



Test Report issued under the responsibility of:



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

Report Number..... : ESTS-P22082014

Date of issue : 2022-12-01

Total number of pages : 97 pages

Name of Testing Laboratory EST Technology Co., Ltd
preparing the Report :

Applicant's name : Sharp NEC Display Solutions, Ltd.

Address : 4-28, Mita 1-chome, Minato-ku, Tokyo, 108-0073 Japan.

Test specification:

Standard : IEC 62368-1: 2018

Test procedure..... : CB Scheme

Non-standard test method..... : N/A

TRF template used : IECEE OD-2020-F1:2021, Ed.1.4

Test Report Form No..... : IEC62368_1E

Test Report Form(s) Originator.... : UL(US)

Master TRF : Dated 2022-04-14

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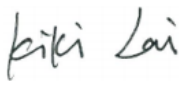
If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.

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

General disclaimer:

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

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Test item description	LCD MONITOR	
Trade Mark(s)	NEC	
Manufacturer	Same as applicant	
Model/Type reference	M751	
Ratings	Input: 100-240V~, 50/60Hz, 4.9-2.0A (6.0A FOR MEXICO)	
Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
☒ CB Testing Laboratory:	EST Technology Co., Ltd	
Testing location/ address	Chilingxiang, Qishantou, Santun, Houjie, Dongguan, Guangdong, China	
Tested by (name, function, signature)	Kiki Lai (Project handler)	
Approved by (name, function, signature) ..	John Lan (Reviewer)	
Testing procedure: CTF Stage 1:		
Testing location/ address		
Tested by (name, function, signature)		
Approved by (name, function, signature) ..		
Testing procedure: CTF Stage 2:		
Testing location/ address		
Tested by (name, function, signature)		
Witnessed by (name, function, signature) . :		
Approved by (name, function, signature) ..		
Testing procedure: CTF Stage 3:		
Testing procedure: CTF Stage 4:		
Testing location/ address		
Tested by (name, function, signature)		
Witnessed by (name, function, signature) . :		
Approved by (name, function, signature) ..		
Supervised by (name, function, signature) :		

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

- Attachment 1 (22 pages) – EU group differences
- Attachment 2 (10 pages) – U.S.A. AND CANADA NATIONAL DIFFERENCES
- Attachment 3 (3 pages) – Singapore National Differences
- Attachment 4 (33 pages) – Australia/New Zealand differences
- Attachment 5 (25 pages) – Photo documentation
- Attachment 6 (6 pages) – Product documentation

Summary of testing:**Tests performed (name of test and test clause):**

4.4.3.7	Glass fixation tests
5.2	Electrical energy source classifications
5.4.1.4, 9.3, B.1.5, B.2.6	Maximum operating temperatures for materials, components and systems
5.4.1.8	Determination of working voltage
5.4.1.10.3	Ball pressure
5.4.8	Humidity conditioning
5.4.9	Electric strength test
5.5.2.2	Safeguards against capacitance discharge test
5.6.6.2	Resistance of protective conductors and terminations
5.7.4	Unearthed accessible parts
5.7.5	Earthed accessible conductive part
6.2.2	Electrical power sources (PS) measurements for classification
8.6	Stability
8.7	Equipment mounted to wall or ceiling
8.8.2	Handles strength test
B.2.5	Input tests
B.3	Simulated Abnormal operating condition tests
B.4	Simulated single fault conditions
F.3.9	Durability, legibility and permanence of markings
G.5.3.3	Transformer overload
M.3.2	Protection circuits for batteries
P.4.2	Metallized coatings and adhesive securing parts
Q.1.2	Limited power sources
T.2	Steady force test, 10 N
T.3	Steady force test, 30 N
T.5	Steady force test. 250N

Testing location:

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

T.6	Impact test	
T.9	Glass Impact Test	

Summary of compliance with National Differences (List of countries addressed):
 EU group differences, United Kingdom (per customer's request shown separately), Canada and United States, Singapore, Australia /New Zealand.

☒ The product fulfils the requirements of EN IEC 62368-1:2020/A11:2020, BS EN IEC 62368-1:2020/A11:2020.

☒ The product fulfils the requirements of CAN/CSA C22.2 No. 62368-1:2019.

☒ The product fulfils the requirements of UL 62368-1:2019.

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

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

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

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

Information on uncertainty of measurement:
 The uncertainties of measurement are calculated by the laboratory based on application of criteria given by OD-5014 for test equipment and application of test methods, decision sheets and operational procedures of IECEE.
 IEC Guide 115 provides guidance on the application of measurement uncertainty principles and applying the decision rule when reporting test results within IECEE scheme, noting that the reporting of the measurement uncertainty for measurements is not necessary unless required by the test standard or customer.
 Calculations leading to the reported values are on file with the NCB and testing laboratory that conducted the testing.

Copy of marking plate:

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

NEC MultiSync M751**LCD MONITOR****ЖК-монитор**

液晶显示器 彩色显示器

모니터 (75인치 LCD 모니터)

(MODEL / Модель / 型号 / 型號 / 모델명 : M751)

VOLTS Вольт 输入电压 輸入電壓 : 100-240V~

AMPERES Ампер 电流 電流 : 4.9-2.0A (6.0A FOR MEXICO)

FREQUENCY Частота 工作频率 工作頻率 : 50/60Hz



CAUTION: TO PREVENT ELECTRIC SHOCK, DO NOT REMOVE THE ENCLOSURE.
NO USER-SERVICEABLE PARTS INSIDE.

ATTENTION: AFIN DE PREVENIR DE TOUT CHOC ELECTRIQUES, NE PAS OUVRIR CE BOITIER.
AUCUNE PIECE INTERNE NE PEUT-ETRE CHANGEES PAR L'UTILISATEUR.

ACHTUNG: ZUR TRENNUNG VOM NETZ IST DER NETZSTECKER AUS DER STECKDOSE ZU ZIEHEN.
GERÄT NICHT ÖFFNEN. ES SIND KEINE DURCH DEN BENUTZER AUSWECHSELBAREN TEILE IM GERÄT VORHANDEN.

PRECAUCIÓN: PARA PREVENIR DESCARGA ELÉCTRICA, NO quite el recinto.
NINGUNAS PIEZAS DEL USUARIO SERVICABLE ADENTRO.

VAROITUS: LAITE ON LIITETTÄVÄ SUOJAKOSKETTIMILLA VARUSTETTUUN PISTORASIAAN.

VARNING: APPARATEN SKALL ANSLUTAS TILL JORDAT UTTAG.

ADVASEL: APPARATET MÅ TILKOPLES JORDET STIKKONTAKT.

ADVASEL: APPARATETS STIKKPROP SKAL TILSLUTTES EN STIKKONTAKT
MED JORD SOM GIVER FORBINDELSE TIL STIKKPROPPENS JORD.

⚠️注意: 请勿打开后盖, 小心高压电击。机内并无用户配件。

⚠️注意: 請勿打開後蓋, 小心高壓電擊。機內並無用戶配件。

⚠️警告: 使用過度恐傷害視力。

사용상 주의사항 감전의 위험 및 제품의 손상이 발생할 수 있으므로 제품의 커버를 열지 마십시오.

인증 서비스 센터 전화 번호: 080-022-1155 (호성ITX주식회사)

* 본 라벨과 전화번호는 국내 규정 내에서 적절한 목적으로만 사용되어야 합니다.



THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES.
OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS:
(1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND
(2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED,
INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRABLE OPERATION.

CAN ICES-003(B) / NMB-003(B)

تنبیه

تجنب فتح الغطاء العلوي للجهاز منعاً للتعرض لصدمة كهربائية.
لا يحتوي الجهاز على أجزاء داخلية قابلة للصيانة من قبل المستخدم.

E354473
I.T.E.

??????-??



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シャープNECディスプレイソリューションズ株式会社

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Sharp Electronics (Europe) Limited

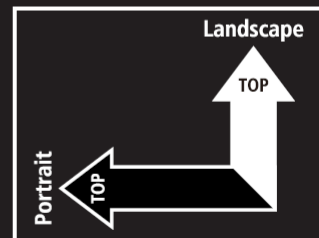
4 Furzeground Way, Stockley Park, Uxbridge, Middlesex, UB11 1EZ, United Kingdom

生産廠: 玳能科技 (杭州) 有限公司 生产厂: 玳能科技 (杭州) 有限公司

生产地址: 浙江杭州经济技术开发区综合保税区东门3号2幢2楼

제조: Dynabook Technology (Hangzhou) Inc.

Applicant: Huizhou KTC Technology Co., Ltd.



中国制造 中國製造

MADE IN CHINA FABRIQUE EN CHINE

FABRICADO EN CHINA Сделано в Китае

For USB Type-A and USB SERVICE ports output marking:



Remark:

1. The above markings are the minimum requirements by the safety standard. For the final production samples, additional markings which do not give rise to misunderstanding may be added.
2. When this apparatus is vended to Europe, the CE marking, WEEE symbol, manufacture/import name and address should be added in the making plate, at the same time, The CE marking and WEEE symbol should be at least 5.0mm and 7.0mm respectively in height.
3. For some special national requirement, the USB ports rating shall be provided on marking but will not listed in page 2 ratings.

Test item particulars:			
Product group	☒ end product ☐ built-in component		
Classification of use by	☒ Ordinary person ☒ Children likely present ☐ Instructed person ☐ Skilled person		
Supply connection	☒ AC mains ☐ DC mains ☐ not mains connected: ☐ ES1 ☐ ES2 ☐ ES3		
Supply tolerance	☒ +10%/-10% ☐ +20%/-15% ☐ + %/ - % ☐ None		
Supply connection – type	☒ pluggable equipment type A - ☐ non-detachable supply cord ☒ appliance coupler ☐ direct plug-in ☐ pluggable equipment type B - ☐ non-detachable supply cord ☐ appliance coupler ☐ permanent connection ☐ mating connector ☐ other:		
Considered current rating of protective device	☒ US, CA:20A, UK:13A, others:16A; Equipment: 15A Location: ☒ building ☒ equipment ☐ N/A		
Equipment mobility	☐ movable ☐ hand-held ☐ transportable ☐ direct plug-in ☒ stationary ☐ for building-in ☒ wall/ceiling-mounted ☐ SRME/rack-mounted ☐ other:		
Overvoltage category (OVC)	☐ OVC I ☒ OVC II ☐ OVC III ☐ OVC IV ☐ other:		
Class of equipment	☒ Class I ☐ Class II ☐ Class III ☐ Not classified ☐		
Special installation location	☒ N/A ☐ restricted access area ☐ outdoor location ☐		
Pollution degree (PD)	☐ PD 1 ☒ PD 2 ☐ PD 3		
Manufacturer's specified T_{ma}	40 °C ☐ Outdoor: minimum °C		
IP protection class	☐ IPX0 ☒ IP30		
Power systems	☒ TN ☐ TT ☐ IT - V _{L-L} ☐ not AC mains		
Altitude during operation (m)	☐ 2000 m or less ☒ 5000 m		
Altitude of test laboratory (m)	☒ 2000 m or less ☐ m		
Mass of equipment (kg)	Approx. 39.68kg (include stand base: 4.45kg)		

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: 2022-08-20 Date (s) of performance of tests: 2022-08-20 to 2022-09-30	
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 IEC62368-1:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided:	☒ Yes ☐ Not applicable
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies) :	1) Huizhou KTC Technology Co., Ltd. NO.38 Guangtai Road, Huinan HI-TECH Industrial Park, Huizhou City, Guangdong Province, China 2) Dynabook Technology (Hangzhou) Inc. 2/F, Building2, NO.3, East Gate, Comprehensive bonded Zone, Hangzhou Economic and Technical Development Zone, Zhejiang, China
General product information and other remarks: 1. The equipment is Class I 75" LCD MONITOR. 2. The equipment is configured with following ports: EXTERNAL SPEAKER(S), AUDIO OUT, LAN1, LAN2, REMOTE, DisplayPort IN1 (8K), DisplayPort IN2, DisplayPort OUT, HDMI IN1 (ARC), HDMI IN2, HDMI OUT, USB-A (Hub/0.5A), USB-B (Ctrl), SEVICE (2A), RS-232C. 3. External metal enclosure used as fire enclosure, mechanical enclosure and electrical enclosure fixed by screws. 4. This equipment is intended to be operated under altitude up to 5000m, so the clearance is multiplied by the altitude correction factors of 1.48. 5. The suitable power supply cord shall be provided and evaluated during national approval. 6. The monitor can be used in the portrait and landscape position, and inclination angle $\pm 30^\circ$. When using the monitor in the portrait position, it should be rotated counter clock wise so that the right side is moved to the top and the left side is moved to the bottom, details see user manual. 7. There are two slots on the side of equipment for installing an optional "Option Board" and "Raspberry Pi Compute Module", "Option Board" and "Raspberry Pi Compute Module" are available separately and must be physically installed in the monitor by a qualified technician, the technical specifications of them as below. Power supply for Optional Board: Max. 12V/5.5A;	

Power supply for Raspberry Pi Compute Module: Max. 12V/1.67A;

Power supply for Optional Board and Raspberry Pi Compute Module: Max. 12V/5.5A.

Model Differences:

N/A

OVERVIEW OF ENERGY SOURCES AND SAFEGUARDS				
Clause	Possible Hazard			
5	Electrically-caused injury			
Class and Energy Source (e.g. ES3: Primary circuit)	Body Part (e.g. Ordinary)	Safeguards		
		B	S	R
ES3: All circuits except for after CN201 and CN203 of power board	Ordinary	N/A	N/A	Enclosure See 5.4.2, 5.4.3, 5.5.3 and 5.5.4
ES3: All circuits except for after CN201 and CN203 of power board	Ordinary	See 5.4.2, 5.4.3	Protective Earthing	N/A
ES3: X capacitor connected between L and N	Ordinary	N/A	N/A	See 5.5.2.2
ES1: Y capacitor connected between L/N to earth	Ordinary	N/A	N/A	N/A
ES1: Power board output CN201 and CN203	Ordinary	N/A	N/A	N/A
ES1: All accessible ports outside the fire enclosure	Ordinary	N/A	N/A	N/A
6	Electrically-caused fire			
Class and Energy Source (e.g. PS2: 100 Watt circuit)	Material part (e.g. Printed board)	Safeguards		
		B	1 st S	2 nd S
PS3 circuit: All circuits except for main board output CN603, CN403, CN404 and accessible ports	Enclosure	See 6.3	See 6.4.5, 6.4.6	N/A
PS3 circuit: All circuits except for main board output CN603, CN403, CN404 and accessible ports	PCB	See 6.3	See 6.4.5, 6.4.6	N/A
PS3 circuit: All circuits except for main board output CN603, CN403, CN404 and accessible ports	Internal wiring	See 6.3	See 6.5	N/A
PS3 circuit: All circuits except for main board output CN603, CN403, CN404 and accessible ports	The other components/materials	See 6.3	See 6.4.5, 6.4.6	N/A
PS2: Main board output CN603 (for internal speaker)	Enclosure	See 6.3	See 6.4.5, 6.4.6	N/A
PS2: Main board output CN603 (for internal speaker)	The other components/materials	See 6.3	See 6.4.5, 6.4.6	N/A
PS1: Main board output CN403 and CN404 (for KEY&IR board), All accessible ports	N/A	N/A	N/A	N/A

7	Injury caused by hazardous substances			
Class and Energy Source (e.g. Ozone)	Body Part (e.g., Skilled)	Safeguards		
		B	S	R
Electrolyte (RTC cap. on main board)	N/A	N/A	N/A	See annex M.3
8	Mechanically-caused injury			
Class and Energy Source (e.g. MS3: Plastic fan blades)	Body Part (e.g. Ordinary)	Safeguards		
		B	S	R
MS3: Wall/ceiling mount	Ordinary	N/A	N/A	See 8.7
MS3: Mass of the unit	Ordinary	N/A	N/A	See 8.6, 8.8.2
MS3: Plastic fan blades (declared)	Ordinary	N/A	N/A	Enclosure
MS1: Edges and corners	Ordinary	N/A	N/A	N/A
9	Thermal burn			
Class and Energy Source (e.g. T801: Keyboard caps)	Body Part (e.g., Ordinary)	Safeguards		
		B	S	R
TS3: Internal parts/circuits	Ordinary	N/A	N/A	Enclosure
TS1: All accessible parts	Ordinary	N/A	N/A	N/A
10	Radiation			
Class and Energy Source (e.g. RS1: PMP sound output)	Body Part (e.g., Ordinary)	Safeguards		
		B	S	R
RS1: LED Indicator	Ordinary	N/A	N/A	N/A
RS1: LED panel	Ordinary	N/A	N/A	N/A
Supplementary Information: “B” – Basic Safeguard; “S” – Supplementary Safeguard; “R” – Reinforced Safeguard				

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

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

4	GENERAL REQUIREMENTS		P
4.1.1	Acceptance of materials, components and subassemblies		P
4.1.2	Use of components	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. See also Annex G. See appended table 4.1.2	P
4.1.3	Equipment design and construction		P
4.1.4	Specified ambient temperature for outdoor use (°C) :	Not for outdoor use	N/A
4.1.5	Constructions and components not specifically covered		N/A
4.1.8	Liquids and liquid filled components (LFC)		N/A
4.1.15	Markings and instructions	(See Annex F)	P
4.4.3	Safeguard robustness		P
4.4.3.1	General		P
4.4.3.2	Steady force tests	(See Clause T.5)	P
4.4.3.3	Drop tests		N/A
4.4.3.4	Impact tests	(See Clause T.6)	P
4.4.3.5	Internal accessible safeguard tests		N/A
4.4.3.6	Glass impact tests	Laminated glass	N/A
4.4.3.7	Glass fixation tests		P
	Glass impact test (1J)	(See Annex T.6, T.9)	P
	Push/pull test (10 N)	(See Clause T.2, T.5)	P
4.4.3.8	Thermoplastic material tests		N/A
4.4.3.9	Air comprising a safeguard	(See Annex T)	P
4.4.3.10	Accessibility, glass, safeguard effectiveness		P
4.4.4	Displacement of a safeguard by an insulating liquid		N/A
4.4.5	Safety interlocks		N/A
4.5	Explosion		P
4.5.1	General		P
4.5.2	No explosion during normal/abnormal operating condition	(See Clause B.2, B.3)	P
	No harm by explosion during single fault conditions	(See Clause B.4)	P

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.6	Fixing of conductors		P
	Fix conductors not to defeat a safeguard		P
	Compliance is checked by test..... :	(See Clause T.2)	P
4.7	Equipment for direct insertion into mains socket-outlets		N/A
4.7.2	Mains plug part complies with relevant standard .. :	Not direct plug-in equipment	N/A
4.7.3	Torque (Nm)		N/A
4.8	Equipment containing coin/button cell batteries		N/A
4.8.1	General	No coin/button cell batteries used	N/A
4.8.2	Instructional safeguard		N/A
4.8.3	Battery compartment door/cover construction		N/A
	Open torque test		N/A
4.8.4.2	Stress relief test		N/A
4.8.4.3	Battery replacement test		N/A
4.8.4.4	Drop test		N/A
4.8.4.5	Impact test		N/A
4.8.4.6	Crush test		N/A
4.8.5	Compliance		N/A
	30N force test with test probe		N/A
	20N force test with test hook		N/A
4.9	Likelihood of fire or shock due to entry of conductive object		P
4.10	Component requirements		P
4.10.1	Disconnect Device	(See Annex L)	P
4.10.2	Switches and relays	(See Clause G.1, G.2)	P

5	ELECTRICALLY-CAUSED INJURY		P
5.2	Classification and limits of electrical energy sources		P
5.2.2	ES1, ES2 and ES3 limits		P
5.2.2.2	Steady-state voltage and current limits	(See appended table 5.2)	P
5.2.2.3	Capacitance limits	(See appended table 5.2)	P
5.2.2.4	Single pulse limits		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	(See Annex E.1)	P
5.3	Protection against electrical energy sources		P
5.3.1	General Requirements for accessible parts to ordinary, instructed and skilled persons		P

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.3.1 a)	Accessible ES1/ES2 derived from ES2/ES3 circuits		P
5.3.1 b)	Skilled persons not unintentional contact ES3 bare conductors		N/A
5.3.2.1	Accessibility to electrical energy sources and safeguards	Only ES1 circuit can be accessed for this product.	P
	Accessibility to outdoor equipment bare parts		N/A
5.3.2.2	Contact requirements	No openings allowing entry of a probe. No access with test probe to any ES3 circuit or parts.	P
	Test with test probe from Annex V	No access with test probe to any ES3 circuit or parts.	—
5.3.2.2 a)	Air gap – electric strength test potential (V)		N/A
5.3.2.2 b)	Air gap – distance (mm)	More than 1.0mm	P
5.3.2.3	Compliance	Compliance checked by clause T.3	P
5.3.2.4	Terminals for connecting stripped wire	External speaker terminal: ES1. No access with test probe to any ES3 or ES2 circuit or parts.	P
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 and natural rubber, hygroscopic materials or asbestos are not used as insulation.	P
5.4.1.3	Material is non-hygroscopic		P
5.4.1.4	Maximum operating temperature for insulating materials	(See appended table 5.4.1.4, 9.3, B.1.5, B.2.6)	P
5.4.1.5	Pollution degrees	2	P
5.4.1.5.2	Test for pollution degree 1 environment and for an insulating compound		N/A
5.4.1.5.3	Thermal cycling test		N/A
5.4.1.6	Insulation in transformers with varying dimensions		N/A
5.4.1.7	Insulation in circuits generating starting pulses		N/A
5.4.1.8	Determination of working voltage	(See appended table 5.4.1.8)	P
5.4.1.9	Insulating surfaces		P
5.4.1.10	Thermoplastic parts on which conductive metallic parts are directly mounted		P
5.4.1.10.2	Vicat test.....		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.4.1.10.3	Ball pressure test	(See appended table 5.4.1.10.3)	P
5.4.2	Clearances	The highest value of 5.4.2.2 and 5.4.2.3 be used.	P
5.4.2.1	General requirements		P
	Clearances in circuits connected to AC Mains, Alternative method		N/A
5.4.2.2	Procedure 1 for determining clearance		P
	Temporary overvoltage	2000 V _{peak}	—
5.4.2.3	Procedure 2 for determining clearance		P
5.4.2.3.2.2	a.c. mains transient voltage	2500 V _{pk} considered for Overvoltage Cat. II	—
5.4.2.3.2.3	d.c. mains transient voltage	Not d.c. mains.	—
5.4.2.3.2.4	External circuit transient voltage.....	No such transient	—
5.4.2.3.2.5	Transient voltage determined by measurement	Not applicable	—
5.4.2.4	Determining the adequacy of a clearance using an electric strength test	Using procedure 2 to determine the clearance according to 5.4.2.3.	N/A
5.4.2.5	Multiplication factors for clearances and test voltages	1.48	P
5.4.2.6	Clearance measurement	(See appended table 5.4.2)	P
5.4.3	Creepage distances		P
5.4.3.1	General		P
5.4.3.3	Material group	IIIb	—
5.4.3.4	Creepage distances measurement	(See appended table 5.4.3)	P
5.4.4	Solid insulation		P
5.4.4.1	General requirements		P
5.4.4.2	Minimum distance through insulation	(See appended table 5.4.4.2)	P
5.4.4.3	Insulating compound forming solid insulation		N/A
5.4.4.4	Solid insulation in semiconductor devices	(See Annex G.12)	P
5.4.4.5	Insulating compound forming cemented joints		N/A
5.4.4.6	Thin sheet material		P
5.4.4.6.1	General requirements		P
5.4.4.6.2	Separable thin sheet material	Where min. two layers are provided as reinforced insulation any one layer passed the electric strength test for reinforced insulation.	P
	Number of layers (pcs)	Min. 2 layers	P

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Clause	Requirement + Test	Result - Remark	Verdict
5.4.4.6.3	Non-separable thin sheet material	No such insulation used within the EUT	N/A
	Number of layers (pcs)		N/A
5.4.4.6.4	Standard test procedure for non-separable thin sheet material		N/A
5.4.4.6.5	Mandrel test		N/A
5.4.4.7	Solid insulation in wound components	(See Annex G.5.3 and G.6.1)	P
5.4.4.9	Solid insulation at frequencies >30 kHz, E_P , K_R , d , V_{PW} (V)		N/A
	Alternative by electric strength test, tested voltage (V), K_R	(See appended Table 5.4.4.9)	P
5.4.5	Antenna terminal insulation		N/A
5.4.5.1	General		N/A
5.4.5.2	Voltage surge test		N/A
5.4.5.3	Insulation resistance ($M\Omega$)		N/A
	Electric strength test		N/A
5.4.6	Insulation of internal wire as part of supplementary safeguard		N/A
5.4.7	Tests for semiconductor components and for cemented joints		N/A
5.4.8	Humidity conditioning		P
	Relative humidity (%), temperature ($^{\circ}C$), duration (h)	93%, 40 $^{\circ}C$, 120hrs	—
5.4.9	Electric strength test		P
5.4.9.1	Test procedure for type test of solid insulation	(See appended table 5.4.9)	P
5.4.9.2	Test procedure for routine test	Should be considered and conducted during production at factory.	N/A
5.4.10	Safeguards against transient voltages from external circuits	No such external circuits	N/A
5.4.10.1	Parts and circuits separated from external circuits		N/A
5.4.10.2	Test methods		N/A
5.4.10.2.1	General		N/A
5.4.10.2.2	Impulse test		N/A
5.4.10.2.3	Steady-state test		N/A
5.4.10.3	Verification for insulation breakdown for impulse test		N/A
5.4.11	Separation between external circuits and earth		N/A
5.4.11.1	Exceptions to separation between external circuits and earth		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.4.11.2	Requirements		N/A
	SPDs bridge separation between external circuit and earth		N/A
	Rated operating voltage U_{op} (V)		—
	Nominal voltage U_{peak} (V)		—
	Max increase due to variation ΔU_{sp}		—
	Max increase due to ageing ΔU_{sa}		—
5.4.11.3	Test method and compliance		N/A
5.4.12	Insulating liquid		N/A
5.4.12.1	General requirements		N/A
5.4.12.2	Electric strength of an insulating liquid		N/A
5.4.12.3	Compatibility of an insulating liquid		N/A
5.4.12.4	Container for insulating liquid		N/A
5.5	Components as safeguards		P
5.5.1	General		P
5.5.2	Capacitors and RC units	(See Annex G.11)	P
5.5.2.1	General requirement		P
5.5.2.2	Safeguards against capacitor discharge after disconnection of a connector	(See appended table 5.5.2.2)	P
5.5.3	Transformers	(See Annex G.5.3)	P
5.5.4	Optocouplers	(See Annex G.12)	P
5.5.5	Relays	Insulation of relays not used as a safeguard	N/A
5.5.6	Resistors		N/A
5.5.7	SPDs	(See Annex G.8)	P
5.5.8	Insulation between the mains and an external circuit consisting of a coaxial cable		N/A
5.5.9	Safeguards for socket-outlets in outdoor equipment		N/A
	RCD rated residual operating current (mA)		—
5.6	Protective conductor		P
5.6.2	Requirement for protective conductors		P
5.6	Protective conductor		P
5.6.2	Requirement for protective conductors		P
5.6.2.1	General requirements		P
5.6.2.2	Colour of insulation	Green and yellow	P
5.6.3	Requirement for protective earthing conductors		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Protective earthing conductor size (mm ²) :	Max. rated current of equipment is 6.0 A, cross-sectional area is min. 0.75 mm ² or min. 18 AWG.	—
	Protective earthing conductor serving as a reinforced safeguard	Not applicable	N/A
	Protective earthing conductor serving as a double safeguard	Not applicable	N/A
5.6.4	Requirements for protective bonding conductors		P
5.6.4.1	Protective bonding conductors		P
	Protective bonding conductor size (mm ²). :	Max. rated current of equipment is 6.0 A, cross-sectional area is min. 0.5 mm ² or min. 20 AWG.	—
5.6.4.2	Protective current rating (A)..... :	16 A or 13 A (UK) or 20 A (North America)	P
5.6.5	Terminals for protective conductors		P
5.6.5.1	Terminal size for connecting protective earthing conductors (mm)..... :	The earthing terminal in the appliance inlet is regarded as the main protective earthing terminal.	P
	Terminal size for connecting protective bonding conductors (mm) :	Terminals for protective bonding conductors comply with Table 32: Screw type, min. nominal thread diameter is 4.0 mm	P
5.6.5.2	Corrosion	No combination above the line in annex N is used.	P
5.6.6	Resistance of the protective bonding system		P
5.6.6.1	Requirements		P
5.6.6.2	Test Method..... :	(See appended table 5.6.6)	P
5.6.6.3	Resistance (Ω) or voltage drop..... :	(See appended table 5.6.6)	P
5.6.7	Reliable connection of a protective earthing conductor		N/A
5.6.8	Functional earthing		N/A
	Conductor size (mm ²)..... :		N/A
	Class II with functional earthing marking :		N/A
	Appliance inlet cl & cr (mm) :		N/A
5.7	Prospective touch voltage, touch current and protective conductor current		P
5.7.2	Measuring devices and networks		P
5.7.2.1	Measurement of touch current	(See appended table 5.7.4 and 5.7.5)	P
5.7.2.2	Measurement of voltage		P

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Clause	Requirement + Test	Result - Remark	Verdict
5.7.3	Equipment set-up, supply connections and earth connections		P
5.7.4	Unearthed accessible parts	(See appended table 5.7.4)	P
5.7.5	Earthed accessible conductive parts	(See appended table 5.7.5)	P
5.7.6	Requirements when touch current exceeds ES2 limits		N/A
	Protective conductor current (mA)		N/A
	Instructional Safeguard		N/A
5.7.7	Prospective touch voltage and touch current associated with external circuits		N/A
5.7.7.1	Touch current from coaxial cables		N/A
5.7.7.2	Prospective touch voltage and touch current associated with paired conductor cables		N/A
5.7.8	Summation of touch currents from external circuits		N/A
	a) Equipment connected to earthed external circuits, current (mA)		N/A
	b) Equipment connected to unearthed external circuits, current (mA)		N/A
5.8	Backfeed safeguard in battery backed up supplies		N/A
	Mains terminal ES		N/A
	Air gap (mm)		N/A

6	ELECTRICALLY- CAUSED FIRE		P
6.2	Classification of PS and PIS		P
6.2.2	Power source circuit classifications	(See appended table 6.2.2)	P
6.2.3	Classification of potential ignition sources		P
6.2.3.1	Arcing PIS	(See appended table 6.2.3.1)	P
6.2.3.2	Resistive PIS	(See appended table 6.2.3.2)	P
6.3	Safeguards against fire under normal operating and abnormal operating conditions		P
6.3.1	No ignition and attainable temperature value less than 90 % defined by ISO 871 or less than 300 °C for unknown materials	(See appended table B.1.5 and B.3, B.4)	P
	Combustible materials outside fire enclosure	Min. HB	P
6.4	Safeguards against fire under single fault conditions		P
6.4.1	Safeguard method	Method by control of fire spread applied, Fire enclosure provided.	P
6.4.2	Reduction of the likelihood of ignition under single fault conditions in PS1 circuits		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
6.4.3	Reduction of the likelihood of ignition under single fault conditions in PS2 and PS3 circuits		N/A
6.4.3.1	Supplementary safeguards		N/A
6.4.3.2	Single Fault Conditions :		N/A
	Special conditions for temperature limited by fuse		N/A
6.4.4	Control of fire spread in PS1 circuits		P
6.4.5	Control of fire spread in PS2 circuits		P
6.4.5.2	Supplementary safeguards	Compliance detailed as follows: – Printed board: rated V-1 or better. – Wire insulation (tubing): complying with Clause 6 (See Table 4.1.2 for wiring used). – All other components: at least V-2/VTM-2 except for mounted on min. V-1 material or small parts (<4g) of combustible material. – Isolating transformer: complying with G.5.3. (See Annex G). – Not ignite during single fault conditions as specified in 6.4.3.2. (For speakers, see appended table B.3, B.4)	P
6.4.6	Control of fire spread in PS3 circuits	Metal enclosure used	P
6.4.7	Separation of combustible materials from a PIS		N/A
6.4.7.2	Separation by distance		N/A
6.4.7.3	Separation by a fire barrier		N/A
6.4.8	Fire enclosures and fire barriers		P
6.4.8.2	Fire enclosure and fire barrier material properties	Metal enclosure used	P
6.4.8.2.1	Requirements for a fire barrier		N/A
6.4.8.2.2	Requirements for a fire enclosure		P
6.4.8.3	Constructional requirements for a fire enclosure and a fire barrier		P
6.4.8.3.1	Fire enclosure and fire barrier openings		P
6.4.8.3.2	Fire barrier dimensions		N/A
6.4.8.3.3	Top openings and properties		P
	Openings dimensions (mm)..... :	For all operating position: Openings do not exceed 3 mm in any dimension (Round holes diameter with approx. 2.4mm and 1.8mm)	P

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Clause	Requirement + Test	Result - Remark	Verdict
6.4.8.3.4	Bottom openings and properties		P
	Openings dimensions (mm)..... :	For all operating position: 1) Openings do not exceed 3 mm in any dimension (Round holes diameter with approx. 2.4mm and 1.8mm). 2) Openings do not exceed 1 mm in width regardless of length.	P
	Flammability tests for the bottom of a fire enclosure		N/A
	Instructional Safeguard..... :		N/A
6.4.8.3.5	Side openings and properties		P
	Openings dimensions (mm)..... :	For all operating position: 1) Openings do not exceed 3 mm in any dimension (Round holes diameter with approx. 2.4mm and 1.8mm). 2) Openings do not exceed 1 mm in width regardless of length.	P
6.4.8.3.6	Integrity of a fire enclosure, condition met: a), b) or c) :		N/A
6.4.8.4	Separation of a PIS from a fire enclosure and a fire barrier distance (mm) or flammability rating :	Metal enclosure used	P
6.4.9	Flammability of insulating liquid..... :		N/A
6.5	Internal and external wiring		P
6.5.1	General requirements		P
6.5.2	Requirements for interconnection to building wiring :	VW-1 wires used, Which considered to equivalent to IEC/TS 60695-11-21	P
6.5.3	Internal wiring size (mm ²) for socket-outlets..... :		N/A
6.6	Safeguards against fire due to the connection to additional equipment		P

