N/A
9.4.2	Instructional safeguard ..... :		N/A
10	**RADIATION**		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
10.2	Radiation energy source classification		N/A
10.2.1	General classification		N/A
10.3	Protection against laser radiation		N/A
	Laser radiation that exists equipment:		—
	Normal, abnormal, single-fault ..... :		N/A
	Instructional safeguard ..... :		—
	Tool ..... :		—
10.4	Protection against visible, infrared, and UV radiation		N/A
10.4.1	General		N/A
10.4.1.a)	RS3 for Ordinary and instructed persons ..... :		N/A
10.4.1.b)	RS3 accessible to a skilled person ..... :		N/A
	Personal safeguard (PPE) instructional safeguard ..... :		—
10.4.1.c)	Equipment visible, IR, UV does not exceed RS1.:		N/A
10.4.1.d)	Normal, abnormal, single-fault conditions ..... :		N/A
10.4.1.e)	Enclosure material employed as safeguard is opaque ..... :		N/A
10.4.1.f)	UV attenuation ..... :		N/A
10.4.1.g)	Materials resistant to degradation UV ..... :		N/A
10.4.1.h)	Enclosure containment of optical radiation ..... :		N/A
10.4.1.i)	Exempt Group under normal operating conditions ..... :		N/A
10.4.2	Instructional safeguard ..... :		N/A
10.5	Protection against x-radiation		N/A
10.5.1	X- radiation energy source that exists equipment :		N/A
	Normal, abnormal, single fault conditions		N/A
	Equipment safeguards ..... :		N/A
	Instructional safeguard for skilled person ..... :		N/A
10.5.3	Most unfavourable supply voltage to give maximum radiation ..... :		—
	Abnormal and single-fault condition ..... :		N/A
	Maximum radiation (pA/kg) ..... :		N/A
10.6	Protection against acoustic energy sources		N/A
10.6.1	General		N/A
10.6.2	Classification		N/A
	Acoustic output, dB(A) ..... :		N/A
	Output voltage, unweighted r.m.s. ..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
10.6.4	Protection of persons		N/A
	Instructional safeguards ..... :		N/A
	Equipment safeguard prevent ordinary person to RS2 ..... :		—
	Means to actively inform user of increase sound pressure ..... :		—
	Equipment safeguard prevent ordinary person to RS2 .....:		—
10.6.5	Requirements for listening devices (headphones, earphones, etc.)		N/A
10.6.5.1	Corded passive listening devices with analog input		N/A
	Input voltage with 94 dB(A) L_{Aeq} acoustic pressure output ..... :		—
10.6.5.2	Corded listening devices with digital input		N/A
	Maximum dB(A)..... :		—
10.6.5.3	Cordless listening device		N/A
	Maximum dB(A)..... :		—
B	**NORMAL OPERATING CONDITION TESTS, ABNORMAL OPERATING CONDITION TESTS AND SINGLE FAULT CONDITION TESTS**		P
B.2	Normal Operating Conditions	See the following details.	P
B.2.1	General requirements .....:	(See TEST ITEM PARTICULARS and appended test tables)	P
	Audio Amplifiers and equipment with audio amplifiers.....:		N/A
B.2.3	Supply voltage and tolerances	See **TEST ITEM PARTICULARS**.	P
B.2.5	Input test .....:	(See appended table B.2.5)	P
B.3	Simulated abnormal operating conditions		P
B.3.1	General requirements .....:	See below.	P
B.3.2	Covering of ventilation openings		N/A
B.3.3	D.C. 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)	P
B.3.6	Reverse battery polarity		N/A
B.3.7	Abnormal operating conditions as specified in Clause E.2.		N/A
B.3.8	Safeguards functional during and after abnormal operating conditions	All safeguards remained effectively.	P
B.4	Simulated single fault conditions		P

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Clause	Requirement + Test	Result - Remark	Verdict
B.4.2	Temperature controlling device open or short-circuited.....:		N/A
B.4.3	Motor tests	See below.	P
B.4.3.1	Motor blocked or rotor locked increasing the internal ambient temperature .....:	(See appended table B.4)	P
B.4.4	Short circuit of functional insulation	See the following details.	P
B.4.4.1	Short circuit of clearances for functional insulation	(See appended table B.4)	P
B.4.4.2	Short circuit of creepage distances for functional insulation	(See appended table B.4)	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.4)	P
B.4.6	Short circuit or disconnect of passive components	(See appended table B.4)	P
B.4.7	Continuous operation of components		N/A
B.4.8	Class 1 and Class 2 energy sources within limits during and after single fault conditions	(See appended table B.4)	P
B.4.9	Battery charging 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 apparatus		N/A
C.2.4	Xenon-arc light exposure apparatus		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	Audio amplifier normal operating conditions		N/A
	Audio signal voltage (V) ..... :		—
	Rated load impedance (Ω) ..... :		—
E.2	Audio amplifier abnormal operating conditions		N/A
F	**EQUIPMENT MARKINGS, INSTRUCTIONS, AND INSTRUCTIONAL SAFEGUARDS**		P
F.1	General requirements	See the following details.	P

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Clause	Requirement + Test	Result - Remark	Verdict
	Instructions – Language .....:	English.	—
F.2	Letter symbols and graphical symbols	See the following details.	P
F.2.1	Letter symbols according to IEC 60027-1	Letter symbols for quantities and units are complied with IEC 60027-1.	P
F.2.2	Graphic symbols IEC, ISO or manufacturer specific	Graphical symbols are complied with IEC 60417, ISO 3864-2, ISO 7000 or ISO 7010.	P
F.3	Equipment markings		P
F.3.1	Equipment marking locations	Equipment marking is located on the exterior surface and is easily visible.	P
F.3.2	Equipment identification markings	See the following details.	P
F.3.2.1	Manufacturer identification .....:	See copy of marking plate.	—
F.3.2.2	Model identification .....:	See copy of marking plate.	—
F.3.3	Equipment rating markings	See the following details.	P
F.3.3.1	Equipment with direct connection to mains		N/A
F.3.3.2	Equipment without direct connection to mains	See copy of marking plate.	P
F.3.3.3	Nature of supply voltage .....:		—
F.3.3.4	Rated voltage .....:	See copy of marking plate.	—
F.3.3.5	Rated frequency.....:		—
F.3.3.6	Rated current or rated power .....:	See copy of marking plate.	—
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	See below.	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.....:	The fuse is located within the equipment and not replaceable by an ordinary person or an instructed person. The fuse marking is marked on PCB near fuse : F1 F15A/65VDC or 72VDC	P
F.3.5.4	Replacement battery identification marking.....:		N/A
F.3.5.5	Terminal marking location		N/A
F.3.6	Equipment markings related to equipment classification		N/A
F.3.6.1	Class I Equipment	To be evaluated in end system.	N/A
F.3.6.1.1	Protective earthing conductor terminal		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
F.3.6.1.2	Neutral conductor terminal		N/A
F.3.6.1.3	Protective bonding conductor terminals		N/A
F.3.6.2	Class II equipment (IEC 60417-5172)		N/A
F.3.6.2.1	Class II equipment with or without functional earth		N/A
F.3.6.2.2	Class II equipment with functional earth terminal marking		N/A
F.3.7	Equipment IP rating marking ..... :	This equipment is classified as IPX0.	—
F.3.8	External power supply output marking	The equipment is not an external power supply.	N/A
F.3.9	Durability, legibility and permanence of marking	See the following details.	P
F.3.10	Test for permanence of markings	Marking is durable and legible. The marking plate has no curling and is not able to be removed easily.	P
F.4	Instructions		P
	a) Equipment for use in locations where children not likely to be present - marking		N/A
	b) Instructions given for installation or initial use	Relevant safety caution texts and installation instruction are available.	P
	c) Equipment intended to be fastened in place		N/A
	d) Equipment intended for use only in restricted access area		N/A
	e) Audio equipment terminals classified as ES3 and other equipment with terminals marked in accordance F.3.6.1		N/A
	f) Protective earthing employed as safeguard		P
	g) Protective earthing conductor current exceeding ES2 limits		N/A
	h) Symbols used on equipment		N/A
	i) Permanently connected equipment not provided with all-pole mains switch		N/A
	j) Replaceable components or modules providing safeguard function		N/A
F.5	Instructional safeguards	No instructional safeguard is considered as necessary.	N/A
	Where “instructional safeguard” is referenced in the test report it specifies the required elements, location of marking and/or instruction		N/A
G	**COMPONENTS**		P
G.1	**Switches**		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.1.1	General requirements		N/A
G.1.2	Ratings, endurance, spacing, maximum load		N/A
G.2	**Relays**		N/A
G.2.1	General requirements		N/A
G.2.2	Overload test		N/A
G.2.3	Relay controlling connectors supply power		N/A
G.2.4	Mains relay, modified as stated in G.2		N/A
G.3	**Protection Devices**		P
G.3.1	Thermal cut-offs		N/A
G.3.1.1a) &b)	Thermal cut-outs separately approved according to IEC 60730 with conditions indicated in a) & b)		N/A
G.3.1.1c)	Thermal cut-outs tested as part of the equipment as indicated in c)		N/A
G.3.1.2	Thermal cut-off connections maintained and secure		N/A
G.3.2	Thermal links		N/A
G.3.2.1a)	Thermal links separately tested with IEC 60691		N/A
G.3.2.1b)	Thermal links tested as part of the equipment		N/A
	Aging hours (H) .....:		—
	Single Fault Condition .....:		—
	Test Voltage (V) and Insulation Resistance (Ω)..:		—
G.3.3	PTC Thermistors		N/A
G.3.4	Overcurrent protection devices	Certified current fuse which comply with applicable IEC/EN standard. See appended table 4.1.2.	P
G.3.5	Safeguards components not mentioned in G.3.1 to G.3.5		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		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 a)	Two wires in contact inside wound component, angle between 45° and 90°	The tubing and insulation tape are provided for windings of transformer to protect against mechanical stress.	P

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Clause	Requirement + Test	Result - Remark	Verdict
G.5.1.2 b)	Construction subject to routine testing	Certified triple insulated wire used. See appended table 4.1.2.	N/A
G.5.2	Endurance test on wound components		N/A
G.5.2.1	General test requirements		N/A
G.5.2.2	Heat run test		N/A
	Time (s) ..... :		—
	Temperature (°C) ..... :		—
G.5.2.3	Wound Components supplied by mains		N/A
G.5.3	**Transformers**		P
G.5.3.1	Requirements applied (IEC61204-7, IEC61558-1/-2, and/or IEC62368-1) ..... :	The transformer meets the requirements given in subclauses G.5.3.2 and G.5.3.3.	P
	Position..... :	See appended table 4.1.2.	—
	Method of protection ..... :	By circuit.	—
G.5.3.2	Insulation	Primary windings and secondary windings are isolated by double/reinforced insulation	P
	Protection from displacement of windings ..... :	The end-turn of each winding is fixed by insulating tape.	—
G.5.3.3	Overload test.....:	(See appended table B.4)	P
G.5.3.3.1	Test conditions	Tested in the complete equipment.	P
G.5.3.3.2	Winding Temperatures testing in the unit	(See appended table B.4)	P
G.5.3.3.3	Winding Temperatures - Alternative test method		N/A
G.5.4	**Motors**		N/A
G.5.4.1	General requirements		N/A
	Position ..... :		—
G.5.4.2	Test conditions		N/A
G.5.4.3	Running overload test		N/A
G.5.4.4	Locked-rotor overload test		N/A
	Test duration (days) ..... :		—
G.5.4.5	Running overload test for d.c. motors in secondary circuits		N/A
G.5.4.5.2	Tested in the unit		N/A
	Electric strength test (V)..... :		—
G.5.4.5.3	Tested on the Bench - Alternative test method; test time (h) ..... :		N/A
	Electric strength test (V)..... :		—
G.5.4.6	Locked-rotor overload test for d.c. motors in secondary circuits		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.5.4.6.2	Tested in the unit		N/A
	Maximum Temperature ..... :		N/A
	Electric strength test (V) ..... :		N/A
G.5.4.6.3	Tested on the bench - Alternative test method; test time (h) ..... :		N/A
	Electric strength test (V)..... :		N/A
G.5.4.7	Motors with capacitors		N/A
G.5.4.8	Three-phase motors		N/A
G.5.4.9	Series motors		N/A
	Operating voltage ..... :		—
G.6	**Wire Insulation**		P
G.6.1	General	The triple insulated wire used as reinforced safeguard in the isolating transformer that complied with Annex J.	P
G.6.2	Solvent-based enamel wiring insulation		N/A
G.7	**Mains supply cords**		N/A
G.7.1	General requirements		N/A
	Type .....:		—
	Rated current (A).....:		—
	Cross-sectional area (mm^2), (AWG) .....:		—
G.7.2	Compliance and test method		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) ..... :		—
G.7.3.2.2	Strain relief mechanism failure		N/A
G.7.3.2.3	Cord sheath or jacket position, distance (mm) ... :		—
G.7.3.2.4	Strain relief comprised of polymeric 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	Mass (g) ..... :		—
	Diameter (m) ..... :		—
	Temperature (°C) ..... :		—
G.7.6	Supply wiring space		N/A
G.7.6.2	Stranded wire		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.7.6.2.1	Test with 8 mm strand		N/A
G.8	**Varistors**		P
G.8.1	General requirements	Certified source used. See table 4.1.2	P
G.8.2	Safeguard against shock	Complied.	P
G.8.3	Safeguard against fire		N/A
G.8.3.2	Varistor overload test ..... :	The method of “control fire spread” is chosen.	N/A
G.8.3.3	Temporary overvoltage ..... :		N/A
G.9	**Integrated Circuit (IC) Current Limiters**		N/A
G.9.1 a)	Manufacturer defines limit at max. 5A.		N/A
G.9.1 b)	Limiters do not have manual operator or reset		N/A
G.9.1 c)	Supply source does not exceed 250 VA ..... :		—
G.9.1 d)	IC limiter output current (max. 5A) ..... :		—
G.9.1 e)	Manufacturers’ defined drift ..... :		—
G.9.2	Test Program 1		N/A
G.9.3	Test Program 2		N/A
G.9.4	Test Program 3		N/A
G.10	**Resistors**		N/A
G.10.1	General requirements		N/A
G.10.2	Resistor test		N/A
G.10.3	Test for resistors serving as safeguards between the mains and an external circuit consisting of a coaxial cable		N/A
G.10.3.1	General requirements		N/A
G.10.3.2	Voltage surge test		N/A
G.10.3.3	Impulse test		N/A
G.11	**Capacitor and RC units**		P
G.11.1	General requirements	The Y-Capacitor used as safeguard and complied with IEC/EN 60384-14 (See appended table 4.1.2).	P
G.11.2	Conditioning of capacitors and RC units	At least 21 days at 40 ± 2°C and 93 ± 3 % RH.	P
G.11.3	Rules for selecting capacitors	The selection followed with tables G.9 and G.12.	P
G.12	**Optocouplers**		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Optocouplers comply with IEC 60747-5-5:2007 Spacing or Electric Strength Test (specify option and test results)..... :	The optocoupler used in the equipment and complied with IEC/EN 60747-5-5 and IEC 60950-1 or the requirements of 5.4 (see appended table 4.1.2).	P
	Type test voltage Vini ..... :	See above.	—
	Routine test voltage, Vini,b ..... :	See above.	—
G.13	**Printed boards**		P
G.13.1	General requirements	See the following details.	P
G.13.2	Uncoated printed boards	The insulation between conductors on the outer surfaces of an uncoated printed board complied with the minimum clearance and creepage requirements.	P
G.13.3	Coated printed boards		N/A
G.13.4	Insulation between conductors on the same inner surface		N/A
	Compliance with cemented joint requirements (Specify construction)..... :		—
G.13.5	Insulation between conductors on different surfaces	Input circuit did not overlap to output and earth circuit on different surfaces.	P
	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.13.6.2a)	Thermal conditioning		N/A
G.13.6.2b)	Electric strength test		N/A
G.13.6.2c)	Abrasion resistance test		N/A
G.14	**Coating on components terminals**		N/A
G.14.1	Requirements .....:		N/A
G.15	**Liquid filled components**		N/A
G.15.1	General requirements		N/A
G.15.2	Requirements		N/A
G.15.3	Compliance and test methods		N/A
G.15.3.1	Hydrostatic pressure test		N/A
G.15.3.2	Creep resistance test		N/A
G.15.3.3	Tubing and fittings compatibility test		N/A
G.15.3.4	Vibration test		N/A
G.15.3.5	Thermal cycling test		N/A
G.15.3.6	Force test		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.15.4	Compliance		N/A
G.16	**IC including capacitor discharge function (ICX)**		N/A
a)	Humidity treatment in accordance with sc5.4.8 – 120 hours		N/A
b)	Impulse test using circuit 2 with Uc = to transient voltage ..... :		N/A
C1)	Application of ac voltage at 110% of rated voltage for 2.5 minutes		N/A
C2)	Test voltage ..... :		—
D1)	10,000 cycles on and off using capacitor with smallest capacitance resistor with largest resistance specified by manufacturer		N/A
D2)	Capacitance ..... :		—
D3)	Resistance ..... :		—
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 complied with		N/A
H.3.2.2	Tripping device		N/A
H.3.2.3	Monitoring voltage (V) ..... :		—
J	**INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION**		P
	General requirements	The triple insulated wire used as reinforced safeguard in the isolating transformer that had been evaluated with Annex J.	P
K	**SAFETY INTERLOCKS**		N/A
K.1	General requirements		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