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

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Clause	Requirement + Test	Result - Remark	Verdict
8	MECHANICALLY-CAUSED INJURY		P
8.2	Mechanical energy source classifications		P
8.3	Safeguards against mechanical energy sources		P
8.4	Safeguards against parts with sharp edges and corners		P
8.4.1	Safeguards	MS1	N/A
	Instructional Safeguard.....:		N/A
8.4.2	Sharp edges or corners	MS1	P
8.5	Safeguards against moving parts		P
8.5.1	Fingers, jewellery, clothing, hair, etc., contact with MS2 or MS3 parts	DC fan cannot accessible for ordinary person	P
	MS2 or MS3 part required to be accessible for the function of the equipment		N/A
	Moving MS3 parts only accessible to skilled person		N/A
8.5.2	Instructional safeguard.....:		N/A
8.5.4	Special categories of equipment containing moving parts		N/A
8.5.4.1	General		N/A
8.5.4.2	Equipment containing work cells with MS3 parts		N/A
8.5.4.2.1	Protection of persons in the work cell		N/A
8.5.4.2.2	Access protection override		N/A
8.5.4.2.2.1	Override system		N/A
8.5.4.2.2.2	Visual indicator		N/A
8.5.4.2.3	Emergency stop system		N/A
	Maximum stopping distance from the point of activation (m).....:		N/A
	Space between end point and nearest fixed mechanical part (mm)		N/A
8.5.4.2.4	Endurance requirements		N/A
	Mechanical system subjected to 100 000 cycles of operation		N/A
	- Mechanical function check and visual inspection		N/A
	- Cable assembly		N/A
8.5.4.3	Equipment having electromechanical device for destruction of media		N/A
8.5.4.3.1	Equipment safeguards		N/A
8.5.4.3.2	Instructional safeguards against moving parts		N/A
8.5.4.3.3	Disconnection from the supply		N/A
8.5.4.3.4	Cut type and test force (N).....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8.5.4.3.5	Compliance		N/A
8.5.5	High pressure lamps		N/A
	Explosion test.....:		N/A
8.5.5.3	Glass particles dimensions (mm)		N/A
8.6	Stability of equipment		P
8.6.1	General	MS3	P
	Instructional safeguard.....:	Not television sets	N/A
8.6.2	Static stability		P
8.6.2.2	Static stability test	The equipment is placed on a plane at an angle of 10° from the horizontal and rotated slowly through an angle of 360° about its normal vertical axis, and does not tip over during the tests.	P
8.6.2.3	Downward force test	Test for base stand	P
8.6.3	Relocation stability		P
	Wheels diameter (mm)	Not applicable	—
	Tilt test	Not tip over	P
8.6.4	Glass slide test	During the test, the equipment does not slide and tip over	P
8.6.5	Horizontal force test	The equipment is placed on a plane and is rotated through an angle of 360° about its normal vertical axis while tilted at an angle of 15°, During the test, the equipment does not tip over.	P
8.7	Equipment mounted to wall, ceiling or other structure		P
8.7.1	Mount means type	Four screws provided, and each rated M8 with a length of 14-16mm.	P
8.7.2	Test methods		P
	Test 1, additional downwards force (N).....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Test 2, number of attachment points and test force (N).....:	Weight: 35.23kg*9.8N/kg=346N. Each of four threaded holes is subjected to below force 346N, one at a time, shall be subjected to the following six test forces: – a shear force perpendicular to its centre axis for 1 min. The force shall be applied in four directions, one direction at a time, separated by 90°. – an inward directed push force parallel to its centre axis for 1 min. – an outward directed pull force parallel to its centre axis for 1 min.	P
	Test 3 Nominal diameter (mm) and applied torque (Nm).....:	Each of four screws is loosened and then tightened 5 times with a torque 2.5 Nm.	P
8.8	Handles strength		P
8.8.1	General		P
8.8.2	Handle strength test	MS3	P
	Number of handles.....:	1) 4 handles; 2) 2 eyebolt brackets	—
	Force applied (N)	Total force: 39.68kg x 3 x 9.8kg/N=1167N 1) Tested for each of four handles: 292N; 2) Tested for each of two eyebolt brackets: 584N.	—
8.9	Wheels or casters attachment requirements		N/A
8.9.2	Pull test		N/A
8.10	Carts, stands and similar carriers		N/A
8.10.1	General		N/A
8.10.2	Marking and instructions.....:		N/A
8.10.3	Cart, stand or carrier loading test		N/A
	Loading force applied (N)		N/A
8.10.4	Cart, stand or carrier impact test		N/A
8.10.5	Mechanical stability		N/A
	Force applied (N)		—
8.10.6	Thermoplastic temperature stability		N/A
8.11	Mounting means for slide-rail mounted equipment (SRME)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8.11.1	General		N/A
8.11.2	Requirements for slide rails		N/A
	Instructional Safeguard		N/A
8.11.3	Mechanical strength test		N/A
8.11.3.1	Downward force test, force (N) applied		N/A
8.11.3.2	Lateral push force test		N/A
8.11.3.3	Integrity of slide rail end stops		N/A
8.11.4	Compliance		N/A
8.12	Telescoping or rod antennas		N/A
	Button/ball diameter (mm)		—

9	THERMAL BURN INJURY		P
9.2	Thermal energy source classifications		P
9.3	Touch temperature limits		P
9.3.1	Touch temperatures of accessible parts	(See appended table)	P
9.3.2	Test method and compliance		P
9.4	Safeguards against thermal energy sources		P
9.5	Requirements for safeguards		P
9.5.1	Equipment safeguard	Enclosure is a safeguard	P
9.5.2	Instructional safeguard.....		N/A
9.6	Requirements for wireless power transmitters		N/A
9.6.1	General		N/A
9.6.2	Specification of the foreign objects		N/A
9.6.3	Test method and compliance		N/A

10	RADIATION		P
10.2	Radiation energy source classification		P
10.2.1	General classification		P
	Lasers	Not applicable	—
	Lamps and lamp systems	RS1	—
	Image projectors	Not applicable	—
	X-Ray	Not applicable	—
	Personal music player	Not applicable	—
10.3	Safeguards against laser radiation		N/A
	The standard(s) equipment containing laser(s) comply		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
10.4	Safeguards against optical radiation from lamps and lamp systems (including LED types)		P
10.4.1	General requirements	1) The LED only used for indicating, which is considered as low power & inherently exempt group according to IEC 62471. 2) The luminance of LED panel does not exceed 10^4 cd/m ² , the radiation does not exceed the exposure limits given in 4.3 of IEC 62471:2006	P
	Instructional safeguard provided for accessible radiation level needs to exceed		N/A
	Risk group marking and location		N/A
	Information for safe operation and installation		N/A
10.4.2	Requirements for enclosures		N/A
	UV radiation exposure		N/A
10.4.3	Instructional safeguard		N/A
10.5	Safeguards against X-radiation		N/A
10.5.1	Requirements		N/A
	Instructional safeguard for skilled persons		—
10.5.3	Maximum radiation (pA/kg)		—
10.6	Safeguards against acoustic energy sources		N/A
10.6.1	General		N/A
10.6.2	Classification		N/A
	Acoustic output $L_{Aeq,T}$, dB(A)		N/A
	Unweighted RMS output voltage (mV)		N/A
	Digital output signal (dBFS)		N/A
10.6.3	Requirements for dose-based systems		N/A
10.6.3.1	General requirements		N/A
10.6.3.2	Dose-based warning and automatic decrease		N/A
10.6.3.3	Exposure-based warning and requirements		N/A
	30 s integrated exposure level (MEL30)		N/A
	Warning for MEL ≥ 100 dB(A)		N/A
10.6.4	Measurement methods		N/A
10.6.5	Protection of persons		N/A
	Instructional safeguards		N/A
10.6.6	Requirements for listening devices (headphones, earphones, etc.)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
10.6.6.1	Corded listening devices with analogue input		N/A
	Listening device input voltage (mV)..... :		N/A
10.6.6.2	Corded listening devices with digital input		N/A
	Max. acoustic output $L_{Aeq,T}$, dB(A) :		N/A
10.6.6.3	Cordless listening devices		N/A
	Max. acoustic output $L_{Aeq,T}$, dB(A) :		N/A

B	NORMAL OPERATING CONDITION TESTS, ABNORMAL OPERATING CONDITION TESTS AND SINGLE FAULT CONDITION TESTS		P
B.1	General		P
B.1.5	Temperature measurement conditions	(See appended table B.1.5)	P
B.2	Normal operating conditions		P
B.2.1	General requirements :	(See Test Item Particulars and appended test tables)	P
	Audio Amplifiers and equipment with audio amplifiers :	(See Annex E)	P
B.2.3	Supply voltage and tolerances	+10 % and -10 % for AC mains considered.	P
B.2.5	Input test :	(See appended table B.2.5)	P
B.3	Simulated abnormal operating conditions		P
B.3.1	General		P
B.3.2	Covering of ventilation openings	(See appended table B.3, B.4)	P
	Instructional safeguard :	Not applicable	N/A
B.3.3	DC mains polarity test	The EUT is not connected to a D.C. mains	N/A
B.3.4	Setting of voltage selector	No such device	N/A
B.3.5	Maximum load at output terminals	(See appended table B.3, B.4)	P
B.3.6	Reverse battery polarity		N/A
B.3.7	Audio amplifier abnormal operating conditions	(See appended table B.3, B.4)	P
B.3.8	Safeguards functional during and after abnormal operating conditions :	(See appended table B.3, B.4)	P
B.4	Simulated single fault conditions		P
B.4.1	General		P
B.4.2	Temperature controlling device	No temperature controlling device used	N/A
B.4.3	Blocked motor test	(See appended table B.3, B.4)	P
B.4.4	Functional insulation		P
B.4.4.1	Short circuit of clearances for functional insulation	(See appended table B.3, B.4)	P

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Clause	Requirement + Test	Result - Remark	Verdict
B.4.4.2	Short circuit of creepage distances for functional insulation	(See appended table B.3, B.4)	P
B.4.4.3	Short circuit of functional insulation on coated printed boards	No coated printed boards used.	N/A
B.4.5	Short-circuit and interruption of electrodes in tubes and semiconductors	(See appended table B.3, B.4)	P
B.4.6	Short circuit or disconnection of passive components	(See appended table B.3, B.4)	P
B.4.7	Continuous operation of components		N/A
B.4.8	Compliance during and after single fault conditions	(See appended table B.3, B.4)	P
B.4.9	Battery charging and discharging under single fault conditions	RTC Cap. Considered. (See Annex M.3)	P
C	UV RADIATION		N/A
C.1	Protection of materials in equipment from UV radiation		N/A
C.1.2	Requirements		N/A
C.1.3	Test method		N/A
C.2	UV light conditioning test		N/A
C.2.1	Test apparatus..... :		N/A
C.2.2	Mounting of test samples		N/A
C.2.3	Carbon-arc light-exposure test		N/A
C.2.4	Xenon-arc light-exposure test		N/A
D	TEST GENERATORS		N/A
D.1	Impulse test generators		N/A
D.2	Antenna interface test generator		N/A
D.3	Electronic pulse generator		N/A
E	TEST CONDITIONS FOR EQUIPMENT CONTAINING AUDIO AMPLIFIERS		P
E.1	Electrical energy source classification for audio signals		P
	Maximum non-clipped output power (W)..... :	1) Internal speaker: 17.27W 2) External speaker: 12.75W	—
	Rated load impedance (Ω)	(See table B.2.5)	—
	Open-circuit output voltage (V)..... :	1) Internal speaker: 10.18V 2) External speaker: 10.10V	—
	Instructional safeguard	Not applicable	—
E.2	Audio amplifier normal operating conditions		P
	Audio signal source type	1KHz sinusoidal signal.	—
	Audio output power (W)..... :	1) Internal speaker: 2.16W 2) External speaker: 1.60W	—

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Clause	Requirement + Test	Result - Remark	Verdict
	Audio output voltage (V) :	1) Internal speaker: 3.60V 2) External speaker: 3.57V	—
	Rated load impedance (Ω) :	(See table B.2.5)	—
	Requirements for temperature measurement	(See appended table B.3)	P
E.3	Audio amplifier abnormal operating conditions	(See Table B.3, B.4)	P
F	EQUIPMENT MARKINGS, INSTRUCTIONS, AND INSTRUCTIONAL SAFEGUARDS		P
F.1	General		P
	Language :	English version provided (Version in other language will be provided when submitted for national approval)	—
F.2	Letter symbols and graphical symbols		P
F.2.1	Letter symbols according to IEC60027-1		P
F.2.2	Graphic symbols according to IEC, ISO or manufacturer specific		P
F.3	Equipment markings		P
F.3.1	Equipment marking locations		P
F.3.2	Equipment identification markings	See copy of marking plate	P
F.3.2.1	Manufacturer identification :	See copy of marking plate	P
F.3.2.2	Model identification :	See page 2 of this report	P
F.3.3	Equipment rating markings	See the following details	P
F.3.3.1	Equipment with direct connection to mains	The equipment is direct connected to AC mains, see F.3.3.3 to F.3.3.6	P
F.3.3.2	Equipment without direct connection to mains		N/A
F.3.3.3	Nature of the supply voltage :	AC	P
F.3.3.4	Rated voltage..... :	See copy of marking plate	P
F.3.3.5	Rated frequency :	See copy of marking plate	P
F.3.3.6	Rated current or rated power..... :	See copy of marking plate	P
F.3.3.7	Equipment with multiple supply connections		N/A
F.3.4	Voltage setting device		N/A
F.3.5	Terminals and operating devices		P
F.3.5.1	Mains appliance outlet and socket-outlet markings :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
F.3.5.2	Switch position identification marking..... :	1. A two-position power switch provided, and use the symbols "I" and "O" to indicate the "ON" and "OFF" positions. 2. A stand-by switch provided, and indicated by symbol "⏻".	P
F.3.5.3	Replacement fuse identification and rating markings :	The current fuse is located within the equipment and not replaceable by an ordinary person or an instructed person. The current fuse is anyway marked with FP1: T15AH 250Vac	P
	Instructional safeguards for neutral fuse :		N/A
F.3.5.4	Replacement battery identification marking :	See Annex M.10	P
F.3.5.5	Neutral conductor terminal		N/A
F.3.5.6	Terminal marking location		P
F.3.6	Equipment markings related to equipment classification		P
F.3.6.1	Class I equipment		P
F.3.6.1.1	Protective earthing conductor terminal..... :	Appliance coupler was provided.	P
F.3.6.1.2	Protective bonding conductor terminals :	A symbol IEC 60417-5017 (2006- 08) is marked on metal chassis adjacent to screw type protective bonding terminal.	P
F.3.6.2	Equipment class marking :	Class I equipment	N/A
F.3.6.3	Functional earthing terminal marking :		N/A
F.3.7	Equipment IP rating marking :	IP30	N/A
F.3.8	External power supply output marking :	See copy of marking plate	P
F.3.9	Durability, legibility and permanence of marking		P
F.3.10	Test for permanence of markings	After the test, the marking remains legible, and moreover the label shows no curling and is not removable by hand.	P
F.4	Instructions		P
	a) Information prior to installation and initial use		P
	b) Equipment for use in locations where children not likely to be present		N/A
	c) Instructions for installation and interconnection		P
	d) Equipment intended for use only in restricted access area		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	e) Equipment intended to be fastened in place	See user manual	P
	f) Instructions for audio equipment terminals		N/A
	g) Protective earthing used as a safeguard		P
	h) Protective conductor current exceeding ES2 limits		N/A
	i) Graphic symbols used on equipment		N/A
	j) Permanently connected equipment not provided with all-pole mains switch		N/A
	k) Replaceable components or modules providing safeguard function		N/A
	l) Equipment containing insulating liquid		N/A
	m) Installation instructions for outdoor equipment		N/A
F.5	Instructional safeguards		P
G	COMPONENTS		P
G.1	Switches		P
G.1.1	General	Approved switch used and is checked and complies with the requirements	P
G.1.2	Ratings, endurance, spacing, maximum load		N/A
G.1.3	Test method and compliance		N/A
G.2	Relays		P
G.2.1	Requirements	Considered in approved power supply	P
G.2.2	Overload test		N/A
G.2.3	Relay controlling connectors supplying power to other equipment		N/A
G.2.4	Test method and compliance		N/A
G.3	Protective devices		P
G.3.1	Thermal cut-offs		N/A
	Thermal cut-outs separately approved according to IEC 60730 with conditions indicated in a) & b)		N/A
	Thermal cut-outs tested as part of the equipment as indicated in c)		N/A
G.3.1.2	Test method and compliance		N/A
G.3.2	Thermal links		N/A
G.3.2.1	a) Thermal links tested separately according to IEC 60691 with specifics		N/A
	b) Thermal links tested as part of the equipment		N/A
G.3.2.2	Test method and compliance		N/A
G.3.3	PTC thermistors		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.3.4	Overcurrent protection devices	Current fuse complying with IEC 60127 as overcurrent protection device.	P
G.3.5	Safeguards components not mentioned in G.3.1 to G.3.4		N/A
G.3.5.1	Non-resettable devices suitably rated and marking provided		N/A
G.3.5.2	Single faults conditions :		N/A
G.4	Connectors		P
G.4.1	Spacings		P
G.4.2	Mains connector configuration..... :	(See appended table 4.1.2)	P
G.4.3	Plug is shaped that insertion into mains socket-outlets or appliance coupler is unlikely	Output connector with a shape that insert into mains connector is unlikely to occur.	P
G.5	Wound components		P
G.5.1	Wire insulation in wound components	(See annex J)	P
G.5.1.2	Protection against mechanical stress	By tube and insulation tape for TF2	P
G.5.2	Endurance test		N/A
G.5.2.1	General test requirements		N/A
G.5.2.2	Heat run test		N/A
	Test time (days per cycle) :		—
	Test temperature (°C)..... :		—
G.5.2.3	Wound components supplied from the mains		N/A
G.5.2.4	No insulation breakdown		N/A
G.5.3	Transformers		P
G.5.3.1	Compliance method..... :	The transformer meets the requirements given in G.5.3.2 and G.5.3.3.	P
	Position :	Considered in approved power supply	P
	Method of protection :	Over current protection by circuit design.	P
G.5.3.2	Insulation	Primary windings and secondary windings are separated by Reinforced insulation.	P
	Protection from displacement of windings :	By bobbin and insulation tape	—
G.5.3.3	Transformer overload tests	(See appended table B.3, B.4)	P
G.5.3.3.1	Test conditions	Tested in the complete equipment.	P

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Clause	Requirement + Test	Result - Remark	Verdict
G.5.3.3.2	Winding temperatures	(See appended table B.3, B.4)	P
G.5.3.3.3	Winding temperatures - alternative test method		N/A
G.5.3.4	Transformers using FIW		N/A
G.5.3.4.1	General		N/A
	FIW wire nominal diameter :		—
G.5.3.4.2	Transformers with basic insulation only		N/A
G.5.3.4.3	Transformers with double insulation or reinforced insulation..... :		N/A
G.5.3.4.4	Transformers with FIW wound on metal or ferrite core		N/A
G.5.3.4.5	Thermal cycling test and compliance		N/A
G.5.3.4.6	Partial discharge test		N/A
G.5.3.4.7	Routine test		N/A
G.5.4	Motors		P
G.5.4.1	General requirements	Approved DC motor (DC fan) used	P
G.5.4.2	Motor overload test conditions		N/A
G.5.4.3	Running overload test		N/A
G.5.4.4.2	Locked-rotor overload test		N/A
	Test duration (days) :		—
G.5.4.5	Running overload test for DC motors		N/A
G.5.4.5.2	Tested in the unit		N/A
G.5.4.5.3	Alternative method		N/A
G.5.4.6	Locked-rotor overload test for DC motors		N/A
G.5.4.6.2	Tested in the unit		N/A
	Maximum Temperature :		N/A
G.5.4.6.3	Alternative method		N/A
G.5.4.7	Motors with capacitors		N/A
G.5.4.8	Three-phase motors		N/A
G.5.4.9	Series motors		N/A
	Operating voltage :		—
G.6	Wire Insulation		P
G.6.1	General	Triple insulation wire used as reinforced insulation	P
G.6.2	Enamelled winding wire insulation	Insulation does not rely on solvent-based enamel.	N/A
G.7	Mains supply cords		P

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Clause	Requirement + Test	Result - Remark	Verdict
G.7.1	General requirements	Approved mains supply cords used	P
	Type..... :	(See appended table 4.1.2)	—
G.7.2	Cross sectional area (mm ² or AWG) :	(See appended table 4.1.2)	P
G.7.3	Cord anchorages and strain relief for non-detachable power supply cords		N/A
G.7.3.2	Cord strain relief		N/A
G.7.3.2.1	Requirements		N/A
	Strain relief test force (N)..... :		N/A
G.7.3.2.2	Strain relief mechanism failure		N/A
G.7.3.2.3	Cord sheath or jacket position, distance (mm) :		N/A
G.7.3.2.4	Strain relief and cord anchorage material		N/A
G.7.4	Cord Entry		N/A
G.7.5	Non-detachable cord bend protection		N/A
G.7.5.1	Requirements		N/A
G.7.5.2	Test method and compliance		N/A
	Overall diameter or minor overall dimension, <i>D</i> (mm) :		—
	Radius of curvature after test (mm) :		—
G.7.6	Supply wiring space		N/A
G.7.6.1	General requirements		N/A
G.7.6.2	Stranded wire		N/A
G.7.6.2.1	Requirements		N/A
G.7.6.2.2	Test with 8 mm strand		N/A
G.8	Varistors		P
G.8.1	General requirements		P
G.8.2	Safeguards against fire		P
G.8.2.1	General		P
G.8.2.2	Varistor overload test	Metal enclosure used as fire enclosure	N/A
G.8.2.3	Temporary overvoltage test		N/A
G.9	Integrated circuit (IC) current limiters		N/A
G.9.1	Requirements		N/A
	IC limiter output current (max. 5A)..... :		—
	Manufacturers' defined drift :		—
G.9.2	Test Program		N/A
G.9.3	Compliance		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.10	Resistors		N/A
G.10.1	General		N/A
G.10.2	Conditioning		N/A
G.10.3	Resistor test		N/A
G.10.4	Voltage surge test		N/A
G.10.5	Impulse test		N/A
G.10.6	Overload test		N/A
G.11	Capacitors and RC units		N/A
G.11.1	General requirements	Capacitors used in accordance with their rating and complied with subclasses of IEC 60384-14. Approved capacitor used.	P
G.11.2	Conditioning of capacitors and RC units	Considered in approved power supply	P
G.11.3	Rules for selecting capacitors		P
G.12	Optocouplers		P
	Optocouplers comply with IEC 60747-5-5 with specifics	Considered in approved power supply	P
	Type test voltage $V_{ini,a}$	Considered	—
	Routine test voltage, $V_{ini,b}$	Considered	—
G.13	Printed boards		P
G.13.1	General requirements		P
G.13.2	Uncoated printed boards		P
G.13.3	Coated printed boards		N/A
G.13.4	Insulation between conductors on the same inner surface		N/A
G.13.5	Insulation between conductors on different surfaces		N/A
	Distance through insulation		N/A
	Number of insulation layers (pcs)		—
G.13.6	Tests on coated printed boards		N/A
G.13.6.1	Sample preparation and preliminary inspection		N/A
G.13.6.2	Test method and compliance		N/A
G.14	Coating on components terminals		N/A
G.14.1	Requirements		N/A
G.15	Pressurized liquid filled components		N/A
G.15.1	Requirements		N/A
G.15.2	Test methods and compliance		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.15.2.1	Hydrostatic pressure test		N/A
G.15.2.2	Creep resistance test		N/A
G.15.2.3	Tubing and fittings compatibility test		N/A
G.15.2.4	Vibration test		N/A
G.15.2.5	Thermal cycling test		N/A
G.15.2.6	Force test		N/A
G.15.3	Compliance		N/A
G.16	IC including capacitor discharge function (ICX)		P
G.16.1	Condition for fault tested is not required	Considered in approved power supply	N/A
	ICX with associated circuitry tested in equipment		N/A
	ICX tested separately		N/A
G.16.2	Tests		N/A
	Smallest capacitance and smallest resistance specified by ICX manufacturer for impulse test..... :		—
	Mains voltage that impulses to be superimposed on :		—
	Largest capacitance and smallest resistance for ICX tested by itself for 10000 cycles test :		—
G.16.3	Capacitor discharge test..... :		N/A
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	Ringling signal		N/A
H.3.1.1	Frequency (Hz) :		—
H.3.1.2	Voltage (V) :		—
H.3.1.3	Cadence; time (s) and voltage (V) :		—
H.3.1.4	Single fault current (mA):..... :		—
H.3.2	Tripping device and monitoring voltage		N/A
H.3.2.1	Conditions for use of a tripping device or a monitoring voltage		N/A
H.3.2.2	Tripping device		N/A
H.3.2.3	Monitoring voltage (V) :		N/A
J	INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION		P
J.1	General		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Winding wire insulation :	Certified triple insulation wire used, Considered in approved power supply	—
	Solid round winding wire, diameter (mm) :		N/A
	Solid square and rectangular (flatwise bending) winding wire, cross-sectional area (mm ²) :		N/A
J.2/J.3	Tests and Manufacturing		—
K	SAFETY INTERLOCKS		N/A
K.1	General requirements		N/A
	Instructional safeguard :		N/A
K.2	Components of safety interlock safeguard mechanism		N/A
K.3	Inadvertent change of operating mode		N/A
K.4	Interlock safeguard override		N/A
K.5	Fail-safe		N/A
K.5.1	Under single fault condition		N/A
K.6	Mechanically operated safety interlocks		N/A
K.6.1	Endurance requirement		N/A
K.6.2	Test method and compliance :		N/A
K.7	Interlock circuit isolation		N/A
K.7.1	Separation distance for contact gaps & interlock circuit elements		N/A
	In circuit connected to mains, separation distance for contact gaps (mm) :		N/A
	In circuit isolated from mains, separation distance for contact gaps (mm) :		N/A
	Electric strength test before and after the test of K.7.2 :		N/A
K.7.2	Overload test, Current (A) :		N/A
K.7.3	Endurance test		N/A
K.7.4	Electric strength test		N/A
L	DISCONNECT DEVICES		P
L.1	General requirements	The appliance coupler was used as disconnect device.	P
L.2	Permanently connected equipment		N/A
L.3	Parts that remain energized		N/A
L.4	Single-phase equipment		P
L.5	Three-phase equipment		N/A
L.6	Switches as disconnect devices		N/A
L.7	Plugs as disconnect devices		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
L.8	Multiple power sources		N/A
	Instructional safeguard :		N/A
M	EQUIPMENT CONTAINING BATTERIES AND THEIR PROTECTION CIRCUITS		P
M.1	General requirements		P
M.2	Safety of batteries and their cells		N/A
M.2.1	Batteries and their cells comply with relevant IEC standards :		N/A
M.3	Protection circuits for batteries provided within the equipment	RTC cap. considered.	P
M.3.1	Requirements		P
M.3.2	Test method		P
	Overcharging of a rechargeable battery	See appended table M.3	P
	Excessive discharging	See appended table M.3	P
	Unintentional charging of a non-rechargeable battery		N/A
	Reverse charging of a rechargeable battery		N/A
M.3.3	Compliance	See appended table M.3	P
M.4	Additional safeguards for equipment containing a portable secondary lithium battery		N/A
M.4.1	General		N/A
M.4.2	Charging safeguards		N/A
M.4.2.1	Requirements		N/A
M.4.2.2	Compliance :		N/A
M.4.3	Fire enclosure :		N/A
M.4.4	Drop test of equipment containing a secondary lithium battery		N/A
M.4.4.2	Preparation and procedure for the drop test		N/A
M.4.4.3	Drop, Voltage on reference and dropped batteries (V); voltage difference during 24 h period (%): :		N/A
M.4.4.4	Check of the charge/discharge function		N/A
M.4.4.5	Charge / discharge cycle test		N/A
M.4.4.6	Compliance		N/A
M.5	Risk of burn due to short-circuit during carrying		N/A
M.5.1	Requirement		N/A
M.5.2	Test method and compliance		N/A
M.6	Safeguards against short-circuits		N/A
M.6.1	External and internal faults		N/A
M.6.2	Compliance		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
M.7	Risk of explosion from lead acid and NiCd batteries		N/A
M.7.1	Ventilation preventing explosive gas concentration		N/A
	Calculated hydrogen generation rate :		N/A
M.7.2	Test method and compliance		N/A
	Minimum air flow rate, Q (m ³ /h) :		N/A
M.7.3	Ventilation tests		N/A
M.7.3.1	General		N/A
M.7.3.2	Ventilation test – alternative 1		N/A
	Hydrogen gas concentration (%) :		N/A
M.7.3.3	Ventilation test – alternative 2		N/A
	Obtained hydrogen generation rate :		N/A
M.7.3.4	Ventilation test – alternative 3		N/A
	Hydrogen gas concentration (%) :		N/A
M.7.4	Marking :		N/A
M.8	Protection against internal ignition from external spark sources of batteries with aqueous electrolyte		N/A
M.8.1	General		N/A
M.8.2	Test method		N/A
M.8.2.1	General		N/A
M.8.2.2	Estimation of hypothetical volume V_z (m ³ /s)..... :		—
M.8.2.3	Correction factors :		—
M.8.2.4	Calculation of distance d (mm) :		—
M.9	Preventing electrolyte spillage		N/A
M.9.1	Protection from electrolyte spillage		N/A
M.9.2	Tray for preventing electrolyte spillage		N/A
M.10	Instructions to prevent reasonably foreseeable misuse		P
	Instructional safeguard :	Compliance is checked by evaluation of available data provided by the manufacturer.	P
N	ELECTROCHEMICAL POTENTIALS		P
	Material(s) used :	The combined electrochemical potential is below 0.6 V.	—
O	MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES		P
	Value of X (mm) :	1mm	—
P	SAFEGUARDS AGAINST CONDUCTIVE OBJECTS		P
P.1	General		P
P.2	Safeguards against entry or consequences of entry of a foreign object		P

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Clause	Requirement + Test	Result - Remark	Verdict
P.2.1	General		P
P.2.2	Safeguards against entry of a foreign object		P
	Location and Dimensions (mm) :	Openings that meet the requirements of IP3X	—
P.2.3	Safeguards against the consequences of entry of a foreign object		N/A
P.2.3.1	Safeguard requirements		N/A
	The ES3 and PS3 keep-out volume in Figure P.3 not applicable to transportable equipment		N/A
	Transportable equipment with metalized plastic parts..... :	Not transportable equipment	N/A
P.2.3.2	Consequence of entry test..... :		N/A
P.3	Safeguards against spillage of internal liquids		N/A
P.3.1	General		N/A
P.3.2	Determination of spillage consequences		N/A
P.3.3	Spillage safeguards		N/A
P.3.4	Compliance		N/A
P.4	Metallized coatings and adhesives securing parts		P
p	General	Adhesive (for base stand non-slip mat)	P
P.4.2	Tests		P
	Conditioning, T _c (°C) :	100	—
	Duration (weeks)..... :	1	—
Q	CIRCUITS INTENDED FOR INTERCONNECTION WITH BUILDING WIRING		P
Q.1	Limited power sources		P
Q.1.1	Requirements		P
	a) Inherently limited output	(See appended table Q.1)	P
	b) Impedance limited output		N/A
	c) Regulating network limited output	(See appended table Q.1)	P
	d) Overcurrent protective device limited output		N/A
	e) IC current limiter complying with G.9		N/A
Q.1.2	Test method and compliance :	(See appended table Q.1)	P
	Current rating of overcurrent protective device (A) :		N/A
Q.2	Test for external circuits – paired conductor cable		N/A
	Maximum output current (A) :		N/A
	Current limiting method :		—

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Clause	Requirement + Test	Result - Remark	Verdict
R	LIMITED SHORT CIRCUIT TEST		N/A
R.1	General		N/A
R.2	Test setup		N/A
	Overcurrent protective device for test..... :		—
R.3	Test method		N/A
	Cord/cable used for test :		—
R.4	Compliance		N/A
S	TESTS FOR RESISTANCE TO HEAT AND FIRE		N/A
S.1	Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power does not exceed 4 000 W		N/A
	Samples, material..... :		—
	Wall thickness (mm) :		—
	Conditioning (°C) :		—
	Test flame according to IEC 60695-11-5 with conditions as set out		N/A
	- Material not consumed completely		N/A
	- Material extinguishes within 30s		N/A
	- No burning of layer or wrapping tissue		N/A
S.2	Flammability test for fire enclosure and fire barrier integrity		N/A
	Samples, material..... :		—
	Wall thickness (mm) :		—
	Conditioning (°C) :		—
S.3	Flammability test for the bottom of a fire enclosure		N/A
S.3.1	Mounting of samples		N/A
S.3.2	Test method and compliance		N/A
	Mounting of samples :		—
	Wall thickness (mm) :		—
S.4	Flammability classification of materials		N/A
S.5	Flammability test for fire enclosure materials of equipment with a steady state power exceeding 4 000 W		N/A
	Samples, material..... :		—
	Wall thickness (mm) :		—
	Conditioning (°C) :		—
T	MECHANICAL STRENGTH TESTS		P
T.1	General		P

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
T.2	Steady force test, 10 N :	(See appended table T.2, T.3, T.4, T.5)	P
T.3	Steady force test, 30 N :	(See appended table T.2, T.3, T.4, T.5)	P
T.4	Steady force test, 100 N :		N/A
T.5	Steady force test, 250 N :	(See appended table T.2, T.3, T.4, T.5)	P
T.6	Enclosure impact test	(See appended table T.6, T.9)	P
	Fall test		P
	Swing test		N/A
T.7	Drop test :		N/A
T.8	Stress relief test..... :	(See appended table T.8)	P
T.9	Glass Impact Test :	(See appended table T.6, T.9)	P
T.10	Glass fragmentation test		N/A
	Number of particles counted.....:		N/A
T.11	Test for telescoping or rod antennas		N/A
	Torque value (Nm)		N/A
U	MECHANICAL STRENGTH OF CATHODE RAY TUBES (CRT) AND PROTECTION AGAINST THE EFFECTS OF IMPLOSION		N/A
U.1	General		N/A
	Instructional safeguard :		N/A
U.2	Test method and compliance for non-intrinsically protected CRTs		N/A
U.3	Protective screen		N/A
V	DETERMINATION OF ACCESSIBLE PARTS		P
V.1	Accessible parts of equipment		P
V.1.1	General		P
V.1.2	Surfaces and openings tested with jointed test probes		P
V.1.3	Openings tested with straight unjointed test probes		P
V.1.4	Plugs, jacks, connectors tested with blunt probe		N/A
V.1.5	Slot openings tested with wedge probe		N/A
V.1.6	Terminals tested with rigid test wire	External speaker terminal	P
V.2	Accessible part criterion		P
X	ALTERNATIVE METHOD FOR DETERMINING CLEARANCES FOR INSULATION IN CIRCUITS CONNECTED TO AN AC MAINS NOT EXCEEDING 420 V PEAK (300 V RMS)		N/A
	Clearance		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
Y	CONSTRUCTION REQUIREMENTS FOR OUTDOOR ENCLOSURES		N/A
Y.1	General		N/A
Y.2	Resistance to UV radiation		N/A
Y.3	Resistance to corrosion		N/A
Y.3	Resistance to corrosion		N/A
Y.3.1	Metallic parts of outdoor enclosures are resistant to effects of water-borne contaminants by :		N/A
Y.3.2	Test apparatus		N/A
Y.3.3	Water – saturated sulphur dioxide atmosphere		N/A
Y.3.4	Test procedure :		N/A
Y.3.5	Compliance		N/A
Y.4	Gaskets		N/A
Y.4.1	General		N/A
Y.4.2	Gasket tests		N/A
Y.4.3	Tensile strength and elongation tests		N/A
	Alternative test methods :		N/A
Y.4.4	Compression test		N/A
Y.4.5	Oil resistance		N/A
Y.4.6	Securing means		N/A
Y.5	Protection of equipment within an outdoor enclosure		N/A
Y.5.1	General		N/A
Y.5.2	Protection from moisture		N/A
	Relevant tests of IEC 60529 or Y.5.3 :		N/A
Y.5.3	Water spray test		N/A
Y.5.4	Protection from plants and vermin		N/A
Y.5.5	Protection from excessive dust		N/A
Y.5.5.1	General		N/A
Y.5.5.2	IP5X equipment		N/A
Y.5.5.3	IP6X equipment		N/A
Y.6	Mechanical strength of enclosures		N/A
Y.6.1	General		N/A
Y.6.2	Impact test :		N/A