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Clause	Requirement + Test	Result - Remark	Verdict
	Compliance .....:		N/A
K.6	Mechanically operated safety interlocks		N/A
K.6.1	Endurance requirement		N/A
K.6.2	Compliance and Test method.....:		N/A
K.7	Interlock circuit isolation		N/A
K.7.1	Separation distance for contact gaps & interlock circuit elements (type and circuit location) .....:		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		N/A
L.2	Permanently connected equipment		N/A
L.3	Parts that remain energized		N/A
L.4	Single phase equipment		N/A
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
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	Requirements		N/A
M.2.2	Compliance and test method (identify method) .. :		N/A
M.3	Protection circuits		N/A
M.3.1	Requirements		N/A
M.3.2	Tests		N/A
	- Overcharging of a rechargeable battery		N/A
	- Unintentional charging of a non-rechargeable battery		N/A
	- Reverse charging of a rechargeable battery		N/A
	- Excessive discharging rate for any battery		N/A
M.3.3	Compliance .....:		N/A
M.4	Additional safeguards for equipment containing secondary lithium battery		N/A
M.4.1	General		N/A
M.4.2	Charging safeguards		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
M.4.2.1	Charging operating limits		N/A
M.4.2.2a)	Charging voltage, current and temperature .....:		—
M.4.2.2 b)	Single faults in charging circuitry .....:		—
M.4.3	Fire Enclosure		N/A
M.4.4	Endurance of equipment containing a secondary lithium battery		N/A
M.4.4.2	Preparation		N/A
M.4.4.3	Drop and charge/discharge function tests		N/A
	Drop		N/A
	Charge		N/A
	Discharge		N/A
M.4.4.4	Charge-discharge cycle test		N/A
M.4.4.5	Result of charge-discharge cycle test		N/A
M.5	Risk of burn due to short circuit during carrying		N/A
M.5.1	Requirement		N/A
M.5.2	Compliance and Test Method (Test of P.2.3)		N/A
M.6	Prevention of short circuits and protection from other effects of electric current		N/A
M.6.1	Short circuits		N/A
M.6.1.1	General requirements		N/A
M.6.1.2	Test method to simulate an internal fault		N/A
M.6.1.3	Compliance (Specify M.6.1.2 or alternative method) ..... :		N/A
M.6.2	Leakage current (mA) ..... :		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
M.7.2	Compliance and test method		N/A
M.8	Protection against internal ignition from external spark sources of lead acid batteries		N/A
M.8.1	General requirements		N/A
M.8.2	Test method		N/A
M.8.2.1	General requirements		N/A
M.8.2.2	Estimation of hypothetical volume *Vz* (m^3/s) ..... :		—
M.8.2.3	Correction factors..... :		—
M.8.2.4	Calculation of distance *d* (mm) ..... :		—
M.9	Preventing electrolyte spillage		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
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 (Determination of compliance: inspection, data review; or abnormal testing) ..... :		N/A
N	**ELECTROCHEMICAL POTENTIALS**		P
	Metal(s) used ..... :	Complied, the combined electrochemical potential < 0.6V.	—
O	**MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES**		P
	Figures O.1 to O.20 of this Annex applied..... :	Considered.	—
P	**SAFEGUARDS AGAINST ENTRY OF FOREIGN OBJECTS AND SPILLAGE OF INTERNAL LIQUIDS**		N/A
P.1	General requirements	To be evaluated in the end product.	N/A
P.2.2	Safeguards against entry of foreign object		N/A
	Location and Dimensions (mm) ..... :		—
P.2.3	Safeguard against the consequences of entry of foreign object		N/A
P.2.3.1	Safeguards against the entry of a foreign object		N/A
	Openings in transportable equipment		N/A
	Transportable equipment with metalized plastic parts ..... :		N/A
P.2.3.2	Openings in transportable equipment in relation to metallized parts of a barrier or enclosure (identification of supplementary safeguard) ..... :		N/A
P.3	Safeguards against spillage of internal liquids		N/A
P.3.1	General requirements		N/A
P.3.2	Determination of spillage consequences		N/A
P.3.3	Spillage safeguards		N/A
P.3.4	Safeguards effectiveness		N/A
P.4	Metallized coatings and adhesive securing parts		N/A
P.4.2 a)	Conditioning testing		N/A
	Tc (°C)..... :		—
	Tr (°C) ..... :		—
	Ta (°C) ..... :		—
P.4.2 b)	Abrasion testing ..... :		N/A
P.4.2 c)	Mechanical strength testing ..... :		N/A
Q	**CIRCUITS INTENDED FOR INTERCONNECTION WITH BUILDING WIRING**		N/A
Q.1	Limited power sources		N/A
Q.1.1 a)	Inherently limited output		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
Q.1.1 b)	Impedance limited output		N/A
	- Regulating network limited output under normal operating and simulated single fault condition		N/A
Q.1.1 c)	Overcurrent protective device limited output		N/A
Q.1.1 d)	IC current limiter complying with G.9		N/A
Q.1.2	Compliance and test method		N/A
Q.2	Test for external circuits – paired conductor cable		N/A
	Maximum output current (A) .....:		—
	Current limiting method.....:		—
R	**LIMITED SHORT CIRCUIT TEST**		N/A
R.1	General requirements		N/A
R.2	Determination of the overcurrent protective device and circuit		N/A
R.3	Test method Supply voltage (V) and short-circuit current (A)). .....:		N/A
S	**TESTS FOR RESISTANCE TO HEAT AND FIRE**		N/A
S.1	Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power does not exceed 4 000 W		N/A
	Samples, material .....:		—
	Wall thickness (mm).....:		—
	Conditioning (°C).....:		—
	Test flame according to IEC 60695-11-5 with conditions as set out		N/A
	- Material not consumed completely		N/A
	- Material extinguishes within 30s		N/A
	- No burning of layer or wrapping tissue		N/A
S.2	Flammability test for fire enclosure and fire barrier integrity		N/A
	Samples, material .....:		—
	Wall thickness (mm).....:		—
	Conditioning (°C).....:		—
	Test flame according to IEC 60695-11-5 with conditions as set out		N/A
	Test specimen does not show any additional hole		N/A
S.3	Flammability test for the bottom of a fire enclosure		N/A
	Samples, material .....:		—
	Wall thickness (mm).....:		—

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Clause	Requirement + Test	Result - Remark	Verdict
	Cheesecloth did not ignite		N/A
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 does not exceed 4 000 W		N/A
	Samples, material ..... :		—
	Wall thickness (mm)..... :		—
	Conditioning (test condition), (°C)..... :		—
	Test flame according to IEC 60695-11-20 with conditions as set out		N/A
	After every test specimen was not consumed completely		N/A
	After fifth flame application, flame extinguished within 1 min		N/A
T	**MECHANICAL STRENGTH TESTS**		P
T.1	General requirements	See the following details.	P
T.2	Steady force test, 10 N .....:	10N applied to all components other than the parts serving as an enclosure.	P
T.3	Steady force test, 30 N .....:		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
T.8	Stress relief test .....:	Insulation material performed. (See appended table T.8).	P
T.9	Impact Test (glass)		N/A
T.9.1	General requirements		N/A
T.9.2	Impact test and compliance		N/A
	Impact energy (J)..... :		—
	Height (m) ..... :		—
T.10	Glass fragmentation test ..... :		N/A
T.11	Test for telescoping or rod antennas		N/A
	Torque value (Nm) .....:		—

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Clause	Requirement + Test	Result - Remark	Verdict
U	**MECHANICAL STRENGTH OF CATHODE RAY TUBES (CRT) AND PROTECTION AGAINST THE EFECTS OF IMPLOSION**		N/A
U.1	General requirements		N/A
U.2	Compliance and test method for non-intrinsically protected CRTs		N/A
U.3	Protective Screen .....:		N/A
V	**DETERMINATION OF ACCESSIBLE PARTS (FINGERS, PROBES AND WEDGES)**		N/A
V.1	Accessible parts of equipment		N/A
V.2	Accessible part criterion		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

4.1.2	TABLE: List of critical components				P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity[1]
Terminal Blocked	How Der Electronic Co Ltd	HD-816	300V, 20A	UL 1059	UL
	Dinkle Enterprise Co Ltd	DT-31#d	150V, 20A	UL 1059	UL
Fuse (F1)	Cooper Bussmann Inc	6125FFxxx-R	72Vdc, F15A	UL 248	UL
	Littelfuse Inc	451, 453	65Vdc, F15A	UL 248	UL
Varistor (VAR1)	TDK (Zhuhai Ftz) Co Lts	S14K95	95Vac, 125Vdc	IEC/EN 61051-1, IEC/EN 61051-2, IEC/EN 61051-2-2, IEC 60950-1: 2013 Annex Q, IEC 62368-1: 2014 G.8.2, UL 1449	VDE, UL
	Nippon Chemi- con Corp	TND14V-151K	95Vac, 125Vdc	IEC/EN 61051-1, IEC/EN 61051-2, IEC/EN 61051-2-2, IEC 60950-1: 2013 Annex Q, UL 1449	VDE, UL
	Thinking Electronic Industrial Co Ltd	TVR14151	95Vac, 125Vdc	IEC/EN 61051-1, IEC/EN 61051-2, IEC/EN 61051-2-2, IEC 60950-1: 2013 Annex Q, UL 1449	VDE, UL
Y-Capacitors (C4) (Y1 type) (Optional) (Max. 4700pF)	TDK	CD	Min. 250Vac, 125°C.	IEC/EN 60384-14: 2013+A1, UL 60384-14	VDE, UL
	Welson Industrial Co Ltd	WD	Min. 250Vac, 125°C.	IEC/EN 60384-14: 2013+A1, UL 60384-14	VDE, UL
	Success Electronics Co Ltd	SE	Min. 250Vac, 125°C.	IEC/EN 60384-14: 2013+A1, UL 60384-14	VDE, UL
	Walsin Technology Corp	AH	Min. 250Vac, 125°C	IEC/EN 60384-14: 2013+A1, UL 60384-14	VDE, UL

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Clause	Requirement + Test	Result - Remark	Verdict

	Murata Mfg. Co., Ltd.	RA	Min. 250Vac, 125°C.	IEC/EN 60384-14: 2013+A1, UL 60384-14	VDE, UL
Inductor (L8)	Li chieh Electronic Industrial Ltd	EMR-299	Min. 105°C	--	--
	Chief Superior Industrial Co., Ltd. (C.S.I)	EMR-299	Min. 105°C	--	--
Inductor (L5)	Li chieh Electronic Industrial Ltd	R6X20	Min. 105°C	--	--
	Main Power Electricy Co Ltd	R6X20	Min. 105°C	--	--
Inductor (L1)	Li chieh Electronic Industrial Ltd	EMR-300	Min. 125°C	--	--
	Chief Superior Industrial Co., Ltd. (C.S.I)	EMR-300	Min. 125°C	--	--
	Li Tai Electronic Enterprise Co., Ltd	EMR-300	Min. 125°C	--	--
Inductor (L2)	Li chieh Electronic Industrial Ltd	EMR-298	Min. 105°C	--	--
	Chief Superior Industrial Co., Ltd. (C.S.I)	EMR-298	Min. 105°C	--	--
	Li Tai Electronic Enterprise Co., Ltd	EMR-298	Min. 105°C	--	--
Drive Transformer (T1, L7)	Li chieh Electronic Industrial Ltd	EMT-225	Min. 105°C	--	--
	Main Power Electricy Co Ltd	EMT-225	Min. 105°C	--	--
	Chief Superior Industrial Co., Ltd. (C.S.I)	EMT-225	Min. 105°C	--	--
	Li Tai Electronic Enterprise Co., Ltd	EMT-225	Min. 105°C	--	--
- Bobbin of T1, L7	Sumitomo Bakelite Co Ltd	PM-9820 PM-9630	Phenolic, V-0, min. 0.71mm thick, 150°C	UL 94 UL 746	UL
	Chang Chun Plastic Co., Ltd.	T375J	Phenolic, V-0, min. 0.71mm thick, 150°C	UL 94 UL 746	UL
- Insulation tape of T1, L7	3M Company Electrical Markets Div (EMD)	1350F-1	130°C	UL 510A	UL
	Symbio Inc	35660Y	130°C	UL 510A	UL

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Clause	Requirement + Test	Result - Remark	Verdict

Transformer (T2)	Li Chieh Electronic Industrial Co Ltd	EMT-269	Class B	Applicable part according to IEC/EN 62368-1 and IEC/EN 60085.	Accepted by TÜV Rheinland
	Chief Superior Industrial Co., Ltd. (C.S.I)	EMT-269	Class B	Applicable part according to IEC/EN 62368-1 and IEC/EN 60085.	Accepted by TÜV Rheinland
	Li Tai Electronic Enterprise Co., Ltd	EMT-269	Class B	Applicable part according to IEC/EN 62368-1 and IEC/EN 60085.	Accepted by TÜV Rheinland
- Bobbin of T2	Sumitomo Bakelite Co Ltd	PM-9820	Phenolic, V-0, min. 0.71mm thick, 150°C	UL 94, UL 746	UL
	Chang Chun Plastic Co., Ltd.	T375J	Phenolic, V-0, min. 0.71mm thick, 150°C	UL 94, UL 746	UL
- Insulation tape of T2	3M Company Electrical Markets Div (EMD)	1350F-1	130°C	UL 510A	UL
	Jingjiang Yahua Pressure Sensitive Glue Co., Ltd	CT	130°C	UL 510A	UL
	Symbio Inc	35660Y	130°C	UL 510A	UL
- Margin tape of T2	3M Company Electrical Markets Div (EMD)	44	130°C	UL 510A	UL
	Symbio Inc	35661	130°C	UL 510A	UL
	Jingjiang Yahua Pressure Sensitive Glue Co., Ltd	WF	130°C	UL 510A	UL
Transformer (T3)	Li Chieh Electronic Industrial Co Ltd	EMT-268	Class B	Applicable part according to IEC/EN 62368-1 and IEC/EN 60085.	Accepted by TÜV Rheinland
	Chief Superior Industrial Co., Ltd. (C.S.I)	EMT-268	Class B	Applicable part according to IEC/EN 62368-1 and IEC/EN 60085.	Accepted by TÜV Rheinland
	Li Tai Electronic Enterprise Co., Ltd	EMT-268	Class B	Applicable part according to IEC/EN 62368-1 and IEC/EN 60085.	Accepted by TÜV Rheinland

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

- Triple insulated wire of T3	COSMOLINK CO. Ltd.	TIW-M	130°C	IEC 60950-1: 2005+A1+A2, EN 60950-1: 2006+A11+A1+ A12+A2, UL 2353	VDE, UL
	Furukawa Electric Co., Ltd.	TEX-E	130°C	IEC 60950-1: 2005+A1+A2, EN 60950-1: 2006+A11+A1+ A12+A2, UL 2353	VDE, UL
- Bobbin of T3	Sumitomo Bakelite Co Ltd	PM-9820	Phenolic, V-0, min. 0.71mm thick, 150°C	UL 94, UL 746	UL
	Chang Chun Plastic Co., Ltd.	T375J	Phenolic, V-0, min. 0.71mm thick, 150°C	UL 94, UL 746	UL
	Hitachi Chemical Co Ltd	CP-J-8800	Phenolic, V-0, min. 0.71mm thick, 150°C	UL 94, UL 746	UL
- Insulation tape of T3	3M Company Electrical Markets Div (EMD)	1350F-1	130°C	UL 510A	UL
	Jingjiang Yahua Pressure Sensitive Glue Co., Ltd	CT	130°C	UL 510A	UL
	Symbio Inc	35660Y	130°C	UL 510A	UL
Optical Isolator (U2, U1, U8, U16) - U16 on main PCB - U2, U1, U8 on CN3 PCB	Lite-On Technology Corporation	LTV-817	Dti= 0.6mm, Ext. dcr= 7.63mm, thermal cycle test, 110°C	IEC/EN 60950-1, IEC 60747-5-5: 2007+A1, EN 60747-5-5: 2011+A1, UL 1577	VDE, UL, FI
	Renesas Electronics Corporation	PS2561, PS2561-1, PS2561L-1, PS2561A-1, PS2561AL-1, PS2561L1-1, PS2561AL1-1, PS2561AL2-1	Dti= 0.4mm, Ext. dcr= 7.0mm, thermal cycle test, 100°C	IEC/EN 60950-1, IEC 60747-5-5: 2007+A1, EN 60747-5-5: 2011+A1, UL 1577	VDE, UL
	Toshiba Corporation Semiconductor & Storage Products Company	TLP781, TLP781F	Dti= 0.6mm, Ext. dcr= 8.0mm, thermal cycling test, 100°C	IEC/EN 60950-1, IEC 60747-5-5: 2007+A1, EN 60747-5-5: 2011+A1, UL 1577	VDE, UL

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

	Everlight Electronics Co., Ltd.	EL817	Dti= 0.5mm, Ext. dcr= 7.7mm, thermal cycle test, 100°C	IEC/EN 60950-1, IEC 60747-5-5: 2007+A1, EN 60747-5-5: 2011+A1, UL 1577	VDE, UL
	Sharp Corporation	PC123	Dti= 0.4mm, Ext. dcr= 8.0mm, thermal cycle test, 110°C	IEC/EN 60950-1, IEC 60747-5-5: 2007+A1, EN 60747-5-5: 2011+A1, UL 1577	VDE, UL
	COSMO Electronics Corporation	K1010	Dti= 0.7mm, Ext. dcr= 8.0mm, thermal cycle test, 100°C	IEC/EN 60950-1, IEC 60747-5-5: 2007+A1, EN 60747-5-5: 2011+A1, UL 1577	VDE, UL
	VISHAY Semiconductor GmbH	TCLT1000, TCLT1001, TCLT1002, TCLT1003, TCLT1004, TCLT1005, TCLT1006, TCLT1007, TCLT1008, TCLT1009	Dti= 0.7mm, Ext. dcr= 8.3mm, thermal cycle test, 100°C	IEC/EN 60950-1, IEC 60747-5-5: 2007+A1, EN 60747-5-5: 2011+A1, UL 1577	VDE, UL
	Everlight Electronics Co., Ltd.	EL1010V, EL1011V, EL1012V, EL1013V, EL1014V, EL1015V, EL1016V, EL1017V, EL1018V, EL1019V	Dti= 0.4mm, Ext. dcr= 8.1mm, thermal cycle test, 110°C	IEC/EN 60950-1, IEC 60747-5-5: 2007+A1, EN 60747-5-5: 2011+A1, UL 1577	VDE, UL
	Renesas Electronics Corporation	PS2381	Dti= 0.4mm, Ext. dcr= 8.0mm, thermal cycle test, 115°C	IEC/EN 60950-1, IEC 60747-5-5: 2007+A1, EN 60747-5-5: 2011+A1, UL 1577	VDE, UL

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

	VISHAY SEMICONDUCTOR GMBH	VOL617A	Dti= 0.4mm, Ext. dcr= 8.0mm, thermal cycle test, 110°C	IEC/EN 60950-1, IEC 60747-5-5: 2007+A1, EN 60747-5-5: 2011+A1, UL 1577	VDE, UL
	LITE-ON TECHNOLOGY CORP	LTV-10XX	Dti= 0.4mm, Ext. dcr= 8.0mm, thermal cycle test, 115°C	IEC/EN 60950-1, IEC 60747-5-5: 2007+A1, EN 60747-5-5: 2011+A1, UL 1577	VDE, UL
	EVERLIGHT ELECTRONICS CO LTD	EL101XV	Dti= 0.4mm, Ext. dcr= 8.0mm, thermal cycle test, 110°C	IEC/EN 60950-1, IEC 60747-5-5: 2007+A1, EN 60747-5-5: 2011+A1, UL 1577	VDE, UL
Bridge Capacitor (C29) (Y1 type) (Max. 4700pF)	TDK	CD	Min. 250Vac, 125°C.	IEC/EN 60384-14: 2013+A1, UL 60384-14	VDE, UL
	Welson Industrial Co Ltd	WD	Min. 250Vac, 125°C.	IEC/EN 60384-14: 2013+A1, UL 60384-14	VDE, UL
	Success Electronics Co Ltd	SE	Min. 250Vac, 125°C.	IEC/EN 60384-14: 2013+A1, UL 60384-14	VDE, UL
	Walsin Technology Corp	AH	Min. 250Vac, 125°C	IEC/EN 60384-14: 2013+A1, UL 60384-14	VDE, UL
	Murata Mfg. Co., Ltd.	RA	Min. 250Vac, 125°C.	IEC/EN 60384-14: 2013+A1, UL 60384-14	VDE, UL
Mylar Sheet (Located between solder side and chassis)	Hon Tai Material Co Ltd	HT-E3503, HT-E3502	Rated minimum V-2. Rated 130°C. Overall measured approximately 152 by 79mm, minimum 0.4mm thick.	UL 94	UL
	Kingboard Laminates Holdings Ltd	KB-6150C, KB-6160A, KB-6160C, KB-6165, KB-6168	Rated minimum V-2. Rated 130°C. Overall measured approximately 152 by 79mm, minimum 0.4mm thick.	UL 94	UL

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

	Shinemore Technology Materials Co Ltd	SM-780F	Rated minimum V-2. Rated 130°C. Overall measured approximately 152 by 79mm, minimum 0.4mm thick.	UL 94	UL
Thermal Pad - Provided located among Q10, D10 and Chassis - Provided among Q6, Q7 and Chassis	BERGQUIST CO	HighRoad (*) R3.2	V-0. Overall measured approximately 53 by 30mm, minimum 0.15mm thick	UL 94, UL 746C	UL
	SHIU LI TECHNOLOGY CO LTD	S393	V-0. Overall measured approximately 53 by 30mm, minimum 0.15mm thick	UL 94, UL 746C	UL
	SHIU LI TECHNOLOGY CO LTD	AST45	V-0. Overall measured approximately 53 by 30mm, minimum 0.15mm thick	UL 94, UL 746C	UL
Thermal Pad (Located among Q1, Q2, Q11 and Chassis)	BERGQUIST CO	HighRoad (*) R3.2	V-0. Overall measured approximately 53 mm by 15mm, minimum 0.15mm thick.	UL 94, UL 746C	UL
	SHIU LI TECHNOLOGY CO LTD	S393	V-0. Overall measured approximately 53 mm by 15mm, minimum 0.15mm thick.	UL 94, UL 746C	UL
	SHIU LI TECHNOLOGY CO LTD	AST45	V-0. Overall measured approximately 53 mm by 15mm, minimum 0.15mm thick.	UL 94, UL 746C	UL
Functional components					
Chassis	Interchangeable	Interchangeable	Steel, min.1.9mm thick	--	--
PCB	Interchangeable	Interchangeable	V-1 or better, min. 130°C	UL 796	UL
Bulk Capacitor (C35)	Interchangeable	Interchangeable	Min. 63V, 470µF, min. 105°C	--	--

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

Bulk Capacitor (C36, C37)	Interchangeable	Interchangeable	Min. 50V, 470µF, min. 105°C	--	--
Transistor (Q1, Q2)	Interchangeable	Interchangeable	Min. 75A, min. 55V	--	--
Transistor (Q13)	Interchangeable	Interchangeable	Min. 18A, min. 200V	--	--

Supplementary information:

1. Provided evidence ensures the agreed level of compliance. See OD-CB2039.
2. For photo coupler technical description Dti= distance insulation, Int. dcr= internal distance creepage, Ext. dcr= external distance creepage.