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

5.2	TABLE: Classification of electrical energy sources						P
Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters				ES Class
			U (V)	I (mA)	Type ¹⁾	Additional Info ²⁾	
264Va.c, 60Hz	Phase to Neutral	Normal	374Vac	--	CP	CX3=0.47 μ F $\pm$ 20%; CX1=1.0 μ F $\pm$ 20%	ES3
		Abnormal	--	--	--	--	--
		Single fault:	--	--	--	--	--
264Va.c, 60Hz	Phase/Neutral to earth	Normal	374Vac	--	CP	CY3=CX4 =470pF $\pm$ 20%	ES1
		Abnormal	--	--	--	--	--
		Single fault:	--	--	--	--	--
264Va.c, 60Hz	Power board output CN203 "+12" to "-"	Normal	12.09Vdc	--	SS	--	ES1
		Abnormal (Refer to abnormal condition on table B.3, B.4, Unit normal operation)	12.09Vdc max.	--	SS	--	ES1
		Abnormal (Refer to abnormal condition on table B.3, B.4, Speaker shutdown, others normal operation)	12.09Vdc max.	--	SS	--	ES1
		Abnormal (Refer to abnormal condition on table B.3, B.4, USB Type-A shutdown, others normal operation)	12.09Vdc max.	--	SS	--	ES1

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

		Abnormal (Refer to abnormal condition on table B.3, B.4, USB SERVICE shutdown, others normal operation)	12.09Vdc max.	--	SS	--	ES1
		Abnormal (Refer to abnormal condition on table B.3, B.4, Optional Board shutdown, others normal operation)	12.09Vdc max.	--	SS	--	ES1
		Abnormal (Refer to abnormal condition on table B.3, B.4, Panel shutdown, others normal operation)	12.09Vdc max.	--	SS	--	ES1
		Abnormal (Refer to abnormal condition on table B.3, B.4, DC fan shutdown, others normal operation)	12.09Vdc max.	--	SS	--	ES1
		Single fault (Refer to fault condition on table B.3, B.4, Fuse opened)	0V	--	SS	--	ES1

IEC 62368-1							
Clause	Requirement + Test			Result - Remark			Verdict
		Single fault (Refer to fault condition on table B.3, B.4, Unit shutdown)	0V	--	SS	--	ES1
		Single fault (Refer to fault condition on table B.3, B.4, Panel shutdown, others normal operation)	12.09Vdc max.	--	SS	--	ES1
		Single fault (Refer to fault condition on table B.3, B.4, Unit normal operation)	12.09Vdc max.	--	SS	--	ES1
		Single fault (LED “+” to “+12V” SC)*	0V	--	SS	--	ES1
264Va.c, 60Hz	Power board output CN203 “+24V” to “-”	Normal	24.09Vdc	--	SS	--	ES1
		Abnormal (Refer to abnormal condition on table B.3, B.4, Unit normal operation)	24.09Vdc max.	--	SS	--	ES1
		Abnormal (Refer to abnormal condition on table B.3, B.4, Speaker shutdown, others normal operation)	24.09Vdc max.	--	SS	--	ES1

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

		Abnormal (Refer to abnormal condition on table B.3, B.4, USB Type-A shutdown, others normal operation)	24.09Vdc max.	--	SS	--	ES1
		Abnormal (Refer to abnormal condition on table B.3, B.4, USB SERVICE shutdown, others normal operation)	24.09Vdc max.	--	SS	--	ES1
		Abnormal (Refer to abnormal condition on table B.3, B.4, Optional Board shutdown, others normal operation)	24.09Vdc max.	--	SS	--	ES1
		Abnormal (Refer to abnormal condition on table B.3, B.4, Panel shutdown, others normal operation)	24.09Vdc max.	--	SS	--	ES1

IEC 62368-1							
Clause	Requirement + Test			Result - Remark			Verdict
		Abnormal (Refer to abnormal condition on table B.3, B.4, DC fan shutdown, others normal operation)	24.09Vdc max.	--	SS	--	ES1
		Single fault (Refer to fault condition on table B.3, B.4, Fuse opened)	0V	--	SS	--	ES1
		Single fault (Refer to fault condition on table B.3, B.4, Unit shutdown)	0V	--	SS	--	ES1
		Single fault (Refer to fault condition on table B.3, B.4, Panel shutdown, others normal operation)	24.09Vdc max.	--	SS	--	ES1
		Single fault (Refer to fault condition on table B.3, B.4, Unit normal operation)	24.09Vdc max.	--	SS	--	ES1
		Single fault (LED "+" to "+24V" SC)*	0V	--	SS	--	ES1
		Single fault (LED "+" to "+24V" SC)*	0V	--	SS	--	ES1
264Va.c,	Power board	Normal	5.19Vdc	--	SS	--	ES1

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

60Hz	output CN201 "+5VSB" to "-"	Abnormal (Refer to abnormal condition on table B.3, B.4, Unit normal operation)	5.19Vdc max.	--	SS	--	ES1
		Abnormal (Refer to abnormal condition on table B.3, B.4, Speaker shutdown, others normal operation)	5.19Vdc max.	--	SS	--	ES1
		Abnormal (Refer to abnormal condition on table B.3, B.4, USB Type-A shutdown, others normal operation)	5.19Vdc max.	--	SS	--	ES1
		Abnormal (Refer to abnormal condition on table B.3, B.4, USB SERVICE shutdown, others normal operation)	5.19Vdc max.	--	SS	--	ES1

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

		Abnormal (Refer to abnormal condition on table B.3, B.4, Optional Board shutdown, others normal operation)	5.19Vdc max.	--	SS	--	ES1
		Abnormal (Refer to abnormal condition on table B.3, B.4, Panel shutdown, others normal operation)	5.19Vdc max.	--	SS	--	ES1
		Abnormal (Refer to abnormal condition on table B.3, B.4, DC fan shutdown, others normal operation)	5.19Vdc max.	--	SS	--	ES1
		Single fault (Refer to fault condition on table B.3, B.4, Fuse opened)	0V	--	SS	--	ES1
		Single fault (Refer to fault condition on table B.3, B.4, Unit shutdown)	0V	--	SS	--	ES1

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

		Single fault (Refer to fault condition on table B.3, B.4, Panel shutdown, others normal operation)	5.19Vdc max.	--	SS	--	ES1
		Single fault (Refer to fault condition on table B.3, B.4, Unit normal operation)	5.19Vdc max.	--	SS	--	ES1
		Single fault (LED “+” to “+5VSB” SC)*	0V	--	SS	--	ES1
264Va.c, 60Hz	USB Type-A port (CN706) "+" to "-"	Normal	5.10Vdc	--	SS	--	ES1
		Abnormal (Refer to abnormal condition on table B.3, B.4, Unit normal operation)	5.10Vdc max.	--	SS	--	ES1
		Abnormal (Refer to abnormal condition on table B.3, B.4, Speaker shutdown, others normal operation)	5.10Vdc max.	--	SS	--	ES1

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

		Abnormal (Refer to abnormal condition on table B.3, B.4, USB Type-A shutdown, others normal operation)	0	--	SS	--	ES1
		Abnormal (Refer to abnormal condition on table B.3, B.4, USB SERVICE shutdown, others normal operation)	5.10Vdc max.	--	SS	--	ES1
		Abnormal (Refer to abnormal condition on table B.3, B.4, Optional Board shutdown, others normal operation)	5.10Vdc max.	--	SS	--	ES1
		Abnormal (Refer to abnormal condition on table B.3, B.4, Panel shutdown, others normal operation)	5.10Vdc max.	--	SS	--	ES1

IEC 62368-1							
Clause	Requirement + Test			Result - Remark			Verdict
		Abnormal (Refer to abnormal condition on table B.3, B.4, DC fan shutdown, others normal operation)	5.10Vdc max.	--	SS	--	ES1
		Single fault (Refer to fault condition on table B.3, B.4, Fuse opened)	0V	--	SS	--	ES1
		Single fault (Refer to fault condition on table B.3, B.4, Unit shutdown)	0V	--	SS	--	ES1
		Single fault (Refer to fault condition on table B.3, B.4, Panel shutdown, others normal operation)	5.10Vdc max.	--	SS	--	ES1
		Single fault (Refer to fault condition on table B.3, B.4, Unit normal operation)	5.10Vdc max.	--	SS	--	ES1
		Single fault (LED "+" to USB Type-A "+" SC)	0V	--	SS	--	ES1
		Single fault (LED "+" to USB Type-A "+" SC)	0V	--	SS	--	ES1
264Va.c,	USB SERVICE	Normal	5.09Vdc	--	SS	--	ES1

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

60Hz	port (CN406) "+" to "-"	Abnormal (Refer to abnormal condition on table B.3, B.4, Unit normal operation)	5.09Vdc max.	--	SS	--	ES1
		Abnormal (Refer to abnormal condition on table B.3, B.4, Speaker shutdown, others normal operation)	5.09Vdc max.	--	SS	--	ES1
		Abnormal (Refer to abnormal condition on table B.3, B.4, USB Type-A shutdown, others normal operation)	5.09Vdc max.	--	SS	--	ES1
		Abnormal (Refer to abnormal condition on table B.3, B.4, USB SERVICE shutdown, others normal operation)	0	--	SS	--	ES1

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

		Abnormal (Refer to abnormal condition on table B.3, B.4, Optional Board shutdown, others normal operation)	5.09Vdc max.	--	SS	--	ES1
		Abnormal (Refer to abnormal condition on table B.3, B.4, Panel shutdown, others normal operation)	5.09Vdc max.	--	SS	--	ES1
		Abnormal (Refer to abnormal condition on table B.3, B.4, DC fan shutdown, others normal operation)	5.09Vdc max.	--	SS	--	ES1
		Single fault (Refer to fault condition on table B.3, B.4, Fuse opened)	0V	--	SS	--	ES1
		Single fault (Refer to fault condition on table B.3, B.4, Unit shutdown)	0V	--	SS	--	ES1

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

		Single fault (Refer to fault condition on table B.3, B.4, Panel shutdown, others normal operation)	5.09Vdc max.	--	SS	--	ES1
		Single fault (Refer to fault condition on table B.3, B.4, Unit normal operation)	5.09Vdc max.	--	SS	--	ES1
		Single fault (LED "+" to USB SERVICE "+" SC)	0V	--	SS	--	ES1

Supplementary information:

- 1) Type: Steady state (SS), Capacitance (CP), Single pulse (SP), Repetitive pulses (RP), etc.
 2) Additional Info: Frequency, Pulse duration, Pulse off time, Capacitance value, etc.
 3) *: It was considered to be representative of all other accessible secondary terminals when simulate fault condition LED "+" to accessible part shorted, as a result of unit shutdown.
 4) Power board output CN201 and CN203 output "-" and all accessible ports "-" earthed.
 5) SC=short circuit.

5.4.1.8	TABLE: Working voltage measurement				P
Location	RMS voltage (V)	Peak voltage (V)	Frequency (Hz)	Comments	
Test with 240Vac, 60Hz	--	--	--	--	
Transformer TH2 pin 8-2	147	282	91.21K	--	
Transformer TH2 pin 8-5	213	372	91.21K	--	
Transformer TH2 pin 11-2	174	340	91.21K	--	
Transformer TH2 pin 11-5	259	406	91.21K	Max. Peak and RMS voltage	
Transformer TH3 pin 8-2	164	308	90.09K	--	
Transformer TH3 pin 8-5	147	280	90.09K	--	
Transformer TH3 pin 11-2	149	286	90.09K	--	

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

Transformer TH3 pin 11-5	174	338	90.09K	Max. Peak and RMS voltage
Transformer TH1 pin 7-2	150	254	94.01K	--
Transformer TH1 pin 7-4	231	386	94.01K	--
Transformer TH1 pin 8-2	154	260	94.01K	--
Transformer TH1 pin 8-4	244	416	94.01K	--
Transformer TH1 pin 9,10-2	146	230	94.01K	--
Transformer TH1 pin 9,10-4	250	408	94.01K	--
Transformer TH1 pin 11,12-2	147	246	94.01K	--
Transformer TH1 pin 11,12-4	241	396	94.01K	--
Transformer TH1 pin 13-2	161	286	94.01K	--
Transformer TH1 pin 13-4	226	384	94.01K	--
Transformer TH1 pin 14-2	150	232	94.01K	--
Transformer TH1 pin 14-4	263	434	94.01K	Max. Peak and RMS voltage
Transformer TF2 pin 4,5-11	171	336	53.30K	--
Transformer TF2 pin 4,5-10	302	408	53.30K	--
Transformer TF2 pin 4,5-9	304	462	53.30K	--
Transformer TF2 pin 4,5-6	314	520	53.30K	Max. Peak and RMS voltage
Transformer TF2 pin 1,2-11	172	348	53.30K	--
Transformer TF2 pin 1,2-10	306	448	53.30K	--
Transformer TF2 pin 1,2-9	306	468	53.30K	--
Transformer TF2 pin 1,2-6	312	516	53.30K	--
PH2 pin 1-3	168	356	60	--
PH2 pin 1-4	168	356	60	--
PH2 pin 2-3	160	342	60	--
PH2 pin 2-4	158	340	60	--
PH1 pin 1-3	172	364	60	--
PH1 pin 1-4	167	360	60	--
PH1 pin 2-3	172	364	60	--
PH1 pin 2-4	160	360	60	--
PH5 pin 1-3	172	364	60	--
PH5 pin 1-4	167	360	60	--
PH5 pin 2-3	172	364	60	--
PH5 pin 2-4	160	360	60	--

IEC 62368-1				
Clause	Requirement + Test		Result - Remark	Verdict
PH4 pin 1-3	168	356	60	--
PH4 pin 1-4	168	356	60	--
PH4 pin 2-3	160	342	60	--
PH4 pin 2-4	158	340	60	--
PH3 pin 1-3	168	356	60	--
PH3 pin 1-4	168	356	60	--
PH3 pin 2-3	160	342	60	--
PH3 pin 2-4	158	340	60	--
PF1 pin 1-3	168	356	60	--
PF1 pin 1-4	168	356	60	--
PF1 pin 2-3	160	342	60	--
PF1 pin 2-4	158	340	60	--
PF3 pin 1-3	168	356	60	--
PF3 pin 1-4	168	356	60	--
PF3 pin 2-3	160	342	60	--
PF3 pin 2-4	158	340	60	--
PF2 pin 1-3	168	356	60	
PF2 pin 1-4	168	356	60	
PF2 pin 2-3	160	342	60	
PF2 pin 2-4	158	340	60	
CY1 primary to secondary	171	344	60	
CY4 primary to secondary	240	341	60	
Test with 100Vac, 60Hz	--	--	--	--
Transformer TH2 pin 11-1,2	259	412	90.53K	Max. Peak and RMS voltage
Transformer TH3 pin 11-5,6	172	336	89.84K	Max. Peak and RMS voltage
Transformer TH1 pin 14-3	268	432	94.15K	Max. Peak and RMS voltage
Transformer TF2 pin 5,6-11	358	524	55.21K	Max. Peak and RMS voltage
Supplementary information:				
Test with 100Vac/240Vac, 60Hz.				
The test result represented the worst condition.				

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

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

Supplementary information:

5.4.1.10.3	TABLE: Ball pressure test of thermoplastics	P
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Allowed impression diameter (mm)	≤ 2 mm	—
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Object/Part No./Material	Manufacturer/trademark	Thickness (mm)	Test temperature (°C)	Impression diameter (mm)
AC connector (CN101)	CKM Electronics Co Ltd / 3962WR-5PF-EVN-HF (material: Toray Industries Inc./ CM3004-V0(rg))	3.0	125	1.1
AC connector (CN101)	CKM Electronics Co Ltd / 3962WR-5PF-EVN-HF (material: E I Dupont De Nemours & Co Inc./ HTNFR52G30NH(r6))	3.0	125	1.0
AC connector (CN101)	Weli Sheng Terminal Industrial Co Ltd/ M5-I39606R (material: BASF CORP/ KR4205)	3.0	125	1.3
AC connector (CN101)	Weli Sheng Terminal Industrial Co Ltd/ M5-I39606R (material: ASAHI KASEI CORP/FG172)	3.0	125	1.2
Case of transformer	CHANG CHUN PLASTICS CO LTD / 4130	3.0	125	0.9

Supplementary information:

Materials of bobbin are no need to conduct this test, see appended table 4.1.2 of CB test report for power board.

5.4.2, 5.4.3	TABLE: Minimum Clearances/Creepage distance	P
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Clearance (cl) and creepage distance (cr) at/of/between:	U _p (V)	U _{rms} (V)	Freq ¹⁾ (Hz)	Required cl (mm)	cl (mm)	E.S. ²⁾ (V)	Required cr (mm)	cr (mm)
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IEC 62368-1								
Clause	Requirement + Test			Result - Remark				Verdict
L-N before fuse FP1 (F)*	420	250	60	2.3	4.5	--	2.5	4.5
Different polarity of trace under FP1 (F)*	420	250	60	2.3	4.2	--	2.5	4.2
Primary circuit to metal enclosure (B)*	524	358	94.15K	2.3	5.0	--	3.6	5.0
PCB trace under CY3 (B)*	420	250	60	2.3	8.0	--	2.5	8.0
PCB trace under CY4 (B)*	420	250	60	2.3	8.0	--	2.5	8.0
PCB trace of UP2 to earth (B)*	420	250	60	2.3	8.9	--	2.5	8.9
PCB trace under CY1 (R)*	420	250	60	4.5	8.0	--	5.0	8.0
PCB trace under PF1, PF2 and PF3 (R)*	420	250	60	4.5	8.3	--	5.0	8.3
PCB trace under PH1, PH2, PH3, PH4 and PH5 (R)*	420	250	60	4.5	8.3	--	5.0	8.3
PCB trace under TH1 (R)*	434	268	94.15K	4.5	>10.0	--	5.4	>10.0
PCB trace under TF2 (R)*	524	358	55.21K	4.5	>10.0	--	7.2	>10.0
PCB trace under TH2/TH3 (R)*	420	259	91.21K	4.5	>10.0	--	5.2	>10.0
Transformer TH1 (core considered as floating):								
Primary winding to secondary winding (R)*	434	268	94.15K	4.5	8.4	--	5.4	8.4
Core to primary winding (B)*	434	268	94.15K	2.3	4.0	--	2.7	4.0
Core to secondary winding (S)*	434	268	94.15K	2.3	4.0	--	2.7	4.0
Core to primary component CH3 (B)*	434	268	94.15K	2.3	8.8	--	2.7	8.8
Transformer TF2 (core considered as secondary):								
Primary winding to secondary winding (R)*	524	358	55.21K	4.5	10.0	--	7.2	10.0
Core to primary winding (R)*	524	358	55.21K	4.5	10.0	--	7.2	10.0
Core to CY1 primary pin (R)*	524	358	55.21K	4.5	10.0	--	7.2	10.0

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

Transformer TH2/TH3 (core considered as floating):

Primary winding to secondary winding (R)*	420	259	91.21K	4.5	6.9	--	5.2	6.9
Core to primary winding (B)*	420	259	91.21K	2.3	5.0	--	2.6	5.0
Core to secondary winding (S)*	420	259	91.21K	2.3	5.0	--	2.6	5.0
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) The equipment was evaluated for a maximum operating altitude of 5000m. Clearance values have been evaluated for an operating altitude of max. 5000 meters, based on Table 16 altitude adjustment factor 1.48.								
2) Unless otherwise specified, the worst conditions of Cl. & Cr. in above mentioned locations have been considered and listed.								
3) Provide Material Group: IIIb.								
4) *F=Functional insulation; B=Basic insulation; S=Supplementary insulation; R=Reinforce insulation.								

5.4.4.2	TABLE: Minimum distance through insulation				P
Distance through insulation (DTI) at/of	Peak voltage (V)	Insulation	Required DTI (mm)	Measured DTI (mm)	
Opto-coupler	420	Reinforce insulation	0.4	1)	
Bobbin of transformers TH2/TH3	420 (max.)	Reinforce insulation	0.4	1)	
Case of transformers TH2/TH3	420 (max.)	Reinforce insulation	0.4	1)	
Insulation tape of transformers TH2/TH3	420 (max.)	Reinforce insulation	Min. 2 layers	Min. 2 layers	
Bobbin of transformer TH1	434	Reinforce insulation	0.4	1)	
Insulation tape of transformer TH1	434	Reinforce insulation	Min. 2 layers	Min. 2 layers	
Bobbin of transformer TF2	524	Reinforce insulation	0.4	1)	
Insulation tape of transformer TF2	524	Reinforce insulation	Min. 2 layers	Min. 2 layers	
Supplementary information:					
1) See appended table 4.1.2 of CB test report for power board for details.					

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5.4.4.9	TABLE: Solid insulation at frequencies >30 kHz						P
Insulation material	E_P	Frequency (kHz)	K_R	Thickness d (mm)	Insulation	V_{PW} (Vpk)	
Bobbin of transformers TH2/TH3	--	91.21	0.46	--	Reinforce insulation	420 (max.)	
Case of transformers TH2/TH3	--	91.21	0.46	--	Reinforce insulation	420 (max.)	
Insulation tape of transformers TH2/TH3	--	91.21	0.46	--	Reinforce insulation	420 (max.)	
Bobbin of transformer TH1	--	94.15	0.46	--	Reinforce insulation	434	
Insulation tape of transformer TH1	--	94.15	0.46	--	Reinforce insulation	434	
Bobbin of transformer TF2	--	55.21	0.46	--	Reinforce insulation	524	
Insulation tape of transformer TF2	--	55.21	0.46	--	Reinforce insulation	524	
Triple Insulation Wire of TF2	--	55.21	0.46	--	Reinforce insulation	524	
Supplementary information:							
Electric strength test voltage as follows:							
Basic insulation: $1.2 \times V_{PW} / K_R$, Reinforce insulation: $1.2 \times 2 \times V_{PW} / K_R$, Refer to table 5.4.9.							

5.4.9	TABLE: Electric strength tests			P
Test voltage applied between:	Voltage shape (Surge, Impulse, AC, DC, etc.)	Test voltage (V)	Breakdown Yes / No	
Line to Neutral (with fuse disconnect)	DC	2500	No	
Line / Neutral to earth	DC	2500	No	
L/N & metal enclosure	DC	2500	No	
Core to primary winding of Transformers TH2/TH3	DC	2500	No	
Core to secondary winding of Transformers TH2/TH3	DC	2500	No	
Core to primary winding of Transformer TH1	DC	2500	No	
Core to secondary winding of Transformer TH1	DC	2500	No	
L/N & accessible ports	DC	4000	No	
L/N & LCD panel wrapped with metal foil	DC	4000	No	
Primary winding to secondary winding of Transformers TH2/TH3	DC	4000	No	

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Primary winding to secondary winding of Transformer TH1	DC	4000	No
Primary winding to secondary winding of Transformer TF2	DC	4000	No
Core to primary winding of Transformer TF2	DC	4000	No
Insulation tape used in and around all transformers (single layer, all sources)	DC	4000	No
Bobbin of all transformers	DC	4000	No
Case of Transformers TH2/TH3	DC	4000	No
Supplementary information:			
1) Core of transformer TF2 was considered as secondary, core of transformers TH1, TH2 and TH3 were considered as floating conductor. 2) Tests after humidity treatment, heating test, and for unit primary to secondary, primary to enclosure electric strength after each fault condition test. 3) Tests were performed on product with each source listed in table 4.1.2 of this report and CB test report for power board.			

5.5.2.2	TABLE: Stored discharge on capacitors					P
Location	Supply voltage (V)	Operating and fault condition ¹⁾	Switch position	Measured voltage (Vpk)	ES Class	
Phase to Neutral	264 Vac, 60 Hz	N (RF1 opened)	on	22V	ES1	
Phase to Neutral	264 Vac, 60 Hz	N (RF1 and RX1 opened)	on	54V	ES1	
Supplementary information:						
X-capacitors installed for testing: CX3=0.47μF±20%, CX1=1.0μF±20%.						
[X] bleeding resistor rating: RX1=RX2=RX3=RX4=RX5=RX6=RX7=RX8=200Kohm.						
[X] ICX: UP2.						
Notes: Approved ICX (UP2) used.						
Normal operating condition (e.g., normal operation, or open fuse), SC= short circuit, OC= open circuit						

5.6.6	TABLE: Resistance of protective conductors and terminations				P
Location	Test current (A)	Duration (min)	Voltage drop (V)	Resistance (Ω)	
Earthing pin of appliance inlet to metal enclosure farthest	32	2	0.736	0.0230	
Earthing pin of appliance inlet to metal enclosure farthest	40	2	1.048	0.0262	
Supplementary information:					
Limit 0.1ohm, Voltage drop <2.5V.					

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Clause	Requirement + Test	Result - Remark	Verdict

5.7.4	TABLE: Unearthed accessible parts					P
Location	Operating and fault conditions	Supply Voltage (V)	Parameters			ES class
			Voltage (V _{rms} or V _{pk})	Current (A _{rms} or A _{pk})	Freq. (Hz)	
LCD Panel/Plastic control panel with metal foil to earth	Normal	264Vac	--	0.050mA _{peak}	60Hz	ES1
	Abnormal (Refer to abnormal condition on table B.3, B.4, Unit normal operation)	264Vac	--	0.050mA _{peak} max.	60Hz	ES1
	Abnormal (Refer to abnormal condition on table B.3, B.4, Speakers shutdown, others normal operation)	264Vac	--	0.050mA _{peak} max.	60Hz	ES1
	Abnormal (Refer to abnormal condition on table B.3, B.4, USB Type-A shutdown, others normal operation)	264Vac	--	0.050mA _{peak} max.	60Hz	ES1
	Abnormal (Refer to abnormal condition on table B.3, B.4, USB SERVICE shutdown, others normal operation)	264Vac	--	0.050mA _{peak} max.	60Hz	ES1
	Abnormal (Refer to abnormal condition on table B.3, B.4, Optional Board shutdown, others normal operation)	264Vac	--	0.050mA _{peak} max.	60Hz	ES1
	Abnormal (Refer to abnormal condition on table B.3, B.4, Panel shutdown, others normal operation)	264Vac	--	0.050mA _{peak} max.	60Hz	ES1
	Abnormal (Refer to abnormal condition on table B.3, B.4, Panel shutdown, others normal operation)	264Vac	--	0.050mA _{peak}	60Hz	ES1

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	to abnormal condition on table B.3, B.4, DC fan shutdown, others normal operation)			max.		
	Single fault (Refer to fault condition on table B.3, B.4, Fuse opened)	264Vac	--	0.050mA _{peak} max.	60Hz	ES1
	Single fault (Refer to fault condition on table B.3, B.4, Unit shutdown)	264Vac	--	0.050mA _{peak} max.	60Hz	ES1
	Single fault (Refer to fault condition on table B.3, B.4, Panel shutdown, others normal operation)	264Vac	--	0.050mA _{peak} max.	60Hz	ES1
	Single fault (Refer to fault condition on table B.3, B.4, Unit normal operation)	264Vac	--	0.050mA _{peak} max.	60Hz	ES1
	Single fault (Earth opened)	264Vac	--	0.050mA _{peak} max.	60Hz	ES1
Supplementary information:						
Abbreviation: SC= short circuit; OC= open circuit						

5.7.5	TABLE: Earthed accessible conductive part			P
Supply voltage (V)	264Vac, 60Hz			—
Phase(s)	[X] Single Phase; [] Three Phase: [] Delta [] Wye			
Power Distribution System	[X] TN []TT [] IT			
Location	Fault Condition No in IEC 60990 clause 6.2.2	Touch current (mA)	Comment	
Metal enclosure	1	0.720mApeak/0.720mApeak	normal and reverse polarity p	
Supplementary Information:				

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

6.2.2	TABLE: Power source circuit classifications					P
Location	Operating and fault condition	Voltage (V)	Current (A)	Max. Power ¹⁾ (W)	Time (S)	PS class
AUDIO OUT port (CON1) All pins to GND	Normal	0	0	0	After 3s	PS1
LAN 1/2 port (CON16) Pin A9/A11/B9/B11 to GND	Normal	3.21	0	0	After 3s	PS1
LAN 1/2 port (CON16) Pin others to GND	Normal	0	0	0	After 3s	PS1
REMOTE IN port (CN407) Pin 1 to GND	Normal	1.90	2.0	3.8	After 3s	PS1
REMOTE IN port (CN407) Pin 1 to GND	Single fault (UM53 pin 4-3 short)	2.91	2.0	5.8	After 3s	PS1
REMOTE IN port (CN407) Pin others to GND	Normal	0	0	0	After 3s	PS1
DisplayPort IN 1/2 port (CN505/CN506) Pin 20 to GND	Normal	2.02	0.8	1.6	After 3s	PS1
DisplayPort IN 1/2 port (CN505/CN506) Pin 20 to GND	Single fault (U527/U530 pin 5-1 short)	2.02	0.8	1.6	After 3s	PS1
DisplayPort IN 1/2 port (CN505/CN506) Pin 20 to GND	Single fault (U528/U525 pin 2-3 short)	3.10	0.8	2.5	After 3s	PS1

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Clause	Requirement + Test	Result - Remark			Verdict	
DisplayPort IN 1/2 port (CN505/CN506) Pin others to GND	Normal	0	0	0	After 3s	PS1
DisplayPort OUT port (CN507) Pin 20 to GND	Normal	2.10	0.8	1.7	After 3s	PS1
DisplayPort OUT port (CN507) Pin 20 to GND	Single fault (U532 pin 5-1 short)	2.10	0.8	1.7	After 3s	PS1
DisplayPort OUT port (CN507) Pin 20 to GND	Single fault (U533 pin 2-3 short)	3.21	0.8	2.6	After 3s	PS1
DisplayPort OUT port (CN507) Pin others to GND	Normal	0	0	0	After 3s	PS1
HDMI IN 1/2 port (CN501/CN502) Pin 18 to GND	Normal	4.89	0	0	After 3s	PS1
HDMI IN 1/2 port (CN501/CN502) Pin others to GND	Normal	0	0	0	After 3s	PS1
HDMI OUT port (CN504) Pin 18 to GND	Normal	4.93	0.1	0.5	After 3s	PS1
HDMI OUT port (CN504) Pin others to GND	Normal	0	0	0	After 3s	PS1
USB Type-A port (CN706) Pin + to -	Normal	4.15	1.8	7.5	After 3s	PS1
USB Type-A port (CN706) Pin + to -	Single fault (U717 pin 1-5 short)	4.98 (USB Type-A normal operation)	0.5 (USB Type-A normal operation)	2.5 (USB Type-A normal operation)	After 3s	PS1
USB Type-B port (CN704) All Pins to GND	Normal	0	0	0	After 3s	PS1

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Clause	Requirement + Test	Result - Remark			Verdict	
USB SERVICE port (CN406) Pin + to -	Normal	4.18	2.5	10.5	After 3s	PS1
USB SERVICE port (CN406) Pin + to -	Single Fault (U420 pin 1-6 short)	4.86 (USB SERVICE normal operation)	2.0 (USB SERVICE normal operation)	9.7 (USB SERVICE normal operation)	After 3s	PS1
RS-232C port (CN408) all Pin to GND	Normal	0	0	0	After 3s	PS1
External speaker port (JA3) "+" to "-"	Normal	3.48	0.62	2.16	After 3s	PS1
External speaker port (JA3) "+" to "-"	Abnormal (Max. attainable power)	10.10	1.26	12.75	After 3s	PS1
External speaker port (JA3) "+" to "-"	Single fault (UA1 pin 2,3-1 short)	0 (Speaker shutdown)	0 (Speaker shutdown)	0 (Speaker shutdown)	After 3s	PS1
Main board CN603 output "+" to "-" (internal speaker)	Normal	3.50	0.83	2.91	After 3s	PS1
Main board CN603 output "+" to "-" (internal speaker)	Abnormal (Max. attainable power)	10.18	1.70	17.27	After 5s	PS2
Main board CN603 output "+" to "-" (internal speaker)	Single fault (UA1 pin 2,3-1 short)	0 (Speaker shutdown)	0 (Speaker shutdown)	0 (Speaker shutdown)	After 3s	PS1
Main board CN403 output pin 4 to GND	Normal	2.48	0.12	0.30	After 3s	PS1
Main board CN403 output pin 4 to GND	Single Fault (UM53 pin 3 to pin 4 short)	2.48 (Normal operation)	0.12 (Normal operation)	0.30 (Normal operation)	After 3s	PS1
Main board CN404 output pin 5 to GND	Normal	2.50	0.11	0.28	After 3s	PS1
Main board CN404 output pin 5 to GND	Single Fault (UM53 pin 3 to pin 4 short)	2.50 (Normal operation)	0.11 (Normal operation)	0.28 (Normal operation)	After 3s	PS1
Main board	Normal	2.61	0.12	0.31	After 3s	PS1

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Clause	Requirement + Test			Result - Remark		Verdict
CN404 output pin 10 to GND						
Main board CN404 output pin 10 to GND	Single Fault (UM53 pin 3 to pin 4 short)	2.61 (Normal operation)	0.12 (Normal operation)	0.31 (Normal operation)	After 3s	PS1
Main board CN509 output pin 1,2,3 to GND*	Normal	10.50	7.0	73.5	After 5s	PS3 (declared)
Main board CN508 output pin 1,2,3 to GND*	Normal	10.90	4.4	48.0	After 5s	PS3 (declared)
Supplementary information:						
Abbreviation: SC= short circuit; OC= open circuit						
1) Measured after 3 s for PS1 and measured after 5 s for PS2 and PS3.						
2) *: Reference of select which port to performed overload test.						

6.2.3.1	TABLE: Determination of Arcing PIS				P
Location	Open circuit voltage after 3 s (Vpk)	Measured r.m.s current (A)	Calculated value	Arcing PIS? Yes / No	
All internal circuits /components except for power board output CN201 and CN203	--	--	--	Yes (Declaration)	
Supplementary information:					
Considered arcing PIS in all primary and secondary circuit.					
An Arcing PIS requires a minimum of 50 V (peak) a.c. or d.c. An Arcing PIS is established when the product of the open circuit voltage (V_p) and normal operating condition rms current (I_{rms}) is greater than 15.					

6.2.3.2	TABLE: Determination of resistive PIS			P
Location		Operating and fault condition	Dissipate power (W)	Arcing PIS? Yes / No
All internal circuits /components		--	--	Yes (Declaration)
Supplementary information:				
Considered resistive PIS in all primary and secondary circuit.				
A combination of voltmeter, VA and ammeter IA may be used instead of a wattmeter.				
If a separate voltmeter and ammeter are used, the product of (VA x IA) is used to determine Resistive PIS classification.				
A Resistive PIS: (a) dissipates more than 15 W, measured after 30 s of normal operation, <u>or</u> (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				

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Clause	Requirement + Test	Result - Remark	Verdict

W measured 30 s after introduction of the fault.
Abbreviation: SC= short circuit; OC= open circuit.