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

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

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

4.8.4.2 TABLE: Stress Relief test —

Part	Material	Oven Temperature (°C)	Comments

4.8.4.3 TABLE: Battery replacement test —

Battery part no. ..... : — —

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

4.8.4.4 TABLE: Drop test —

Impact Area	Drop Distance	Drop No.	Observations
		1	
		2	

4.8.4.5 TABLE: Impact —

Impacts per surface	Surface tested	Impact energy (Nm)	Comments

4.8.4.6 TABLE: Crush test —

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

Supplementary information:

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

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

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

Supplementary information:			

5.2	TABLE: Classification of electrical energy sources						P
5.2.2.2 – Steady State Voltage and Current conditions							
No.	Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters			ES Class
				U (Vrms or Vpk)	I (Apk or Arms)	Hz	
Test on model: BB1U-6150V							
1.	18 or 36Vdc	+3.3V to output GND	Normal Abnormal in B.3 (after restoration) Single Fault in B.4 - For result is normal operating	3.37Vdc	--	--	1
			Single Fault in B.4 - For result is Fuse opened - For result is shutdown - For result is shutdown except +5Vsb	0	--	--	
2.	18 or 36Vdc	+5V to output GND	Normal Abnormal in B.3 (after restoration) Single Fault in B.4 - For result is normal operating	5.15Vdc	--	--	1
			Single Fault in B.4 - For result is Fuse opened - For result is shutdown	0	--	--	

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

			- For result is shutdown except +5Vsb				
3.	18 or 36Vdc	+12V to output GND	Normal Abnormal in B.3 (after restoration) Single Fault in B.4 - For result is normal operating	12.2Vdc	--	--	1
			Single Fault in B.4 - For result is Fuse opened - For result is shutdown - For result is shutdown except +5Vsb	0	--	--	
4.	18 or 36Vdc	+5Vsb to output GND	Normal Abnormal in B.3 (after restoration) Single Fault in B.4 - For result is normal operating - For result is shutdown except +5Vsb	5.01Vdc	--	--	1
			Single Fault in B.4 - For result is Fuse opened - For result is shutdown	0	--	--	
5.	18 or 36Vdc	-5V to output GND	Normal Abnormal in B.3 (after restoration) Single Fault in B.4	5.01Vdc	--	--	1

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

			- For result is normal operating				
			Single Fault in B.4 - For result is Fuse opened - For result is shutdown - For result is shutdown except +5Vsb	0	--	--	
6.	18 or 36Vdc	-12V to output GND	Normal Abnormal in B.3 (after restoration) Single Fault in B.4 - For result is normal operating	12.1Vdc	--	--	1
			Single Fault in B.4 - For result is Fuse opened - For result is shutdown - For result is shutdown except +5Vsb	0	--	--	
Test on Model AB1U-5120V							
1.	10 or 36Vdc	+3.3V to output GND	Normal Abnormal in B.3 (after restoration)	3.39Vdc	--	--	1
2.	18 or 36Vdc	+5V to output GND	Normal Abnormal in B.3 (after restoration)	5.12Vdc	--	--	1
3.	18 or 36Vdc	+12V to output GND	Normal Abnormal in B.3 (after restoration)	12.1Vdc	--	--	1
4.	18 or 36Vdc	+5Vsb to output	Normal	5.01Vdc	--	--	1

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

		GND	Abnormal in B.3 (after restoration)				
5.	18 or 36Vdc	-12V to output GND	Normal Abnormal in B.3 (after restoration)	12.1Vdc	--	--	1

5.2.2.3 – Capacitance Limits

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

5.2.2.4 – Single Pulses

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

5.2.2.5 – Repetitive Pulses

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

Test Conditions:

Normal – Max. normal load

Abnormal – No load

Supplementary information: SC = Short-circuited, OC = Open-circuited

5.4.1.4, 6.3.2, 9.0, B.2.6	TABLE: Temperature measurements					P
—	Supply voltage (V) ..... :	--	--	--	--	—

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

—	Ambient T_{min} (°C) ..... :	--	--	--	--	—
—	Ambient T_{max} (°C) ..... :	--	--	--	--	—
—	Tma (°C) ..... :	--	--	--	--	—
Max. measured temperature T of part/at:		T (°C)				Allowed T_{max} (°C)
Test on Model: BB1U- 6150V						
Supply voltage		18Vdc		36Vdc		--
Load condition		B				--
Test condition		normal				--
Tma		50.0				--
L8 coil		62.1		57.4		105
C4 body near L8 (Y-cap)		66.3		59.3		125
L5 coil		73.1		61.3		105
L1 coil		86.9		65.2		125
C37 body (bulk cap)		77.5		63.2		105
L2 coil		92.5		65.6		105
C35 body (bulk cap)		76.1		60.7		105
L7 coil		83.5		64.9		105
T1 coil		82.1		77.6		105
PCB near Q1		73.1		68.3		130
PCB near Q10 and D10		81.0		66.1		130
PCB near H4		85.2		63.8		130
PCB near H5		80.5		64.8		130
PCB near Q13		69.3		63.5		130
T2 coil		81.5		79.1		110
T2 core		82.4		79.8		110
T3 coil		66.5		63.4		110
T3 core		65.7		62.8		110
C29 body near T2 (Bridge-cap.)		66.4		64.2		125
PCB near U11 board		68.0		66.7		130
PCB near U2 board		65.0		63.1		130
L1 coil (on U11 board)		59.8		59.1		125
U16 body (on solder side)		64.8		60.8		100
U2 body (on CN3 board)		57.1		55.3		100
U8 body (on CN3 board)		60.0		56.6		100
Terminal Block body		71.1		58.8		--
Label		73.1		61.4		80

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

Tamb	23.7		24.0		--
Supply voltage	18Vdc				--
Load condition	B	A	B	C	--
Test condition	External Fan disable	+3.3V OL	+5V OL	+12V OL	--
Tma	50				
L2 coil	105	95.8	96.1	90.5	300
T2 coil	136	96.0	97.5	85.1	175
T3 coil	113	75.9	78.8	64.8	175
C29 body near T2 (Bridge-cap.)	92.3	69.4	71.9	66.0	300
U16 body (on solder side)	74.8	68.5	68.0	64.7	300
U2 body (on CN3 board)	66.9	60.5	61.1	57.7	300
U8 body (on CN3 board)	71.6	60.9	61.8	58.1	300
Tamb	23.5	23.3	24.0	23.8	--
Supply voltage	18Vdc				--
Load condition	B				--
Test condition	-12V OL	-5V OL	+5Vsb OL	T3 (pin F2 (B) (WHITE2) to F1 (A) (BLACK2) at C25) OL	--
Tma	50				
L2 coil	97.3	97.5	96.6	--	300
T2 coil	102.3	104.3	89.1	89.8	175
T3 coil	78.4	82.7	79.1	82.8	175
C29 body near T2 (Bridge-cap.)	72.8	74.0	71.3	--	300
U16 body (on solder side)	68.0	68.3	67.0	--	300
U2 body (on CN3 board)	61.8	63.0	60.9	--	300
U8 body (on CN3 board)	62.0	63.4	61.3	--	300
Tamb	23.5	23.8	23.2	23.0	--
Test on Model: AB1U-5120V					
Supply voltage	10Vdc		36Vdc		--
Load condition	A				--
Test condition	normal				--
Tma	50.0				--
L8 coil	64.5		54.0		105
C4 body near L8 (Y-cap)	70.9		55.6		125
L5 coil	84.7		57.1		105

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

L1 coil	113	60.4	125
C37 body (bulk cap)	85.7	59.2	105
L2 coil	105	61.0	105
C35 body (bulk cap)	87.2	57.1	105
L7 coil	98.0	61.1	105
T1 coil	78.7	69.3	105
PCB near Q1	72.0	62.2	130
PCB near Q10 and D10	87.6	62.0	130
PCB near H4	115	58.8	130
PCB near H5	95.8	61.0	130
PCB near Q13	68.9	60.5	130
T2 coil	75.1	70.6	110
T2 core	76.9	73.1	110
T3 coil	64.5	60.9	110
T3 core	63.6	60.3	110
C29 body near T2 (Bridge-cap.)	62.8	60.5	125
PCB near U11 board	64.3	62.5	130
PCB near U2 board	62.1	60.4	130
L1 coil (on U11 board)	57.6	56.9	125
U16 body (on solder side)	63.4	58.0	100
U2 body (on CN3 board)	55.0	53.0	100
U8 body (on CN3 board)	58.4	54.0	100
Terminal Block body	85.4	55.2	--
Label	78.9	57.7	80
Tamb	23.7	23.0	--
Supply voltage	10Vdc		--
Load condition	B		--
Test condition	External Fan disconnected	-12V OL	--
Tma	50.0		--
L1 coil	122	119	300
L2 coil	112	109	300
T2 coil	119	91.2	175
T3 coil	103	68.9	175
PCB near H4	119	118	300
C29 body near T2 (Bridge-cap.)	90.2	66.8	300
U16 body (on solder side)	73.1	65.9	300
U2 body (on CN3 board)	68.0	59.8	300

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

U8 body (on CN3 board)	72.5	63.4	300
Tamb	23.1	24.7	--

Supplementary information:

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

Supplementary Information:

Note 1: Tma should be considered as directed by appliable requirement

Note 2: Tma is not included in assessment of Touch Temperatures (Clause 9)

Tma should be considered as directed by appliable requirement.

- Load condition:
  For AB1U-5120V as below:
  - Condition A: +5V/ 6.08A, +12V/ 3.05A, +3.3V/ 12A, -12V/ 0.5A, +5VSB/ 1.5A
  - Condition B: +5V/ 14A, +12V/ 3.05A, +3.3V/ 0A, -12V/ 0.5A, +5VSB/ 1.5A
  - Condition C: +5V/ 0A, +12V/ 8A, +3.3V/ 3.19A, -12V/ 0.5A, +5VSB/ 1.5A

  For BB1U-6150V as below:
  - Condition A: +5V/ 6.08A, +12V/ 5.42A, +3.3V/ 12A, -5V/ 0.3A, -12V/ 0.5A, +5VSB/ 1.5A
  - Condition B: +5V/ 14A, +12V/ 5.42A, +3.3V/ 0A, -5V/ 0.3A, -12V/ 0.5A, +5VSB/ 1.5A
  - Condition C: +5V/ 0A, +12V/ 12A, +3.3V/ 0A,-5V/ 0A, -12V/ 0A, +5VSB/ 1.2A

5.4.1.10.2	**TABLE: Vicat softening temperature of thermoplastics**		N/A
Penetration (mm)..... :			—
Object/ Part No./Material	Manufacturer/trademark	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	Test temperature (°C)	Impression diameter (mm)
Supplementary Information:			

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

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

Distance under before fuse	36	36	--	0.6 (0.5x1.16)	See below	1.1	See below
- Input V+ to V- before fuse					3.2		3.2
- Traces under fuse					3.8		3.8
Basic:							
Input circuit components (with 10N) to earthed	36	36	--	0.6 (0.5*1.16)	See below	1.1	See below
- Input side component Heatsink (H4) to earth terminal					4.5		4.5
- Input side component Q11 to C4 earth pin					5.0		5.0
Input circuit trace to earthed trace	36	36	--	0.6 (0.5*1.16)	See below	1.1	See below
- Traces under CN1 (PCB top side)					4.0		4.0
- Input side trace of D11 to earthed screw (PCB top side)					2.0		2.0
- Traces under C4, C5 (PCB top side)					7.6		7.6
- Traces under CN1 (PCB bottom side)					3.2		3.2
- Traces under C4, C5 (PCB bottom side)					6.8		6.8
- Input side trace of Q11 to C4 earth trace (PCB bottom side)					4.6		4.6
- Input side trace of H5 to earthed screw (PCB bottom side)					2.7		2.7
- Input side trace of R33 to earthed screw (PCB bottom side)					3.4		3.4
Reinforced:							
Input circuit components (with 10N) to output circuit components (with 10N)	36	36	--	1.2 (1.0*1.16)	See below	2.2	See below
- Input side component C52 to output side component C1 (on U2 PCB)					8.0		8.0
- Input side component C52 to output side component U2 PCB					7.3		7.3
Input circuit trace to output circuit trace	36	36	--	1.2 (1.0*1.16)	See below	2.2	See below
- Traces under CN3 (PCB top side)					5.8		5.8

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- Input side trace of C52 to output side trace of CN3 pin10 (PCB top side)					5.2		5.2
- Traces under C29 (PCB top side)					7.6		7.6
- Traces under T2 (PCB top side)					11.3		11.3
- Traces under U1, U2, U8 (On CN3 PCB) (PCB top side)					6.6		6.6
- Input side traces of U8 pin 4 to output side trace of C14 (On CN3 PCB) (PCB top side)					5.8		5.8
- Input side trace of JP1 to output side trace of R34 (PCB bottom side)					3.8		3.8
- Traces under U16 (PCB bottom side)					8.0		8.0
- Traces under CN3 (PCB bottom side)					5.8		5.8
- Traces under C29 (PCB bottom side)					7.6		7.6
- Traces under T2 (PCB bottom side)					13.6		13.6
- Traces under U1, U2, U8 (On CN3 PCB) (PCB bottom side)					6.0		6.0

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.
2. One mylar sheet provided between PCB bottom side and metal enclosure.
3. One slot provided between Heatsink (H5) and earth screw, one mylar sheet provided on it and fixed by glue to keep basic insulation from H5 to earth.
4. Insulation pad provided on Q1, Q2, Q11, Q10, D10 and Q13 to keep basic insulation to earthed metal chassis and metal objects on it.
5. Insulation pad provided between CN4 PCB and earthed metal chassis to keep basic insulation.
6. Insulation pad provided between primary components on CN3 PCB and earthed metal chassis to keepbasic insulation.
7. Glued components (safety relevant): C52 with T3.

5.4.2.3	**TABLE: Minimum Clearances distances using required withstand voltage**	P
	Overvoltage Category (OV):	II
	Pollution Degree:	2

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Clearance distanced between:	Required withstand voltage	Required cl (mm)	Measured cl (mm)
Primary to earthed parts	1500	0.6 (0.5*1.16)	See appended table 5.4.2.2, 5.4.2.4 and 5.4.3 for details.
Primary to secondary	1500	1.2 (1.0*1.16)	
Supplementary information:			

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

5.4.4.2, 5.4.4.5 c) 5.4.4.9	TABLE: Distance through insulation measurements				P
Distance through insulation di at/of:	Peak voltage (V)	Frequency (kHz)	Material	Required DTI (mm)	DTI (mm)
Photo Coupler (Reinforced Insulation)	36	<100	1.	0.4	1.
Insulation tape (Reinforced Insulation)	100	<100	1.	2 layers	1.
Insulation sheet (Basic Insulation)	100	<100	1.	--	1.
Thermal Pad (Basic Insulation)	100	<100	1.	--	1.
Supplementary information: 1. See appended table 4.1.2 for details.					

5.4.9	TABLE: Electric strength tests			P
Test voltage applied between:	Voltage shape (AC, DC)	Test voltage (V)	Breakdown Yes / No	
Basic/supplementary:				
Unit: Input and Earth	DC	1500	No	
T2: Primary winding and Core	DC	1500	No	
T2: Secondary winding and Core	DC	1500	No	
Insulation sheet	DC	1500	No	
Thermal Pad	DC	1500	No	
Reinforced:				

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5.4.9	TABLE: Electric strength tests			P
Test voltage applied between:		Voltage shape (AC, DC)	Test voltage (V)	Breakdown Yes / No
Unit: Input and Output		DC	2500	No
T2: Primary winding and Secondary winding		DC	2500	No
T3: Primary winding and Secondary winding		DC	2500	No
T3: Secondary winding and Core		DC	2500	No
One layer Insulation tape of transformer		DC	2500	No
Routine Tests:				
--		--	--	--
Supplementary information: 1. KR= 0.46 (<100kHz) RI= 1.2 * 2 * peak voltage / KR = 1.2 * 2 * 100 / 0.46= 522V peak 2. KR= 0.35 (<100kHz) BI= 1.2 * peak voltage / KR = 1.2 * 100 / 0.35= 343 V peak				

5.5.2.2	TABLE: Stored discharge on capacitors				N/A
Supply Voltage (V), Hz	Test Location	Operating Condition (N, S)	Switch position On or off	Measured Voltage (after 2 seconds)	ES Classification
Supplementary information: ☐ bleeding resistor rating: ☐ Additional test for ICX: Notes: A. Test Location: Phase to Neutral; Phase to Phase; Phase to Earth; and/or Neutral to Earth. B. Operating condition abbreviations: N – Normal operating condition (e.g., normal operation, or open fuse); S – Single fault condition.					

5.6.6.2	TABLE: Resistance of protective conductors and terminations			P
Accessible part	Test current (A)	Duration (min)	Voltage drop (V)	Resistance (mΩ)
Test on model: BB1U-6150V				
Earth terminal to U chassis near output wire	32	2	0.70	16.8
Earth terminal to U chassis near output wire	40	2	0.87	16.7
Supplementary Information:				

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

Supplementary information:

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

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

[3] Specify method used for measurement as described in IEC 60990 subclause 4.3.

[4] IEC60990, subclause 6.2.2.7, Fault 7 not applicable.

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

6.2.2	Table: Electrical power sources (PS) measurements for classification				N/A
Source	Description	Measurement	Max Power after 3 s	Max Power after 5 s*)	PS Classification
		Power (W) :			
		VA (V) :			
		IA (A) :			

Supplementary Information:

(*) Measurement taken only when limits at 3 seconds exceed PS1 limits.

All circuits within the equipment are considered as PS3. For output circuits see appended table Q.1.

6.2.3.1	TABLE: Determination of Potential Ignition Sources (Arcing PIS)			N/A
Location	Open circuit voltage After 3 s (Vp)	Measured r.m.s current (Irms)	Calculated value (V_p x I_{rms})	Arcing PIS? Yes / No

Supplementary information:

1. All components located within the EUT are considered as arcing PIS.

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

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6.2.3.2	TABLE: Determination of Potential Ignition Sources (Resistive PIS)				N/A
Circuit Location (x-y)	Operating Condition (Normal / Describe Single Fault)	Measured wattage or VA During first 30 s (W / VA)	Measured wattage or VA After 30 s (W / VA)	Protective Circuit, Regulator, or PTC Operated? Yes / No (Comment)	Resistive PIS? Yes/No

Supplementary information:

1. All components located within the EUT are considered as resistive PIS.

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.

B.2.5	TABLE: Input test						P
U (V)	I (A)	I rated (A)	P (W)	P rated (W)	Fuse No	I fuse (A)	Condition/status
Test on Model AB1U-5120V							
10Vdc	15.3	14.5	153	--	F1	15.3	Maximum normal load condition A
36Vdc	3.78	4	137	--	F1	3.78	As above
10Vdc	15.5	14.5	155	--	F1	15.5	Maximum normal load condition B
36Vdc	3.83	4	138	--	F1	3.83	As above
10Vdc	15.1	14.5	151	--	F1	15.1	Maximum normal load condition C
36Vdc	3.73	4	135	--	F1	3.73	As above
Test on Model BB1U-6150V							
18Vdc	9.79	10	177	--	F1	9.79	Maximum normal load condition A
36Vdc	4.72	5	170	--	F1	4.72	As above
18Vdc	9.85	10	178	--	F1	9.85	Maximum normal load condition B
36Vdc	4.77	5	172	--	F1	4.77	As above
18Vdc	9.45	10	171	--	F1	9.45	Maximum normal load condition C
36Vdc	4.58	5	165	--	F1	4.58	As above

Supplementary Information:

For model AB1U-5120V as below:
Condition A: +5V/ 6.08A, +12V/ 3.05A, +3.3V/ 12A, -12V/ 0.5A, +5VSB/ 1.5A

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Condition B: +5V/ 14A, +12V/ 3.05A, +3.3V/ 0A, -12V/ 0.5A, +5VSB/ 1.5A
Condition C: +5V/ 0A, +12V/ 8A, +3.3V/ 3.19A, -12V/ 0.5A, +5VSB/ 1.5A
For model BB1U-6150V as below:
Condition A: +5V/ 6.08A, +12V/ 5.42A, +3.3V/ 12A, -5V/ 0.3A, -12V/ 0.5A, +5VSB/ 1.5A
Condition B: +5V/ 14A, +12V/ 5.42A, +3.3V/ 0A, -5V/ 0.3A, -12V/ 0.5A, +5VSB/ 1.5A
Condition C: +5V/ 0A, +12V/ 12A, +3.3V/ 0A,-5V/ 0A, -12V/ 0A, +5VSB/ 1.2A

B.3	TABLE: Abnormal operating condition tests							P
Ambient temperature (°C) .....:			25, if not specified					—
Power source for EUT: Manufacturer, model/type, output rating .:			--					—
Component No.	Abnormal Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
Test on Model BB1U-6150V								
External Fan (condition B)	Disable	18Vdc	4.5 hours	F1	9.85	T	See table 5.4.1.4, 6.3.2, 9.0, B.2.6	Unit operation normally. NT, NC, NB, ASRE.
Output (+3.3V/ 12A) (Condition A)	OL	18Vdc	3.0 hours	F1	9.79 to 9.98 to 0.48	T	See table 5.4.1.4, 6.3.2, 9.0, B.2.6	Temperature was stable at load 13.0A, Unit shut down except +5Vsb at load 13.1A. NB, NC, NT, ASRE.
Output (+3.3V/ 12A) (Condition A)	SC	18Vdc	0.5 hour	F1	9.79 to 0.48	--	--	Unit shut down except +5Vsb. NB, NC, NT, ASRE.
Output (+5V/ 14A) (condition B)	OL	18Vdc	3.5 hours	F1	9.85 to 10.1 to 0.48	T	See table 5.4.1.4, 6.3.2, 9.0, B.2.6	Temperature was stable at load 14.6A, Unit shut down except +5Vsb at load 14.7A. NB, NC, NT, ASRE.
Output (+5V/ 14A) (condition B)	SC	18Vdc	0.5 hour	F1	9.85 to 0.48	--	--	Unit shut down except +5Vsb. NB, NC, NT,

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B.3	TABLE: Abnormal operating condition tests		P
Ambient temperature (°C) .....:		25, if not specified	—
Power source for EUT: Manufacturer, model/type, output rating .:		--	—

Component No.	Abnormal Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
								ASRE.
Output (+12V/ 12A) (Condition C)	Overload	18Vdc	3.0 hours	F1	9.45 to 9.88 to 0.48	T	See table 5.4.1.4, 6.3.2, 9.0, B.2.6	Temperature was stable at load 12.6A, Unit shut down except +5Vsb at load 12.7A. NB, NC, NT, ASRE.
Output (+12V/ 12A) (Condition C)	SC	18Vdc	0.5 hour	F1	9.45 to 0.48	--	--	Unit shut down except +5Vsb. NB, NC, NT, ASRE.
Output (-12V/ 0.5A) (condition B)	OL	18Vdc	3.0 hours	F1	9.85 to 10.18 to 0.48	T	See table 5.4.1.4, 6.3.2, 9.0, B.2.6	Temperature was stable at load 0.9A, Unit shut down except +5Vsb at load 1.0A. NB, NC, NT, ASRE.
Output (-12V/ 0.5A) (condition B)	SC	18Vdc	0.5 hour	F1	9.85 to 0.48	--	--	Unit shut down except +5Vsb. NB, NC, NT, ASRE.
Output (-5V/ 0.3A) (condition B)	OL	18Vdc	4.0 hours	F1	9.85 to 10.1 to 0.48	T	See table 5.4.1.4, 6.3.2, 9.0, B.2.6	Temperature was stable at load 0.9A, Unit shut down except +5Vsb at load 1.0A. NB, NC, NT, ASRE.
Output (-5V/ 0.3A) (condition B)	SC	18Vdc	0.5 hour	F1	9.85 to 0.48	--	--	Unit shut down except +5Vsb. NB,

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B.3	TABLE: Abnormal operating condition tests		P
Ambient temperature (°C) .....:		25, if not specified	—
Power source for EUT: Manufacturer, model/type, output rating .:		--	—

Component No.	Abnormal Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
								NC, NT, ASRE.
Output (+5VSB/ 1.5A) (condition B)	OL	18Vdc	2.5 hours	F1	9.85 to 9.98 to 0.02	T	See table 5.4.1.4, 6.3.2, 9.0, B.2.6	Temperature was stable at load 1.9A, Unit shut down at load 2.0A. NB, NC, NT, ASRE.
Output (+5VSB/ 1.5A) (condition B)	SC	18Vdc	0.5 hour	F1	9.85 to 0.02	--	--	Unit shut down. NB, NC, NT, ASRE.
Test on Model AB1U-5120V								
External Fan (Condition A)	Disable	10Vdc	4.5 hours	F1	15.3	T	See table 5.4.1.4, 6.3.2, 9.0, B.2.6	Unit operation normally, NT, NC, NB, ASRE.
Output (-12V/ 0.5A) (Condition A)	OL	10Vdc	2.5 hours	F1	15.3 to 15.9 to 0.88	T	See table 5.4.1.4, 6.3.2, 9.0, B.2.6	Temperature was stable at load 0.9A, Unit shut down except +5Vsb at load 1.0A. NB, NC, NT, ASRE.

Supplementary Information:
Test table is provided to record abnormal including Thermal burn injury.

1) SC: Short-circuited; OC: Open-circuited; OL: Overloaded; BL: Blocked.
2) The test result shown all safeguards remained effective and didn't lead to a single fault condition during abnormal operating condition; besides, all safeguards complied with applicable requirements in this standard after restoration of normal operating conditions.
3) The test result shown no Class 1 or 2 energy source become Class 3 level during and after single fault condition.
4) The overloaded condition is according to annex G.5.3.3.
5) All output voltage remain under limits of ES1, if no otherwise specified.

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B.3	TABLE: Abnormal operating condition tests		P
Ambient temperature (°C) .....:		25, if not specified	—
Power source for EUT: Manufacturer, model/type, output rating .:		--	—

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

Abbreviations used:
NC: Cheesecloth remain intact
NT: Tissue paper remains intact
NB: No indication of dielectric breakdown
IP: Internal protection operated (list component)
CT: Constant temperatures were obtained
CD: Components damaged (list damaged components)
ASRE: All safeguards remained effectively
Temperature Measurements: See Table 5.4.1.4, 6.3.2, 9.0, B.2.6.
All ES measurement See appended table 5.2.

For model AB1U-5120V as below:
- Condition A: +5V/ 6.08A, +12V/ 3.05A, +3.3V/ 12A, -12V/ 0.5A, +5VSB/ 1.5A
- Condition B: +5V/ 14A, +12V/ 3.05A, +3.3V/ 0A, -12V/ 0.5A, +5VSB/ 1.5A
- Condition C: +5V/ 0A, +12V/ 8A, +3.3V/ 3.19A, -12V/ 0.5A, +5VSB/ 1.5A

For model BB1U-6150V as below:
- Condition A: +5V/ 6.08A, +12V/ 5.42A, +3.3V/ 12A, -5V/ 0.3A, -12V/ 0.5A, +5VSB/ 1.5A
- Condition B: +5V/ 14A, +12V/ 5.42A, +3.3V/ 0A, -5V/ 0.3A, -12V/ 0.5A, +5VSB/ 1.5A
- Condition C: +5V/ 0A, +12V/ 12A, +3.3V/ 0A,-5V/ 0A, -12V/ 0A, +5VSB/ 1.2A

B.4	TABLE: Fault condition tests		P
Ambient temperature (°C) ..... :		25, if not specified	—
Power source for EUT: Manufacturer, model/type, output rating .... :		--	—

Component No.	Fault Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
Test on Model BB1U-6150V								
T3 (pin F2 (B) (WHITE2) to F1 (A) (BLACK2) at C25) (condition B)	OL	18Vdc	3.5 hours	F1	9.85 to 10.05 to 0.02	T	See table 5.4.1.4, 6.3.2, 9.0, B.2.6	Temperature was stable at load 1.9A, Unit shut down at load 2.0A. NB, NC, NT, ASRE.
Q2 (D-S)	SC	36Vdc	1 second	F1	--	--	--	Fuse (F1) opened. NB, NC, NT,

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								ASRE, RP2.
Q2 (D-G)	SC	36Vdc	1 second	F1	--	--	--	Fuse (F1) opened. NB, NC, NT, ASRE, RP2.
Q2 (G-S)	SC	36Vdc	0.5 hour	F1	9.85 to 0.48	--	--	Unit shut down except +5Vsb. NB, NC, NT, ASRE.
Q1 (D-S)	SC	36Vdc	0.5 hour	F1	--	--	--	Fuse (F1) opened. NB, NC, NT, ASRE, RP2.
Q1 (D-G)	SC	36Vdc	0.5 hour	F1	--	--	--	Fuse (F1) opened. NB, NC, NT, ASRE, RP2.
Q1 (G-S)	SC	36Vdc	0.5 hour	F1	9.85 to 0.48	--	--	Unit shut down except +5Vsb. NB, NC, NT, ASRE.
T2 (9-7)	SC	36Vdc	0.5 hour	F1	9.85 to 0.48	--	--	Unit shut down except +5Vsb. NB, NC, NT, ASRE.
T2 (7-F)	SC	36Vdc	0.5 hour	F1	9.85 to 0.48	--	--	Unit shut down except +5Vsb. NB, NC, NT, ASRE.
T2 (F-8)	SC	36Vdc	0.5 hour	F1	9.85 to 0.48	--	--	Unit shut down except +5Vsb. NB, NC, NT, ASRE.
T3 (F2 (B) (WHITE2) – F1 (A) (BLACK2))	SC	36Vdc	0.5 hour	F1	9.85 to 0.02	--	--	Unit shut down. NB, NC, NT, ASRE.
T3 (5-1)	SC	36Vdc	0.5 hour	F1	9.85 to 0.02	--	--	Unit shut down. NB, NC, NT, ASRE.

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T3 (1-2)	SC	36Vdc	0.5 hour	F1	9.85 to 0.02	--	--	Unit shut down. NB, NC, NT, ASRE.
U17 (8-2)	SC	36Vdc	0.5 hour	F1	9.85 to 0.02	--	--	Unit shut down. NB, NC, NT, ASRE.
U17 (8-4)	SC	36Vdc	0.5 hour	F1	9.85 to 0.02	--	--	Unit shut down. NB, NC, NT, ASRE.
U16 (1-2)	SC	36Vdc	0.5 hour	F1	9.85 to 0.02	--	--	Unit shut down. NB, NC, NT, ASRE.
U16 (3-4)	SC	36Vdc	0.5 hour	F1	9.85 to 0.02	--	--	Unit shut down. NB, NC, NT, ASRE.
U8 (1-2)	SC	36Vdc	0.5 hour	F1	9.85 to 0.48	--	--	Unit shut down except +5Vsb. NB, NC, NT, ASRE.
U8 (3-4)	SC	36Vdc	0.5 hour	F1	9.85 to 0.48	--	--	Unit shut down except +5Vsb. NB, NC, NT, ASRE.
U1 (1-2)	SC	36Vdc	0.5 hour	F1	9.85 to 0.02	--	--	Unit shut down. NB, NC, NT, ASRE.
U1 pin 1	OC	36Vdc	0.5 hour	F1	9.85 to 0.02	--	--	Unit shut down. NB, NC, NT, ASRE.
U1 (3-4)	SC	36Vdc	0.5 hour	F1	9.85 to 0.02	--	--	Unit shut down. NB, NC, NT, ASRE.
U1 pin 3	OC	36Vdc	0.5 hour	F1	9.85 to 0.02	--	--	Unit shut down. NB, NC, NT, ASRE.

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U2 (1-2)	SC	36Vdc	0.5 hour	F1	9.85 to 0.02	--	--	Unit shut down. NB, NC, NT, ASRE.
U2 pin 1	OC	36Vdc	0.5 hour	F1	9.85 to 0.02	--	--	Unit shut down. NB, NC, NT, ASRE.
U2 (3-4)	SC	36Vdc	0.5 hour	F1	9.85 to 0.02	--	--	Unit shut down. NB, NC, NT, ASRE.
U2 pin 3	OC	36Vdc	0.5 hour	F1	9.85 to 0.02	--	--	Unit shut down. NB, NC, NT, ASRE.

Supplementary Information:
Abbreviations used:

NC: Cheesecloth remain intact

NT: Tissue paper remains intact

NB: No indication of dielectric breakdown

IP: Internal protection operated (list component)

CT: Constant temperatures were obtained

CD: Components damaged (list damaged components)

ASRE: All safeguards remained effectively

All fuse sources are repeated ten times with the tests which fuse would be opened during the test, refer to appended table 4.1.2 for details

Temperature Measurements: See Table 5.4.1.4, 6.3.2, 9.0, B.2.6.
ES Measurement: See Table 5.2.

For model AB1U-5120V as below:

- Condition A: +5V/ 6.08A, +12V/ 3.05A, +3.3V/ 12A, -12V/ 0.5A, +5VSB/ 1.5A
- Condition B: +5V/ 14A, +12V/ 3.05A, +3.3V/ 0A, -12V/ 0.5A, +5VSB/ 1.5A
- Condition C: +5V/ 0A, +12V/ 8A, +3.3V/ 3.19A, -12V/ 0.5A, +5VSB/ 1.5A

For model BB1U-6150V as below:

- Condition A: +5V/ 6.08A, +12V/ 5.42A, +3.3V/ 12A, -5V/ 0.3A, -12V/ 0.5A, +5VSB/ 1.5A
- Condition B: +5V/ 14A, +12V/ 5.42A, +3.3V/ 0A, -5V/ 0.3A, -12V/ 0.5A, +5VSB/ 1.5A
- Condition C: +5V/ 0A, +12V/ 12A, +3.3V/ 0A,-5V/ 0A, -12V/ 0A, +5VSB/ 1.2A

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Annex Q.1	**TABLE: Circuits intended for interconnectionwith building wiring (LPS)**						N/A
Note: Measured UOC (V) with all load circuits disconnected:							
Output Circuit	Components	U_{oc} (Vdc)	I_{sc} (A)		S (VA)		
			Meas.	Limit	Meas.	Limit	
Supplementary information: SC = Short-circuited; OC = Open-circuited.							

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

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

T.8	**TABLE: Stress relief test**					P
Part/Location	Material	Thickness (mm)	Oven Temperature (°C)	Duration (h)	Observation	
Insulation sheet	See appended table 4.1.2	See appended table 4.1.2	125	7	All safeguards remain effective.	
Thermal Pad	See appended table 4.1.2	See appended table 4.1.2	125	7	All safeguards remain effective.	
Supplementary information:						

List of test equipment used:

“No listing of test equipment used necessary for chosen test procedure.”

5.4.1.8	Table: working voltage measurement		P
Location	RMS voltage (V)	Peak voltage (V)	Comments
Test on model: BB1U-6150V			
T2 Pin 1 to Pin 7	20	44	Max. 55.7kHz
T2 Pin 1 to Pin 8	38	78	--
T2 Pin 1 to Pin 9	20	44	--
T2 Pin 1 to Pin 10	**50**	**100**	--
T2 Pin 1 to Pin F (WHITE) (Earth)	25	50	--
T2 Pin 2 to Pin 7	22	64	--
T2 Pin 2 to Pin 8	22	40	--
T2 Pin 2 to Pin 9	32	84	--
T2 Pin 2 to Pin 10	33	70	--
T2 Pin 2 to Pin F (WHITE) (Earth)	20	30	--
T3 Pin 1 to Pin F2 (B) (WHITE2)	6	16	Max. 56.3kHz
T3 Pin 1 to Pin F1 (A) (BLACK2) (Earth)	24	60	--
T3 Pin 2 to Pin F2 (B) (WHITE2)	29	68	--
T3 Pin 2 to Pin F1 (A) (BLACK2) (Earth)	10	26	--
T3 Pin 3 to Pin F2 (B) (WHITE2)	39	54	--
T3 Pin 3 to Pin F1 (A) (BLACK2) (Earth)	48	100	--
T3 Pin 4 to Pin F2 (B) (WHITE2)	39	56	--
T3 Pin 4 to Pin F1 (A) (BLACK2) (Earth)	38	50	--
T3 Pin F3 (C) (BLACK1) to Pin F2 (B) (WHITE2)	41	60	--
T3 Pin F3 (C) (BLACK1) to Pin F1 (A) (BLACK2) (Earth)	38	50	--
T3 Pin F4 (D) (WHITE1) to Pin F2 (B) (WHITE2)	39	54	--
T3 Pin F4 (D) (WHITE1) to Pin F1 (A) (BLACK2) (Earth)	**60**	**100**	--
C29 Primary to Secondary	2	4	--
U2 Pin 3 to Pin 1	4	8	--
U2 Pin 3 to Pin 2	4	8	--
U2 Pin 4 to Pin 1	4	8	--
U2 Pin 4 to Pin 2	4	8	--
U1 Pin 3 to Pin 1	4	8	--

U1 Pin 3 to Pin 2	4	8	--
U1 Pin 4 to Pin 1	4	8	--
U1 Pin 4 to Pin 2	4	8	--
U8 Pin 3 to Pin 1	4	8	--
U8 Pin 3 to Pin 2	4	8	--
U8 Pin 4 to Pin 1	4	8	--
U8 Pin 4 to Pin 2	4	8	--
U1 Pin 3 to Pin 1	4	8	--
U1 Pin 3 to Pin 2	4	8	--
U16 Pin 4 to Pin 1	2	8	--
U16 Pin 4 to Pin 2	2	8	--
Supplementary Information: Supply Voltage: 36Vdc			

TABLE: evaluation of voltage limiting components in ES1 circuits			
Component (measured between)	max. voltage (V) (normal operation)		Voltage Limiting Components
	V peak	V d.c.	
Test on model: BB1U-6150V			
T2 Pin 9 to Pin F	57	--	--
After R43	52	--	--
After Q7	--	36	R43, Q7
After R4	50	--	--
After C20	--	36	R4, C20
T2 Pin 7 to Pin F	--	35	--
T2 Pin 8 to Pin F	--	36	--
T2 Pin 10 to Pin F	59	--	--
After R44	--	52	R44
After Q6	--	36	Q6
After R5	50	--	--
After C19	--	36	R5, C19
T3 Pin F2 (B) (WHITE2) to F1 (A) (BLACK2)	35	--	--
Fault test performed on voltage limiting components	Voltage measured (V) in SELV circuits (V peak or V d.c.)		
Test on model: BB1U-6150V			
R43, Q7 SC	0		
R4, C20 SC	0		
R44 SC	0		

Q6 SC	0
R5, C19 SC	0
Supplementary information: Test voltage: 36Vdc Results represented worst conditions.	