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

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

5.4.1.4, 9.3, B.1.5, B.2.6	TABLE: Temperature measurements					P
Supply voltage (V)..... :		See below	See below	See below	See below	—
Ambient temperature during test T_{amb} (°C) :		--	--	--	--	—
Maximum measured temperature T of part/at:		T (°C)				Allowed T_{max} (°C)
Test conditions:	90V/50Hz	264V/50Hz	90V/50Hz	264V/50Hz	--	
	Landscape position	Landscape position	Portrait position	Portrait position		
AC inlet	54.6	47.5	59.0	52.4	70	
Earth wire	50.3	47.1	58.5	53.8	80	
Input wire	56.8	50.1	62.2	55.7	80	
AC connector CN101	66.5	48.8	72.4	55.8	85	
Line chock of LP1 winding	69.7	49.9	78.5	60.4	130	
X-capacitor CX1	60.2	48.8	72.7	61.7	100	

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Clause	Requirement + Test		Result - Remark		Verdict

Line chock of LP2A winding	71.0	51.1	84.9	66.9	130
PCB under RT1	68.6	54.2	83.0	71.2	130
Relay RLY1 body	76.6	67.2	86.8	80.4	105
Relay RLY1 winding	82.6	72.4	92.7	92.5	130
Y-capacitor CY3	53.0	47.6	77.2	68.0	125
E-capacitor CP24	57.0	51.0	65.3	61.3	105
E-capacitor CP18	57.5	54.5	65.9	63.4	105
PCB under BD1	77.2	57.3	95.7	74.3	130
PCB under BD1A	87.0	61.2	101.4	79.1	130
Line chock of LP4 winding	82.9	61.3	95.0	78.4	130
RV2 body	75.4	58.4	89.9	79.3	105
Line chock of LP6 winding	83.4	69.6	83.6	73.9	130
Line chock of LP5 winding	82.6	72.4	84.6	75.3	130
PCB under QP1	79.4	77.6	92.7	92.5	130
PCB under QP4	79.6	79.4	90.8	91.6	130
PCB under QH4	67.5	65.2	80.1	78.4	130
PCB under QF4	61.8	59.6	71.1	69.3	130
PCB under QH8	81.2	78.4	93.5	89.8	130
Opto-coupler PH1 body	70.5	68.1	78.2	75.6	110
Opto-coupler PH5 body	70.6	68.1	74.4	71.3	110
Y-capacitor CY1	55.5	54.5	63.0	60.9	125
Opto-coupler PF1 body	55.0	53.4	61.3	59.4	110
TH2 winding	108.7	106.4	105.3	103.9	130
TH2 core	99.3	97.1	96.8	93.8	130
TH3 winding	102.8	100.7	108.9	106.1	130
TH3 core	91.5	89.2	95.2	90.6	130
TH1 winding	79.6	78.4	80.1	78.4	130
TH1 core	73.1	70.7	74.3	71.8	130
TF2 winding	62.4	60.2	68.5	67.0	130
TF2 core	60.7	58.7	64.3	63.2	130
PCB under DH12	99.7	96.9	101.3	99.0	130
PCB under DH5	70.3	67.4	71.4	69.5	130
PCB under DF16	61.8	59.5	65.3	62.8	130
PCB under QH12	70.5	68.1	78.0	75.6	130
E-capacitor CH40	70.6	68.0	74.2	71.3	105
E-capacitor CH26	68.9	66.6	71.4	69.5	105

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Clause	Requirement + Test		Result - Remark		Verdict

E-capacitor CH22	70.6	68.2	68.7	66.7	105
E-capacitor CF36	60.4	58.3	62.5	60.6	105
Internal wire	58.5	56.7	54.6	53.1	80
E-capacitor CSE1 body (main board)	62.6	60.3	55.0	53.3	For ref.
PCB under HS401near U401 (main board)	68.9	66.6	64.8	63.1	105
PCB under U547 (main board)	66.8	64.7	57.5	55.9	105
PCB under U546 (main board)	64.9	62.8	56.9	55.2	105
PCB under U420(main board)	60.0	57.6	58.8	57.0	105
PCB under U717(main board)	62.0	59.6	60.9	59.1	105
PCB under UA1(main board)	77.6	75.5	79.3	77.6	105
PCB under QL9 (Local dimming board))	77.4	75.1	68.3	66.5	105
Fan winding	71.9	68.3	47.9	48.8	130
Ambient	40.0	40.0	40.0	40.0	--
Accessible parts:	--	--	--	--	--
Metal enclosure outside near TH3	37.8	34.9	36.9	35.9	60*
Metal enclosure outside near TH1	33.6	31.0	37.1	36.1	60*
Metal enclosure near ventilation	44.8	39.7	36.2	35.4	60*
Handle	32.7	31.0	31.2	30.9	60*
Panel surface	38.5	36.4	34.4	33.9	71*
Power switch	39.2	31.9	38.9	35.9	77*
Button	38.7	32.3	39.3	33.8	77*
Ambient	25.0	25.0	25.0	25.0	--
Test conditions:	90V/50Hz	90V/50Hz	90V/50Hz	90V/50Hz	--
	Landscape position (inclined +30°)	Landscape position (inclined -30°)	Portrait position (inclined +30°)	Portrait position (inclined -30°)	
AC inlet	52.3	53.1	58.8	57.8	70
Earth wire	48.3	49.1	58.4	57.3	80
Input wire	53.6	55.2	61.3	61.0	80
AC connector CN101	61.4	64.9	67.6	71.2	85
Line chock of LP1 winding	66.1	68.1	76.1	77.3	130
X-capacitor CX1	57.5	58.9	71.3	71.5	100
Line chock of LP2A winding	69.1	69.6	82.9	83.7	130
PCB under RT1	66.3	67.2	81.7	81.8	130
Relay RLY1 body	73.4	74.9	85.9	85.6	105

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Clause	Requirement + Test		Result - Remark		Verdict

Relay RLY1 winding	80.8	81.2	91.2	91.5	130
Y-capacitor CY3	51.8	51.8	76.0	76.0	125
E-capacitor CP24	54.7	55.6	64.4	64.1	105
E-capacitor CP18	55.3	55.7	65.2	64.7	105
PCB under BD1	75.4	75.3	94.6	94.5	130
PCB under BD1A	84.8	85.3	99.9	100.2	130
Line chock of LP4 winding	79.9	81.2	93.3	93.8	130
RV2 body	72.7	73.7	88.4	88.7	105
Line chock of LP6 winding	80.5	81.8	83.2	82.4	130
Line chock of LP5 winding	80.8	81.2	84.2	83.4	130
PCB under QP1	77.3	77.7	91.2	91.5	130
PCB under QP4	78.1	78.0	89.4	89.6	130
PCB under QH4	65.7	65.9	78.7	78.9	130
PCB under QF4	60.0	60.3	70.6	69.9	130
PCB under QH8	80.3	79.7	92.4	92.3	130
Opto-coupler PH1 body	67.7	68.7	77.4	77.0	110
Opto-coupler PH5 body	67.9	68.8	72.3	73.2	110
Y-capacitor CY1	53.4	53.5	62.6	61.8	125
Opto-coupler PF1 body	53.2	53.2	60.9	60.1	110
TH2 winding	108.1	106.7	105.6	104.1	130
TH2 core	96.5	97.7	96.7	95.6	130
TH3 winding	101.0	101.5	108.3	107.7	130
TH3 core	89.2	90.0	92.2	94.0	130
TH1 winding	65.7	65.9	70.6	78.9	130
TH1 core	70.4	71.4	71.9	73.1	130
TF2 winding	60.3	60.8	68.1	67.3	130
TF2 core	58.5	58.9	64.4	63.1	130
PCB under DH12	98.4	98.0	100.8	100.1	130
PCB under DH5	69.7	68.8	69.2	70.2	130
PCB under DF16	59.9	60.3	64.4	64.1	130
PCB under QH12	67.7	68.7	77.4	77.0	130
E-capacitor CH40	67.9	68.8	72.3	73.2	105
E-capacitor CH26	69.7	68.8	69.2	70.2	105
E-capacitor CH22	69.2	69.0	66.9	67.5	105
E-capacitor CF36	58.6	59.0	61.9	61.3	105
Internal wire	56.7	57.1	54.6	53.4	80

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Clause	Requirement + Test		Result - Remark		Verdict

E-capacitor CSE1 body (main board)	61.1	60.9	54.7	53.8	For ref.
PCB under HS401near U401 (main board)	67.1	67.0	64.1	63.6	105
PCB under U547 (main board)	64.7	65.1	57.3	56.3	105
PCB under U546 (main board)	62.7	63.1	56.4	55.7	105
PCB under U420(main board)	57.3	57.8	51.6	57.6	105
PCB under U717(main board)	59.3	59.9	51.5	59.7	105
PCB under UA1(main board)	76.1	75.9	78.2	78.1	105
PCB under QL9 ((Local dimming board))	75.5	75.9	67.7	67.1	105
Fan winding	69.5	70.4	49.1	47.9	130
Ambient	40.0	40.0	40.0	40.0	--
Accessible parts:	--	--	--	--	--
Metal enclosure outside near TH3	35.3	36.3	37.3	36.9	60*
Metal enclosure outside near TH1	31.0	32.0	37.0	37.1	60*
Metal enclosure near ventilation	42.1	43.0	36.2	36.2	60*
Handle	30.0	31.1	31.4	31.2	60*
Panel surface	37.9	36.8	34.2	34.4	71*
Power switch	36.0	37.3	41.9	41.2	77*
Button	36.4	37.2	39.4	39.3	77*
Ambient	25.0	25.0	25.0	25.0	--
Simulated abnormal operating conditions:	90V/50Hz , Portrait position	90V/50Hz , Portrait position	90V/50Hz , Portrait position	90V/50Hz , Portrait position	--
	Speaker max. attainable power	One speaker short	USB SERVICE output overload	USB Type-A output overload	
TH2 winding	107.4	106.5	106.7	105.9	200
TH2 core	98.7	97.2	97.4	96.6	200
TH3 winding	110.9	109.3	109.7	108.9	200
TH3 core	95.6	93.2	95.4	96.3	200
TH1 winding	87.7	85.6	81.6	80.8	200
TH1 core	78.2	75.1	75.8	75.0	200
TF2 winding	71.1	69.7	70.1	69.3	200
TF2 core	67.0	67.5	67.0	66.2	200
PCB under U547 (main board)	59.3	58.8	61.6	57.9	300
PCB under U546 (main board)	58.5	57.9	61.3	57.4	300
PCB under U420 (main board)	60.2	59.4	64.9	61.3	300

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Clause	Requirement + Test		Result - Remark		Verdict

PCB under U717 (main board)	62.2	61.5	66.6	66.2	300
PCB under UA1 (main board)	94.2	139.6	80.3	79.5	300
Ambient	40.0	40.0	40.0	40.0	--
Accessible parts:	--	--	--	--	--
Metal enclosure outside near TH3	39.1	37.5	37.2	38.0	70*
Metal enclosure outside near TH1	39.7	37.8	37.7	38.5	70*
Metal enclosure near ventilation	38.0	37.5	36.5	37.3	70*
Handle	33.5	32.7	32.0	32.8	70*
Panel surface	36.1	35.1	34.8	35.6	81*
Power switch	42.0	40.7	43.3	43.3	87*
Button	41.5	40.2	42.1	42.2	87*
Ambient	25.0	25.0	25.0	25.0	--
Simulated abnormal operating conditions:	90V/50Hz , Portrait position	90V/50Hz , Portrait position	--	--	--
	Optional Board overload	Ventilation blocked	--	--	
TH2 winding	108.1	111.1	--	--	200
TH2 core	97.9	102.2	--	--	200
TH3 winding	110.5	109.6	--	--	200
TH3 core	94.7	93.5	--	--	200
TH1 winding	83.2	81.4	--	--	200
TH1 core	79.7	75.0	--	--	200
TF2 winding	71.6	70.2	--	--	200
TF2 core	69.2	66.4	--	--	200
PCB under U547 (main board)	62.9	59.2	--	--	300
PCB under U546 (main board)	62.7	58.5	--	--	300
PCB under U420 (main board)	59.4	60.2	--	--	300
PCB under U717 (main board)	61.7	62.3	--	--	300
PCB under UA1 (main board)	81.7	82.9	--	--	300
Ambient	40.0	40.0	--	--	--
Accessible parts:	--	--	--	--	--
Metal enclosure outside near TH3	39.7	38.6	--	--	70*
Metal enclosure outside near TH1	40.5	38.7	--	--	70*
Metal enclosure near ventilation	38.9	47.7	--	--	70*
Handle	33.8	34.9	--	--	70*

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Clause	Requirement + Test		Result - Remark		Verdict

Panel surface	36.7	40.7	--	--	81*
Power switch	40.5	43.2	--	--	87*
Button	39.7	40.7	--	--	87*
Ambient	25.0	25.0	--	--	--
Simulated abnormal operating conditions:	90V/50Hz , Portrait position	90V/50Hz , Portrait position	90V/50Hz , Portrait position	90V/50Hz , Portrait position	--
	Transformer TH2/TH3 overload	Transformer TH1 overload (CH22)	Transformer TH1 overload (CH40)	Transformer TF2 overload	
TH2 winding	121.3	107.0	108.1	105.6	200
TH2 core	105.7	97.4	98.3	96.9	200
TH3 winding	124.6	109.9	110.7	110.4	200
TH3 core	101.5	95.5	96.3	98.4	200
TH1 winding	81.6	84.1	88.3	84.0	200
TH1 core	74.8	78.3	82.3	75.0	200
TF2 winding	69.6	70.0	70.8	88.2	200
TF2 core	66.3	66.6	67.3	79.4	200
PCB under U547 (main board)	58.0	58.9	59.1	58.6	300
PCB under U546 (main board)	57.5	58.3	58.8	57.8	300
PCB under U420 (main board)	58.9	59.9	60.7	59.5	300
PCB under U717 (main board)	60.8	62.1	62.8	61.2	300
PCB under UA1 (main board)	80.0	80.5	81.3	80.6	300
Ambient	40.0	40.0	40.0	40.0	--
Accessible parts:	--	--	--	--	--
Metal enclosure outside near TH3	39.0	38.2	38.8	37.6	70*
Metal enclosure outside near TH1	39.1	38.5	39.6	39.0	70*
Metal enclosure near ventilation	37.9	37.7	39.0	36.9	70*
Handle	33.2	33.3	34.8	32.1	70*
Panel surface	34.7	35.7	36.3	34.6	81*
Power switch	41.9	42.1	42.3	42.3	87*
Button	41.4	40.9	41.0	41.5	87*
Ambient	25.0	25.0	25.0	25.0	--
Simulated abnormal operating conditions:	90V/50Hz , Portrait position	90V/50Hz , Portrait position	90V/50Hz , Portrait position	--	--
	DC fan near	DC fan near main	DC fan near local	--	

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Clause	Requirement + Test	Result - Remark	Verdict

				power board locked	board locked	dimming board locked		
TH2 winding				112.3	111.4	111.3	--	200
TH2 core				103.4	102.5	102.3	--	200
TH3 winding				110.8	109.9	110.1	--	200
TH3 core				94.7	93.8	93.9	--	200
TH1 winding				82.6	81.7	81.7	--	200
TH1 core				76.2	75.3	75.4	--	200
TF2 winding				71.4	70.5	70.7	--	200
TF2 core				67.6	66.4	67.3	--	200
PCB under U547 (main board)				59.5	60.3	58.8	--	300
PCB under U546 (main board)				58.8	59.4	58.1	--	300
PCB under U420 (main board)				60.5	61.0	59.7	--	300
PCB under U717 (main board)				62.6	63.4	61.7	--	300
PCB under UA1 (main board)				83.2	84.1	82.2	--	300
Ambient				40.0	40.0	40.0	--	--
Accessible parts:				--	--	--	--	--
Metal enclosure outside near TH3				38.9	39.0	37.8	--	70*
Metal enclosure outside near TH1				39.0	39.4	37.8	--	70*
Metal enclosure near ventilation				48.0	48.3	46.8	--	70*
Handle				35.2	35.8	34.5	--	70*
Panel surface				41.0	39.4	40.2	--	81*
Power switch				43.5	43.5	42.6	--	87*
Button				41.0	40.9	40.0	--	87*
Ambient				25.0	25.0	25.0	--	--
Temperature T of winding:		t ₁ (°C)	R ₁ (Ω)	t ₂ (°C)	R ₂ (Ω)	T (°C)	Allowed T _{max} (°C)	Insulation class
Supplementary information:								

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*Temperature limit for TS1 or TS2 of accessible enclosure according to Table 38.

Note 1: The apparatus was submitted and evaluated for maximum manufacturer's recommended ambient (Tma) of 40°C.

Note 2: The temperatures were measured under the worse case normal mode defined in clause B.2.1.

Note 3: Temperature limits are calculated as follows:

Winding components providing safety isolation:

- Class F Tmax = 140 °C - 10 °C = 130 °C (For normal temperature measurements).

- Class F Tmax = 200 °C (For abnormal temperature measurements).

Note 4: Maximum normal load -- Test with HDMI mode (Select internal speaker), 1kHz sine wave signal input, adjust volume to 1/8 maximum attainable output power. The video signal is three vertical bar signals, adjust the brightness and contrast to maximum value; USB Type-A load: 5Vdc, 0.5A; USB SERVICE load: 5Vdc, 2A, Optional Board load: 12Vdc, 5.5A.

B.2.5		TABLE: Input test							P
U (V)	Hz	I (A)	I rated (A)	P (W)	P rated (W)	Fuse No	I fuse (A)	Condition/status	
Test condition: HDMI mode									
90	50	4.644	--	408.9	--	FP1	4.644	1kHz sine wave signal input, adjust volume to 1/8 maximum attainable output power. The video signal is three vertical bar signals, adjust the brightness and contrast to maximum value. Internal speaker (6ohm*2) voltage: 3.60Vrms; USB Type-A load: 5Vdc, 0.5A; USB SERVICE load: 5Vdc, 2A; Optional board load: 12Vdc, 5.5A.	
90	60	4.619	--	414.7	--	FP1	4.619		
100	50	4.413	4.9/6.0	411.7	--	FP1	4.413		
100	60	4.137	4.9/6.0	411.9	--	FP1	4.137		
240	50	1.760	2.0/6.0	402.5	--	FP1	1.760		
240	60	1.755	2.0/6.0	403.0	--	FP1	1.755		
264	50	1.627	--	402.2	--	FP1	1.627		
264	60	1.611	--	402.8	--	FP1	1.611		
Test condition: DisplayPort1 mode									
90	50	4.598	--	404.8	--	FP1	4.598	1kHz sine wave signal input, adjust volume to 1/8 maximum	
90	60	4.573	--	410.6	--	FP1	4.573		
100	50	4.369	4.9/6.0	407.6	--	FP1	4.369		

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Clause		Requirement + Test				Result - Remark		Verdict
100	60	4.096	4.9/6.0	407.8	--	FP1	4.096	attainable output power. The video signal is three vertical bar signals, adjust the brightness and contrast to maximum value. Internal speaker (6ohm*2)voltage : 3.60Vrms; USB Type-A load: 5Vdc, 0.5A; USB SERVICE load: 5Vdc, 2A; Optional board load: 12Vdc, 5.5A.
240	50	1.742	2.0/6.0	398.5	--	FP1	1.742	
240	60	1.737	2.0/6.0	399.0	--	FP1	1.737	
264	50	1.609	--	398.2	--	FP1	1.609	
264	60	1.595	--	398.8	--	FP1	1.595	
Test condition: USB Type-A mode (Select internal speaker)								
90	50	4.602	--	405.2	--	FP1	4.602	1kHz sine wave signal input, adjust volume to 1/8 maximum attainable output power. The video signal is three vertical bar signals, adjust the brightness and contrast to maximum value. Internal speaker (6ohm*2) voltage: 3.60Vrms; USB Type-A load: 5Vdc, 0.5A; USB SERVICE load: 5Vdc, 2A; Optional board load: 12Vdc, 5.5A.
90	60	4.577	--	411.0	--	FP1	4.577	
100	50	4.373	4.9/6.0	408.0	--	FP1	4.373	
100	60	4.100	4.9/6.0	408.2	--	FP1	4.100	
240	50	1.744	2.0/6.0	398.9	--	FP1	1.744	
240	60	1.739	2.0/6.0	399.4	--	FP1	1.739	
264	50	1.612	--	398.6	--	FP1	1.612	
264	60	1.597	--	399.2	--	FP1	1.597	
Test condition: USB Type-A mode (Select external speaker)								
90	50	4.600	--	404.8	--	FP1	4.600	1kHz sine wave signal input,
90	60	4.572	--	410.8	--	FP1	4.572	

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Clause	Requirement + Test		Verdict

100	50	4.370	4.9/6.0	407.8	--	FP1	4.370	adjust volume to 1/8 maximum attainable output power. The video signal is three vertical bar signals, adjust the brightness and contrast to maximum value. External speaker (8ohm*2) voltage: 3.57Vrms; USB Type-A load: 5Vdc, 0.5A; USB SERVICE load: 5Vdc, 2A; Optional board load: 12Vdc, 5.5A.
100	60	4.098	4.9/6.0	408.0	--	FP1	4.098	
240	50	1.741	2.0/6.0	398.2	--	FP1	1.741	
240	60	1.735	2.0/6.0	399.0	--	FP1	1.735	
264	50	1.610	--	398.1	--	FP1	1.610	
264	60	1.592	--	399.0	--	FP1	1.592	

Supplementary information:

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

B.3, B.4		TABLE: Abnormal operating and fault condition tests					P
Ambient temperature T _{amb} (°C)..... :				25°C, if not specified			—
Power source for EUT: Manufacturer, model/type, outputrating .. :				--			—
Component No.	Condition	Supply voltage (V)	Test time	Fuse no.	Fuse current (A)	Observation	
Test condition: HDMI mode (Select external speaker)							
One speaker (External)	S-C	90	30min	FP1	4.780	External speaker shutdown immediately, others normal operation, Recoverable when fault removed, no hazard, all safeguards remained effective during and after abnormal condition.	
Test condition: HDMI mode (Select internal speaker)							
USB Type-A output	S-C	90	30min	FP1	4.630	USB Type-A output shutdown immediately, others normal operation, recoverable, no hazard.	
USB SERVICE	S-C	90	30min	FP1	4.611	USB SERVICE output shutdown immediately, others	

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Clause	Requirement + Test			Result - Remark		Verdict
output						normal operation, recoverable, no hazard.
Optional Board output	S-C	90	30min	FP1	4.410	Optional Board output shutdown immediately, others normal operation, recoverable, no hazard.
Speaker	Maximum attainable power	90	1h45min	FP1	4.815	Unit normal operation, no hazard. all safeguards remained effective during and after abnormal condition.
One speaker (Internal)	S-C	90	2h15min	FP1	4.789	Internal speaker shutdown immediately, others normal operation, Recoverable when fault removed, no hazard, all safeguards remained effective during and after abnormal condition.
USB SERVICE output	O-L	90	2h30min	FP1	4.644 → 4.664 → 4.611	USB SERVICE output overload to 2.4A and USB SERVICE shutdown at 2.5A, others normal operation, Recoverable when fault removed, no hazard, all safeguards remained effective during and after abnormal condition.
USB Type-A output	O-L	90	3h15min	FP1	4.644 → 4.671 → 4.630	USB Type-A output overload to 1.0A and USB shutdown at 1.1A, others normal operation, Recoverable when fault removed, no hazard, all safeguards remained effective during and after abnormal condition.
Optional Board output	O-L	90	4h07min	FP1	4.644 → 4.769 → 4.410	Optional Board output overload to 7.0A and Optional Board output shutdown at 7.1A, others normal operation, Recoverable when fault removed, no hazard, all safeguards remained effective during and after abnormal condition.
Ventilation	Blocked	90	1h59min	FP1	4.644	Unit normal operation, no hazard. all safeguards remained effective during and after abnormal condition.
Transformer TH2/TH3 (Across CH26)	O-L	90	5h09min	FP1	4.644 → 5.229	Transformer overload to 1.5A and panel shutdown at 1.6A, others normal operation, Recoverable when

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Clause	Requirement + Test			Result - Remark		Verdict
					→ 5.681 → 0.043	fault removed, no hazard. all safeguards remained effective during and after abnormal condition.
Transformer TH1 (Across CH22)	O-L	90	4h07min	FP1	4.644 → 4.767 → 4.924 → 0.043	Transformer overload to 2.0A and shutdown at 2.1A, Recoverable when fault removed, no hazard. all safeguards remained effective during and after abnormal condition.
Transformer TH1 (Across CH40)	O-L	90	4h13min	FP1	4.644 → 4.767 → 5.019 → 0.043	Transformer overload to 2.9A and shutdown at 3.0A, Recoverable when fault removed, no hazard. all safeguards remained effective during and after abnormal condition.
Transformer TF2 (Across CF36)	O-L	90	5h09min	FP1	4.644 → 4.709 → 4.831 → 0.043	Transformer overload to 4.5A and shutdown at 4.6A, Recoverable when fault removed, no hazard. all safeguards remained effective during and after abnormal condition.
DC fan near power board	Locked	90	2h07min	FP1	4.644 → 4.640	Unit normal operation, no hazard. all safeguards remained effective during and after abnormal condition.
DC fan near main board	Locked	90	1h27min	FP1	4.644 → 4.641	Unit normal operation, no hazard. all safeguards remained effective during and after abnormal condition.
DC fan near local dimming board	Locked	90	1h40min	FP1	4.644 → 4.640	Unit normal operation, no hazard. all safeguards remained effective during and after abnormal condition.
RV2	S-C	264	1s	FP1	0	Fuse FP1 opened immediately, no hazard.
BD1 pin 1-2	S-C	264	1s	FP1	0	Fuse FP1 opened immediately, no hazard.
CP18	S-C	264	1s	FP1	0	Fuse FP1 opened immediately, no hazard.
QP4 pin G-S	S-C	264	30min	FP1	0.047	Unit shutdown immediately and recoverable, no hazard.

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Clause	Requirement + Test			Result - Remark		Verdict
QP4 pin G-D	S-C	264	1s	FP1	0	Fuse FP1 opened immediately, QP4 damaged, no hazard.
QP4 pin D-S	S-C	264	1s	FP1	0	Fuse FP1 opened immediately, QP4 damaged, no hazard..
RP25	S-C	264	30min	FP1	1.620	Unit normal operation, no hazard.
QP1 pin G-S	S-C	264	30min	FP1	0.045	Unit shutdown immediately and recoverable, no hazard.
QP1 pin G-D	S-C	264	1s	FP1	0	Fuse FP1 opened immediately, QP1 damaged, no hazard.
QP1 pin D-S	S-C	264	1s	FP1	0	Fuse FP1 opened immediately, QP1 damaged, no hazard.
RP23	S-C	264	30min	FP1	1.622	Unit normal operation, no hazard.
QH6 pin G-S	S-C	264	30min	FP1	0.312	The panel shutdown immediately, others normal operation, recoverable, no hazard.
QH6 pin G-D	S-C	264	1s	FP1	0	Fuse FP1 opened immediately, QH6 damaged, no hazard.
QH6 pin D-S	S-C	264	1s	FP1	0	Fuse FP1 opened immediately, QH6 damaged, no hazard.
QH8 pin G-S	S-C	264	30min	FP1	0.310	The panel shutdown immediately, others normal operation, recoverable, no hazard.
QH8 pin G-D	S-C	264	1s	FP1	0	Fuse FP1 opened immediately, QH6 and QH8 damaged, no hazard.
QH8 pin D-S	S-C	264	1s	FP1	0	Fuse FP1 opened immediately, QH6 and QH8 damaged, no hazard.
QH3 pin G-S	S-C	264	30min	FP1	0.048	Unit shutdown immediately and recoverable, no hazard.
QH3 pin G-D	S-C	264	1s	FP1	0	Fuse FP1 opened immediately, QH3 damaged, no hazard.
QH3 pin D-S	S-C	264	1s	FP1	0	Fuse FP1 opened immediately, QH3 damaged, no hazard.
QF4 pin G-S	S-C	264	30min	FP1	0.047	Unit shutdown immediately and recoverable, no hazard.
QF4 pin G-D	S-C	264	1s	FP1	0	Fuse FP1 opened immediately, QF4 damaged, no hazard.
QF4 pin D-S	S-C	264	1s	FP1	0	Fuse FP1 opened immediately, QF4 damaged,

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Clause	Requirement + Test			Result - Remark		Verdict

						no hazard.
RF55	S-C	264	30min	FP1	1.624	Unit normal operation, no hazard.
UH4 pin 12-10	S-C	264	30min	FP1	0.318	The panel shutdown immediately, others normal operation, recoverable, no hazard.
UH4 pin 12-4	S-C	264	30min	FP1	0.316	The panel shutdown immediately, others normal operation, recoverable, no hazard.
UH1 pin 12-10	S-C	264	30min	FP1	0.050	Unit shutdown immediately and recoverable, no hazard.
UH1 pin 12-4	S-C	264	30min	FP1	0.046	Unit shutdown immediately and recoverable, no hazard.
UF3 pin 8-2	S-C	264	30min	FP1	0.048	Unit shutdown immediately and recoverable, no hazard.
UF3 pin 8-1	S-C	264	30min	FP1	0.049	Unit shutdown immediately and recoverable, no hazard.
UP4 pin 8-7	S-C	264	30min	FP1	0.047	Unit shutdown immediately and recoverable, no hazard.
UP4 pin 8-6	S-C	264	30min	FP1	0.045	Unit shutdown immediately and recoverable, no hazard.
UP1 pin 8-7	S-C	264	30min	FP1	0.050	Unit shutdown immediately and recoverable, no hazard.
UP1 pin 8-6	S-C	264	30min	FP1	0.047	Unit shutdown immediately and recoverable, no hazard.
PF1 pin 1-2	S-C	264	30min	FP1	0.045	Unit shutdown immediately and recoverable, no hazard.
PF1 pin 3-4	S-C	264	30min	FP1	1.621	Unit normal operation, no hazard.
PF1 pin 1	O-C	264	30min	FP1	0.046	Unit shutdown immediately and recoverable, no hazard.
PF1 pin 3	O-C	264	30min	FP1	1.624	Unit normal operation, no hazard.
PF2 pin 1-2	S-C	264	30min	FP1	0.047	Unit shutdown immediately and recoverable, no hazard.
PF2 pin 3-4	S-C	264	30min	FP1	1.624	Unit normal operation, no hazard.
PF2 pin 1	O-C	264	30min	FP1	0.052	Unit shutdown immediately and recoverable, no hazard.
PF2 pin 3	O-C	264	30min	FP1	1.621	Unit normal operation, no hazard.
PF3 pin 1-2	S-C	264	30min	FP1	0.046	Unit shutdown immediately and recoverable, no hazard.
PF3 pin 3-4	S-C	264	30min	FP1	1.624	Unit normal operation, no hazard.
PF3 pin 1	O-C	264	30min	FP1	0.045	Unit shutdown immediately

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Clause	Requirement + Test			Result - Remark		Verdict

						and recoverable, no hazard.
PF3 pin 3	O-C	264	30min	FP1	1.624	Unit normal operation, no hazard.
PH3 pin 1-2	S-C	264	30min	FP1	0.046	Unit shutdown immediately and recoverable, no hazard.
PH3 pin 3-4	S-C	264	30min	FP1	1.622	Unit normal operation, no hazard.
PH3 pin 1	O-C	264	30min	FP1	0.048	Unit shutdown immediately and recoverable, no hazard.
PH3 pin 3	O-C	264	30min	FP1	1.624	Unit normal operation, no hazard.
PH1 pin 1-2	S-C	264	30min	FP1	0.312	The panel shutdown immediately, others normal operation, recoverable, no hazard.
PH1 pin 3-4	S-C	264	30min	FP1	0.316	The panel shutdown immediately, others normal operation, recoverable, no hazard.
PH1 pin 1	O-C	264	30min	FP1	0.312	The panel shutdown immediately, others normal operation, recoverable, no hazard.
PH1 pin 3	O-C	264	30min	FP1	0.311	The panel shutdown immediately, others normal operation, recoverable, no hazard.
PH2 pin 1-2	S-C	264	30min	FP1	0.310	The panel shutdown immediately, others normal operation, recoverable, no hazard.
PH2 pin 3-4	S-C	264	30min	FP1	0.313	The panel shutdown immediately, others normal operation, recoverable, no hazard.
PH2 pin 1	O-C	264	30min	FP1	0.315	The panel shutdown immediately, others normal operation, recoverable, no hazard.
PH2 pin 3	O-C	264	30min	FP1	0.312	The panel shutdown immediately, others normal operation, recoverable, no hazard.
PH4 pin 1-2	S-C	264	30min	FP1	0.045	Unit shutdown immediately and recoverable, no hazard.
PH4 pin 3-4	S-C	264	30min	FP1	0.052	Unit shutdown immediately and recoverable, no hazard.
PH4 pin 1	O-C	264	30min	FP1	0.048	Unit shutdown immediately and recoverable, no hazard.

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Clause	Requirement + Test			Result - Remark		Verdict

PH4 pin 3	O-C	264	30min	FP1	0.049	Unit shutdown immediately and recoverable, no hazard.
PH5 pin 1-2	S-C	264	30min	FP1	0.046	Unit shutdown immediately and recoverable, no hazard.
PH5 pin 3-4	S-C	264	30min	FP1	0.048	Unit shutdown immediately and recoverable, no hazard.
PH5 pin 1	O-C	264	30min	FP1	0.042	Unit shutdown immediately and recoverable, no hazard.
PH5 pin 3	O-C	264	30min	FP1	0.047	Unit shutdown immediately and recoverable, no hazard.
TH1 pin 2-4	S-C	264	30min	FP1	0.046	Unit shutdown immediately and recoverable, no hazard.
TH1 pin 8-13	S-C	264	30min	FP1	0.045	Unit shutdown immediately and recoverable, no hazard.
TH1 pin 8-14	S-C	264	30min	FP1	0.045	Unit shutdown immediately and recoverable, no hazard.
TH1 pin 9,10-11,12	S-C	264	30min	FP1	0.046	Unit shutdown immediately and recoverable, no hazard.
TH1 pin 7-11,12	S-C	264	30min	FP1	0.046	Unit shutdown immediately and recoverable, no hazard.
DH5 pin 1-2	S-C	264	30min	FP1	0.046	Unit shutdown immediately and recoverable, no hazard.
DH5 pin 2-3	S-C	264	30min	FP1	0.045	Unit shutdown immediately and recoverable, no hazard.
CH38	S-C	264	30min	FP1	0.048	Unit shutdown immediately and recoverable, no hazard.
QH12 pin 2-3	S-C	264	30min	FP1	0.046	Unit shutdown immediately and recoverable, no hazard.
QH13 pin 2-3	S-C	264	30min	FP1	0.045	Unit shutdown immediately and recoverable, no hazard.
CH22	S-C	264	30min	FP1	0.048	Unit shutdown immediately and recoverable, no hazard.
TF2 pin 6-9	S-C	264	30min	FP1	0.044	Unit shutdown immediately and recoverable, no hazard.
TF2 pin 10-11	S-C	264	30min	FP1	0.046	Unit shutdown immediately and recoverable, no hazard.
TF2 pin 1,2-4,5	S-C	264	30min	FP1	0.046	Unit shutdown immediately and recoverable, no hazard.
DF13 pin 1,3-2	S-C	264	30min	FP1	0.047	Unit shutdown immediately and recoverable, no hazard.
CF36	S-C	264	30min	FP1	0.048	Unit shutdown immediately and recoverable, no hazard.
TH2/TH3 pin 2-5	S-C	264	30min	FP1	1.624	Unit normal operation, no hazard.
TH2/TH3 pin 8-	S-C	264	30min	FP1	0.315	The panel shutdown

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Clause	Requirement + Test				Result - Remark	Verdict

11						immediately, others normal operation, recoverable, no hazard.
DH11 pin 1-2	S-C	264	30min	FP1	0.312	The panel shutdown immediately, others normal operation, recoverable, no hazard.
DH6 pin 2-3	S-C	264	30min	FP1	0.314	The panel shutdown immediately, others normal operation, recoverable, no hazard.
CH26	S-C	264	30min	FP1	0.313	The panel shutdown immediately, others normal operation, recoverable, no hazard.
LED "+" to "-"	S-C	264	30min	FP1	0.315	The panel shutdown immediately, others normal operation, recoverable, no hazard.
LED "+" to CN201 "+5VSB"	S-C	264	30min	FP1	0.047	Unit shutdown immediately and recoverable, no hazard.
LED "+" to CN203 "+12V"	S-C	264	30min	FP1	0.047	Unit shutdown immediately and recoverable, no hazard.
LED "+" to CN203 "+24V"	S-C	264	30min	FP1	0.049	Unit shutdown immediately and recoverable, no hazard.
UA1 pin 2,3-1	S-C	264	30min	FP1	1.610	Speakers shutdown immediately, others normal operation, Recoverable when fault removed, no hazard, all safeguards remained effective during and after abnormal condition.