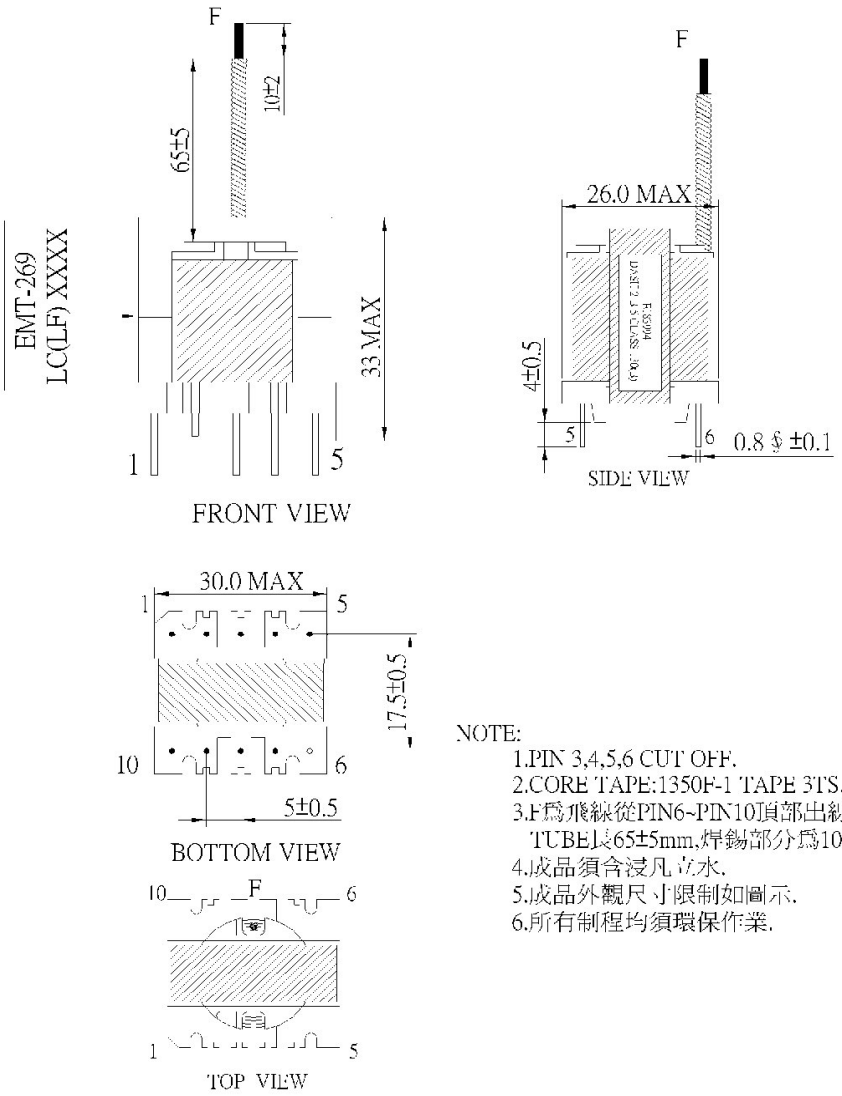
G.5.3.2	**TABLE: transformers**						P
Loc.	Tested insulation	Working voltage peak / V (5.4.1.8)	Working voltage rms / V (5.4.1.8)	Required electric strength (5.4.9)	Required clearance / mm (5.4.2)	Required creepage distance / mm (5.4.3)	Required distance thr. insul. (5.4.4)
T2	Primary to secondary	100	50	2500V	1.2 (1.0*1.16)	2.4	2 layers / 0.4mm
	Core to primary	100	50	1500V	0.6 (0.5*1.16)	1.2	--
	Core to secondary	100	50	1500V	0.6 (0.5*1.16)	1.2	--
Loc.	Tested insulation			Test voltage/ V	Measured clearance / mm	Measured creepage dist./ mm	Measured distance thr. insul. / mm; number of layers
T2	Primary winding and secondary winding (internal)			2500V	6.0	6.0	See supplementary information
	Primary winding and core (internal)			1500V	3.0	3.0	See supplementary information
	Secondary winding and core (internal)			1500V	3.0	3.0	See supplementary information
	Primary pin and secondary pin (external)			2500V	17.0	17.0	See supplementary information
	Primary pin and core (external)			1500V	4.2	4.2	See supplementary

					information
	Primary pin and secondary winding (external)	1500V	7.2	7.2	See supplementary information
	Secondary pin and core (external)	1500V	4.2	4.2	See supplementary information
	Secondary pin and primary winding (external)	2500V	7.2	7.2	See supplementary information

supplementary information:

- Manufacturer: See appended table 4.1.2.
- Type: See appended table 4.1.2.
- Core is considered as floating.

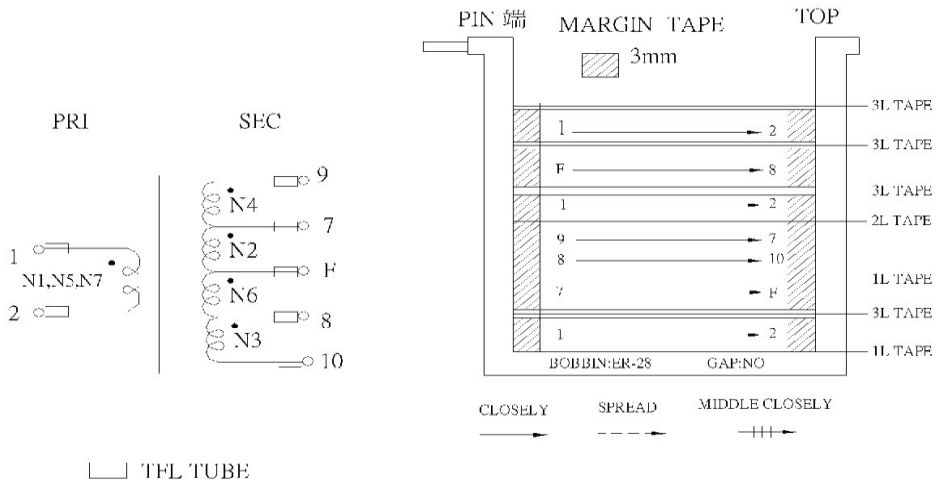
1. CONFIGURATION DIMENSION:UNIT m/m



NOTE:

1.PIN 3,4,5,6 CUT OFF.
2.CORE TAPE:1350F-1 TAPE 3TS.
3.F爲飛線從PIN6~PIN10頂部出線,從B/N邊緣量TUBE長65±5mm,焊錫部分爲10±2mm.(如圖示)
4.成品須含浸凡立水.
5.成品外觀尺寸限制如圖示.
6.所有制程均須環保作業.

2.SCHEMATIC

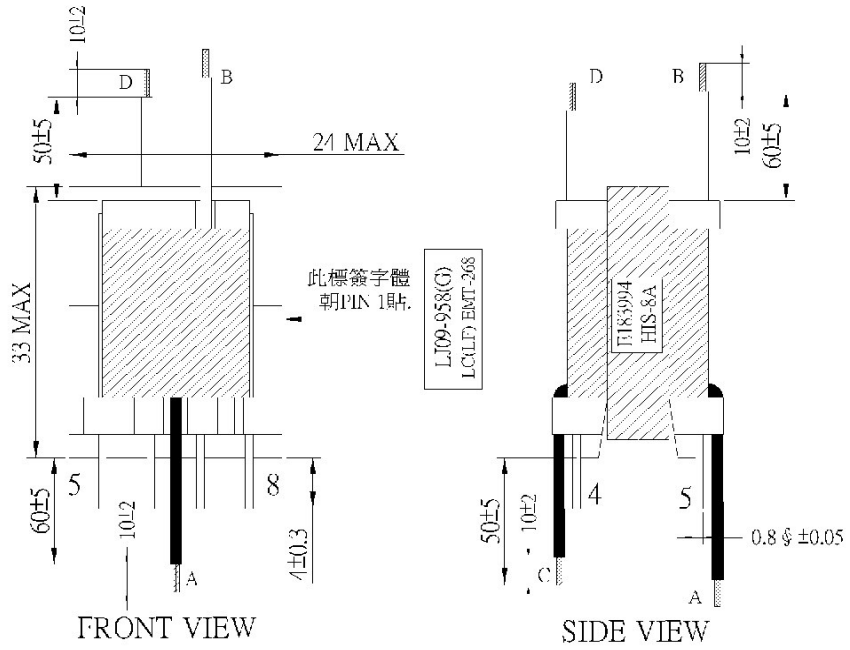


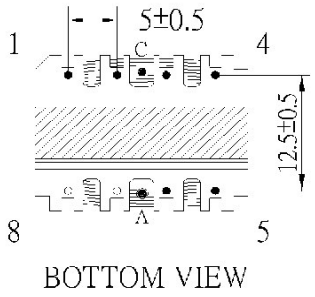
NO	WIRE SIZE	START	END	TURNS	LAYER	INSULATION	TFL TUBE		NOTE
							START	END	
N0	——	——	——	——	——	TAPE 1 TS	——	——	——
N1	0.5Φ*3P	1	2	6	1	TAPE 3 TS	✓	✓	密繞
N2	0.5Φ*4P	7	F	4	1	TAPE 1 TS	✓	✓	密繞
N3	0.3Φ*3P	8	10	4	1	TAPE 2 TS	✓	✓	同層并繞
N4	0.3Φ*3P	9	7	4			✓	✓	
N5	0.5Φ*3P	1	2	6	1	TAPE 3 TS	✓	✓	密繞
N6	0.5Φ*4P	F	8	4	1	TAPE 3 TS	✓	✓	密繞
N7	0.5Φ*3P	1	2	6	1	TAPE 3 TS	✓	✓	密繞

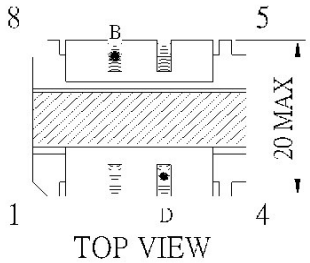
G.5.3.2	**TABLE: transformers**						P
Loc.	Tested insulation	Working voltage peak / V (5.4.1.8)	Working voltage rms / V (5.4.1.8)	Required electric strength (5.4.9)	Required clearance / mm (5.4.2)	Required creepage distance / mm (5.4.3)	Required distance thr. insul. (5.4.4)
T3	Primary to secondary	100	60	4000 V	1.2 (1.0*1.16)	2.5	2 layers / 0.4mm
	Core to secondary	100	60	4000 V	1.2 (1.0*1.16)	2.5	2 layers / 0.4mm
Loc.	Tested insulation			Test voltage/	Measured clearance /	Measured creepage	Measured distance

		V	mm	dist./ mm	thr. insul. / mm; number of layers
T3	Primary winding and secondary winding (internal)	4000 V	Triple insulation wire used.	Triple insulation wire used.	See supplementary information
	Primary winding and core (internal)	--	--	--	--
	Secondary winding and core (internal)	4000 V	Triple insulation wire used.	Triple insulation wire used.	See supplementary information
	Primary pin and secondary pin (external)	4000 V	40.0	40.0	See supplementary information
	Primary pin and core (external)	--	--	--	--
	Primary pin and secondary winding (external)	4000 V	Triple insulation wire used.	Triple insulation wire used.	See supplementary information
	Secondary pin and core (external)	4000 V	40.0	40.0	See supplementary information
	Secondary pin and primary winding (external)	4000 V	40.0	40.0	See supplementary information
supplementary information:					
• Manufacturer: See appended table 4.1.2. • Type: See appended table 4.1.2. • Core is considered as primary.					

1. CONFIGURATION DIMENSION:UNIT m/m





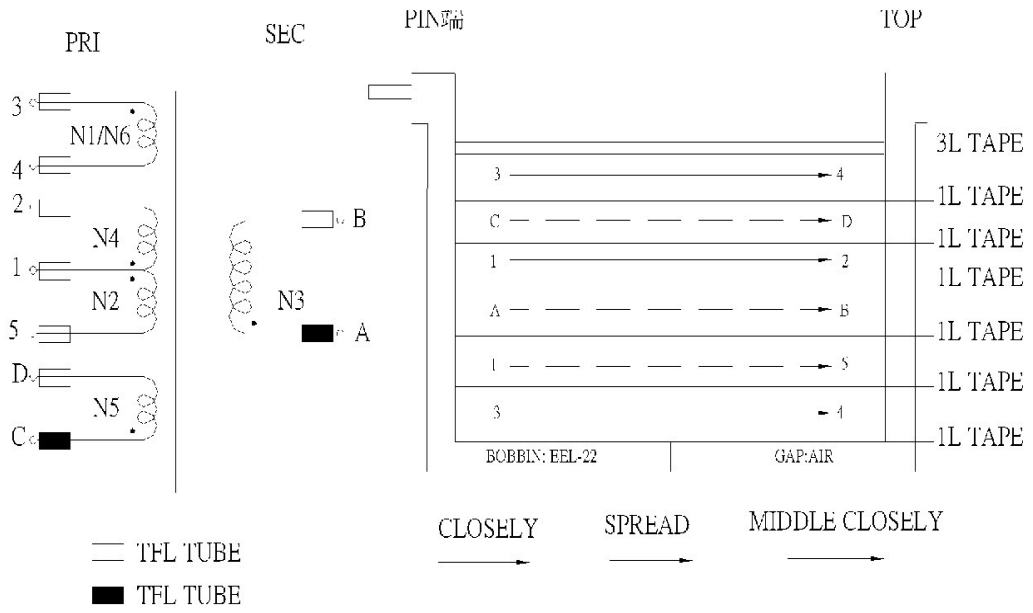


NOTE:

1.PIN 6,7,8 CUT OFF,
2.CORE須研磨,研磨CORE置於PIN端,
3.CORE TAPE:1350F-1 TAPE 3TS.
4.A飛線穿黑色套管從PIN5-8側底部PIN6～7之間溝槽出線,B飛線穿白色套管從PIN5-8側頂部出線,C穿黑色套管從PIN1-4側底部PIN2~3之間溝槽出線,D穿白色套管從PIN1~4頂部出線;A,B,C,D飛線穿TUBE長度及鍍錫長度如圖所示;
5.成品須含浸凡立水.
6.成品外觀尺寸限制如圖示.
7.所有制程均須環保作業 .

ATTACHMENT

2.SCHEMATIC



NO	WIRE SIZE	START	END	TURNS	LAYER	INSULATION	TFL TUBE		NOTE
							START	END	
N0	——	——	——	——	——	TAPE 1 TS	——	——	——
N1	0.45Φ*2P	3	4	14	1	TAPE 1 TS	✓	✓	密繞
N2	0.30Φ*2P	1	5	17.5	1	TAPE1 TS	✓	✓	疏繞
N3	TRIPLE WIRE 0.45Φ*3P	A	B	7	1	TAPE1 TS	✓	✓	疏繞
N4	0.25Φ*2P	1	2	28	1	TAPE 1 TS	✓	✓	密繞
N5	0.30Φ*2P	C	D	19	1	TAPE 1 TS	✓	✓	疏繞
N6	0.45Φ*2P	3	4	14	1	TAPE 3 TS	✓	✓	密繞

Report No. 60391663 001

IEC62368_1B - 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 62368-1:2014+A11:2017
Attachment Form No.....:	EU_GD_IEC62368_1B_II
Attachment Originator .....:	Nemko AS
Master Attachment.....:	Date 2017-09-22
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	CENELEC COMMON MODIFICATIONS (EN)	P
	Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 62368-1:2014 are prefixed "Z".	P
CONTENTS	**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
	Delete all the "country" notes in the reference document (IEC 62368-1:2014) according to the following list:	P

0.2.1	Note	1	Note 3	4.1.15	Note
4.7.3	Note 1 and 2	5.2.2.2	Note	5.4.2.3.2.2 Table 13	Note c
5.4.2.3.2.4	Note 1 and 3	5.4.2.5	Note 2	5.4.5.1	Note
5.5.2.1	Note	5.5.6	Note	5.6.4.2.1	Note 2 and 3
5.7.5	Note	5.7.6.1	Note 1 and 2	10.2.1 Table 39	Note 2, 3 and 4
10.5.3	Note 2	10.6.2.1	Note 3	F.3.3.6	Note 3

	For special national conditions, see Annex ZB.		P
1	**Add** the following note: NOTE Z1 The use of certain substances in electrical and electronic equipment is restricted within the EU: see Directive 2011/65/EU.		P

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Report No. 60391663 001

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
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.	Add.	P
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
10.2.1	**Add** the following to [c] and [d] in table 39: For additional requirements, see 10.5.1.	No such radiation from the equipment.	N/A
10.5.1	**Add** the following after the first paragraph: *For RS 1 compliance is checked by measurement under the following conditions:* *In addition to the normal operating conditions, all controls adjustable from the outside by hand, by any object such as a tool or a coin, and those internal adjustments or presets 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		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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.		
10.6.1	**Add** the following paragraph to the end of the subclause: EN 71-1:2011, 4.20 and the related tests methods and measurement distances apply.	No such x-radiation generated from the equipment.	N/A
10.Z1	**Add** the following new subclause after 10.6.5. **10.Z1 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	No such consideration for the purpose of personal music players.	N/A
G.7.1	**Add** the following note: NOTE Z1 The harmonized code designations corresponding to the IEC cord types are given in Annex ZD.		N/A
Bibliography	**Add** the following standards: **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.		P

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Clause	Requirement + Test	Result - Remark	Verdict
	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.		
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”	The equipment is for building-in into a Class I equipment. The marking text must be provided when marketed in applicable countries.	N/A
4.7.3	**United Kingdom** To the end of the subclause the following is added: The torque test is performed using a socket-outlet complying with BS 1363, and the plug part shall be assessed to the relevant clauses of BS 1363. Also see Annex G.4.2 of this annex	The equipment is not direct plug-in equipment.	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	No high touch current.	N/A