Supplementary information:

- 1) S-C: Short circuit; O-C: Open circuit; O-L: Overloaded.
- 2) The test result shown all safeguards remained effective and didn't lead to a single fault condition during abnormal operating condition; In addition all safeguards complied with applicable requirements in this standard after restoration of normal operating conditions.
- 3) The test result showed no Class 1 or 2 energy source become Class 3 level during and after single fault condition.
- 4) The overloaded condition is applied according to annex G.5.3.3.
- 5) The same as result test conducted on all fuse sources, all fuse sources see table 4.1.2 for details of CB test report for power board.
- 6) For component damaged without fuse opened condition have been repeated twice (three tests total) with same result
- 7) For USB output connector: During and after abnormal and single fault operating condition test, the output voltage did not increase by more than 3V or 10% which one is higher of its rated output voltage under normal operating condition; For Satellite connector: During and after abnormal and single fault operating condition test, the output voltage did not increase by more than 10% of its rated output voltage under normal operating condition.

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Clause	Requirement + Test	Result - Remark	Verdict

8) For T-couple and Temp.(°C), see table 5.4.1.4, 9.3, B.1.5, B.2.6 for details.

M.3	TABLE: Protection circuits for batteries provided within the equipment						P
Is it possible to install the battery in a reverse polarity position? :				No		—	
Equipment Specification	Charging						
	Voltage (V)			Current (A)			
	100-240Vac			5.4-2.1A (6.0A FOR MEXICO)			
Manufacturer/type	Battery specification						
	Non-rechargeable batteries		Rechargeable batteries				
	Discharging current (A)	Unintentional charging current (A)	Charging		Discharging current (A)	Reverse charging current (A)	
			Voltage (V)	Current (A)			
Korchip Corporation / DCLT5R5105CF	--	--	5.5V	50mA	70mA	--	
Note: The tests of M.3.2 are applicable only when above appropriate data is not available.							
Specified battery temperature (°C)..... :				--			
Component No.	Fault condition	Charge/ discharge mode	Test time	Temp. (°C)	Current (A)	Voltage (V)	Observation
RS7	SC	Charge	7hours	--	3.5mA	5.42V	NL, NS, NE, NF
US3 pin 3-8	SC	Charge	7hours	--	9.1mA	5.41V	NL, NS, NE, NF
RS7	SC	Discharge	7hours	--	0.6uA	5.42V	NL, NS, NE, NF
US3 pin 3-8	SC	Discharge	7hours	--	330uA	5.44V	NL, NS, NE, NF
Supplementary information:							
Abbreviation: SC= short circuit; OC= open circuit NL= no chemical leakage; NS= no spillage of liquid; NE= no explosion; NF= no emission of flame or expulsion of molten metal.							

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

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Clause	Requirement + Test	Result - Remark	Verdict

specified charging temperature.

Q.1	TABLE: Circuits intended for interconnection with building wiring (LPS)						P
Output Circuit	Condition	U _{oc} (V)	Time (s)	I _{sc} (A)		S (VA)	
				Meas.	Limit	Meas.	Limit
AUDIO OUT port (CON1) All pins to GND	Normal	0	After 5s	0	8	0	100
LAN 1/2 port (CON16) Pin A9/A11/B9 /B11 to GND	Normal	3.21	After 5s	0	8	0	100
LAN 1/2 port (CON16) Pin others to GND	Normal	0	After 5s	0	8	0	100
REMOTE IN port (CN407) Pin 1 to GND	Normal	3.21	After 5s	2.0	8	3.8	100
REMOTE IN port (CN407) Pin 1 to GND	Single fault (UM53 pin 4-3 short)	5.15	After 5s	2.8	8	9.3	100
REMOTE IN port (CN407) Pin others to GND	Normal	0	After 5s	0	8	0	100
DisplayPort IN 1/2 port (CN505/CN506) Pin 20 to GND	Normal	3.37	After 5s	0.8	8	1.6	100
DisplayPort IN 1/2 port (CN505/CN506) Pin 20 to GND	Single fault (U527/U530 pin 5-1 short)	3.37	After 5s	1.2	8	2.4	100

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Clause	Requirement + Test	Result - Remark				Verdict	
DisplayPort IN 1/2 port (CN505/CN506) Pin 20 to GND	Single fault (U528/U525 pin 2-3 short)	5.02	After 5s	0.8	8	2.5	100
DisplayPort IN 1/2 port (CN505/CN506) Pin others to GND	Normal	0	After 5s	0	8	0	100
DisplayPort OUT port (CN507) Pin 20 to GND	Normal	3.28	After 5s	0.8	8	1.7	100
DisplayPort OUT port (CN507) Pin 20 to GND	Single fault (U532 pin 5-1 short)	3.28	After 5s	1.2	8	2.4	100
DisplayPort OUT port (CN507) Pin 20 to GND	Single fault (U533 pin 2-3 short)	5.11	After 5s	0.8	8	2.6	100
DisplayPort OUT port (CN507) Pin others to GND	Normal	0	After 5s	0	8	0	100
HDMI IN 1/2 port (CN501/CN502) Pin 18 to GND	Normal	4.89	After 5s	0	8	0	100
HDMI IN 1/2 port (CN501/CN502) Pin others to GND	Normal	0	After 5s	0	8	0	100
HDMI OUT port (CN504) Pin 18 to GND	Normal	5.19	After 5s	0.1	8	0.5	100

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Clause	Requirement + Test			Result - Remark			Verdict
HDMI OUT port (CN504) Pin others to GND	Normal	0	After 5s	0	8	0	100
USB Type-A port (CN706) Pin + to -	Normal	5.10	After 5s	1.8	8	7.5	100
USB Type-A port (CN706) Pin + to -	Single fault (U717 pin 1-5 short)	5.10 (USB Type-A normal operation)	After 5s	2.3 (USB Type-A normal operation)	8	10.1 (USB Type-A normal operation)	100
USB Type-B port (CN704) All Pins to GND	Normal	0	After 5s	0	8	0	100
USB SERVICE port (CN406) Pin + to -	Normal	5.09	After 5s	2.5	8	10.5	100
USB SERVICE port (CN406) Pin + to -	Single Fault (U420 pin 1-6 short)	5.09 (USB SERVICE normal operation)	After 5s	4.0 (USB SERVICE normal operation)	8	17.2 (USB SERVICE normal operation)	100
RS-232C port (CN408) all Pin to GND	Normal	0	After 5s	0	8	0	100
External speaker port (JA3) “+” to “-”	Normal	3.57	After 5s	0.62	8	2.16	100
External speaker port (JA3) “+” to “-”	Abnormal (Max. attainable power)	10.10	After 5s	2.04	8	18.59	100
External speaker port (JA3) “+” to “-”	Single fault (UA1 pin 2,3-1 short)	0 (Speaker shutdown)	After 5s	0 (Speaker shutdown)	8	0 (Speaker shutdown)	100
Supplementary Information:							
SC= short circuit; OC= open circuit.							

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Clause	Requirement + Test	Result - Remark	Verdict

T.2, T.3, T.4, T.5		TABLE: Steady force test					P
Part/Location	Material	Thickness (mm)	Probe	Force (N)	Test Duration (s)	Observation	
Enclosure top, closed to transformer (T.5)	Metal	See table 4.1.2	--	250	5	Enclosure remained intact, safeguards remained effectively	
Enclosure side (T.5)	Metal	See table 4.1.2	--	250	5	Enclosure remained intact, safeguards remained effectively	
Enclosure bottom, closed to transformer (T.5)	Metal	See table 4.1.2	--	250	5	Enclosure remained intact, safeguards remained effectively	
Enclosure rear, closed to transformer (T.5)	Metal	See table 4.1.2	--	250	5	Enclosure remained intact, safeguards remained effectively	
Enclosure openings (T.3)	Metal	See table 4.1.2	--	30	5	Enclosure remained intact, safeguards remained effectively	
Internal components (T.2)	--	--	--	10	5	No insulation breakdown. No reduction the clearances and creepage distances	
LCD panel	Glass*	See table 4.1.2	--	10	--	Safeguards remained effectively	
Supplementary information:							
*Tests were performed on product with each source listed in table 4.1.2.							

T.6, T.9	TABLE: Impact test				P
Location/part	Material	Thickness (mm)	Height (mm)	Observation	
Enclosure top, closed to transformer (T.6)	Metal	See table 4.1.2	1300	Enclosure remained intact, safeguards remained effectively	

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Clause	Requirement + Test	Result - Remark	Verdict

Enclosure side (T.6)	Metal	See table 4.1.2	1300	Enclosure remained intact, safeguards remained effectively
Enclosure bottom, closed to transformer (T.6)	Metal	See table 4.1.2	1300	Enclosure remained intact, safeguards remained effectively
Enclosure rear, closed to transformer (T.6)	Metal	See table 4.1.2	1300	Enclosure remained intact, safeguards remained effectively
LCD panel (T.9)	Glass*	See table 4.1.2	204	Safeguards remained effectively

Supplementary information:

*Tests were performed on product with each source listed in table 4.1.2.

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

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

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

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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⁾	
Mains cord set (Saudi Arabia) (Optional)	--	--	--	--	--	
Plug	I-Sheng	SP-62	5A/10A/13A, 250V	BS 1363-1; SASO 2203:2018	CVC	
(Alternative)	I-Sheng	SP-65	5A/10A, 250V	BS 1363-1; SASO 2203:2018	CVC	
(Alternative)	Interchangeable	Interchangeable	5A/10A/13A, 250V	BS 1363-1; SASO 2203:2018	CVC or other certification marks	
Cord	I-Sheng	H05VV-F	3X0.75mm ² , 3X1.0mm ² , 3X1.5mm ²	EN 50525-2-11; IEC 60227-5	VDE	
(Alternative)	I-Sheng	H03VV-F	3X0.75mm ²	EN 50525-2-11; IEC 60227-5	VDE	
(Alternative)	I-Sheng	H05RR-F	3X0.75mm ²	EN 50525-2-21; IEC 60245-4	VDE	
(Alternative)	Interchangeable	Interchangeable	3X0.75mm ² , 3X1.0mm ² , 3X1.5mm ²	EN 50525-2-11; IEC 60227-5; IEC 60245-4	VDE or other certification marks	
Connector	I-Sheng	IS-14	10A, 250Vac	IEC 60320-1	ENEC	
(Alternative)	Interchangeable	Interchangeable	10A, 250Vac	IEC 60320-1	ENEC or other certification marks	
Metal enclosure	Interchangeable	Interchangeable	Min. 0.81mm thickness	--	--	
Base stand (optional)	Interchangeable	Interchangeable	Metal, two provided,	--	--	
- Base stand non-slip mat	SHIN-ETSU CHEMICAL CO LTD	KE-9510@, KE-9511@	Silicone, HB, min. 0.75mm thickness, 150°C	UL 94, UL 746C	UL	
- Adhesive (for base stand non- slip mat)	3M	9080	90°C, Comply with P.4.2 test	IEC/EN 62368-1	Tested with appliance	

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
LCD panel	SHENZHEN KTC COMMERCIAL DISPLAY TECHNOLOGY CO., LTD	K750WD97	75 inch TFT LCD, with LED backlight, Power consumption: Total 227.4W(Typ.)[Logic 7.8W(mosaic 7X5)/BL 219.6W]	IEC/EN 62368-1	Tested with appliance
Speaker	Interchangeable	Interchangeable	Two speakers, each 6 ohm, 12W max.	--	--
AC inlet (CN1)	Zhe Jiang Bei Er Jia Electronic Co., Ltd.	ST-A01-001L, ST-A01-002L, ST-A01-003J, ST-A01-003K	10A, 250Vac, Standard sheet C14 type, min. 70°C	IEC/EN/UL 60320-1	VDE, UL
(Alternative)	Zhe Jiang Bei Er Jia Electronic Co., Ltd.	ST-A01-003JC, ST-A01-003JD, ST-A01-003JE, ST-A01-003JK, ST-A01-003JL	10A, 250Vac, Standard sheet C14 type, min. 70°C	IEC/EN/UL 60320-1	VDE, UL
(Alternative)	LECI Electronics Co., Ltd	DB-14, DB-14-1, DB-14-2, DB-14-3, DB-14-5	10A, 250Vac, Standard sheet C14 type, min. 70°C	IEC/EN/UL 60320-1	VDE, UL
(Alternative)	Yueqing Yanhui Electronic Co., Ltd	DB-14	10A, 250Vac, Standard sheet C14 type, min. 70°C	IEC/EN/UL 60320-1	VDE, UL
(Alternative)	Steady Electronics Corporation	2107	10A, 250Vac, Standard sheet C14 type, min. 70°C	IEC/EN/UL 60320-1	VDE, UL
Power switch	ZHE JIANG BEI ER JIA ELECTRONIC CO LTD	PS8A	VDE: 6(4)A, 250Vac; UL: 8A 250Vac, 10A 125Vac; min. 105°C, Endurance minimum 10000 cycle, PD2, Glow-wire test 850°C	IEC/ EN 61058-1; UL 61058-1	VDE, UL
(Alternative)	ZHE JIANG BEI ER JIA ELECTRONIC CO LTD	PS8A-11	VDE: 12(4)A 250Vac, 8A/108A 250Vac; UL: 12(6)A, 125/250Vac; min. 125°C, Endurance minimum 10000 cycle, PD2, Glow-wire test 850°C	IEC/ EN 61058-1; UL 61058-1	VDE, UL

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Clause	Requirement + Test		Result - Remark		Verdict
(Alternative)	Zhejiang Yuyang Technology Co., Ltd.	RS-2206	6(4)A, 250Vac, min. 85°C, Endurance minimum 10000 cycle, PD2, Glow-wire test 850°C	IEC/ EN 61058-1; UL 61058-1	TUV, UL
(Alternative)	Zhejiang LECI Electronics Co., Ltd.	RS601 series	VDE: 6(4)A 250Vac, 8/108A 250Vac; UL: 10.1A 125Vac, 6A 250Vac; min. 105°C, Endurance minimum 10000 cycle, PD2, Glow-wire test 850°C	IEC/ EN 61058-1; UL 61058-1	VDE, UL
Primary lead wire (AC inlet to power switch)	DONGGUAN ZELONGKANG WIRE CO., LTD	1617	600V, 22 AWG, 105°C, VW-1	UL 758	UL
(Alternative)	Interchangeable	Interchangeable	Min. 300V, min. 22AWG, min. 80°C, VW-1	UL 758	UL
Primary lead wire (Power switch to power board)	DONGGUAN ZELONGKANG WIRE CO., LTD	1617	600V, 22 AWG, 105°C, VW-1	UL 758	UL
(Alternative)	Interchangeable	Interchangeable	Min. 300V, min. 22 AWG, min. 80°C, VW-1	UL 758	UL
Protective bonding wire	DONGGUAN ZELONGKANG WIRE CO., LTD	1015	600V, 18 AWG, 105°C, VW-1, green and yellow	UL 758	UL
(Alternative)	Interchangeable	Interchangeable	Min. 300V, min. 18 AWG, min. 80°C, VW-1, green and yellow	UL 758	UL
Internal secondary wire (Power board output)	Interchangeable	Interchangeable	Min. 300V, min. 22 AWG, min. 80°C, VW-1	UL 758	UL
Internal secondary wire (except power board output)	Interchangeable	Interchangeable	Min. 30V, min. 32 AWG, min. 80°C, VW-1	UL 758	UL
PCB (except power board)	Shenzhen Stariver Circuits Co Ltd	SR-01	V-0, 125°C	UL 796	UL
(Alternative)	Interchangeable	Interchangeable	V-1 or better, min. 105°C	UL 796	UL

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
RTC. Cap. (CSE1)	Korchip Corporation	DCLT5R5105CF	1.0F, 5.5V, max. charge current 50mA, max. discharge current 70mA	IEC 62368-1	Tested with appliance
DC fan	DONGGUAN WANHANG ELECTRONICS TECHNOLOGY CO LTD	WSA06010F12M	12 Vdc, 0.2 A, min. 0.42 m³/min	IEC/EN 62368-1; UL 507	TUV, UL
Built-in Switching Power Supply	Shenzhen MEGMEET Electrical Co., Ltd.	MP580DM-M751	Input: 100-240V~, 50/60Hz, 7.0A Max. Output: STB (5.2Vdc, 8.0A); V12 (12Vdc, 15A); V24 (24Vdc, 2.0A); LED (49.5V-60.3Vdc, Max. 4.0A)	IEC/EN 62368-1	CB by UL (Certif. No.: DK-132150-UL. Report No.: 2208221161 CB-1)
Supplementary information:					
¹⁾ Provided evidence ensures the agreed level of compliance. See OD-2039. ²⁾ License available upon request.					

Attachment 1

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

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IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
3.3.19.1	momentary exposure level, MEL metric for estimating 1 s sound exposure level from the HD 483-1 S2 test signal applied to both channels, based on EN 50332-1:2013, 4.2. Note 1 to entry: MEL is measured as A-weighted levels in dB. Note 2 to entry: See B.3 of EN 50332-3:2017 for additional information.		N/A
3.3.19.3	sound exposure, E A-weighted sound pressure (p) squared and integrated over a stated period of time, T Note 1 to entry: The SI unit is Pa ² s. $E = \int_0^T p(t)^2 dt$		N/A
3.3.19.4	sound exposure level, SEL logarithmic measure of sound exposure relative to a reference value, E_0 , typically the 1 kHz threshold of hearing in humans. Note 1 to entry: SEL is measured as A-weighted levels in dB. $SEL = 10 \lg \left(\frac{E}{E_0} \right) \text{ dB}$ Note 2 to entry: See B.4 of EN 50332-3:2017 for additional information.		N/A
3.3.19.5	digital signal level relative to full scale, dBFS levels reported in dBFS are always r.m.s. Full scale level, 0 dBFS, is the level of a dc-free 997-Hz sine wave whose undithered positive peak value is positive digital full scale, leaving the code corresponding to negative digital full scale unused Note 1 to entry: It is invalid to use dBFS for non-r.m.s. levels. Because the definition of full scale is based on a sine wave, the level of signals with a crest factor lower than that of a sine wave may exceed 0 dBFS. In particular, square wave signals may reach +3,01 dBFS.		N/A
2	Modification to Clause 10		
10.6	Safeguards against acoustic energy sources Replace 10.6 of IEC 62368-1 with the following:		N/A
10.6.1.1	Introduction Safeguard requirements for protection against long-term exposure to excessive sound pressure levels from personal music players closely coupled		N/A

Attachment 1

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	to the ear are specified below. Requirements for earphones and headphones intended for use with personal music players are also covered. A personal music player is a portable equipment intended for use by an ordinary person, that: – is designed to allow the user to listen to audio or audiovisual content / material; and – uses a listening device, such as headphones or earphones that can be worn in or on or around the ears; and – has a player that can be body worn (of a size suitable to be carried in a clothing pocket) and is intended for the user to walk around with while in continuous use (for example, on a street, in a subway, at an airport, etc.). EXAMPLES Portable CD players, MP3 audio players, mobile phones with MP3 type features, PDAs or similar equipment. Personal music players shall comply with the requirements of either 10.6.2 or 10.6.3. NOTE 1 Protection against acoustic energy sources from telecom applications is referenced to ITU-T P.360. NOTE 2 It is the intention of the Committee to allow the alternative methods for now, but to only use the dose measurement method as given in 10.6.5 in future. Therefore, manufacturers are encouraged to implement 10.6.5 as soon as possible. Listening devices sold separately shall comply with the requirements of 10.6.6. These requirements are valid for music or video mode only. The requirements do not apply to: – professional equipment; NOTE 3 Professional equipment is equipment sold through special sales channels. All products sold through normal electronics stores are considered not to be professional equipment. – hearing aid equipment and other devices for assistive listening; – the following type of analogue personal music players: • long distance radio receiver (for example, a multiband radio receiver or world band radio receiver, an AM radio receiver), and • cassette player/recorder; NOTE 4 This exemption has been allowed because this technology is falling out of use and it is expected that within a few years it will no longer exist. This exemption will not be extended to other technologies. – a player while connected to an external amplifier		

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

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10.6.2.2	RS1 limits (to be superseded, see 10.6.3.2) RS1 is a class 1 acoustic energy source that does not exceed the following: – for equipment provided as a package (player with its listening device), and with a proprietary connector between the player and its listening device, or where the combination of player and listening device is known by other means such as setting or automatic detection, the $L_{Aeq,T}$ acoustic output shall be ≤ 85 dB when playing the fixed “programme simulation noise” described in EN 50332-1. – for equipment provided with a standardized connector (for example, a 3,5 phone jack) that allows connection to a listening device for general use, the unweighted r.m.s. output voltage shall be ≤ 27 mV (analogue interface) or -25 dBFS (digital interface) when playing the fixed “programme simulation noise” described in EN 50332-1. – The RS1 limits will be updated for all devices as per 10.6.3.2.		N/A
10.6.2.3	RS2 limits (to be superseded, see 10.6.3.3) RS2 is a class 2 acoustic energy source that does not exceed the following: – for equipment provided as a package (player with its listening device), and with a proprietary connector between the player and its listening device, or when the combination of player and listening device is known by other means such as setting or automatic 130 detection, the $L_{Aeq,T}$ acoustic output shall be ≤ 100 dB(A) when playing the fixed “programme simulation noise” as described in EN 50332-1. – for equipment provided with a standardized connector (for example, a 3,5 phone jack) that allows connection to a listening device for general use, the unweighted r.m.s. output voltage shall be ≤ 150 mV (analogue interface) or -10 dBFS (digital interface) when playing the fixed “programme simulation noise” as described in EN 50332-1.		N/A
10.6.2.4	RS3 limits RS3 is a class 3 acoustic energy source that exceeds RS2 limits.		N/A
10.6.3	Classification of devices (new)		N/A
10.6.3.1	General Previous limits (10.6.2) created abundant false negative and false positive PMP sound level warnings. New limits, compliant with The Commission Decision of 23 June 2009, are given		N/A

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

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

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	Personal music players shall give the warnings as provided below when tested according to EN 50332-3, using the limits from this clause. The manufacturer may offer optional settings to allow the users to modify when and how they wish to receive the notifications and warnings to promote a better user experience without defeating the safeguards. This allows the users to be informed in a method that best meets their physical capabilities and device usage needs. If such optional settings are offered, an administrator (for example, parental restrictions, business/educational administrators, etc.) shall be able to lock any optional settings into a specific configuration. The personal music player shall be supplied with easy to understand explanation to the user of the dose management system, the risks involved, and how to use the system safely. The user shall be made aware that other sources may significantly contribute to their sound exposure, for example work, transportation, concerts, clubs, cinema, car races, etc.		
10.6.5.2	Dose-based warning and requirements When a dose of 100 % <i>CSD</i> is reached, and at least at every 100 % further increase of <i>CSD</i>, the device shall warn the user and require an acknowledgement. In case the user does not acknowledge, the output level shall automatically decrease to compliance with class RS1. The warning shall at least clearly indicate that listening above 100 % <i>CSD</i> leads to the risk of hearing damage or loss.		N/A
10.6.5.3	Exposure-based requirements With only dose-based requirements, cause and effect could be far separated in time, defying the purpose of educating users about safe listening practice. In addition to dose-based requirements, a PMP shall therefore also put a limit to the short-term sound level a user can listen at. The exposure-based limiter (EL) shall automatically reduce the sound level not to exceed 100 dB(A) or 150 mV integrated over the past 180 s, based on methodology defined in EN 50332-3. The EL settling time (time from starting level reduction to reaching target output) shall be 10 s or faster. Test of EL functionality is conducted according to		N/A

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	EN 50332-3, using the limits from this clause. For equipment provided as a package (player with its listening device), the level integrated over 180 s shall be 100 dB or lower. For equipment provided with a standardized connector, the unweighted level integrated over 180 s shall be no more than 150 mV for an analogue interface and no more than -10 dBFS for a digital interface. NOTE In case the source is known not to be music (or test signal), the EL may be disabled.		
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10.6.6	Requirements for listening devices (headphones, earphones, etc.)		N/A
10.6.6.1	Corded listening devices with analogue input With 94 dB L_{Aeq} acoustic pressure output of the listening device, and with the volume and sound settings in the listening device (for example, built-in volume level control, additional sound features like equalization, etc.) set to the combination of positions that maximize the measured acoustic output, the input voltage of the listening device when playing the fixed “programme simulation noise” as described in EN 50332-1 shall be ≥ 75 mV. NOTE The values of 94 dB and 75 mV correspond with 85 dB and 27 mV or 100 dB and 150 mV.		N/A
10.6.6.2	Corded listening devices with digital input With any playing device playing the fixed “programme simulation noise” described in EN 50332-1, and with the volume and sound settings in the listening device (for example, built-in volume level control, additional sound features like equalization, etc.) set to the combination of positions that maximize the measured acoustic output, the $L_{Aeq,T}$ acoustic output of the listening device shall be ≤ 100 dB with an input signal of -10 dBFS.		N/A
10.6.6.3	Cordless listening devices In cordless mode, – with any playing and transmitting device playing the fixed programme simulation noise described in EN 50332-1; and – respecting the cordless transmission standards, where an air interface standard exists that specifies the equivalent acoustic level; and – with volume and sound settings in the receiving device (for example, built-in volume level control, additional sound features like equalization, etc.) set to the combination of positions that maximize the measured acoustic output for the above mentioned		N/A

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	programme simulation noise, the $L_{Aeq,T}$ acoustic output of the listening device shall be ≤ 100 dB with an input signal of -10 dBFS.						
10.6.6.4	Measurement method <i>Measurements shall be made in accordance with EN 50332-2 as applicable.</i>						N/A
3	Modification to the whole document						
	Delete all the “country” notes in the reference document according to the following list:						N/A
	0.2.1	Note 1 and 2	1	Note 4 and 5	3.3.8.1	Note 2	
	3.3.8.3	Note 1	4.1.15	Note	4.7.3	Note 1 and 2	
	5.2.2.2	Note	5.4.2.3.2.2 Table 12	Note c	5.4.2.3.2.4	Note 1 and 3	
	5.4.2.3.2.4 Table 13	Note 2	5.4.2.5	Note 2	5.4.5.1	Note	
	5.4.10.2.1	Note	5.4.10.2.2	Note	5.4.10.2.3	Note	
	5.5.2.1	Note	5.5.6	Note	5.6.4.2.1	Note 2 and 3 and 4	
	5.6.8	Note 2	5.7.6	Note	5.7.7.1	Note 1 and Note 2	
	8.5.4.2.3	Note	10.2.1 Table 39	Note 3 and 4 and 5	10.5.3	Note 2	
	10.6.4	Note 3	F.3.3.6	Note 3	Y.4.1	Note	
	Y.4.5	Note					
4	Modification to Clause 1						P
1	Add the following note: <i>NOTE Z1 The use of certain substances in electrical and electronic equipment is restricted within the EU: see Directive 2011/65/EU.</i>						P

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

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

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

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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	Not direct plug-in equipment	P
5.2.2.2	Denmark After the 2nd paragraph add the following: A warning (marking safeguard) for high touch current is required if the touch current exceeds the limits of 3,5 mA a.c. or 10 mA d.c.	No high touch current.	N/A
5.4.11.1 and Annex G	Finland and Sweden To the end of the subclause the following is added: For separation of the telecommunication network from earth the following is applicable: If this insulation is solid, including insulation forming part of a component, it shall at least consist of either • two layers of thin sheet material, each of which shall pass the electric strength test below, or • one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below. If this insulation forms part of a semiconductor component (e.g. an optocoupler), there is no distance through insulation requirement for the insulation consisting of an insulating compound completely filling the casing, so that clearances and creepage distances do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition • passes the tests and inspection criteria of 5.4.8 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 5.4.9 shall be performed using 1,5 kV), and • is subject to routine testing for electric strength during manufacturing, using a test voltage of 1,5 kV. It is permitted to bridge this insulation with a capacitor complying with EN 60384-14:2005, subclass Y2.	No TNV circuits.	N/A

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	A capacitor classified Y3 according to EN 60384-14:2005, may bridge this insulation under the following conditions: - the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 60384-14, which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in 5.4.11; - the additional testing shall be performed on all the test specimens as described in EN 60384-14; the impulse test of 2,5 kV is to be performed before the endurance test in EN 60384-14, in the sequence of tests as described in EN 60384-14.		
5.5.2.1	Norway After the 3rd paragraph the following is added: Due to the IT power system used, capacitors are required to be rated for the applicable line-to-line voltage (230 V).		N/A
5.5.6	Finland, Norway and Sweden To the end of the subclause the following is added: Resistors used as basic safeguard or bridging basic insulation in class I pluggable equipment type A shall comply with G.10.1 and the test of G.10.2.	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. <i>Justification:</i> 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

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5.6.4.2.1	France After the indent for pluggable equipment type A , the following is added: – in certain cases, the protective current rating of the circuit supplied from the mains is taken as 20 A instead of 16 A.		N/A
5.6.5.1	To the second paragraph the following is added: The range of conductor sizes of flexible cords to be accepted by terminals for equipment with a rated current over 10 A and up to and including 13 A is: 1,25 mm ² to 1,5 mm ² in cross-sectional area.		N/A
5.6.8	Norway To the end of the subclause the following is added: Equipment connected with an earthed mains plug is classified as class I equipment . See the Norway marking requirement in 4.1.15. The symbol IEC 60417-6092, as specified in F.3.6.2, is accepted.		N/A
5.7.6	Denmark To the end of the subclause the following is added: The installation instruction shall be affixed to the equipment if the protective conductor current exceeds the limits of 3,5 mA a.c. or 10 mA d.c.	No high protective conductor current.	N/A

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

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	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.”.		
8.5.4.2.3	United Kingdom Add the following after the 2nd dash bullet in 3rd paragraph: An emergency stop system complying with the requirements of IEC 60204-1 and ISO 13850 is required where there is a risk of personal injury.		N/A
B.3.1 and B.4	Ireland and United Kingdom The following is applicable: To protect against excessive currents and short-circuits in the primary circuit of direct plug-in equipment, tests according to Annexes B.3.1 and B.4 shall be conducted using an external miniature circuit breaker complying with EN 60898-1, Type B, rated 32A. If the equipment does not pass these tests, suitable protective devices shall be included as an integral part of the direct plug-in equipment, until the requirements of Annexes B.3.1 and B.4 are met	Not direct plug-in equipment	N/A

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

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

Attachment 1

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Report No.: ESTS-P22082014

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
G.7.1	United Kingdom To the first paragraph the following is added: Equipment which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord shall be fitted with a 'standard plug' in accordance with the Plugs and Sockets etc. (Safety) Regulations 1994, Statutory Instrument 1994 No. 1768, unless exempted by those regulations. NOTE "Standard plug" is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.		N/A
G.7.1	Ireland To the first paragraph the following is added: Apparatus which is fitted with a flexible cable or cord shall be provided with a plug in accordance with Statutory Instrument 525: 1997, "13 A Plugs and Conversion Adapters for Domestic Use Regulations: 1997. S.I. 525 provides for the recognition of a standard of another Member State which is equivalent to the relevant Irish Standard		N/A
G.7.2	Ireland and United Kingdom To the first paragraph the following is added: A power supply cord with a conductor of 1,25 mm² is allowed for equipment which is rated over 10 A and up to and including 13 A.		N/A

Attachment 1

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Report No.: ESTS-P22082014

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

ZC	ANNEX ZC, NATIONAL DEVIATIONS (EN)		
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. <i>Justification:</i> 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	No CRT within the equipment.	N/A

Attachment 1

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Report No.: ESTS-P22082014

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

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

IEC 62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
ATTACHMENT TO TEST REPORT IEC 62368-1 U.S.A. AND CANADA NATIONAL DIFFERENCES (Audio/video, information and communication technology equipment – Part 1: Safety requirements)			
Differences according to : CSA/UL 62368-1:2019			
TRF template used: : IECEE OD-2020-F3, Ed. 1.1			
Attachment Form No. : US_CA_ND_IEC62368_1E			
Attachment Originator : UL(US)			
Master Attachment : Dated 2022-03-04			
Copyright © 2022 IEC System for Conformity Testing and Certification of Electrical Equipment (IECEE), Geneva, Switzerland. All rights reserved.			
IEC 62368-1 - US and Canadian National Differences Special National Conditions based on Regulations and Other National Differences			
1 (1DV.1) (1.3)	All equipment is to be designed to allow installation in accordance with the National Electrical Code (NEC), ANSI/NFPA 70, the Canadian Electrical Code (CEC), Part 1, CAN/CSA C22.1, and when applicable, the National Electrical Safety Code, IEEE C2. Also, for such equipment marked or otherwise identified, installation is allowed per the Standard for the Protection of Information Technology Equipment, ANSI/NFPA 75.		P
1 (1DV.2.1)	This standard includes additional requirements for equipment used for entertainment purposes intended for installation in general patient care areas of health care facilities. See Annex DVB.		N/A
1 (1DV.2.2)	This standard includes additional requirements for equipment intended for mounting under cabinets. See Annex DVC.		N/A
1 (1DV.2.3)	IEC 62368-3 clause 5 for DC power transfer at ES1 or ES2 voltage levels is considered informative. IEC 62368-3 clause 6 for remote power feeding telecommunication (RFT) circuits is considered normative (see ITU K.50). Alternatively, equipment with RFT circuits are given in either UL 2391 or CSA/UL 60950-21. RFT-C circuits are not permitted unless the RFT-C circuit complies with RFT-V limits ($\leq 200V$ per conductor to earth).		N/A

IEC 62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
1 (1DV.3)	For protection against direct lightning strikes, reference is made to NFPA 780 and CAN/CSA-B72 for additional requirements.		N/A
1 (DV.5)	Additional requirements apply to some forms of power distribution equipment, including sub-assemblies.		N/A
4.1 (4.1.17)	For lengths exceeding 3.05 m, external interconnecting cable assemblies are required to be a suitable cable type (e.g., DP, CL2) specified in the NEC.		N/A
	For lengths 3.05 m or less, external interconnecting cable assemblies that are not types specified in the NEC generally are required to have special construction features and identification markings.		N/A
4.6 (4.6.2)	Wire-wrap terminals have special construction and performance requirements.		N/A
4.8 (4.8.3, 4.8.4.5, 4.8.5)	Coin / button cell batteries have modified special construction and performance requirements.		N/A
5.4.2.3.2 (5.4.2.3.2.1)	Surge Arrestors and Transient Voltage Surge Suppressors installed external to the equipment are required to comply with the appropriate NEC and CEC requirements.		N/A
5.5.9	Receptacles, rated 125-V, single phase, 15- or 20-A accessible to either ordinary, instructed, or skilled persons are required to be provided with GFCI Protection for Personnel if the equipment containing the receptacles is installed outdoors. The protection devices are required to comply with UL 943, and CAN/CSA C22.2 No.144.		N/A
5.6.3	Protective earthing conductors comply with the minimum conductor sizes in Table G.7, except as required by Table G.7ADV.1 for cord connected equipment, or Annex DVH for permanently connected equipment.		P
5.7.8 (5.7.8.1)	Equipment intended to receive telecommunication ringing signals is required to comply with a special touch current measurement tests.		N/A

IEC 62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
6.5.1	PS3 wiring outside a fire enclosure is required to comply with single fault testing in B.4, or be current limited per one of the permitted methods.		N/A
Annex F (F.3.3.9)	Output terminals provided for supply of other equipment, except mains supply, are required to be marked with a maximum rating or reference to equipment permitted to be connected.		N/A
Annex F (F.3.7)	Outdoor Enclosures are required to be classified and marked in accordance with UL 50 or 50E, or CAN/CSA C22.2 No. 94.1 or 94.2.		N/A
Annex G (G.7)	Permanent connection of equipment to the mains supply by a power supply cord is not permitted, except for certain equipment, such as ATMs.		N/A
	Power supply cords are required to have attachment plugs rated not less than 125 percent of the rated current of the equipment.		P
	Flexible power supply cords are required to be compatible with Article 400 of the NEC, and Tables 11 and 12 of the CEC.		P
	Minimum cord length is required to be 1.5 m, with certain constructions such as external power supplies allowed to consider both input and output cord lengths into the requirement. Power supply cords are required to be no longer than 4.5 m in length if used in ITE Rooms.		N/A
	Power supply cords for outdoor equipment are required to be suitable outdoor use type as required by Section 400.4 of the NEC and Rule 4-012 of the CEC, i.e., marked "W."		N/A
Annex H.2	Continuous ringing signals under normal operating conditions up to 16 mA only are permitted if the equipment is subjected to special installation and performance restrictions.		N/A