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IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	the limits of 3,5 mA a.c. or 10 mA d.c.		
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 1,5kV. It is permitted to bridge this insulation with a capacitor complying with EN 60384-14:2005, subclass Y2. A capacitor classified Y3 according to EN 60384-14:2005, may bridge this insulation under the following conditions: • the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 60384-14, which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in 5.4.11; • the additional testing shall be performed on all the test specimens as described in EN 60384-14; the impulse test of 2,5 kV is to be performed before the endurance test in EN 60384-14, in the sequence of tests as described in EN 60384-14.	No TNV circuits.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.5.2.1	**Norway** After the 3rd paragraph the following is added: Due to the IT power system used, capacitors are required to be rated for the applicable line-to-line voltage (230 V).		N/A
5.5.6	**Finland, Norway** and **Sweden** To the end of the subclause the following is added: Resistors used as **basic safeguard** or bridging **basic insulation** in **class I pluggable equipment type A** shall comply with G.10.1 and the test of G.10.2.	No such resistors.	N/A
5.6.1	**Denmark** **Add** to the end of the subclause Due to many existing installations where the socket-outlets can be protected with fuses with higher rating than the rating of the socket-outlets the protection for pluggable equipment type A shall be an integral part of the equipment. *Justification:* In Denmark an existing 13 A socket outlet can be protected by a 20 A fuse.		N/A
5.6.4.2.1	**Ireland and United Kingdom** After the indent for **pluggable equipment type A**, the following is added: – the **protective current rating** is taken to be 13 A, this being the largest rating of fuse used in the **mains** plug.		N/A
5.6.5.1	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
5.7.5	**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.	No high protective conductor current.	N/A
5.7.6.1	**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	Not such system.	N/A

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IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	system within the building. Therefore the protective earthing of the building installation needs to be isolated from the screen of a cable distribution system. It is however accepted to provide the insulation external to the equipment by an adapter or an interconnection cable with galvanic isolator, which may be provided by a retailer, for example. The user manual shall then have the following or similar information in Norwegian and Swedish language respectively, depending on in what country the equipment is intended to be used in: “Apparatus connected to the protective earthing of the building installation through the mains connection or through other apparatus with a connection to protective earthing – and to a television distribution system using coaxial cable, may in some circumstances create a fire hazard. Connection to a television distribution system therefore has to be provided through a device providing electrical isolation below a certain frequency range (galvanic isolator, see EN 60728-11)” NOTE In Norway, due to regulation for CATV-installations, and in Sweden, a galvanic isolator shall provide electrical insulation below 5 MHz. The insulation shall withstand a dielectric strength of 1,5 kV r.m.s., 50 Hz or 60 Hz, for 1 min. Translation to Norwegian (the Swedish text will also be accepted in Norway): “Apparater som er koplet til beskyttelsesjord via nettplugg og/eller via annet jordtilkoplet utstyr – og er tilkoplet et koaksialbasert kabel-TV nett, kan forårsake brannfare. For å unngå dette skal det ved tilkopling av apparater til kabel-TV nett installeres en galvanisk isolator mellom apparatet og kabel-TV nettet.” Translation to Swedish: ”Apparater som är kopplad till skyddsjord via jordat vägguttag och/eller via annan utrustning och samtidigt är kopplad till kabel-TV nät kan i vissa fall medföra risk för brand. För att undvika detta skall vid anslutning av apparaten till kabel-TV nät galvanisk isolator finnas mellan apparaten och kabel-TV nätet.”.		
5.7.6.2	**Denmark** To the end of the subclause the following is added:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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 .		
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	The equipment is not direct plug-in equipment.	N/A
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 poly-phase 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 equipment is not direct plug-in equipment.	N/A

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IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	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.		
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.	The power supply cord has not been checked.	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	The power supply cord has not been checked.	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.	The power supply cord has not been checked.	N/A
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:*	No CRT within the equipment.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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		

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IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT IEC 62368-1
DENMARK NATIONAL DIFFERENCES

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

Differences according to.....:	DS/EN 62368-1:2014
Attachment Form No.....:	DK_ND_IEC62368_1B
Attachment Originator .....:	UL (Demko)
Master Attachment.....:	2014-10

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	National Differences		
4.1.15	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: "Apparatets stikprop skal tilsluttes en stikkontakt med jord som giver forbindelse til stikproppens jord."	The equipment is for building-in into a Class I equipment. The marking text must be provided when marketed in applicable countries.	N/A
5.2.2.2	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.	No high touch current.	N/A
5.6.1	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.		N/A

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IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	Justification: In Denmark an existing 13 A socket outlet can be protected by a 20 A fuse.		
5.7.5	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.	No high protective conductor current.	N/A
5.7.6.2	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
G.4.2	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 poly-phase 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		N/A

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IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	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		

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Report No. 60391663 001

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT
IEC 62368-1
ITALY NATIONAL DIFFERENCES
(Audio/video, information and communication technology equipment – Part 1: Safety requirements)

Differences according to.....: CEI EN 62368-1:2016

Attachment Form No.....: IT_ND_IEC62368_1B

Attachment Originator .....: IMQ S.p.A.

Master Attachment.....: Date 2020-01-31

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	National Differences		P
F.1	**Italy** The following requirements shall be fulfilled: • The power consumption in Watts (W) shall be indicated on TV receivers and in their instruction for use (Measurement according to EN 60555-2). Note: *EN 60555-2 has since been replaced by IEC 60107-1:1997.* • TV receivers shall be provided with an instruction for use, schematic diagrams and adjustments procedure in Italian language. • Marking for controls and terminals shall be in Italian language. Abbreviation and international symbols are allowed provided that they are explained in the instruction for use. • The ECC manufacturers are bound to issue a conformity declaration according to the above requirements in the instruction manual. The correct statement for conformity to be written in the instruction manual, shall be: *Questo apparecchio è fabbricato nella CEE nel rispetto delle disposizioni del D.M. marzo 1992 ed è in particolare conforme alle prescrizioni dell'art. 1 dello stesso D.M.* • The first importers of TV receivers manufactured outside EEC are bound to submit the TV receivers for previous conformity certification to the Italian Post Ministry (PP.TT). The TV receivers shall have on the backcover the certification number in the		N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	following form: D.M. 26/03/1992 xxxxx/xxxxx/S or T or pT S for stereo T for Teletext pT for retrofitable teletext *Justification:* Ministerial Decree of 26 March 1992 : National rules for television receivers trade. NOTE/: *Ministerial decree above contains additional, but not safety relevant requirements*		

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Report No. 60391663 001

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT IEC 62368-1 2th Ed. U.S.A. NATIONAL DIFFERENCES Audio/video, information and communication technology equipment – Part 1: Safety requirements	
Differences according to.....:	CSA/UL 62368-1:2014
Attachment Form No.....:	US&CA_ND_IEC623681B
Attachment Originator .....:	UL(US)
Master Attachment.....:	Date 2015-06
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IEC 62368-1 - US and Canadian National Differences Special National Conditions based on Regulations and Other National Differences			
1.1	All equipment is to be designed to allow installation according to the National Electrical Code (NEC), ANSI/NFPA 70, the Canadian Electrical Code (CEC), Part I, 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.	In accordance with the National Electrical Code (NEC) and the Canadian Electrical Code (CEC) part 1 CAN/CSA C22.1, ANSI/NFPA 70, and unless marked or otherwise identified, the Standard for Electronic Computer/Data-Processing Equipment, ANSI/NFPA 75.	P
1.4	Additional requirements apply to some forms of power distribution equipment, including sub-assemblies.	Considered.	P
4.1.17	For lengths exceeding 3.05 m, external interconnecting flexible cord and cable assemblies are required to be a suitable cable type (e.g., DP, CL2) specified in the NEC.	The equipment is a building-in type and evaluation is to be made during the final system approval.	N/A
	For lengths 3.05 m or less, external interconnecting flexible cord and cable assemblies that are not types specified in the NEC generally are required to have special construction features and identification markings.	See above.	N/A
4.8	Lithium coin / button cell batteries have modified special construction and performance requirements.	No batteries.	N/A
5.6.3	Protective earthing conductors comply with the minimum conductor sizes in Table G.5, except as required by Table G.7ADV.1 for cord connected equipment, or Annex DVH for permanently connected equipment		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.7.7	Equipment intended to receive telecommunication ringing signals complies with a special touch current measurement tests.	No TNV circuits within the equipment.	N/A
6.5.1	PS3 wiring outside a fire enclosure complies with single fault testing in B.4, or be current limited per one of the permitted methods.	Single fault conducted.	P
Annex F (F.3.3.8)	Output terminals provided for supply of other equipment, except mains, supply are marked with a maximum rating or references to which equipment it is permitted to be connected.	DC output connector is provided. See copy of marking plate.	P
Annex G (G.7.1)	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
Annex G (G.7.3)	Power supply cords are required to have attachment plugs rated not less than 125 percent of the rated current of the equipment.	The power supply cord has not been checked.	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.	See above.	N/A
Annex G (G.7.5)	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.	See above.	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.	No TNV circuits within the equipment.	N/A
Annex H.4	For circuits with other than ringing signals and with voltages exceeding 42.4 V_{peak} or 60 V d.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.	No TNV circuits within the equipment.	N/A
Annex M	Battery packs for stationary applications comply with special component requirements.	No such parts.	N/A
Annex DVA (1)	Equipment intended for use in spaces used for environmental air are subjected to special flammability requirements for heat and visible smoke release.	The equipment not intended to be used within such environments.	N/A
	For ITE room applications, automated information storage systems with combustible media greater	Not such equipment.	N/A

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IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	than 0.76 m^3 (27 cu ft) have a provision for connection of either automatic sprinklers or a gaseous agent extinguishing system with an extended discharge.		
	Consumer products designed or intended primarily for children 12 years of age or younger are subject to additional requirements in accordance with U.S. & Canadian Regulations.	The equipment is not for children used.	N/A
	Baby monitors additionally comply with ASTM F2951, Consumer Safety Specification for Baby Monitors.	Not a baby monitors.	N/A
Annex DVA (5.6.3)	For Pluggable Equipment Type A, the protection in the installation is assumed to be 20A.		N/A
Annex DVA (6.3)	The maximum quantity of flammable liquid stored in equipment complies with NFPA 30.	No flammable liquids within the equipment.	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) 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 min. flammability classification of V-1.	No such application.	N/A
Annex DVA (10.3.1)	Equipment with lasers meets the U.S. Code of Federal Regulations 21 CFR 1040 (and the Canadian Radiation Emitting Devices Act, REDR C1370).	No such parts.	N/A
Annex DVA (10.5.1)	Equipment that produces ionizing radiation complies with the U.S. Code of Federal Regulations, 21 CFR 1020 (and the Canadian Radiation Emitting Devices Act, REDR C1370).	No such parts.	N/A
Annex DVA (F.3.3.3)	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 are lower than the “Normal Operating Condition” in Table 2 of CAN/CSA C22.2 No. 235.”		N/A
Annex DVA (F.3.3.5)	Equipment identified for ITE (computer) room installation is marked with the rated current	Not such application.	N/A
Annex DVA (G.1)	Vertically-mounted disconnect switches and circuit breakers have the "on" position indicated by the handle in the up position	No such parts.	N/A

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IEC62368_1B - 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.	No standard supply outlets, receptacles, medium-base or smaller lampholders provided.	N/A
Annex DVA (G.4.2)	Equipment with isolated ground (earthing) receptacles complies with NEC 250.146(D) and CEC 10-112 and 10-906(8).	No such parts.	N/A
Annex DVA (G.4.3)	Where a fuse is used to provide Class 2 or Class 3 current limiting, it is not operator-accessible unless it is non- interchangeable.	No such parts.	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.	No such parts.	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).	No such parts.	N/A
Annex DVA (Annex M)	For ITE room applications, equipment with battery systems capable of supplying 750 VA for five minutes have a battery disconnect means that may be connected to the ITE room remote power-off circuit.	Not such application.	N/A
Annex DVA (Q)	Wiring terminals intended to supply Class 2 outputs according to the NEC or CEC Part 1are marked with the voltage rating and “Class 2” or equivalent; marking is located adjacent to the terminals and visible during wiring.	Not applicable for the equipment.	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.	Not such application.	N/A
Annex DVC (1)	Additional requirements apply for equipment intended for mounting under kitchen cabinets.	Not such application.	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 have component or material ratings in accordance with the applicable national (U.S. and Canadian) component or material requirements. Components required to comply include: appliance couplers, attachment plugs, battery	UL approved components used. Refer to table 4.1.2 of IEC 62368-1 test report for details.	P

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IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	back-up systems, battery packs, circuit breakers, communication circuit accessories, connectors (used for current interruption of non-LPS circuits), power supply cords, direct plug-in equipment, electrochemical capacitor modules (energy storage modules with ultra-capacitors), enclosures (outdoor), flexible cords and cables, fuses (branch circuit), ground-fault current interrupters, interconnecting cables, data storage equipment, printed wiring, protectors for communications circuits, receptacles, surge protective devices, vehicle battery adapters, wire connectors, and wire and cables.		
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 in accordance with the NEC/CEC.		N/A
Annex DVH (DVH.3.2)	Terminals for permanent wiring, including protective earthing terminals, are suitable for U.S./Canadian wire gauge sizes, rated 125 percent of the equipment rating, and are specially marked when specified.		N/A
Annex DVH (DVH.3.2)	Wire binding screws are not permitted to attach conductors larger than 10 AWG (5.3 mm^2).	No wire binding screws.	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, complies with special earthing, wiring, marking and installation instruction requirements.		N/A
Annex DVI (6.7)	Equipment intended for connection to telecommunication network outside plant cable is required to be protected against overvoltage from power line crosses.	No TNV circuits within the equipment.	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.	No TNV circuits within the equipment.	N/A

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Report No. 60391663 001

IEC62368_1B - 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 62368.1:2018

Attachment Form No.....: AU_NZ_ND_IEC62368_1B

Attachment Originator .....: JAS-ANZ

Master Attachment.....: 2019-02-04

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	National Differences		P
Appendix ZZ	Variations to IEC 62368-1:2014 (ED. 2.0) for Australia and New Zealand		P
ZZ1 Scope	This Appendix lists the normative variations to IEC 62368-1:2014 (ED. 2.0)		P
ZZ2 Variations	The following modifications are required for Australian/New Zealand conditions:		P
2	*Add* the following to the list of normative references: The following normative documents are referenced in Appendix ZZ: -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 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, 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*	Added	P

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	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 60950.1:2015, *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 61558.1:2008 (including Amendment 2:2015), *Safety of Power Transformers,* *Power Supplies, Reactors and Similar Products, Part 1: General requirements and* *tests (IEC 61558-1 Ed 2.1, 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.*		
4.1.1	**Application of requirements and acceptance of materials, components and subassemblies** 1 *Replace* the text 'IEC 60950-1' with 'AS/NZS 60950.1:2015'. 2 *Replace* the text 'IEC 60065' with 'AS/NZS 60065'.	Replaced.	P
4.7	**Equipment for direct insertion into mains socket-outlets**		N/A
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 complying with AS/NZS 3112 shall comply with the requirements in AS/NZS 3112 for equipment with integral pins for insertion into	The equipment is not direct plug-in equipment.	N/A

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IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	socket-outlets.		
4.7.3	**Compliance Criteria** *Delete* the first paragraph and Note 1 and Note 2 and *replace* with the following: *Compliance is checked by inspection and, if necessary, by the tests in AS/NZS 3112.*		N/A
4.8	*Delete* existing clause title and *replace* with the following: **4.8 Products containing coin/button cell batteries**		N/A
4.8.1	**General** 1 Second dashed point, *delete* the text and *replace* with the following: – include coin/button cell batteries with a diameter of 32 mm or less. 2 After the second dashed point, *insert* the following Note: NOTE 1: Batteries are specified in IEC 60086-2. 3 After the third dashed point, *renumber* the existing Note as 'NOTE 2'. 4 Fifth dashed point, *delete* the word 'lithium'.	No such batteries.	N/A
4.8.2	**Instructional Safeguard** First line, *delete* the word 'lithium'.		N/A
4.8.3	**Construction** First line, after the word 'Equipment' *insert* the words 'containing one or more coin/button batteries and'		N/A
4.8.5	**Compliance criteria** *Delete* the first paragraph and *replace* with the following: *Compliance is checked by applying a force of 30 N +/-1 N for 10 s to the battery compartment door/cover by a rigid test finger according to test probe 11 of IEC 61032:1997 at the most unfavourable place and in the most unfavourable direction. The force shall be applied in one direction at a time.*		N/A
5.4.10.2	**Test methods**		N/A
5.4.10.2.1	**General** *Delete* the first paragraph and *replace* with the following: In Australia only, the separation is checked by the test of both Clause 5.4.10.2.2 and Clause 5.4.10.2.3. In New Zealand, the separation is checked by the test of either Clause	No such external circults.	N/A

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	5.4.10.2.2 or Clause 5.4.10.2.3.		
Table 29	*Replace* the table with the following:		N/A

Parts	Impulse test		Steady state test	
	New Zealand	Australia	New Zealand	Australia
Parts indicated in Clause 5.4.10.1 a) [a]	2.5 kV 10/700 µs	7.0 kV for hand-held telephones and headsets, 2.5 kV for other equipment. 10/700 µs	1.5 kV	3 kV
Parts indicated in Clause 5.4.10.1 b) and c) [b]	1.5 kV 10/700 µs [c]		1.0 kV	1.5 kV

[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.

5.4.10.2.2	After the first paragraph, *insert* new Notes 201 and 202 as follows: NOTE 201 For Australia, the 7 kV impulse simulates lightning surges on typical rural and semi-rural network lines. NOTE 202 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.		N/A
5.4.10.2.3	After the first paragraph, *insert* new Notes 201 and 202 as follows: NOTE 201 For Australia, where there are capacitors across the insulation under test, it is recommended that d.c. test voltages are used. NOTE 202 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.		N/A
6	**Electrically-caused fire**		P
6.1	**General** After the first paragraph, *insert* the following new paragraph: Alternatively, the requirements of Clauses 6.2 to 6.5.2 are considered to be fulfilled if the equipment complies with the requirements of Clause 6.202	Considered.	P
6.6	After Clause 6.6, *add* the new Clauses 6.201 and 6.202 as follows:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	6.201 External power supplies, docking stations and other similar devices and **6.202 Resistance to fire—Alternative tests** (see special national conditions)		
8.5.4	**Special categories of equipment comprising moving parts**		N/A
8.5.4.1	**Large data storage equipment** In the first dashed row and the second dashed rows *replace* 'IEC 60950-1:2005' with 'AS/NZS 60950.1:2015'.	The equipment is not large data storage equipment.	N/A
8.6	**Stability of equipment**		N/A
8.6.1 and Table 36	**Requirements** 1. Table 36, *insert* Footnote c at the end of the 'Glass slide' heading, and *add* a new Footnote c after the text of Footnote b in the last row of Table 36 as follows: [c] The glass slide test is not applicable to floor standing equipment, even though the equipment may have controls or a display. 2. Table 36, fifth row, *insert* '[201]' at the end of 'No stability requirements' 3. Table 36, ninth row, *insert* '[201]' at the end of 'No stability requirements' 4. Table 36, *add* the following new footnote: [201] MS2 and MS3 television sets and display devices, designed only for fixing to a wall, ceiling or equipment rack, are not subjected to stability requirements only if the instructional safeguard of Clause 8.6.1.201 is provided. Otherwise, the glass slide requirements of Clause 8.6.4 and horizontal force requirements of Clause 8.6.5 apply. 5. Second paragraph beneath Table 36, *delete* the words 'MS2 and MS3 television sets' and *replace* with 'MS2 and MS3 television sets and display devices'		N/A
8.6.1	After Clause 8.6.1 *add* the following new clauses: **8.6.1.201 Instructional safeguard for fixed-mount television sets** (see special national conditions)		N/A
Annex F Paragraph F.3.5.1	**Mains appliance outlet and socket-outlet markings** *Replace* 'IEC 60320-2-2' with 'AS/NZS 60320.2.2'.		N/A
Annex G Paragraph	**Mains connectors** 1 In the second line *insert* 'or AS/NZS 3123' after 'IEC 60906-1'.	The equipment is not direct plug-in equipment.	N/A

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G.4.2	2 In the second line *insert* 'or AS/NZS 60320 series' after 'IEC 60320 series' 3 *Add* the following new paragraph: 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.		
Paragraph G.5.3.1	**Transformers, General** 1 In the 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 In the fourth dashed point *replace* 'IEC 61558-2-16' with 'AS/NZS 61558.2.16'.	Replaced.	P
Paragraph G.7.1	**Mains supply cords, General** In the fourth dashed paragraph, *replace* 'IEC 60320-1' with 'AS/NZS 60320.1'		N/A
Table G.5	**Sizes of conductors** 1 In the second row, first column, *delete* '6' and *replace* with '7.5' 2 In the second row, second column, *delete* '0,75' and *replace* with '0.75[b] 3 *Delete* Note 1. 4 *Replace* 'NOTE 2' with 'NOTE:'. 5 *Delete* the text of '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 mm2 three-core supply flexible cords are not permitted; see AS/NZS 3191). 6 In Footnote c *replace* 'IEC 60320-1' with 'AS/NZS 60320.1' 7 In Footnote d *replace* 'IEC 60320-1' with 'AS/NZS 60320.1'		N/A
Annex M Paragraph M.3.2	**Protection circuits for batteries provided within the equipment, Test method** After the first dashed point *add* the following Note: NOTE 201: 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	No such batteries.	N/A

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	assumed that the maximum limit of SELV 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.		
	Special national conditions (if any)		N/A
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— – at all ES1 outlets or connectors shall not increase by more than 10% of its rated output voltage under normal operating condition; and – of a USB outlet or connector shall not increase by more than 3 V or 10% of its rated output voltage under normal operating conditions, whichever is higher. For equipment with multiple rated output voltages, the requirements apply with the equipment configured for each rated output 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. *Compliance 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
6.202	**Resistance to fire—Alternative tests**	See below.	N/A
6.202.1	**General** Parts of non-metallic material shall be resistant to ignition and spread of fire. This requirement does not apply to decorative trims, knobs and other parts unlikely to be ignited or to propagate flames from inside the equipment, or the following: a) Components that are contained in an enclosure having a flammability category of V-0 according to AS/NZS 60695.11.10 and having openings only for the connecting wires filling the openings completely, and for ventilation not exceeding 1	However, equipment under test materials used and components in compliance with requirements of IEC standard. Alternative test methods were not considered.	N/A

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	mm in width regardless of length. b) The following parts which would contribute negligible fuel to a fire: – small mechanical parts, the mass of which does not exceed 4 g, such as mounting parts, gears, cams, belts and bearings; – small electrical components, such as capacitors with a volume not exceeding 1 750 mm3, integrated circuits, transistors and optocoupler packages, if these components are mounted on material of flammability category V-1, or better, according to AS/NZS 60695.11.10. NOTE: In considering how to minimize propagation of fire and what 'small parts' are, account should be taken of the cumulative effect of small parts adjacent to each other for the possible effect of propagating the fire from one part to another.		
	Compliance shall be checked by the tests of Clauses 6.202.2, 6.202.3 and 6.202.4. For the base material of printed boards, compliance shall be checked by the test of Clause 6.202.5. The tests shall be carried out on parts of non-metallic material which have been removed from the equipment. When the glow-wire test is carried out, the parts shall be placed in the same orientation as they would be in normal use. These tests are not carried out on internal wiring.	See above.	N/A
6.202.2	**Testing of non-metallic materials** Parts of non-metallic material shall be subject to the glow-wire test of AS/NZS 60695.2.11 which shall be carried out at 550°C. Parts for which the glow-wire test cannot be carried out, such as those made of soft or foamy material, shall meet the requirements specified in ISO 9772 for category FH-3 material. The glow-wire test shall be not carried out on parts of material classified at least FH-3 according to ISO 9772 provided that the relevant part is not thinner than the sample tested.	See above.	N/A
6.202.3	**Testing of insulating materials** Parts of insulating material supporting Potential Ignition Sources shall be subject to the glow-wire test of AS/NZS 60695.2.11 which shall be carried out at 750°C.	See above.	N/A

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	The test shall be also carried out on other parts of insulating material which are within a distance of 3 mm of the connection. NOTE: Contacts in components such as switch contacts are considered to be connections		
	For parts which withstand the glow-wire test but produce a flame, other parts above the connection within the envelope of a vertical cylinder having a diameter of 20 mm and a height of 50 mm shall be subjected to the needle-flame test. However, parts shielded by a barrier which meets the needle-flame test need not be tested	See above.	N/A
	The needle-flame test shall be made in accordance with AS/NZS 60695.11.5 with the following modifications:		

Clause of AS/NZS 60695.11.5	Change
9 Test procedure	
9.2 Application of needle-flame	*Delete* the first and second paragraphs and *replace* with the following: The specimen shall be arranged so that the flame can be applied to a vertical or horizontal edge as shown in the examples of Figure 1. If possible the flame shall be applied at least 10 mm from a corner. The duration of application of the test flame shall be 30 s 1 s.
9.3 Number of test specimens	*Replace* with the following: The test shall be made on one specimen. If the specimen does

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	not withstand the test, the test may be repeated on two further specimens, both of which shall withstand the test. **11 Evaluation of test results**: *Replace* with the following: The duration of burning (tb) shall not exceed 30 s. However, for printed circuit boards, it shall not exceed 15 s. The needle-flame test shall not be carried out on parts of material classified as V-0 or V-1 according to AS/NZS 60695.11.10, provided that the relevant part is not thinner than the sample tested.		
6.202.4	**Testing in the event of non-extinguishing material** If parts, other than enclosures, do not withstand the glow wire tests of Clause 6.202.3, by failure to extinguish within 30 s after the removal of the glowwire tip, the needle-flame test detailed in Clause 6.202.3 shall be made on all parts of non-metallic material which are within a distance of 50 mm or which are likely to be impinged upon by flame during the tests of Clause 6.202.3. Parts shielded by a separate barrier which meets the needle-flame test need not be tested. NOTE 1: If the enclosure does not withstand the glow-wire test the equipment is considered to have failed to meet the requirements of Clause 6.202 without the need for consequential testing. NOTE 2: If other parts do not withstand the glow-wire test due to ignition of the tissue paper and if this indicates that burning or glowing particles can fall onto an external surface underneath the equipment, the equipment is considered to have failed to meet the requirements of Clause 6.202 without the need for consequential testing. NOTE 3: Parts likely to be impinged upon by the flame are considered to be those within the envelope of a vertical cylinder having a radius of 10 mm and a height equal to the height of the flame, positioned above the point of the material supporting, in contact with, or in close proximity to, connections.	See above.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
6.202.5	**Testing of printed boards** The base material of printed boards shall be subjected to the needle-flame test of Clause 6.202.3. The flame shall be applied to the edge of the board where the heat sink effect is lowest when the board is positioned as in normal use. The flame shall not be applied to an edge, consisting of broken perforations, unless the edge is less than 3 mm from a potential ignition source. The test is not carried out if— – the printed board does not carry any potential ignition source; – the base material of printed boards, on which the available apparent power at a connection exceeds 15 VA operating at a voltage exceeding 50 V and equal or less than 400 V (peak) a.c. or d.c. under normal operating conditions, is of flammability category V-1 or better according to AS/NZS 60695.11.10, or the printed boards are protected by an enclosure meeting the flammability category V-0 according to AS/NZS 60695.11.10, or made of metal, having openings only for connecting wires which fill the openings completely; or – the base material of printed boards, on which the available equipment power at a connection exceeds 15 VA operating at a voltage exceeding 400 V (peak) a.c. or d.c. under normal operating conditions, and base material of printed boards supporting spark gaps which provides protection against overvoltages, is of flammability category V-0 according to AS/NZS 60695.11.10 or the printed boards are contained in a metal enclosure, having openings only for connecting wires which fill the openings completely. *Conformance shall be determined using the smallest thickness of the material.* NOTE: Available apparent power is the maximum apparent power which can be drawn from the supplying circuit through a resistive load whose value is chosen to maximize the apparent power for more than 2 min when the circuit supplied is disconnected.	For PCB material refer to appended table 4.1.2 of IEC 62368-1 test report.	N/A
6.202.6	**For open circuit voltages greater than 4 kV** Potential ignition sources with open circuit voltages exceeding 4 kV (peak) a.c. or d.c. under normal operating conditions shall be contained in	See above.	N/A

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	a FIRE ENCLOSURE which shall comply with flammability category V-1 or better according to AS/NZS 60695.11.10.		
8.6.1.201	**8.6.1.201 Instructional safeguard for fixed-mount television sets** MS2 and MS3 television sets and display devices designed only for fixed mounting to a wall of ceiling or equipment rack shall, where required in Table 36, footnote 201, have an instructional safeguard in accordance with Clause F.5 which may be on the equipment or included in the installation instructions or equivalent document accompanying the equipment. The elements of the instructional safeguard shall be as follows: – element 1a: not available; – element 2: 'Stability Hazard' or equivalent wording; – element 3: 'The television set may fall, causing serious personal injury or death' or equivalent text; – element 4: the following or equivalent text: To prevent injury, this television set must be securely attached to the floor/wall in accordance with the installation instructions	The equipment is not fixed-mount television sets.	N/A
8.6.1.202	**Restraining device** MS2 and MS3 television sets and display devices that are not solely fixed-mounted should be provided with a restraining device such as a fixing point to facilitate restraining the equipment from toppling forward. The restraining device shall be capable of withstanding a pull of 100 N in all directions without damage. Where a restraining device is provided, instructions shall be provided in the instructions for installation or instructions for use to ensure correct and safe installation.		N/A

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IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT
IEC 62368-1
(JAPAN) NATIONAL DIFFERENCES
(Audio/video, information and communication technology equipment – Part 1: Safety requirements)

Differences according to ..... : J62368-1 (H30)

Attachment Form No. ..... : JP_ND_IEC62368_1B

Attachment Originator..... : UL (JP)

Master Attachment ..... : Date 2018-11-22

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	National Differences		—
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 standard 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.	Replaced.	P
5.6.1	Mains socket-outlet and appliance outlet shall comply with Clause G.4.2A if they are incorporated as part of the equipment.	Added. The equipment is “Class I”.	N/A
5.6.2.1	Mains connection of class 0I equipment: Instructional safeguard in accordance with Clause F.3.6.1A; Mains plug having a lead wire for protective earthing connection of class 0I equipment; Independent main protective earthing terminal installed by ordinary person.	Added. The equipment is “Class I”.	N/A
5.6.2.2	This requirement does not apply to internal conductor of the cord set that is covered by the sheath of mains cord and is formed together with mains plug and appliance connector.	Added. The equipment is “Class I”.	N/A

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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	Added. The equipment is "Class I".	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 or JIS C 8303, or otherwise being considered to comply with relevant regulations, or that is provided with mains appliance outlet as specified in JIS C 8283-2-2 for the purpose of interconnection, the measurement is conducted on the system of the interconnected equipment having a single connection to the mains.	Added. The equipment is "Class I".	N/A
5.7.4	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.	Added. The equipment is "Class I".	N/A
6.4.3.3	A fuse complying with JIC C 6575 series or a fuse having equivalent characteristics shall open within 1 s. For 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". A fuse not complying with JIS C 6575 series shall be tested with the breaking capacity taken into account.	Replaced.	N/A
8.5.4.2.1	Only three-phase stationary equipment rated more than 200 V ac can be considered as being for use in locations where children are not likely to be present, when complying with Clause F.4.	Replaced.	N/A
8.5.4.2.2	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.	Replaced.	N/A
8.5.4.2.4	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.	Replaced.	N/A

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8.5.4.2.5	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.	Replaced.	N/A
9.2.6, Table 38	Handles, Knobs, grips, etc. and external surfaces either held, touched or worn against the body in normal use (> 1 min) [b,c]	Added.	P
F.3.5.1	Instructional safeguard of class 0I equipment in accordance with Clause F.5 when a mains socket-outlet as specified in JIS C 8282 series, JIS C 8303 or relevant regulation 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.	Added.	N/A
F.3.5.3	If the fuse is necessary for the safeguard function, the symbols indicating pre-arcing time-current characteristic.	Added.	P
F.3.6.1A	Marking for class 0I equipment The requirements of Clauses F.3.6.1.1 and F.3.6.1.3 shall be applied to class 0I equipment. For class 0I equipment, a marking of instructions and instructional safeguard shall be provided regarding the earthing connection.	Added. The equipment is “Class I”.	N/A
F.3.6.2.1	Symbols, IEC 60417-5172 (2003-02) or IEC 60417-6092 (2011-10), shall not be used for class I equipment or class 0I equipment.	Added. The equipment is “Class I”.	N/A
F.4	Instruction 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. Installation instruction for the protective earthing connection for class 0I equipment provided with independent main protective earthing terminal, where the cord for the protective earthing connection is not provided within the package for the equipment.	Replaced.	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.	Replaced.	N/A

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G.3.4	Except for devices covered by Clause G.3.5, overcurrent protective devices used as a safeguard shall comply with the relevant part of JIS C 6575 (corresponding to IEC60127) or shall have equivalent characteristics. If there are no applicable IEC standards, overcurrent protective devices used as a safeguard shall comply with their applicable IEC standards.	Replaced.	P
G.4.1	This requirement is not applicable to Clauses G.4.2 and G.4.2A.	Added.	N/A
G.4.2	Mains connector shall comply with JIS C 8282 series, JIS C 8283 series, JIS C 8285, JIS C 8303 or IEC 60309 series. Mains plugs and socket-outlets shall comply with JIS C 8282 series, JIS C 8303, IEC 60309 series, or have equivalent or better performance. 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 preventing mechanical stress not to transmit to the soldering part of inlet terminal. Consideration for an equipment rated not more than 125 V provided with Type C14 and C18 appliance coupler complying with JIS C 8283 series.	Replaced.	N/A
G.4.2A	Mains socket-outlet and interconnection coupler provided with the class II, class I and class 0I equipment respectively.	Added.	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.	Replaced.	N/A
G.8.3.3	Withstand 1,71 × 1.1 × U_0 for 5 s.	Replaced.	N/A

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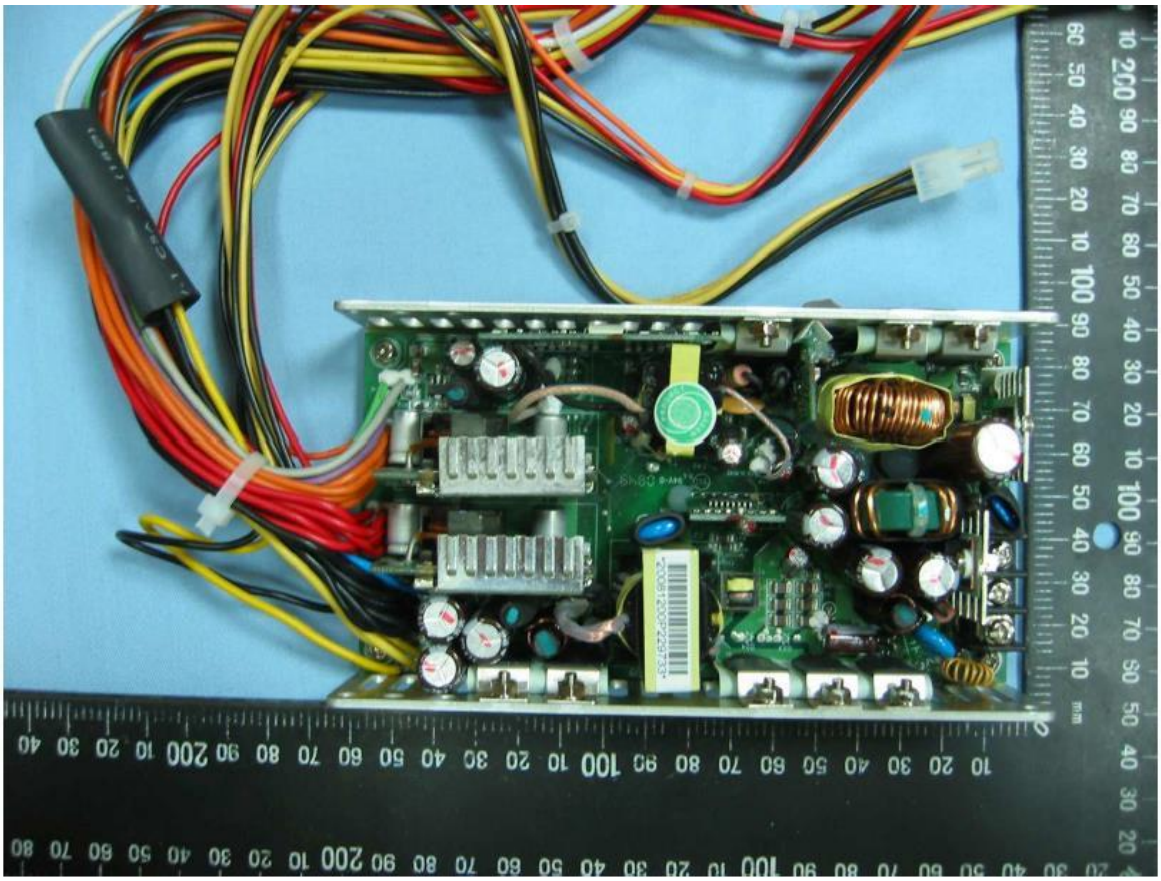
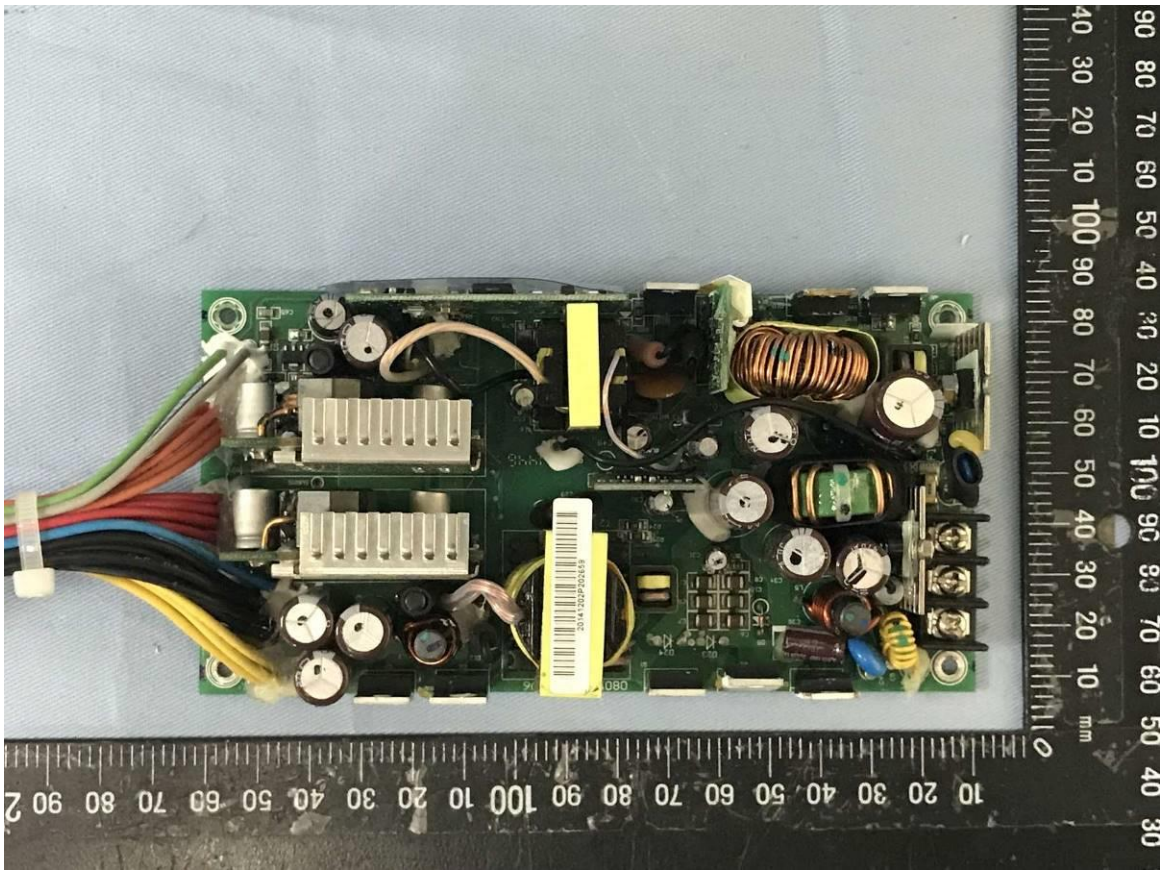
Product: Switching Power Supply