IEC 62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
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.		N/A
Annex Q (Q.3)	Equipment with paired conductor and/or coax communications cables/wiring connected to building wiring are required to have special voltage, current, power and marking requirements.		N/A
Annex DVA (1)	Equipment that is designed such that it may be powered from a separate electrical service, is required to meet applicable requirements for service equipment for control and protection of services and their installation and complies with Article 230 of the National Electrical Code (NEC), NFPA 70 and Section 6 of the Canadian Electrical Code, Part I, CSA C22.1.		N/A
	Equipment intended for use in spaces used for environmental air (plenums) are subjected to special flammability requirements for heat and visible smoke release.		N/A
	For ITE room applications, automated information storage systems with combustible media greater than 0.76 m ³ (27 cu ft) are required to have a provision for connection of either automatic sprinklers or a gaseous agent extinguishing system with an extended discharge.		N/A
	Consumer products designed or intended primarily for children 12 years of age or younger are subject to additional requirements in accordance with U.S. and Canadian Regulations.		N/A
	Baby monitors are required to additionally comply with ASTM F2951, Consumer Safety Specification for Baby Monitors.		N/A

IEC 62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	Storage batteries and battery management equipment, other than associated with lead-acid batteries, and including battery backup systems that are not an integral part of stationary AV and ICT equipment, such as provided in separate cabinets, are required to be certified (listed) to the appropriate standard(s) for such storage batteries and equipment.		N/A
Annex DVA (5.6)	For Pluggable Equipment Type A, the protection in the installation is assumed to be 20A.		P
Annex DVA (6.3)	The maximum quantity of flammable liquid stored in equipment is required to comply with NFPA 30.		N/A
Annex DVA (6.4.8)	For ITE room applications, enclosures with combustible material measuring greater than 0.9 m ² (10 sq ft) or a single dimension greater than 1.8 m (6 ft) are required to have a flame spread rating of 50 or less. For equipment with the same dimensions for other applications, an external surface that is not a fire enclosure requires a minimum flammability classification of V-1.		N/A
Annex DVA (10.3)	Equipment with lasers is required to meet the U.S. Code of Federal Regulations 21 CFR 1040 (and the Canadian Radiation Emitting Devices Act, REDR C1370).		P
Annex DVA (10.5)	Equipment that produces ionizing radiation is required to comply with the U.S. Code of Federal Regulations, 21 CFR 1020 (and the Canadian Radiation Emitting Devices Act, REDR C1370).		N/A
Annex DVA (F.3.3.4)	Equipment for use on a.c. mains supply systems with a neutral and more than one phase conductor (e.g. 120/240 V, 3-wire) require a special marking format for electrical ratings. Additional considerations apply for voltage ratings that exceed the attachment cap rating or that are lower than the "Normal Operating Condition" in Table 2 of CAN/CSA C22.2 No. 235."		P
Annex DVA (F.3.3.6)	Equipment identified for ITE (computer) room installation is required to be marked with the rated current.		N/A

IEC 62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
Annex DVA (G.1)	Vertically-mounted disconnect switches and circuit breakers are required to have the "on" position indicated by the handle in the up position, where mounted in an enclosure, vertically mounted disconnect switches and circuit breakers with vertical operating means extending outside the enclosure are required to indicate in a location visible when accessing the external operating means whether the switch or circuit breaker is in the open (off) or closed (on) position.		N/A
Annex DVA (G.3.4)	Suitable NEC/CEC branch circuit protection rated at the maximum circuit rating is required for all standard supply outlets and receptacles (such as supplied in power distribution units) if the supply branch circuit protection is not suitable.		N/A
	Where a fuse is used to provide Class 2 or Class 3 current limiting, it is not operator-accessible unless it is non- interchangeable.		N/A
Annex DVA (G.4.2)	Equipment with isolated ground (earthing) receptacles is required to comply with NEC 250.146(D) and CEC 10-400 and 10-612.		N/A
Annex DVA (G.4.3)	Interconnection of units by conductors supplied by a limited power source, or a Class 2 circuit defined in the NEC/CEC may have field wiring connections other than specified in DVH.3, such as wire-wrap and crimp-on types, if the limited power source and Class 2 circuits are separated from all other circuits by barriers, routing or fixing.		N/A
Annex DVA (G.5.3)	Power distribution transformers distributing power at 100 volts or more, and rated 10 kVA or more, require special transformer overcurrent protection.		N/A
Annex DVA (G.5.4)	Motor control devices are required for cord-connected equipment with a mains-connected motor if the equipment is rated more than 12 A, or if the equipment has a nominal voltage rating greater than 120 V, or if the motor is rated more than 1/3 hp (locked rotor current over 43 A).		N/A

IEC 62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
Annex DVA (G.7)	Flexible cords used outdoors are required to have the suffix "W" marked on the flexible cord.		N/A
Annex DVA (M)	For ITE room applications, equipment with battery systems capable of supplying 750 VA for five minutes are required to have a battery disconnect means that may be connected to the ITE room remote power-off circuit.		N/A
Annex DVA (Q)	If applicable per NEC 725.121(C), some limited power sources supplied from AV/ICT equipment are required to have a label indicating the maximum voltage and maximum current, or maximum voltage and nominal current output for each connection point. Where multiple connection points have the same rating, a single label is permitted to be used.		N/A
	Wiring terminals intended to supply Class 2 outputs in accordance with the NEC or CEC Part 1 are required to be marked with the voltage rating and "Class 2" or equivalent. The marking is located adjacent to the terminals and visible during wiring.		N/A
	Applicable parts of Chapter 8 of the NEC, and Rules 54 and 60 of the CEC, may be applicable to ITE installed outdoors with connections to communication systems.		N/A
Annex DVB (1)	Additional requirements apply for equipment used for entertainment purposes intended for installation in general patient care areas of health care facilities.		N/A
Annex DVC (1)	Additional requirements apply for equipment intended for mounting under kitchen cabinets.		N/A

IEC 62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
Annex DVE (4.1.1)	Some equipment, components, sub-assemblies and materials associated with the risk of fire, electric shock, or personal injury are required to have component or material ratings in accordance with the applicable national (U.S. and Canadian) component or material requirements. These equipment and components include: appliance couplers, attachment plugs, battery backup systems, circuit breakers, communication circuit accessories, connectors (used for current interruption of non-LPS circuits), direct plug-in equipment, electrochemical capacitor modules (energy storage modules with ultracapacitors), enclosures (outdoor), flexible cords and cables, fuses (branch circuit), ground-fault current interrupters, interconnecting cables, modular data centers, power supply cords, some power distribution equipment, printed wiring, protectors for communications circuits, receptacles, surge protective devices, vehicle battery adapters, wire connectors, and wire and cables.		P
Annex DVH	Equipment for permanent connection to the mains supply is subjected to additional requirements.		N/A
Annex DVH (DVH.1)	Wiring methods (terminals, leads, etc.) used for the connection of the equipment to the mains are required to be in accordance with the NEC/CEC.		N/A
Annex DVH (DVH.2.1)	For safe and reliable connection to a mains, permanently connected equipment is to be provided.		N/A
Annex DVH (DVH.2.2)	Additional considerations for D.C. mains.		N/A
Annex DVH (DVH.3.2.1)	Terminals for permanent wiring, including protective earthing terminals, are required to be suitable for U.S./Canadian wire gauge sizes, rated 125 percent of the equipment rating, and be specially marked when specified.		N/A
Annex DVH (DVH.3.2.3)	Wire binding screws are not permitted to attach conductors larger than 10 AWG (5.3 mm ²).		N/A

IEC 62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
Annex DVH (DVH.3.2.4)	All associated mains supply terminals are located in proximity to each other and to the main protective earthing terminal, if any.		N/A
Annex DVH (DVH.3.2.5)	Terminals are located, guarded or insulated so that, should a strand of a conductor escape when the conductor is fitted, there is no likelihood of accidental contact between such a strand and accessible conductive parts or unearthed conductive parts separated from accessible conductive parts by supplementary insulation only.		N/A
Annex DVH (DVH.3.3)	When field connection to an external circuit is via wires (example, free conductors), the wires are not smaller than 18 AWG (0.82 mm ²) and the free length of the wire inside an outlet box or wiring compartment is 150 mm or more.		N/A
Annex DVH (DVH.3.4)	Size of protective earthing conductors and terminals	(See sub-clause 5.6.5)	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.4.1)	Wire bending space		N/A
Annex DVH (DVH.4.2)	Volume of wiring compartment		N/A
Annex DVH (DVH.4.3)	Separation of circuits		N/A
Annex DVH (DVH.5)	Equipment markings and instructional safeguards		N/A
Annex DVH (DVH.5.1)	Identification of protective earthing terminal		N/A
Annex DVH (DVH.5.2)	Identification of terminal for earthed conductor (neutral)		N/A
Annex DVH (DVH.5.3)	Identification of terminals for aluminium conductors		N/A
Annex DVH (DVH.5.4)	Wire temperature ratings		N/A

IEC 62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
Annex DVH (DVH 5.5)	Equipment connected to a centralized d.c. power system, and having one pole of the DC mains input terminal connected to the main protective earthing terminal in the equipment, is required to comply with special earthing, wiring, marking and installation instruction requirements.		N/A
Annex DVI (6.7)	Equipment intended for connection to telecommunication network outside plant cable is required to be protected against overvoltage from power line crosses.		N/A
Annex DVJ (10.6.1)	Equipment connected to a telecommunication and cable distribution networks and supplied with an earphone intended to be held against, or in the ear is required to comply with special acoustic pressure requirements.		N/A

IEC62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
ATTACHMENT TO TEST REPORT IEC 62368-1 SINGAPORE NATIONAL DIFFERENCES Audio/video, information and communication technology equipment - Part 1: Safety requirements			
Differences according to : Special National Conditions			
TRF template used: : IECEE OD-2020-F3, Ed. 1.1			
Attachment Form No. : SG_ND_IEC62368_1E			
Attachment Originator : Intertek Testing Services (Singapore) Pte Ltd			
Master Attachment : 2022-07-08			
Copyright © 2022 IEC System for Conformity Testing and Certification of Electrical Equipment (IECEE), Geneva, Switzerland. All rights reserved.			
	National Differences		
	Not Applicable		
Chapter 4.2	Special national conditions (if any) Controlled goods under the Consumer Protection (Safety Requirements) Registration Scheme (CPS) are required to be tested to additional requirements stipulated by the Consumer Product Safety Office (CPSO) of Enterprise Singapore in Chapter 7 of the CPS information booklet. The CPS information booklet is updated on an ongoing basis. At the point of testing, refer to the latest copy of the CPS information booklet for the minimum edition of standard to apply for testing of products under the CPS scheme and any new requirements. Link to CPS information booklet: https://www.consumerproductsafety.gov.sg/files/cps-info-booklet.pdf		P
<u>Clause</u> 1	All appliances must be tested to 230 VAC, 50 Hz.		P
4	Appliance fitted with voltage selector shall be tested as follows: Connect appliance to 230 VAC mains with voltage selector switch to settings not suitable for operation at 230 VAC.		N/A

IEC62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
5	All appliances (with tropical test requirements in applicable Standards) shall comply with the tropical condition test as stated in the relevant IEC Standards.		P
7	All Class I appliances must be fitted with 3-pin mains plugs that are registered with the CPSO.		N/A
8	a) All Class II appliances must be fitted with 2-pin mains plug complying with EN 50075. b) Class II appliances that are fitted with 3-pin mains plugs must use plugs that are registered with the CPSO.		N/A
9	Detachable power cord set must be listed in the test report critical component list.		N/A
14	AC Adaptor incorporated with 13A socket-outlet to be tested to additional tests clauses 13, 17 and 18 of SS 145 Part 3: 2020.		N/A
15	Supplier who is supplying AC adaptors with detachable interchangeable plug pins must include with its products, written instructions to inform customer on the type of detachable interchangeable plug pins that are approved and suitable to use in Singapore. These instructions are to be submitted to the Conformity Assessment Body for verification when applying for Certificate of Conformity.		N/A
16	For AC Adaptors supplied together with Personal Mobility Devices: 1. Registered Supplier to declare the model of the AC adaptor that is to be used with/ bundled together with the PMDs; 2. Registered Supplier to provide valid IEC 60950-1 or IEC 62368-1 test reports for certification and registration of the declared AC adaptor under the CPS scheme; and 3. Registered Supplier to provide the UL 2272 test report as supporting document, showing that the listed AC adaptor in the UL 2272 test report is the model declared to be used with/ bundled together with the PMDs.		N/A
18	CD/ DVD ROMs (used in personal computers) to have test certificate showing that CD/DVD ROM drive has complied with IEC 60825- 1.		N/A

IEC62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
19	Modem card incorporated in the personal computer must be tested at set level (sub-clauses 5.1 & 6 of IEC 60950) or at component level.		N/A
20	Powerline Ethernet Adaptor incorporated with 13A socket-outlet, to be tested to additional test clauses 13, 17 & 18 of SS 145 Part 3: 2020.		N/A
	Other additional requirements which may be included in Chapter 7 of the information booklet in ongoing basis at the time of testing.		P

IEC 62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
ATTACHMENT TO TEST REPORT IEC 62368-1 (AUSTRALIA / NEW ZEALAND) NATIONAL DIFFERENCES (Audio/video, information and communication technology equipment)			
Differences according to : AS/NZS 62368.1:2022			
TRF template used: : IECEE OD-2020-F3, Ed. 1.1			
Attachment Form No. : AU_NZ_ND_IEC62368_1E			
Attachment Originator : JAS-ANZ			
Master Attachment : 2022-07-01			
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	National Differences		
Appendix ZZ	Variations to IEC 62368-1:2018 (ED. 3.0) for Australia and New Zealand		P
ZZ1 Scope	This Appendix lists the normative variations to IEC 62368-1:2018 (ED. 3.0)		P
ZZ2 Variations	The following modifications are required for Australian/New Zealand conditions:		P
2	After the first paragraph, <i>add</i> the following: The Australian or Australian/New Zealand Standards listed below are modified adoptions of, or not equivalent to, the IEC normative references and are required for the application of this Standard. All references in the source text to those IEC normative references shall be replaced by references to the corresponding Australian or Australian/New Zealand Standards. Australian or Australian/New Zealand Standards that are identical adoptions of international normative references may be used interchangeably -AS/NZS 3112, <i>Approval and test specification—Plugs and socket-outlets</i> -AS/NZS 3123, <i>Approval and test specification—Plugs, socket-outlets and couplers for general industrial application</i> -AS/NZS 3191, <i>Electric flexible cords</i> -AS/NZS 60884.1, <i>Plugs and socket-outlets for household and similar purposes, Part 1: General requirements</i> -IEC 60086-2 <i>Primary batteries — Part 2: Physical and electrical specifications</i> -AS/NZS 60065, <i>Audio, video and similar electronic apparatus—Safety requirements</i>		P

IEC 62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	(IEC 60065:2015 (ED.8.0) MOD) -AS/NZS 60320.1, <i>Appliance couplers for household and similar general purposes, Part 1: General requirements (IEC 60320-1, Ed.2.1 (2007) MOD)</i> -AS/NZS 60320.2.2, <i>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)</i> -AS/NZS 60695.2.11, <i>Fire hazard testing, Part 2.11: Glowing/hot wire based test methods—Glow-wire flammability test method for end-products</i> -AS/NZS 60695.11.5, <i>Fire hazard testing, Part 11.5: Test flames—Needle-flame test method—Apparatus, confirmatory test arrangement and guidance</i> -AS/NZS 60695.11.10, <i>Fire hazard testing, Part 11.10: Test flames—50 W horizontal and vertical flame test methods</i> -AS/NZS 60884.1, <i>Plugs and socket-outlets for household and similar purposes, Part 1: General requirements</i> -AS/NZS 60950.1, <i>Information technology equipment—Safety, Part 1: General requirements (IEC 60950-1, Ed.2.2 (2013), MOD)</i> IEC 61032:1997, <i>Protection of persons and equipment by enclosures—Probes for verification</i> -AS/NZS 61558.1, <i>Safety of Power Transformers, Power Supplies, Reactors and Similar Products, Part 1: General requirements and tests (IEC 61558-1 Ed 3, MOD)</i> -AS/NZS 61558.2.16, <i>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.</i>		

IEC 62368_1E ATTACHMENT					
Clause	Requirement + Test		Result - Remark		Verdict
4.7.2	Requirements <i>Delete</i> the text of the second paragraph and <i>replace</i> with the following: Equipment with a plug portion, suitable for insertion into a 10 A 3-pin flat-pin socket-outlet conforming to AS/NZS 3112, shall conform to the requirements in AS/NZS 3112 for equipment with integral pins for insertion into socket-outlets. Conformity is checked by inspection and, if necessary, by the tests in AS/NZS 3112. NOTE: Equipment with plug portions for use in countries other than Australia and New Zealand will need to conform to other countries' requirements Note Additional AS/NZS 3112 Appendix J,TRF is appended to end of this TRF.				N/A
4.7.3	Compliance Criteria <i>Delete</i> this clause				N/A
4.8.1	General After second list, <i>add</i> the following: NOTE: Refer to the Consumer Goods (Products Containing Button/Coin Batteries) Safety Standard 2020 and Consumer Goods (Products Containing Button/Coin Batteries) Information Standard 2020 for more information on button cell batteries in Australia..				N/A
5.4.10.2.1	General <i>Delete</i> the first paragraph and <i>replace</i> with the following: In Australia, the separation is checked by the test given in both Clause 5.4.10.2.2 and Clause 5.4.10.2.3. In New Zealand, the separation is checked by the test given in either 5.4.10.2.2 or 5.4.10.2.3..				N/A
Table 28	<i>Delete</i> Table 28 and <i>replace</i> 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	7.0 kV for hand-held telephones and headsets, 2.5 kV for other equipment.	1.5 kV	3 kV
Parts indicated in Clause 5.4.10.1 b) and c) ^b		1.5 kV ^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.					

IEC 62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.10.2.2	<i>Delete "NOTE" and replace with "NOTE 1".</i> After NOTE 1, <i>add</i> the following: NOTE 2: For Australia, the 7 kV impulse simulates lightning surges on typical rural and semi-rural network lines. NOTE 3: For Australia, the value of 2.5 kV for Clause 5.4.10.1 a) was chosen to ensure the adequacy of the insulation concerned and does not necessarily simulate likely overvoltages.		N/A
5.4.10.2.3	<i>Delete "NOTE" and replace with "NOTE 1".</i> After NOTE 1, <i>add</i> the following: NOTE 2: For Australia, where there are capacitors across the insulation under test, it is recommended that d.c. test voltages are used. NOTE 3: The 3 kV and 1.5 kV values for Australia have been determined considering the low frequency induced voltages from the power supply distribution system.		N/A
6	Electrically-caused fire		P
6.6	After Clause 6.6, <i>add</i> the new Clauses 6.201 as follows: 6.201 External power supplies, docking stations and other similar devices (see special national conditions)		P
8.6	Stability of equipment		N/A
Table 36	Footnote ^a , after first sentence, <i>add</i> the following: Equipment having displays with moving images shall include "television sets and display devices".		N/A
8.6.1	After Clause 8.6.1 <i>add</i> the following new clauses: 8.6.201 Restraining Device fixing point (see special national conditions) 8.6.202 Restraining device (see special national conditions)		N/A
Annex F Paragraph F.3.3.4	Rated Voltage <i>Delete "NOTE" and replace with NOTE1"</i> After NOTE 1, <i>add</i> the following Equipment that is intended for connection to the supply mains in Australia and New Zealand shall be marked with: (a) A rated voltage of: • 230 V for single phase equipment • 400 V for poly phase equipment Or (b) A rated voltage range that includes: • 230 V for single phase equipment • 400 V for poly phase equipment NOTE 2: equipment that is not rated as above is not suitable for direct connection to the supply mains in Australia or new Zealand.		P

IEC 62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
Annex F.3.3.5	After the list, <i>add</i> the following Equipment that is intended for connection to supply mains in Australia or New Zealand shall be marked with a rated frequency of 50 Hz or a rated frequency range or nominal value which includes 50Hz		P
Annex F.3.8	After "The DC output of an external power supply", insert "or docking stations and other similar external devices"		P
Annex G Paragraph G.4.2	Mains connectors 1 After "IEC 60320", insert "or AS/NZS 60320 series". 2 After "IEC 60906-1", insert "or AS/NZS 3123" 3 After first paragraph <i>add</i> the following: 10 A or 15 A 250 V flat pin plugs for the connection of equipment to mains-powered socket-outlets for household or similar general use shall comply with AS/NZS 3112 or AS/NZS 60884.1.		P
Paragraph G.5.3.1	Transformers, General 1 Third dashed point <i>replace</i> 'IEC 61558-1 and the relevant parts of IEC 61558-2' with 'AS/NZS 61558-1 and the relevant parts of AS/NZS 61558.2' 2 Fourth dashed point <i>replace</i> 'IEC 61558-2-16' with 'AS/NZS 61558.2.16'.		N/A
Annex G.7.1	Mains supply cords, General Fourth dashed paragraph, <i>replace</i> 'IEC 60320-1' with 'AS/NZS 60320.1'		P
Table G.7	Sizes of conductors 1 First column, second row, <i>delete</i> "6" and <i>replace</i> with "7.5" 2 Second column, second row, <i>delete</i> '0,75' and <i>replace</i> with '0.75' ^b 3 <i>Delete</i> NOTE 1. 4 <i>Replace</i> 'NOTE 2' with 'NOTE:'. 5 <i>Delete</i> 'Footnote b' and <i>replace</i> with the following: ^b This nominal cross-sectional area is only allowed for Class II appliances if the length of the power supply cord, measured between the point where the cord, or cord guard, enters the appliance, and the entry to the plug does not exceed 2 m (0.5 mm ² three-core supply flexible cords are not permitted; see AS/NZS 3191). 6 Footnote c <i>replace</i> 'IEC 60320-1' with 'AS/NZS 60320.1' 7 Footnote d <i>replace</i> 'IEC 60320-1' with 'AS/NZS 60320.1'		P
Annex M M 2.1	<i>Add</i> "IEC 60086-2" to the list		N/A

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

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

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

AS/NZS 3112:2017 Appendix J			
Clause	Requirement + Test	Result - Remark	Verdict
ATTACHMENT TO TEST REPORT AS_NZS_3112:2017_+A1:2021 Appendix J AUSTRALIAN / NEW ZEALAND NATIONAL DIFFERENCES (Approval and test specification—Plugs and socket-outlets)			
Differences according to : AS_NZS_3112:2017_Amendment 1:2021_Appendix J			
TRF template used: : IECEE OD-2020-F3, Ed. 1.1			
Attachment Form No. : AS_NZS_3112:2017_Appendix J			
Attachment Originator : JAS-ANZ			
Master Attachment : 2022-06			
Copyright © 2020 IEC System for Conformity Testing and Certification of Electrical Equipment (IECEE), Geneva, Switzerland. All rights reserved.			
	Note: AS/NZS 3112 is NOT covered by IECEE Accreditation for Testing / Reporting Please State Laboratory Accreditation for this Standard		N/A
	Accreditation		N/A
	Accreditation Stamp		N/A

J1 SCOPE	General: This Appendix specifies additional dimensional and constructional requirements for detachable plug portions, or equipment incorporating integral supply pins or equipment incorporating detachable plug portions. This Appendix shall be read in conjunction with Section 2 of this Standard. For the purposes of this Appendix, where the term 'plug' is used in Section 2 it shall be taken to mean the plug portion of equipment or the detachable plug portion. The equipment shall comply with the relevant product Standard. The tests and requirements specified in this Appendix are in addition to any test and requirements of the relevant product Standard for the equipment. (AS/NZS 3112:2017/A1:2021)	N/A
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J2	DEFINITION	N/A
J2.1	Detachable plug portion A plug portion that is detachable from the equipment and with connections including the following standardized outputs and other contacts (a) Type A (see Figure J1): A detachable plug portion with a connection intended for plugging directly into equipment. The connection being via the equipment group 1 appliance inlet within	N/A

	the scope of AS/NZS 60320.1. (b) Type B (see Figure J2): A detachable plug portion with a non-standardized connection intended for plugging directly into equipment (c) Type C (see Figure J3): A detachable plug portion with a connection intended for use with an adaptor connected to a flexible cord so as to replicate a supply plug and flexible cord configuration. The connection being via a group 1 appliance outlet within scope of AS/NZS 60320.2.2, which is integral with the plug portion (AS/NZS 3112:2017)	
J2.2	Integral plug portion A plug portion that is integral to the equipment enclosure and is not detachable (AS/NZS 3112:2017)	N/A
J2.3	Plug portion A plug portion is that portion of equipment with pins for insertion into a socket-outlet, including the plug pins, terminals of the plug pins, external dimensions of the 'maximum projection' and any connections of a detachable plug portion. (AS/NZS 3112:2017/A1:2021)	N/A

J3	REQUIREMENTS FOR THE PLUG PORTION	N/A
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J3.1	General The following provisions apply to the dimensional and constructional requirements of plug portions of equipment and any detachable connection between the plug portion and the equipment:	N/A
(a)	For detachable plug portions intended for connection to the equipment in multiple orientations, the relevant tests are performed in the most onerous orientation.	N/A
(b)	For Type A detachable plug portion, the relevant requirements of AS/NZS 3105:2014 are applicable, in addition to conformance with relevant clauses of this Appendix	N/A
(c)	For Type B detachable plug portions, the conformance is shown by the relevant clauses of this Appendix.	N/A
(d)	For Type C detachable plug portions, conformance is shown by assessment to Section 2 of this Standard (plugs) and relevant clauses of this	N/A

	Appendix (AS/NZS 3112:2017)		
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J3.2	Plug pins of plug portions The requirements of Clause 2.2 are applicable for plug pins.	N/A
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2.2	PLUG PINS	N/A
2.2.1	Current carrying parts of plug pins of metal having sufficient mechanical strength, electrical conductivity and resistance to corrosion adequate for the intended use	N/A
	Plug pin material?	N/A

2.2.3	Plug pins adequately proportioned throughout and portion adjacent to the connection designed to not introduce a stress concentration which may lead to a fracture of the pin, and suitably shaped to prevent abrasion or cutting of conductor strands due to flexure in normal use	N/A
	Exposed ends of plug pins have a lead-in, bevel or radius to facilitate entry into socket-outlets and to operate shutters	N/A
	Flat-pins with the following profile are deemed to comply:	N/A
(a)	Flat-pins with a radius on the end with side bevels may have a width and thickness profile as specified in Figure 2.1(h)	N/A
(b)	Flat-pins square on the end with corner and side bevels may have a width and thickness profile as specified in Figure 2.1(i)	N/A
(c)	Flat-pins square on the end with corner bevels and a radius on the sides may have a width and thickness profile as specified in Figure 2.1(j)	N/A
	Contact portion of the pins smooth and free from openings or indentations	N/A
	Flat pin plugs having a longitudinal seam or opening in the contact portion of one face; width not exceeding 0.3 mm and	N/A
	Thickness not exceeding 1.58 mm	N/A
	Exposed portion of earthing pins and pins other than insulated pins free from any non-metallic coverings or coatings (AS/NZS 3112:2017)	N/A

2.2.4	Live parts of insulated pin plugs not exposed when plug is partially or fully engaged with associated socket		N/A
	Compliance by measurement to Figure 2.4	(see appended table)	N/A
	Lacquer, enamel or sprayed insulating coating not considered to be insulation material		N/A
	All live pins on low voltage plugs except for those shown in Figure 2.1 (a2), (b) and (g) of the insulated pin type		N/A
	Colour green or green / yellow not used for insulation of insulated pins (AS/NZS 3112:2017)		N/A

J3.3	Ratings and dimensions for low-voltage plug portions Requirements of clauses 2.8.1 and 2.8.4 apply for rating and dimensions		N/A
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2.8	Ratings and Dimensions of Low Voltage Plugs		N/A
2.8.1	Plugs with ratings up to and including 20A; shall conform to the appropriate dimensions shown in Figure 2.1	(see appended results)	N/A
	Rating of plug	___A	N/A
	Nominal dimensions covering disposition of pins checked by gauge of Appendix A		N/A
	Distance between live pin and edge of moulding to not less than 9 mm		N/A
	Measured distance	___mm	N/A
	No point on plug face protrudes more than 0.5 mm		N/A
	Measured protrusion	___mm	N/A
	Dimensional requirements of Figure 2.1(e2) did not applied to plugs with greater than three pins (AS/NZS 3112:2017)		N/A
2.8.4	Low voltage plugs comply with dimensions of Figure 2.1	(see appended table 2.8.1)	N/A
	Disposition of pins checked by gauge complying with Appendix A, B or F as appropriate		N/A
	Low voltage plug having rating up to 15A and of the Figure 2.1 (a1), (c), (d), (f) or (g) type; comply with dimensional requirements of Figure 2.1 (e1 and e2)		N/A
	20A plug of Figure 2.1(a2) type complies with		N/A

	dimensional requirements of Figure 2.1 (e2)		
	Plugs with insulated pins need not comply with dimension $R20.0 \pm 1$ mm requirement of Figure 2.1 (e3) provided there is at least 9mm from the edge of the live pins to the edge of the plug face Figure 2.1(e3). (AS/NZS 3112:2017)		N/A

J3.4	Internal connections for plug portions Requirements of clause 2.9 apply for internal connections, unless requirements contained in the relevant product standard (AS/NZS 3112:2017)		N/A
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2.9	INTERNAL CONNECTIONS		N/A
	Plug provided with earthing connections designed and constructed so that when plug is correctly wired and assembled:		N/A
(a)	Loose terminal screw or conductive material cannot bridge any live or earthed parts		N/A
(b)	Earthing parts effectively isolated from contact with live conductor which may become detached		N/A
(c)	Live parts effectively isolated from contact with any earthing conductor which may become detached		N/A
	Any connections for auxiliary devices comply with above requirements (AS/NZS 3112:2017)		N/A

J3.5	Arrangement of earthing connections for plug portions Requirements of clause 2.10 apply for arrangement of earthing connections		N/A
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2.10	Arrangement of earthing connections		N/A
	Earthing pin radial to the circle embracing the pins (AS/NZS 3112:2017)		N/A

J3.6	Configuration of plug portions Requirements of clause 2.12.6 apply for configuration of the plug portion (AS/NZS 3112:2017)		N/A
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2.12	Marking		N/A
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2.12.6	Configuration of plugs	N/A
	Pins disposed so that configuration, as viewed from the pins, is earth, neutral and active in a clockwise direction	N/A
	Where there is no earthing pin; live pins conform to this configuration (AS/NZS 3112:2017)	N/A

J4	Tests	N/A
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J4.1	General Plug portions of equipment shall be subjected to the following tests and unless stated otherwise, shall comply with the requirements specified in Section 2 for each test. The number of test samples shall be in accordance with Table J1 For equipment with a detachable plug portion, the assessment(s) of Table J1 tests 2, 3, 5, 10 and 11 shall be conducted on the— (a) assembled equipment with the detachable plug portion connected; and (b) the detachable plug portion after it has been separated from the equipment (AS/NZS 3112:2017/A1:2021)	N/A
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J4.2	High voltage test The requirements of Clause 2.13.3 are applicable unless requirements are contained in the relevant product standard (AS/NZS 3112:2017)	N/A
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2.13.3	Test No.1 - High voltage test	N/A
	Plug withstands without failure electric strength test as specified (AS/NZS 3112:2017)	(see appended table) N/A

J4.3	Mechanical strength	N/A
J4.3.1	Tumbling barrel test The tumbling barrel test is applied to determine the mechanical strength of the plug portions and equipment having integral or detachable plug portions. For equipment with a detachable plug portion, the detachable plug portion may become detached during the test. If this occurs the detachable plug portion shall	N/A

	be reassembled with the equipment when the pins are straightened as per (a) and (b) below. Three samples (Samples BCD in Table J1) that have not been subjected to any previous test are tested as specified in <u>Clause 2.13.7.1</u>, however the test is modified as follows:		
	They are tested in a tumbling barrel as described in AS 60068.2.32 or test Free fall repeated – Procedure 2 in IEC 60068-2.31. The samples shall be dropped from a height of 500 mm onto a steel plate, 3 mm thick. The barrel shall be turned at a rate of 5 r/min, to yield 10 falls per minute. Only one sample shall be tested at a time. A sample is dropped— (a) 500 times if the mass of the specimen does not exceed 250 g. The pins being straightened after each 100 drops and at the completion of the test to pass through the appropriate gauge of <u>Figure A1</u>, <u>Figure B1</u> or <u>Figure F1</u>; and (b) 250 times if the mass of the specimen exceeds 250 g. The pins being straightened after each 25 drops and at the completion of the test to pass through the appropriate gauge of <u>Figures A1</u>, <u>Figure B1</u> or <u>Figure F1</u>. (AS/NZS 3112:2017/A1:2021)		N/A
	Mass of sample	_____ Grams	N/A
	Number of drops	500 / 250	N/A
	Compliance shall be checked by <u>Paragraph J4.3.3</u>	(See appended table)	N/A

J4.3.2	Test No.3 Impact test. Plug portions and equipment having integral plug portions or detachable plug portions shall withstand lateral impact forces. All samples that were subjected to the tests in <u>Paragraph J4.3.1</u> (Samples BCD in Table J1) shall be tested as follows:		N/A
	(a) The sample shall be positioned at the centre of a steel plate with a thickness of at least 6 mm. Apertures in the steel plate for the plug pins to pass through shall conform to the corresponding socket Standard. The sample shall be held against the steel plate by clamping all the pins.		N/A
	(b) Samples shall be subjected to blows, with an impact energy of 1.0 ± 0.05 J by any means having the same performance as the spring-operated impact-test apparatus of AS/NZS 3100.		N/A
	(c) Three blows shall be applied to every point that		N/A

	is most likely to directly or indirectly stress the enclosure joints of the sample		
	Compliance shall be checked by <u>Paragraph J4.3.3</u>		N/A

J4.3.3	Specific compliance criteria This Paragraph provides the common compliance assessment criteria for tests specified in Paragraphs <u>J4.3.1</u> and <u>J4.3.2</u> .		N/A
	Following each test, the samples shall comply with <u>Clause 2.13.7.1</u>		N/A
(a)	assembled equipment with the detachable plug portion connected;		N/A
	After the test, samples show no damage	(See appended table)	N/A
(b)	the detachable plug portion after it has been separated from the equipment.		N/A
	After the test, samples show no damage	(See appended table)	N/A

4.3.4	Pin bending test The pins of the plug portion of three samples (Samples EFG in Table J1) not subjected to any previous tests shall be tested for compliance with the pin bending test of <u>Clause 2.13.7.2</u> (AS/NZS 3112:2017/A1:2021)		N/A
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2.13.7.2	Test No.4 – Pin bending test		N/A
	All flat-pin plugs rated up to and including 15 A shall be subjected to the pin bending test		N/A
	Three samples are subjected by clamping the plug in a rigid holding block and applying the bending force as specified		N/A
	After the test the pins shall not be broken off. (AS/NZS 3112:2017)		N/A