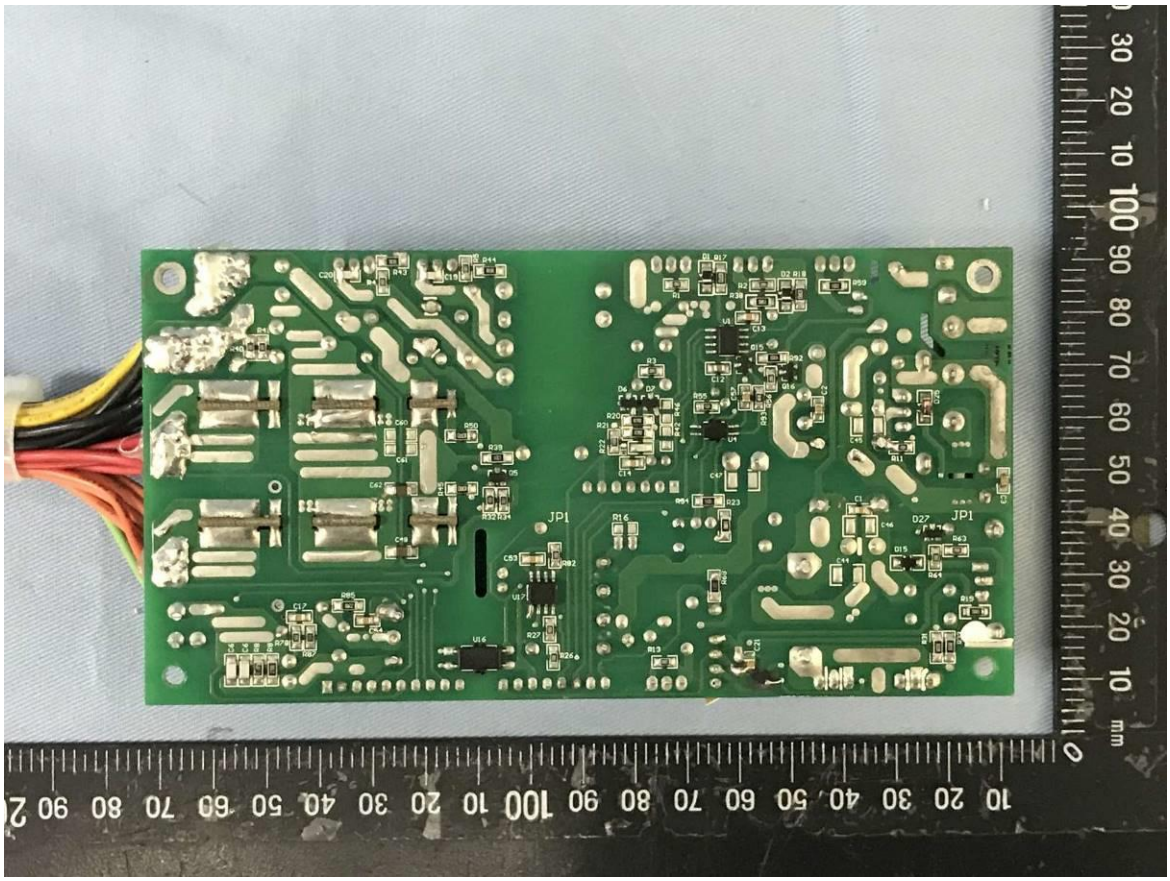
Type Designation: AB1U-5120V, BB1U-6150V

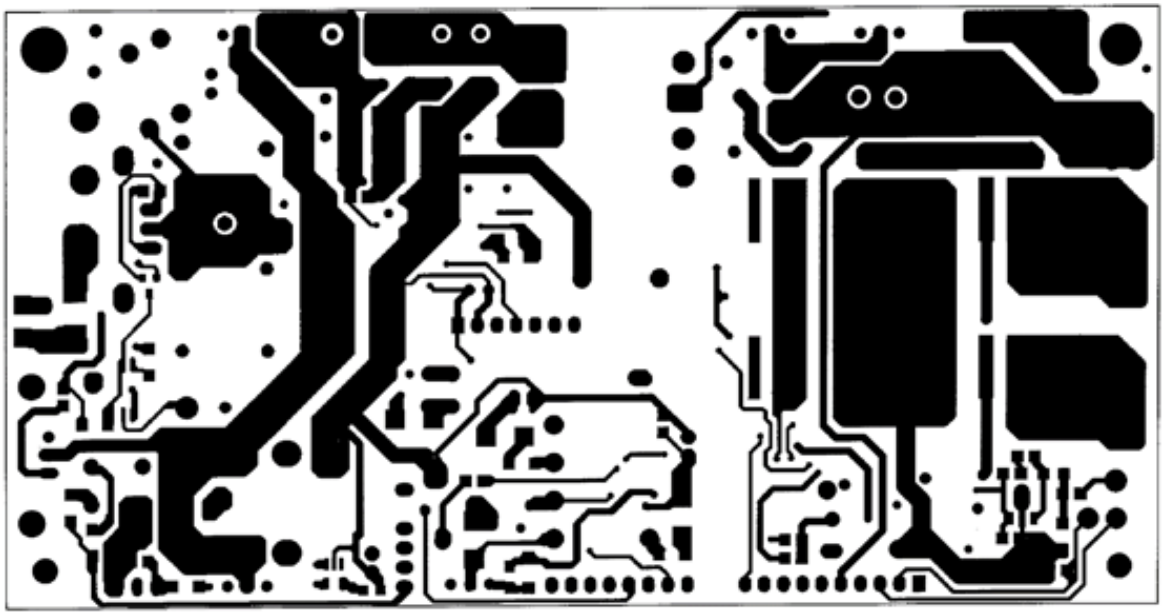




Product: Switching Power Supply

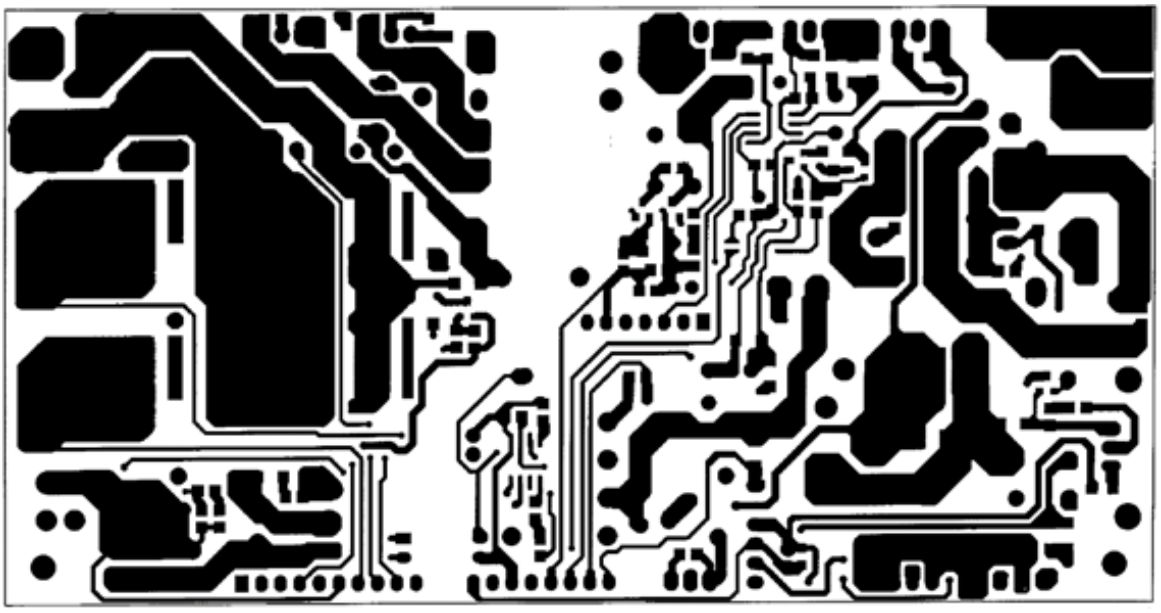
Type Designation: AB1U-5120V, BB1U-6150V

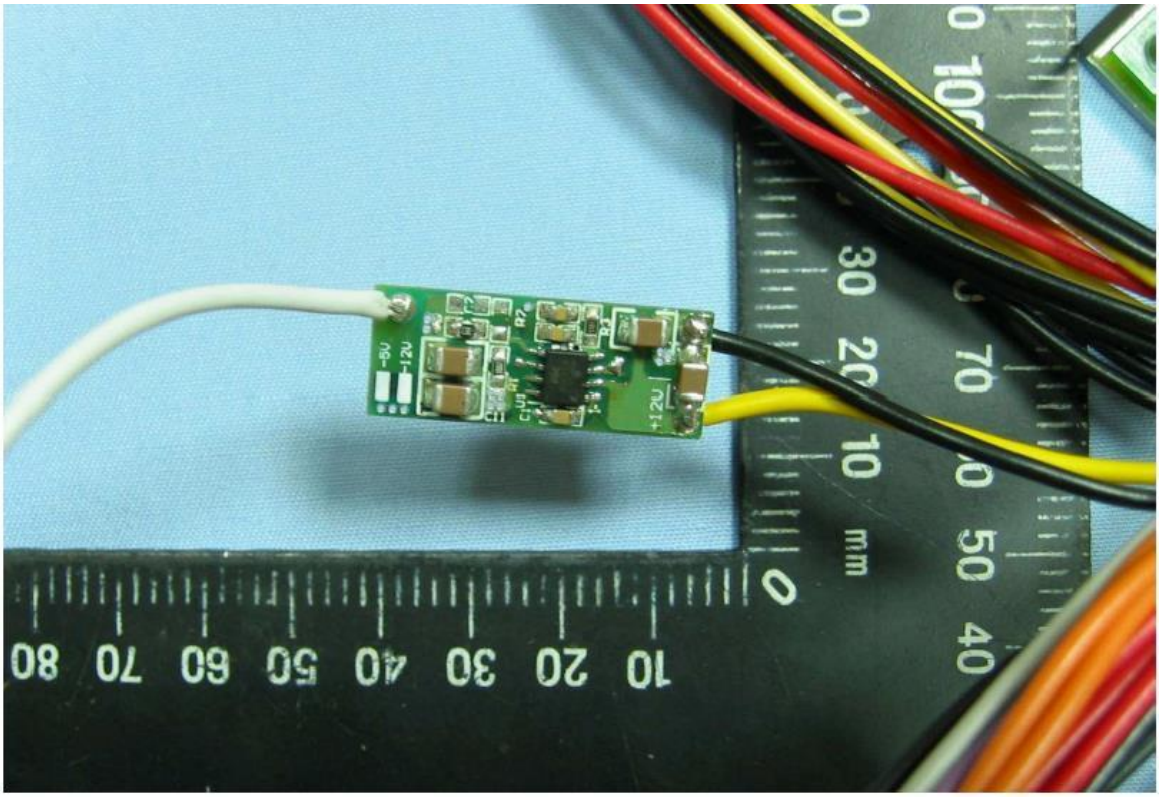


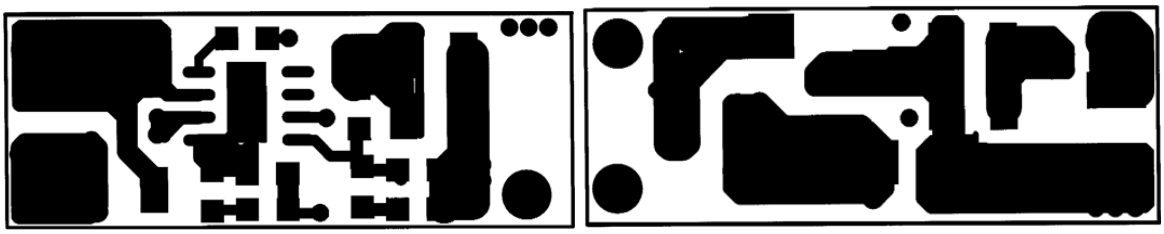


Product: Switching Power Supply

Type Designation: AB1U-5120V, BB1U-6150V



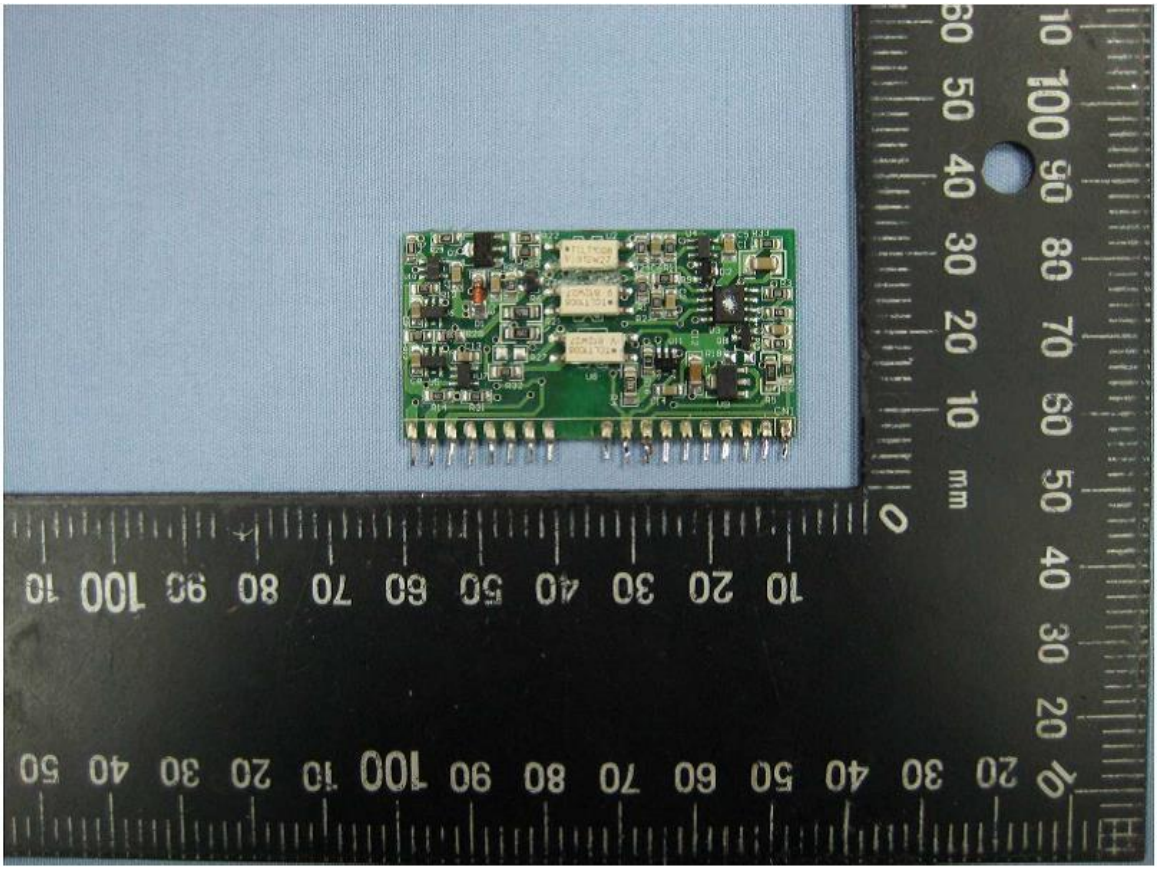


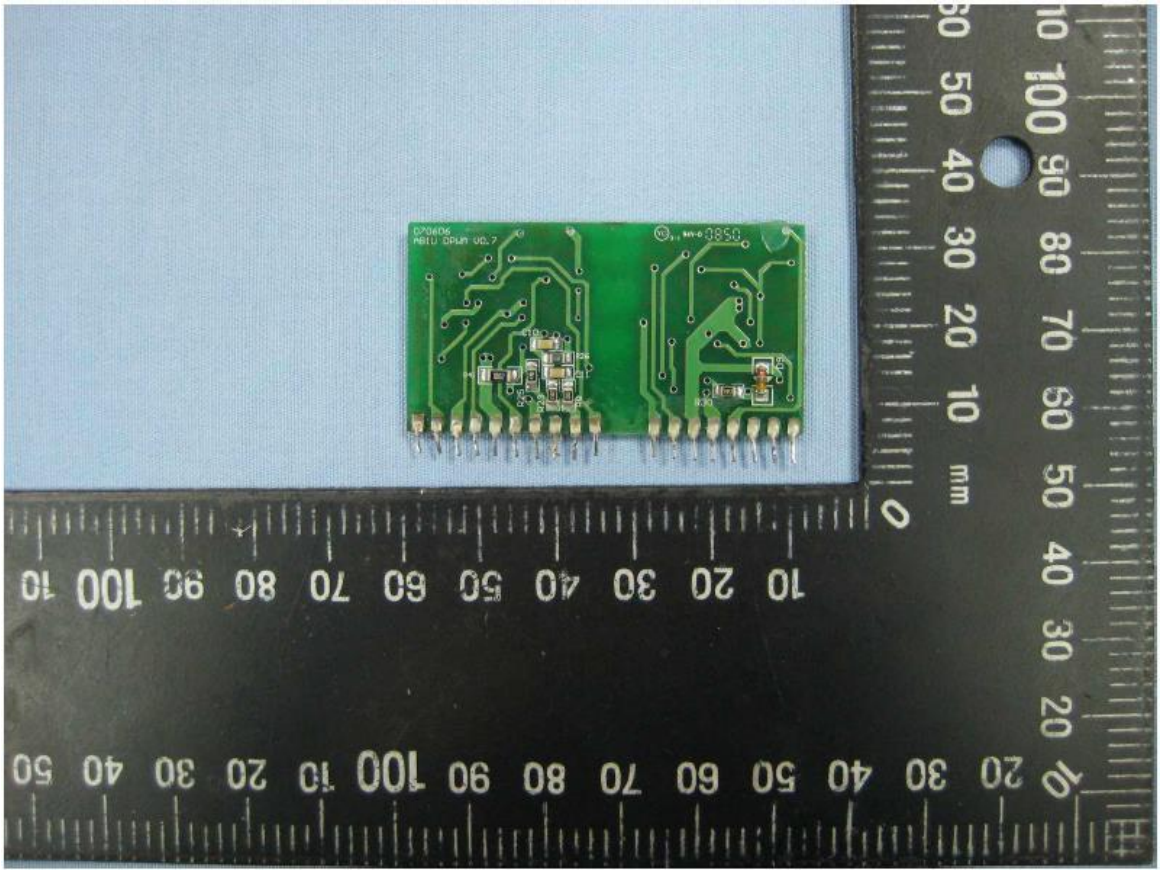


Control board

Product: Switching Power Supply

Type Designation: AB1U-5120V, BB1U-6150V





Product: Switching Power Supply

Type Designation: AB1U-5120V, BB1U-6150V