J4.8.3	Test No.5 Plug portion detachment requirements		N/A
	For all Type B or C devices and for Type A devices where the outlet of the detachable plug portion is parallel to the plug supply pins, disengagement of the detachable plug portion from the equipment shall require at least two simultaneous independent actions or the use of a tool.		N/A
	The plug portion and the equipment/adaptor shall be connected and disconnected 50 times (100		N/A

	strokes).		
	Compliance is verified by the plugging test, a force which, over a period of 10 s, shall be increased steadily to 60 ± 0.6 N and held at this value for a further 10 s, shall be applied evenly at the connecting equipment in a direction parallel to the pins. This procedure shall be conducted three times on the same plug portion, at intervals of 5 min, without disturbing the plug portions between tests		N/A
	During the test the plug portion shall not separate		N/A
	The test of AS/NZS 3112 'temperature rise test' for plugs shall be conducted immediately after the above test without disturbing the sample. Test No 6 Temperature Rise test J4.4 (AS/NZS 3112:2017/A1:2021)		N/A

J4.4	Temperature rise test The relevant requirements of <u>Clause 2.13.8</u> are applicable for the temperature rise test, except that the test current shall be that specified in the relevant product standard		N/A
	The temperature rise of the pins shall not exceed 45 K irrespective of the temperature rise of parts specified in end-product standards.		N/A
	For detachable plug portions the temperature rise of terminals and contacts shall not exceed 45 K. (AS/NZS 3112:2017)		N/A

2.13.8	Test No.6 – Temperature rise test		N/A
	Plug tested in draught free environment as specified using clamping units as specified in Figure 2.10		N/A
	Test Current Relevant Product Standard	_____ Amps _____ (Standard?)	N/A
	Temperature of terminals and contacts of detachable plug portion not exceeding 45 K (AS/NZS 3112:2017)	(see appended table)	N/A

J4.5	Securement of pins of the plug portion		N/A
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	The requirements of <u>Clause 2.13.9</u> are applicable for the securement of pins. (AS/NZS 3112:2017)	
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2.13.9	Test No.7. Securement of pins		N/A
2.13.9.1	Movement of pins		N/A
	Plug pins clamped 5 ± 0.5 mm from pin face; test equipment and sample pre-conditioning for 1 h at $40 \pm 1^\circ\text{C}$		N/A
	Force of 18 ± 1 N applied to pin 14 ± 0.5 mm from plug face; applied gradually over 10 s and maintained for 10 s; applied in four directions		N/A
	Maximum deflection during test not exceeding 2.0 mm	(see appended results)	N/A
	Any distortion 5 minutes after test does not prevent insertion of plug into standard gauge(s) (AS/NZS 3112:2017 + A1:2021)		N/A
2.13.9.2	Fixing of pins		N/A
	Plug heated to $50 \pm 2^\circ\text{C}$ for 1h		N/A
	Force of 60 ± 0.6 N applied to each pin over 10 s and maintained for 10 minutes; applied in two directions along length of pin		N/A
	Maximum displacement during test not exceeding 2.4 mm		N/A
	Maximum measured displacement		N/A
	Pin returns to within 0.8 mm of nominal length within 5 minutes of removal of test force (AS/NZS 3112:2017)		N/A

J4.6	Tests on the insulation material of insulated pin-plug portions The requirements of <u>Clause 2.13.13</u> are applicable for insulating material of insulated plug pins. (AS/NZS 3112:2017)	N/A
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2.13.13	Test No.8 Tests for insulation material of insulated pin plugs		N/A
2.13.13.1	Material of pin-insulation resistant to stresses at temperature likely to occur		N/A
2.13.13.2	Pressure test at high temperature		N/A
	Specimen tested as per Figure 2.5 with force of		N/A

	2.5 N applied as specified; maintained for 2 h at $160 \pm 5^\circ\text{C}$; removed and cooled by immersion in water within 10 s		
	Thickness of insulation at point of impression not reduced by more than 50%		N/A
	Initial thickness	mm	N/A
	Thickness after test	mm	N/A
	No visible cracks on insulation material		N/A
	Dimension of insulating material not below minimum size in Figure 2.4 (AS/NZS 3112:2017)		N/A

2.13.13.3	Static damp heat test		N/A
	Specimen subjected to two damp heat cycles in accordance with IEC 60068-2-30; Db ($12 + 12\text{h}$), 95% RH, $25 \pm 3^\circ\text{C}$; 40°C		N/A
	After this treatment and recovery to room temperature; specimen subjected to:		N/A
(a)	Insulation resistance test in accordance with clause 2.13.2 (e)	(see appended table)	N/A
(b)	High voltage test in accordance with clause 2.13.3	(see appended table)	N/A
(c)	Abrasion test in accordance with clause 2.13.13.6		N/A
2.13.13.4	Low temperature test		N/A
	Plug maintained at $-15 \pm 2^\circ\text{C}$ for minimum of 24 h and returned to room temperature; after which specimen subjected to:		N/A
(a)	Insulation resistance test in accordance with clause 2.13.2 (e)	(see appended table)	N/A
(b)	High voltage test in accordance with clause 2.13.3	(see appended table)	N/A
(c)	Abrasion test in accordance with clause 2.13.13.6		N/A
2.13.13.5	Impact test at low temperature		N/A
	Specimen maintained at $-15 \pm 2^\circ\text{C}$ for 24 h		N/A
	Specimen placed in position and subjected to impact test as per Figure 2.6; mass of $100 \pm 1\text{ g}$ falling through 100 mm		N/A
	Four impacts applied; specimen rotated through 90° between impacts		N/A
	After return to room temperature; no visible cracks of insulating material		N/A
2.13.13.6	Abrasion test		N/A

	Plug held in clamp and tested as per Figure 2.7; pin loaded at 4 N; 20 000 movements		N/A
	After test; pins show no damage affecting safety or impairing further use of the plug		N/A
	Insulating sleeve not punctured or rucked up (AS/NZS 3112:2017)		N/A

J4.7	Test no.9 Equipment with a plug portion intended to be supported by the contacts of a socket-outlet		N/A
	Equipment with pins intended to be introduced into fixed socket-outlets not imposing undue strain on socket-outlet		N/A
	Applied torque not exceeding 0.25 Nm		N/A
	Measured torque (AS/NZS 3112:2017)	_____Nm	N/A

J4.8	Additional requirements for detachable plug portions		N/A
J4.8.1	Test no.10 Access to live parts		N/A
	Small test finger of Figure 13 of IEC 61032 was not possible to contact live parts with the force of 20N		N/A
	incorrectly assemble the plug portion was not possible (AS/NZS 3112:2017)		N/A

J4.8.2	Test No.11 Construction of detachable contacts where the input current of the equipment exceeds 0.2 A		N/A
	Contacts of the equipment shall be such that they make and maintain, under normal service conditions, satisfactory electrical and mechanical contact with the corresponding contact of the detachable plug portion.		N/A
	For connections intended to accommodate pins, contact shall be made on two surfaces diametrically opposite, except if a single spring-assisted contact is used. (AS/NZS 3112:2017/A1:2021)		N/A
	Contacts shall not rely exclusively on the resilience of the contact material and shall have an opposite face of material other than thermoplastic or resilient insulating material. (AS/NZS 3112:2017/ A1:2021)		N/A
	The alignment and contact-making properties of contacts shall be independent of terminal screws		N/A

	The effectiveness of the contacts shall be independent of pressure from any thermoplastic or resilient moulding.		N/A
	A visual inspection is conducted to determine the existence of interference between the metal contacts and the thermoplastic or resilient moulding to provide supplementary contact pressure to the metal contacts.		N/A
	Conformance of the effectiveness of the contacts is checked by inspection and by the inspection and tests in J4.8.3 (AS/NZS 3112:2017)		N/A

J4.8.4	Resistance of insulating material to heat and fire		N/A
J4.8.4.1	Test no.12 Resistance to heat For Type B detachable plug portions parts of non-metallic material, parts of insulating material supporting live parts including connections, and parts of thermoplastic material providing supplementary insulation or reinforced insulation, shall be sufficiently resistant to heat if their deterioration could cause the appliance to fail to comply with this Standard.		N/A
	Ball pressure test conducted in accordance with IEC 60695-10-2		N/A
(a)	75°C ± 2°C, for external parts;		N/A
(b)	125°C ± 2°C, for parts supporting live parts.		N/A

J4.8.4.2	Test no.13 Resistance to fire		N/A
	Plug portions comply with resistance to fire requirements of AS/NZS 3100 Annex A as follows:		N/A
	The glow wire test temperature 'T' for 'retaining parts' of fixed socket outlets shall be 750 C (AS/NZS 3112:2017)		N/A

TABLES OF RESULTS

2.2.4	TABLE: Dimensions of insulation on insulated pin plugs		N/A
Dimension (Figure 2.1 designation)		Measured (mm)	Allowed (mm)
Phase pin			8.7 ± 0.5
Neutral pin			8.7 ± 0.5

2.8.1	TABLE: Dimensions of plugs- 10A (a1)		N/A
Dimension (Figure 2.1 designation)	Measured (mm)	Allowed (mm)	
Phase and neutral pin width (A)		6.35 ± 0.15	
Earth pin width (B)		6.35 ± 0.15	
Pin thickness (C)		$1.63 + 0.15, -0.05$	
Pin disposition (D)		checked by test gauge	
Pin disposition (E)		checked by test gauge	
Phase and neutral pin length (F)		17.06 ± 0.4	
Earth pin length (G)		19.94 ± 0.8	
Pin boss radius - maximum		21.0 max	
Pin boss height		8.6 min	

2.8.1	TABLE: Dimensions of plugs- 15A (a1)		N/A
Dimension (Figure 2.1 designation)	Measured (mm)	Allowed (mm)	
Phase and neutral pin width (A)		6.35 ± 0.15	
Earth pin width (B)		9.08 ± 0.15	
Pin thickness (C)		$1.63 + 0.15, -0.05$	
Pin disposition (D)		checked by test gauge	
Pin disposition (E)		checked by test gauge	
Phase and neutral pin length (F)		17.06 ± 0.4	
Earth pin length (G)		19.94 ± 0.8	
Pin boss radius - maximum		21.0 max	
Pin boss height		8.6 min	

2.8.1	TABLE: Dimensions of plugs-20A (a2)		N/A
Dimension (Figure 2.1 designation)	Measured (mm)	Allowed (mm)	
Phase and neutral pin width (A)		9.08 ± 0.15	
Earth pin width (B)		9.08 ± 0.15	
Pin thickness (C)		$1.63 + 0.15, -0.05$	
Pin disposition (D)		checked by test gauge	
Pin disposition (E)		checked by test gauge	
Phase and neutral pin length (F)		17.06 ± 0.4	
Earth pin length (G)		19.94 ± 0.8	
Pin boss radius - maximum		21.0 max	
Pin boss height		8.6 min	

2.8.1	TABLE: Projection from plug face centroid	N/A
Direction of projection	Measured (mm)	Allowed (mm)
Left		≤ 21.9 or ≥ 27.0
Right		≤ 21.9 or ≥ 27.0
Up		≤ 21.9 or ≥ 27.0
Down		≤ 21.9 or ≥ 27.0

2.13.3	TABLE: Test No. 1 – High voltage test	N/A
Test voltage applied between:	Test voltage (V)	Breakdown
All poles of the plug; taken in pairs	1000	Yes / No
Live poles of the plug and any external metal	3500	Yes / No
Live poles of the plug and the earthing terminal	1000	Yes / No
Live poles of the plug and a flexible electrode	3500	Yes / No
Live poles and metal foil applied around insulation on pins	1250	Yes / No

2.13.7.1	Test No.2 – Tumbling barrel test	N/A
	Following the test, the samples shall comply with <u>Clause 2.13.7.1(a..e)</u>	N/A
	(a) Live parts shall not have become exposed to the standard test finger	N/A
	(b) For earth pins, the resistance of the plug/socket-outlet circuit shall be such that conformance with Clause 3.14.7 is maintained. AS/NZS 3100 CI 8.5 The resistance shall not exceed 0.1 Ω	N/A
	(c) Any other function affecting safety shall not be impaired	N/A
	(d) No live part shall have become detached or loosened, to the extent that a hazardous situation is created (see Clause 2.9)	N/A
	(e) The pins shall be inspected with normal, or corrected to normal, vision. Insulation may be removed if necessary. Pins shall not be broken or show cracking	N/A

	Test No.3 Impact test for assembled equipment with the detachable plug portion connected and for equipment with an integral plug portion.	N/A
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	Following the test, the samples shall comply with <u>Clause 2.13.7.1 (a..e) as follows:</u>		N/A
	(a) Live parts shall not have become exposed to the standard test finger (Figure 8.10 in AS/NZS 3100 or Test Probe B in IEC 61032)		N/A
	(b) For earth pins, the resistance of the plug/socket-outlet circuit shall be such that conformance with Clause 3.14.7 is maintained so that the resistance between the earthing terminal of any socket-outlet provided with an earthing contact and the earthing terminal of the plug used for testing shall be of a low resistance. Compliance is by the test of earthing connection in AS/NZS 3100 Clause 8.5. The resistance shall not exceed 0.1 Ω	— Ω .	N/A
	(c) Any other function affecting safety shall not be impaired		N/A
	(d) No live part shall have become detached or loosened, to the extent that a hazardous situation is created		N/A
	(e) The pins shall be inspected with normal, or corrected to normal, vision. Insulation may be removed if necessary. Pins shall not be broken or show cracking.		N/A
	Following the test, the samples shall conform to the 'Guarding of live parts' requirements of AS/NZS 3100:2015 cl 5.1 as follows:		N/A
	Except for equipment intended for use only in a position not accessible to unauthorized persons, all equipment shall be so designed and constructed that, when the equipment is standing, supported, or fixed, in a normal manner, no person can inadvertently come into contact with any live part		N/A
	If a hole giving access to preset controls is marked as such on the enclosure or reference made to it in the instructions and the setting of this control requires a screwdriver or other tool, the adjustment of the control shall not allow contact with any live parts. A metal test pin having a diameter of 2 mm and a length of 100 mm shall not become live when it is inserted through the hole in every position with a force of 10 N.		N/A
	In addition, the opening or removal of any cover or component, with or without tools, where such opening or removal is necessary as a normal operation of the equipment as distinct from maintenance, repairs, or adjustment, shall not expose live parts to inadvertent personal contact.		N/A

	Any metal cover or casing enclosing live parts shall be of a strength sufficient to ensure that it cannot be deformed readily so as to come into contact with live parts.		N/A
	Compliance is checked by inspection, test and checking that live parts shall not have become exposed to the standard test finger (Figure 8.10 in AS/NZS 3100 or Test Probe B in IEC 61032)		N/A
	Class II equipment and class II constructions shall be constructed and enclosed so that there is adequate protection against accidental contact with basic insulation and metal parts separated from live parts by basic insulation only.		N/A
	It shall only be possible to touch parts which are separated from live parts by double insulation or reinforced insulation.		N/A
	Compliance is checked by application of the standard test finger (Figure 8.10 in AS/NZS 3100 or Test Probe B in IEC 61032)		N/A
	Following the test, the samples shall conform to the 'Separation of live parts from non-current-carrying conductive parts' requirements of AS/NZS 3100.C1 5.2.2 as follows:		N/A
	The support and insulation of every live part shall be such as will ensure that no live part can make contact with any non-current-carrying conductive part exposed to personal contact.		N/A
	In respect of terminals of components such as switches, adequate clearances shall be maintained or insulation shall be provided to prevent contact of the terminals, or loose strands of flexible cords intended to be terminated therein, with exposed conductive parts. Where necessary, provision shall be made to ensure that conductors protruding through terminals, when normally connected, will not contact exposed conductive parts.		N/A
	Compliance is checked by inspection.		N/A

	Test No.3 Impact test for the detachable plug portion after it has been separated from the equipment		N/A
	Following the test, the samples shall comply with <u>Clause 2.13.7.1 (a..e)</u>		N/A
	(a) Live parts shall not have become exposed to the standard test finger (Figure 8.10 in AS/NZS 3100 or Test Probe B in IEC 61032)		N/A

	(b) For earth pins, the resistance of the plug/socket-outlet circuit shall be such that conformance with Clause 3.14.7 is maintained so that the resistance between the earthing terminal of any socket-outlet provided with an earthing contact and the earthing terminal of the plug used for testing shall be of a low resistance. Compliance is by the test of earthing connection in AS/NZS 3100 Clause 8.5. The resistance shall not exceed 0.1 Ω	— Ω .	N/A
	(c) Any other function affecting safety shall not be impaired		N/A
	(d) No live part shall have become detached or loosened, to the extent that a hazardous situation is created		N/A
	(e) The pins shall be inspected with normal, or corrected to normal, vision. Insulation may be removed if necessary. Pins shall not be broken or show cracking.		N/A
	Following the test, the samples shall conform to the 'Guarding of live parts' requirements of AS/NZS 3100:2015 cl 5.1 as follows:		N/A
	Except for equipment intended for use only in a position not accessible to unauthorized persons, all equipment shall be so designed and constructed that, when the equipment is standing, supported, or fixed, in a normal manner, no person can inadvertently come into contact with any live part		N/A
	If a hole giving access to preset controls is marked as such on the enclosure or reference made to it in the instructions and the setting of this control requires a screwdriver or other tool, the adjustment of the control shall not allow contact with any live parts. A metal test pin having a diameter of 2 mm and a length of 100 mm shall not become live when it is inserted through the hole in every position with a force of 10 N.		N/A
	In addition, the opening or removal of any cover or component, with or without tools, where such opening or removal is necessary as a normal operation of the equipment as distinct from maintenance, repairs, or adjustment, shall not expose live parts to inadvertent personal contact.		N/A

	Any metal cover or casing enclosing live parts shall be of a strength sufficient to ensure that it cannot be deformed readily so as to come into contact with live parts.		N/A
	Compliance is checked by inspection, test and checking that live parts shall not have become exposed to the standard test finger (Figure 8.10 in AS/NZS 3100 or Test Probe B in IEC 61032)		N/A
	Class II equipment and class II constructions shall be constructed and enclosed so that there is adequate protection against accidental contact with basic insulation and metal parts separated from live parts by basic insulation only.		N/A
	It shall only be possible to touch parts which are separated from live parts by double insulation or reinforced insulation.		N/A
	Compliance is checked by application of the standard test finger (Figure 8.10 in AS/NZS 3100 or Test Probe B in IEC 61032)		N/A
	Following the test, the samples shall conform to the 'Separation of live parts from non-current-carrying conductive parts' requirements of AS/NZS 3100.CI 5.2.2 as follows:		N/A
	The support and insulation of every live part shall be such as will ensure that no live part can make contact with any non-current-carrying conductive part exposed to personal contact.		N/A
	In respect of terminals of components such as switches, adequate clearances shall be maintained or insulation shall be provided to prevent contact of the terminals, or loose strands of flexible cords intended to be terminated therein, with exposed conductive parts. Where necessary, provision shall be made to ensure that conductors protruding through terminals, when normally connected, will not contact exposed conductive parts.		N/A
	Compliance is checked by inspection.		N/A

2.13.8	TABLE: Test No. 6 - Temperature rise test		N/A
	Ambient temperature	°C	
	Test current	A	

Measured part	dT measured (K)	dT allowed (K)
Active (phase) terminal		45
Neutral terminal		45
Earthing terminal		45

2.13.9.1	TABLE: Movement of pins		N/A
	Earth and neutral pins clamped – phase pin loaded		
Force direction	Measured deflection (mm)	Allowed deflection (mm)	
Force towards neutral plane parallel to pin plane		2.0	
Force from neutral plane parallel to pin plane		2.0	
Force outwards at 90° to pin plane		2.0	
Force inwards at 90° to pin plane		2.0	

2.13.9.1	TABLE: Movement of pins		N/A
	Phase and neutral pins clamped – earth pin loaded		
Force direction	Measured deflection (mm)	Allowed deflection (mm)	
Force inwards parallel to pin plane		2.0	
Force outwards parallel to pin plane		2.0	
Force towards neutral		2.0	
Force towards phase		2.0	

2.13.9.1	TABLE: Movement of pins		N/A
	Phase and earth pins clamped – neutral pin loaded		
Force direction	Measured deflection (mm)	Allowed deflection (mm)	
Force towards phase plane parallel to pin plane		2.0	
Force from phase plane parallel to pin plane		2.0	
Force outwards at 90° to pin plane		2.0	
Force inwards at 90° to pin plane		2.0	

2.13.13.3	TABLE: Test No.13(b) – Insulation resistance test after static damp heat test		N/A
Applied between:	Insulation resistance (MΩ)	Minimum required (MΩ)	
Live poles and metal foil applied around insulation on pins		5	

2.13.13.3	TABLE: Test No.1 – High voltage test after static damp heat test	N/A
Test voltage applied between:		Test voltage (V)
Live poles and metal foil applied around insulation on pins		1250
		Breakdown
		Yes / No

2.13.13.4	TABLE: Test No.1 – Insulation resistance test after low temperature test	N/A
Applied between:		Insulation resistance (MΩ)
Live poles and metal foil applied around insulation on pins		5
		Minimum required (MΩ)

2.13.13.4	TABLE: Test No.1 – High voltage test after low temperature test	N/A
Test voltage applied between:		Test voltage (V)
Live poles and metal foil applied around insulation on pins		1250
		Breakdown
		Yes / No

J4.8.4.1	TABLE: Test no.12 Resistance to heat	N/A
Component tested		Temperature (°C)
		Diameter of impression (mm)

Conformance is checked by subjecting the relevant part to the ball pressure test of IEC 60695-10-2.

J4.8.4.2	TABLE: Test no.13 Resistance to Fire	N/A
	Plug portions shall comply with the requirements for resistance to fire in accordance with AS/NZS 3100:2017 Annex A.	N/A
	The glow-wire test temperature 'T' shall be 750°C.	

Glow-wire testing was conducted in accordance with IEC 60695-2-11.

Test specimens arranged so that the surface in contact with the tip of the glow-wire was vertical and glow wire tip applied to surface of the specimen likely to be subjected to thermal stresses in normal use.

A layer of white pine board and wrapping tissue was placed beneath the sample at 200mm ± 5mm distance.

SPECIMEN NUMBER	1	2	3	4	5	6	7	8
SPECIMEN DESCRIPTION								
Material								
Colour								
Test specimen								
Glow wire tip temperature (°C)	750	750	750	750	750	750	750	750
Duration of glow wire application (t _a) (s)	30	30	30	30	30	30	30	30
OBSERVATIONS								
Duration from beginning of glow-wire tip application to ignition of specimen or layer (t _i) (s)								
Duration from beginning of glow-wire tip application to when flames extinguish (t _e) (s)								
Maximum height of flames after initial 1s (to nearest 5 mm) (mm)								
Flame impingement on other parts								
Degree of tip penetration								
Degree of specimen distortion								
Scorching of pinewood board								

EVALUATION CRITERIA								
Visible flame or sustained glowing								
Visible Flame Duration in Seconds during test.								
Duration of flaming or glowing after tip removal (max. allowable 30 s) (s)								
Surrounding parts burned away completely (not permitted)								
Ignition of wrapping tissue layer (not permitted)								
RESULTS If parts tested withstand the glow-wire test, but during the test produce a flame that persists for longer than 2 s, then the consequential needle flame test of AS/NZS 3100:2017 Annex A 6.1.5 applies.								

LEGEND: CE Complete Equipment SA Sub Assembly

SE Self Extinguished

EBDEmitted Burning Droplets SBD

Specimen Burned and DistortedSMD Specimen Melted and Distorted

ME Manually Extinguished SC

Separate Component SS Specimen Scorched

NA Not Applicable

SCCSpecimen Completely Consumed WPNI Wall Penetrated but no Ignition

NI No Ignition

X Flame Appeared for an Instant

TABLE: Needle- flame test (NFT)					N/A
Object/ Part No./ Material	Manufacturer/ trademark	Duration of application of test flame (ta); (s)	Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict
Supplementary information: - NFT not relevant (or applicable) for Parts of material classified as V-0 or V-1 - NFT not relevant (or applicable) for Base material of PCBs classified as V-0 or if relevant VTM-0					



	PHOTOGRAPHS	N/A
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Photo 1 External view



Photo 2 External view



Photo 3 External view

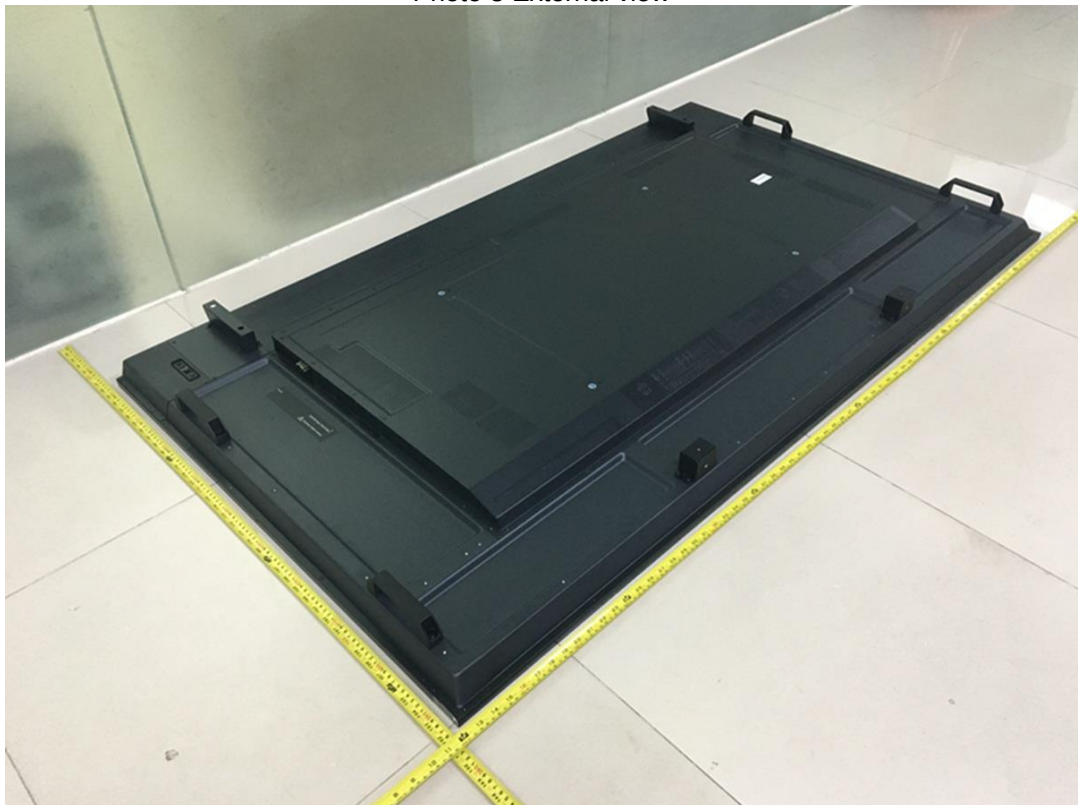


Photo 4 External view

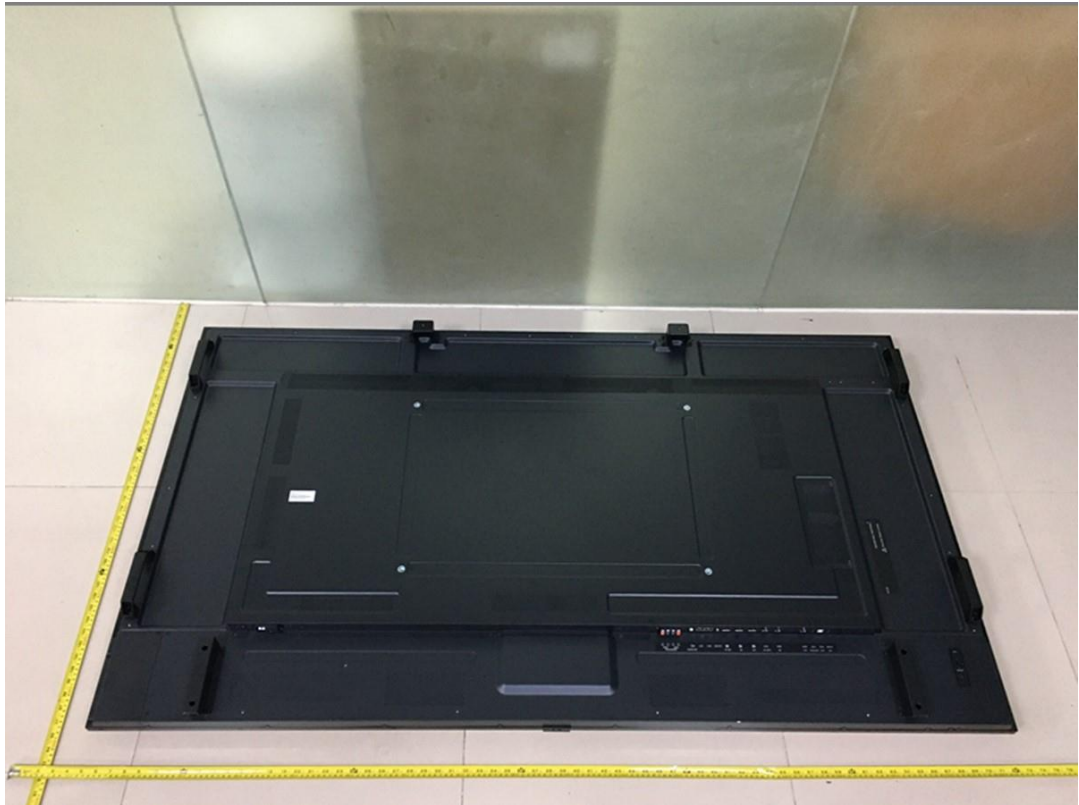


Photo 5 External view



Photo 6 Terminal view

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Photo 7 Terminal view



Photo 8 Terminal view

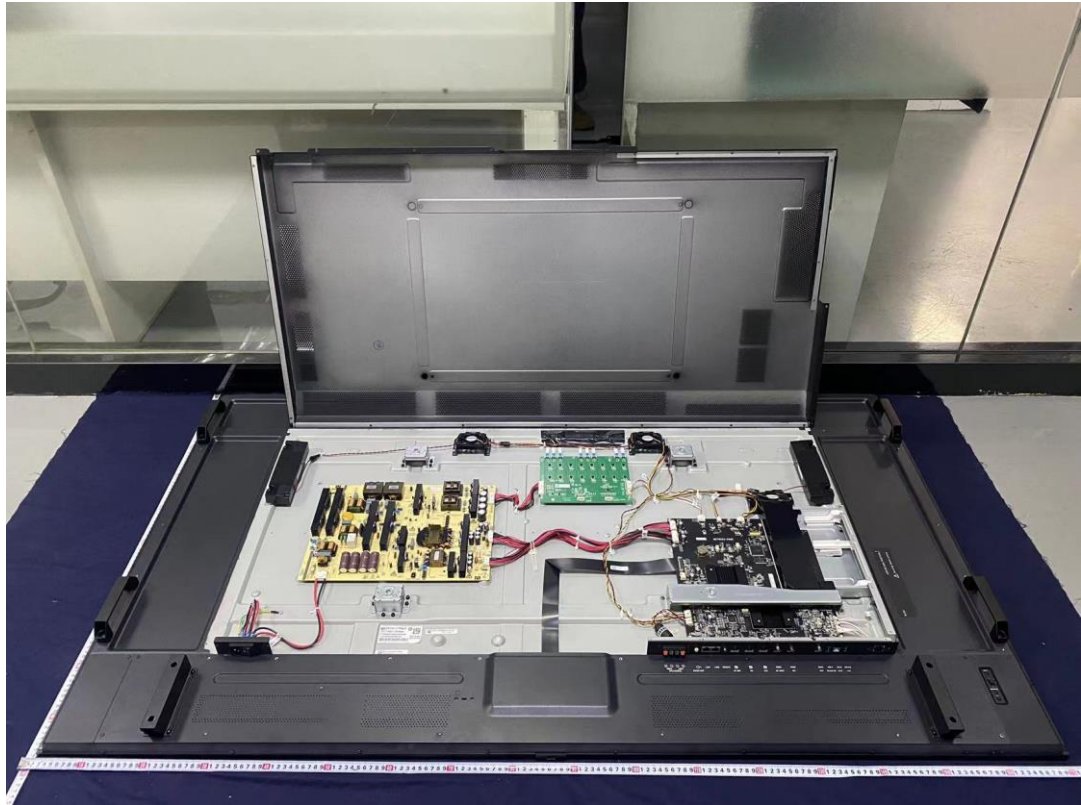


Photo 9 Internal view

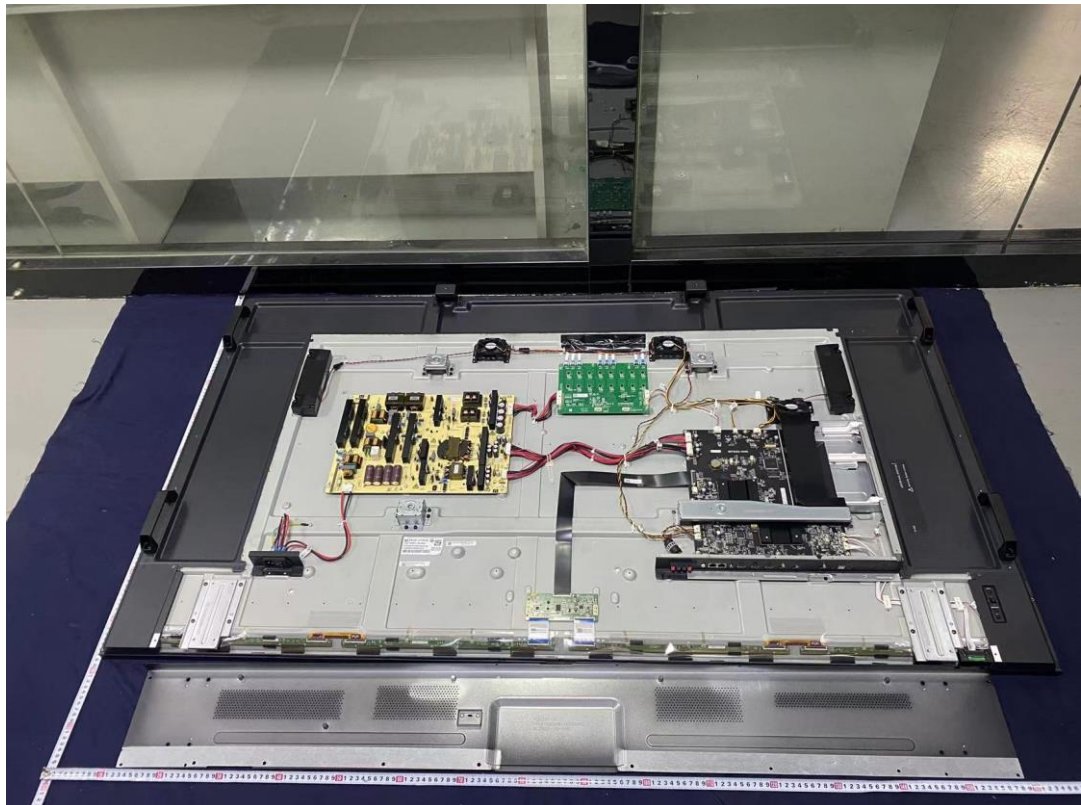


Photo 10 Internal view

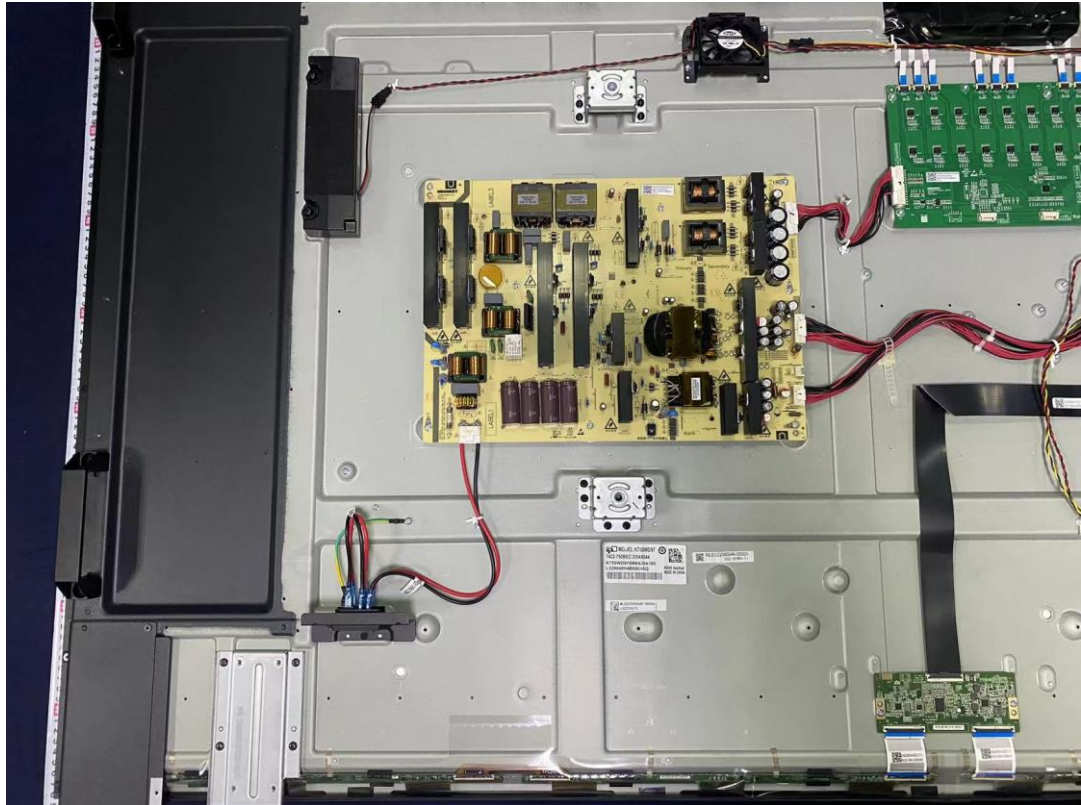


Photo 11 Internal view

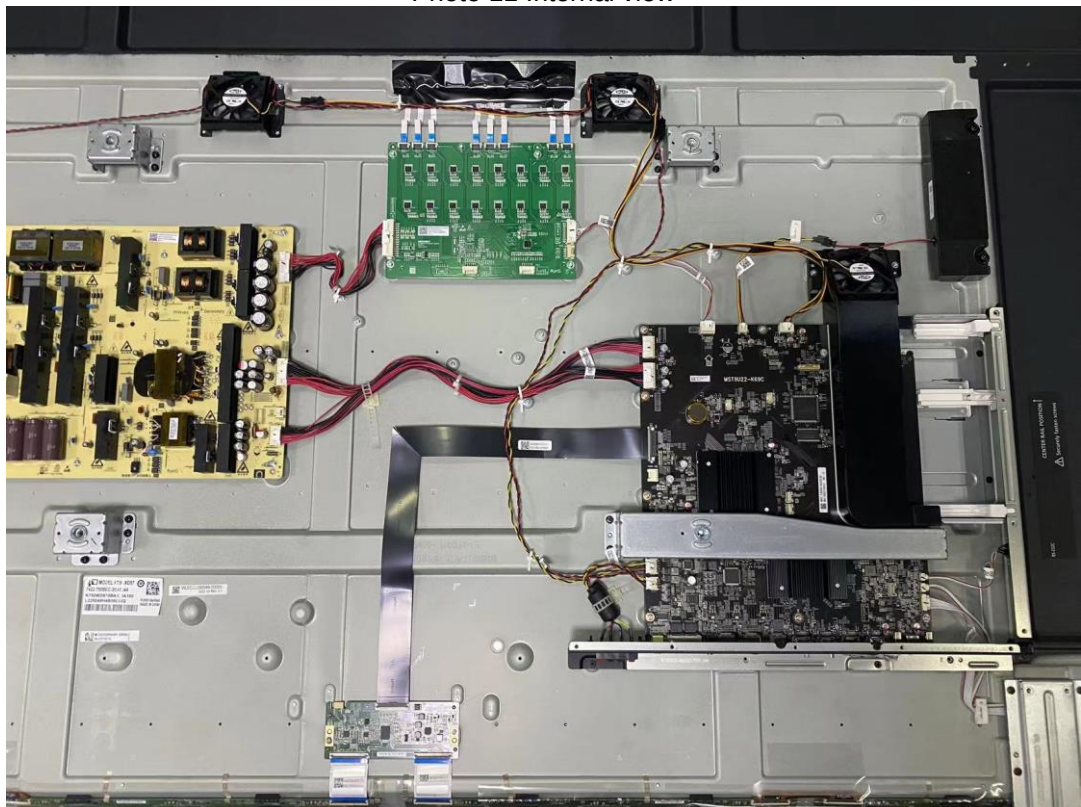


Photo 12 Internal view

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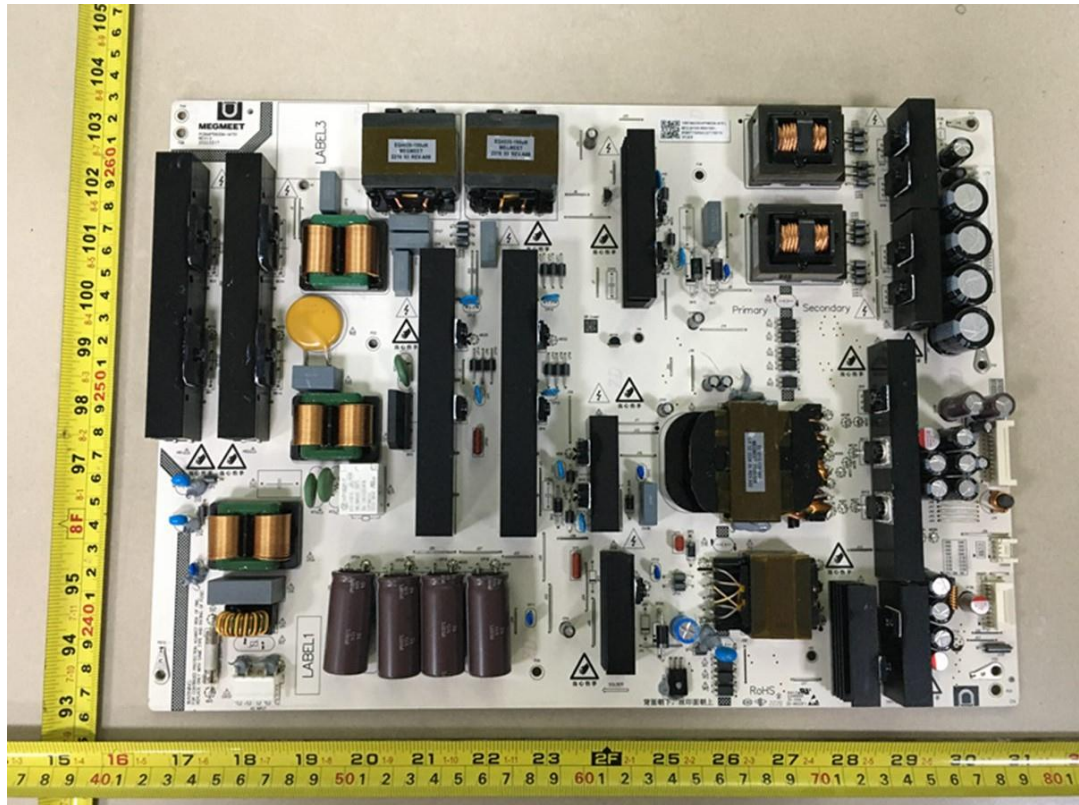


Photo 13 Power board view

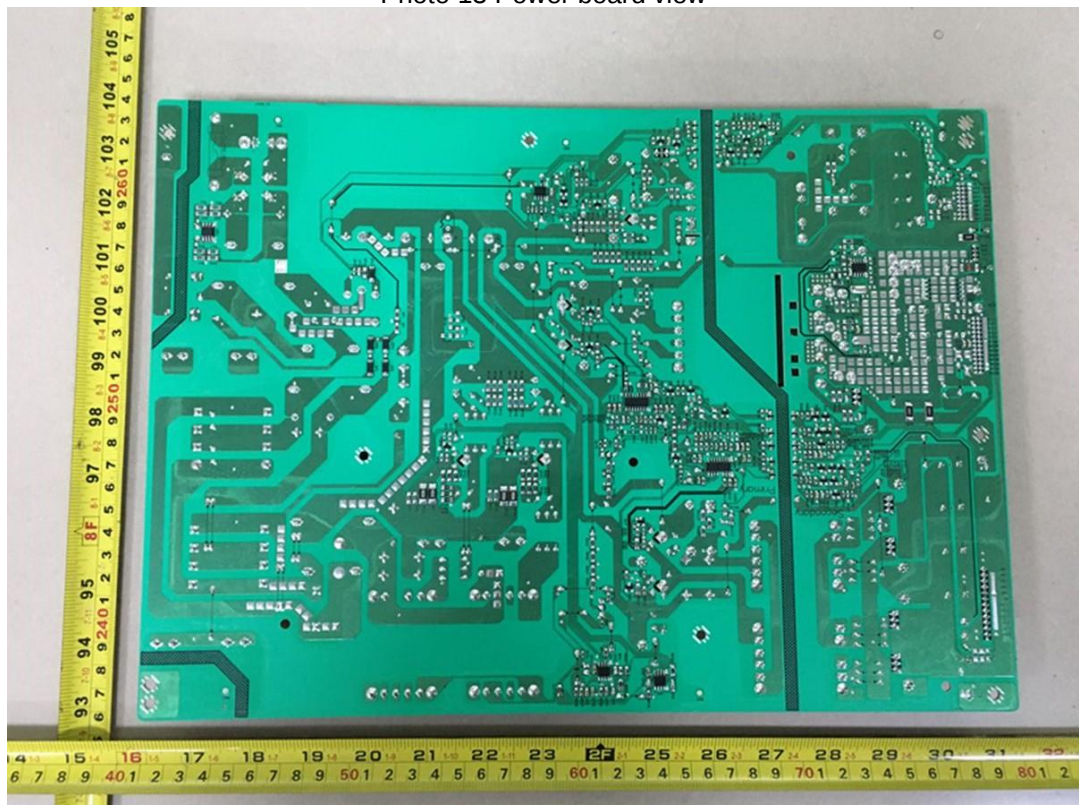


Photo 14 Power board view

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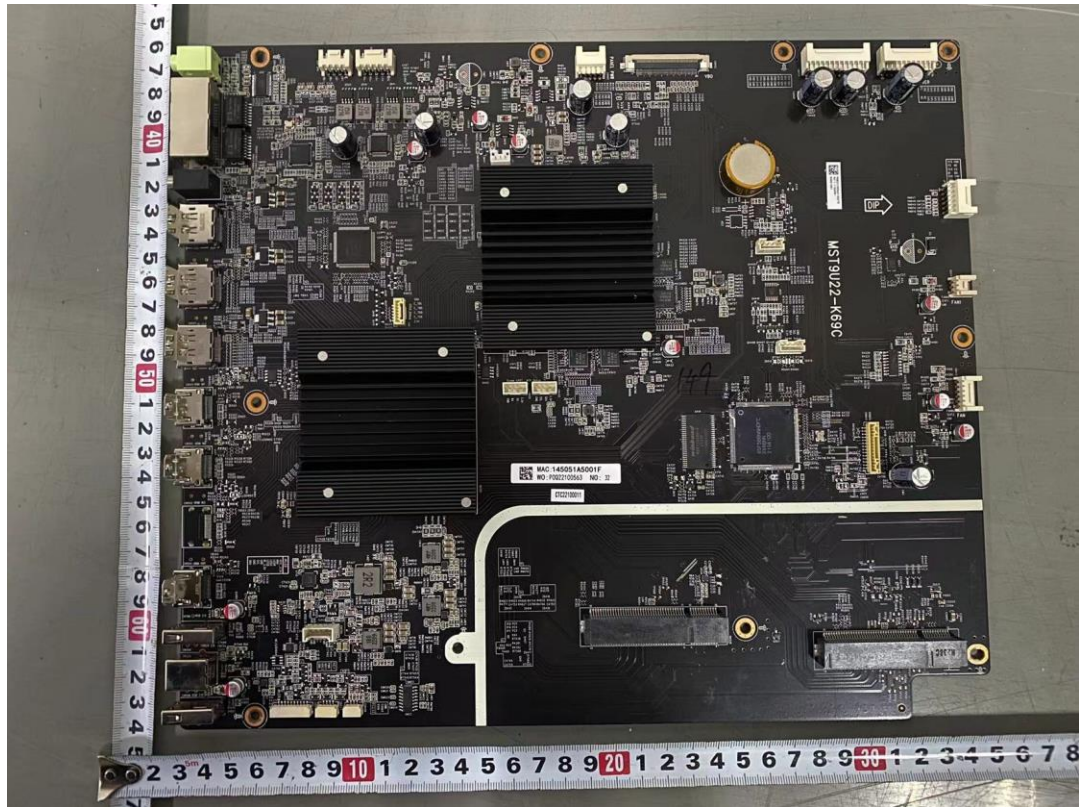


Photo 15 Main board view

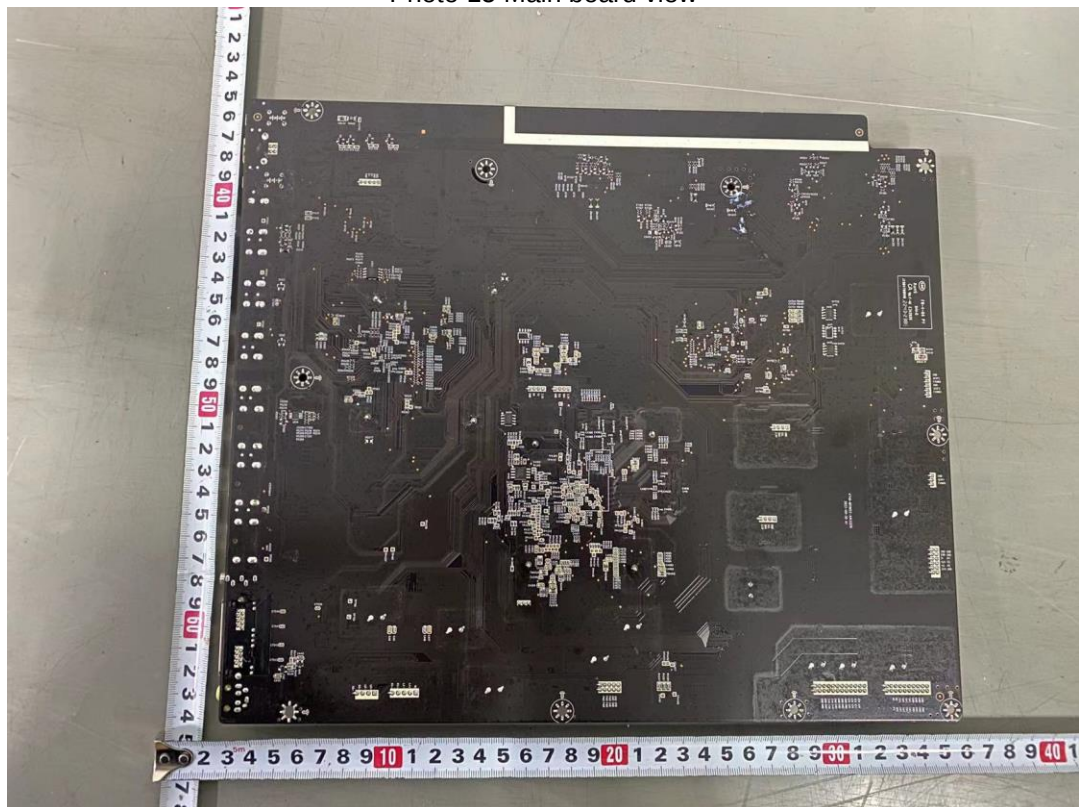


Photo 16 Main board view

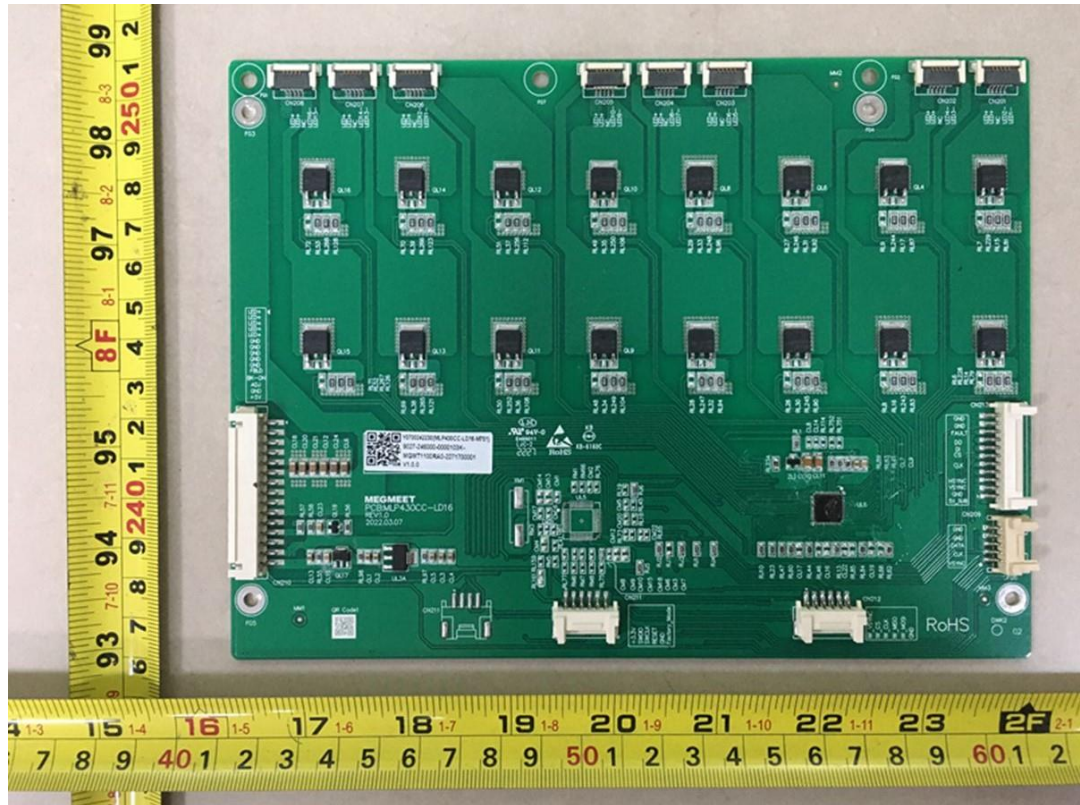


Photo 17 Local dimming board view

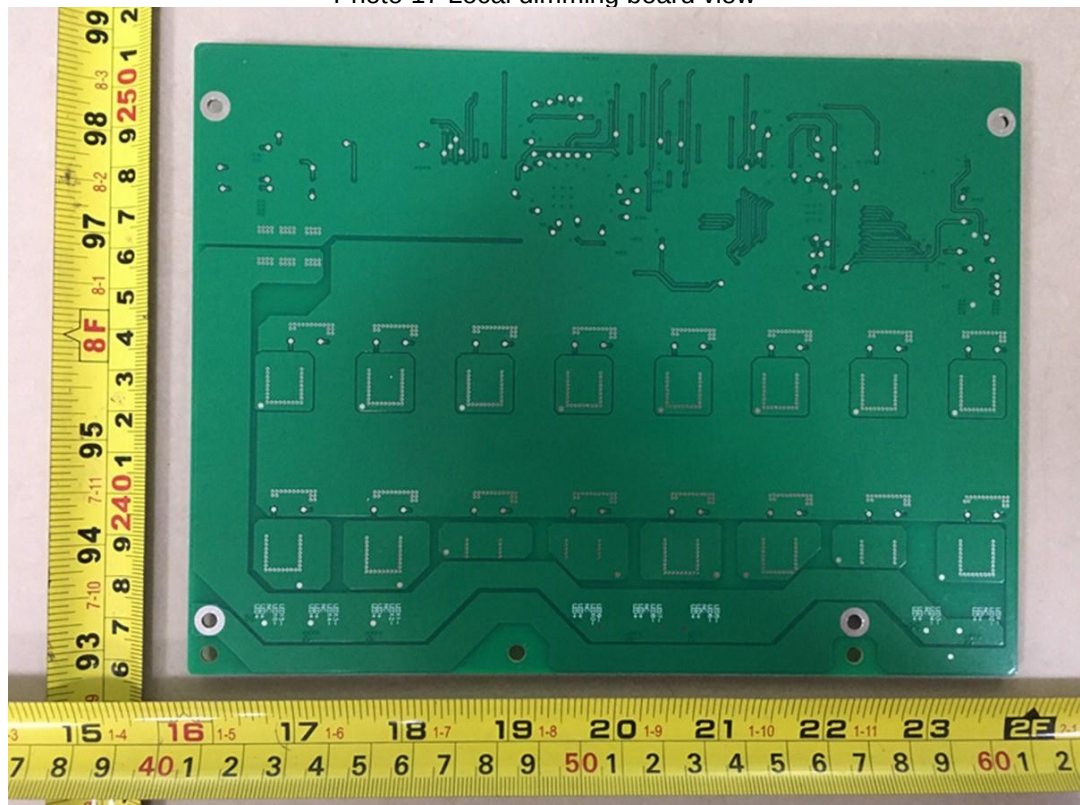


Photo 18 Local dimming board view

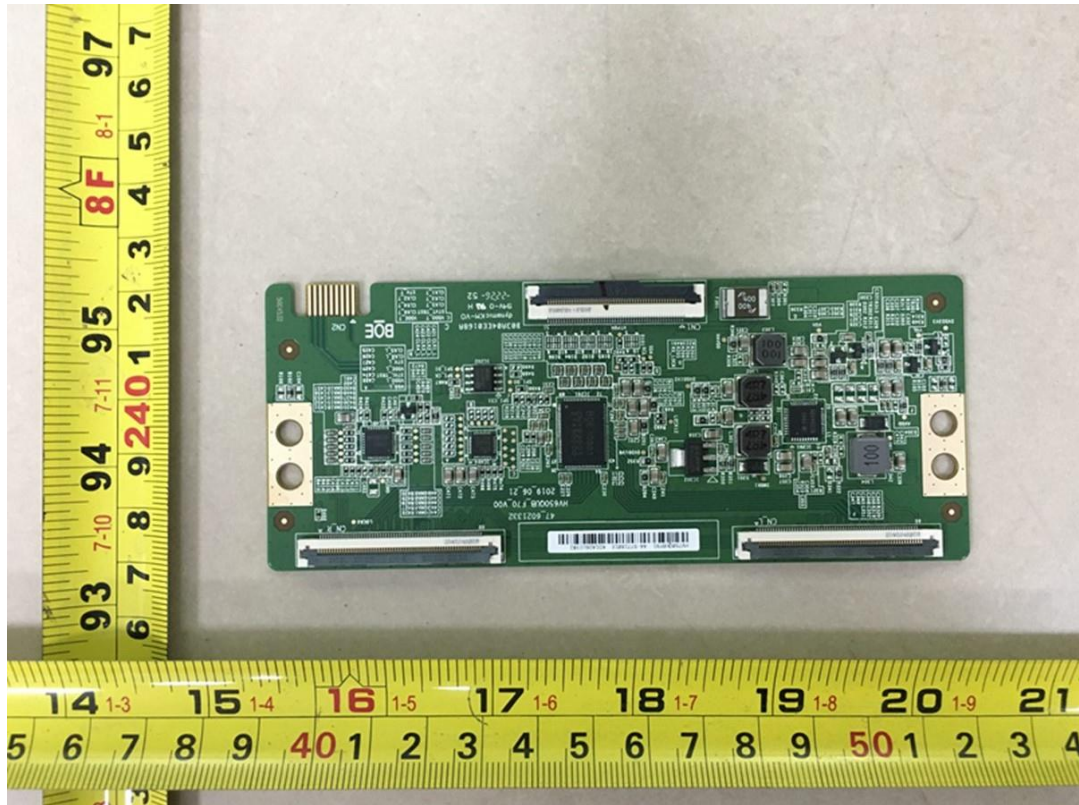


Photo 19 T CON board view

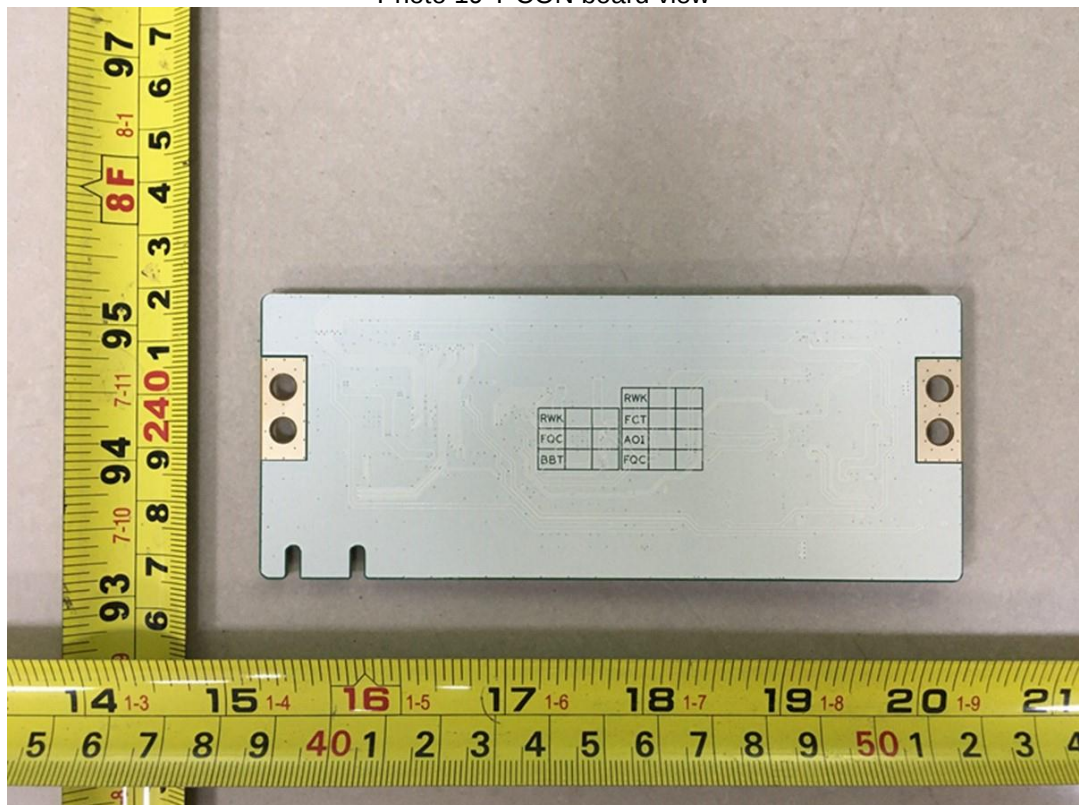


Photo 20 T CON board view



Photo 21 Base stand view



Photo 22 Base stand view



Photo 23 Remote control

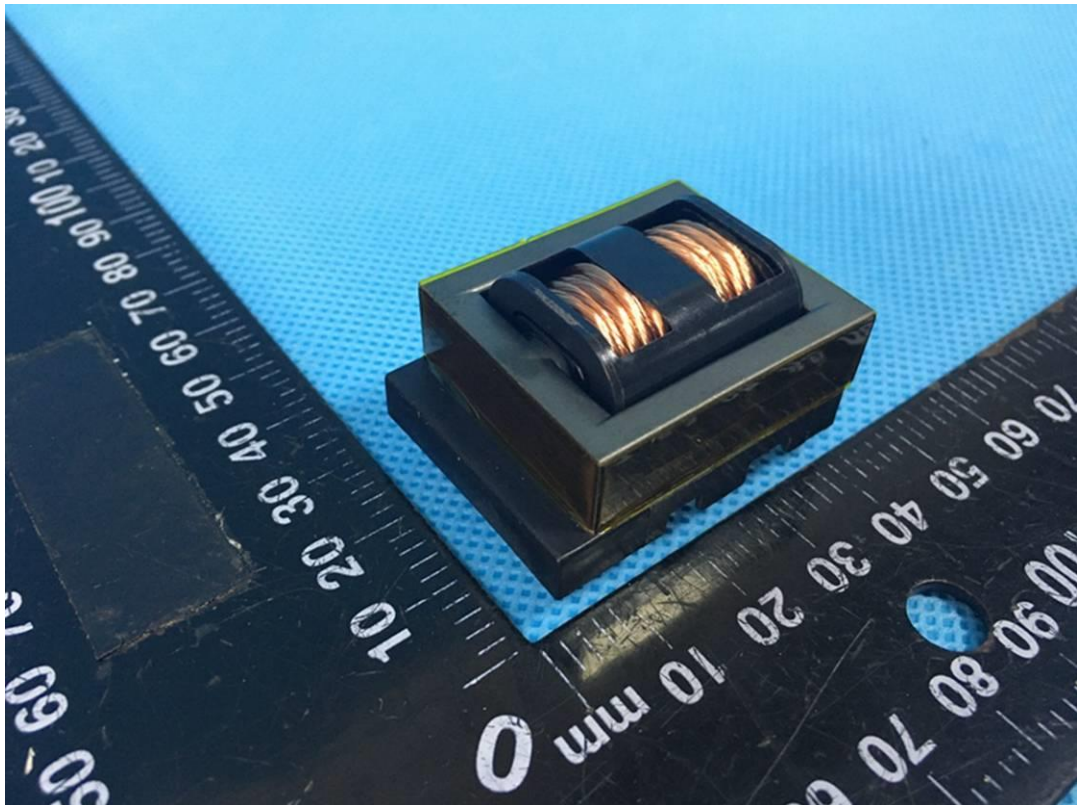


Photo 24 Transformer TH2/TH3 view

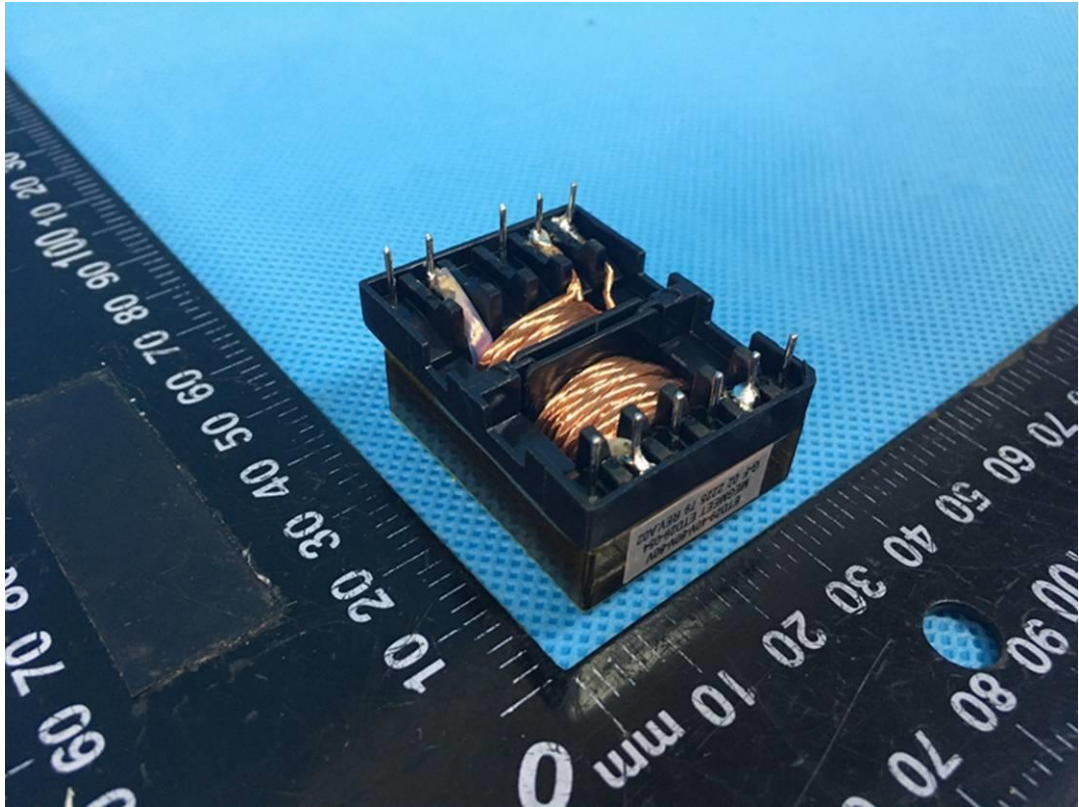


Photo 25 Transformer TH2/TH3 view

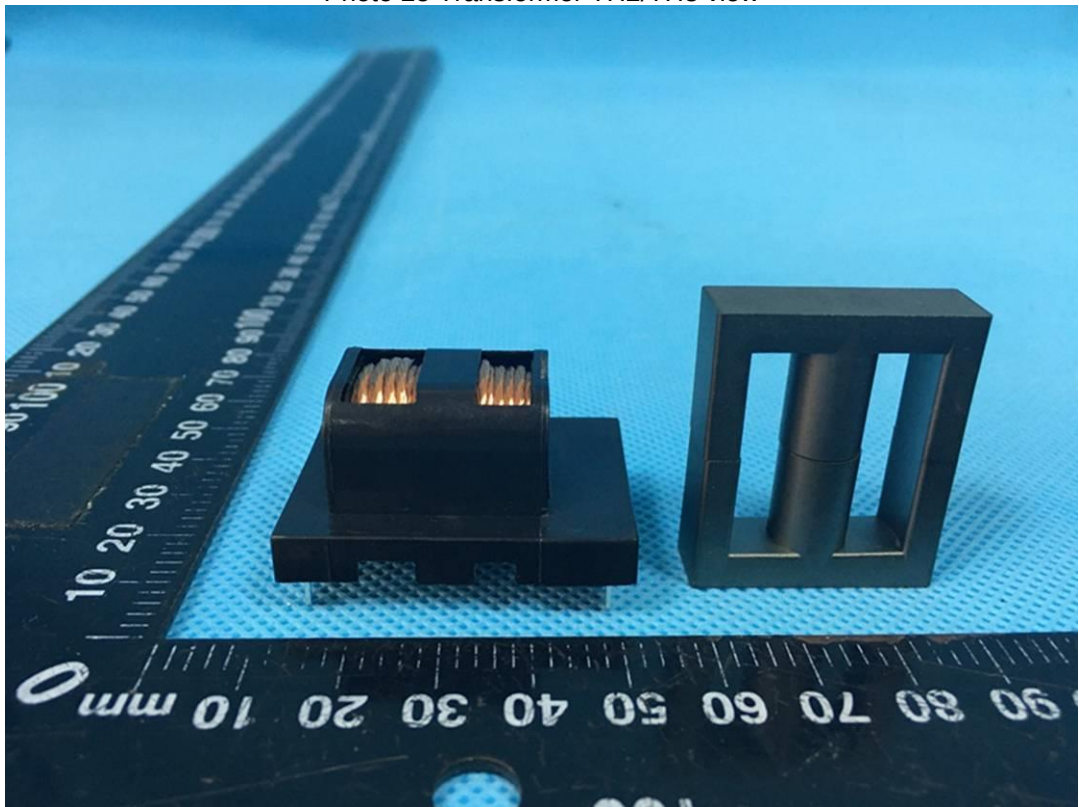


Photo 26 Transformer TH2/TH3 view

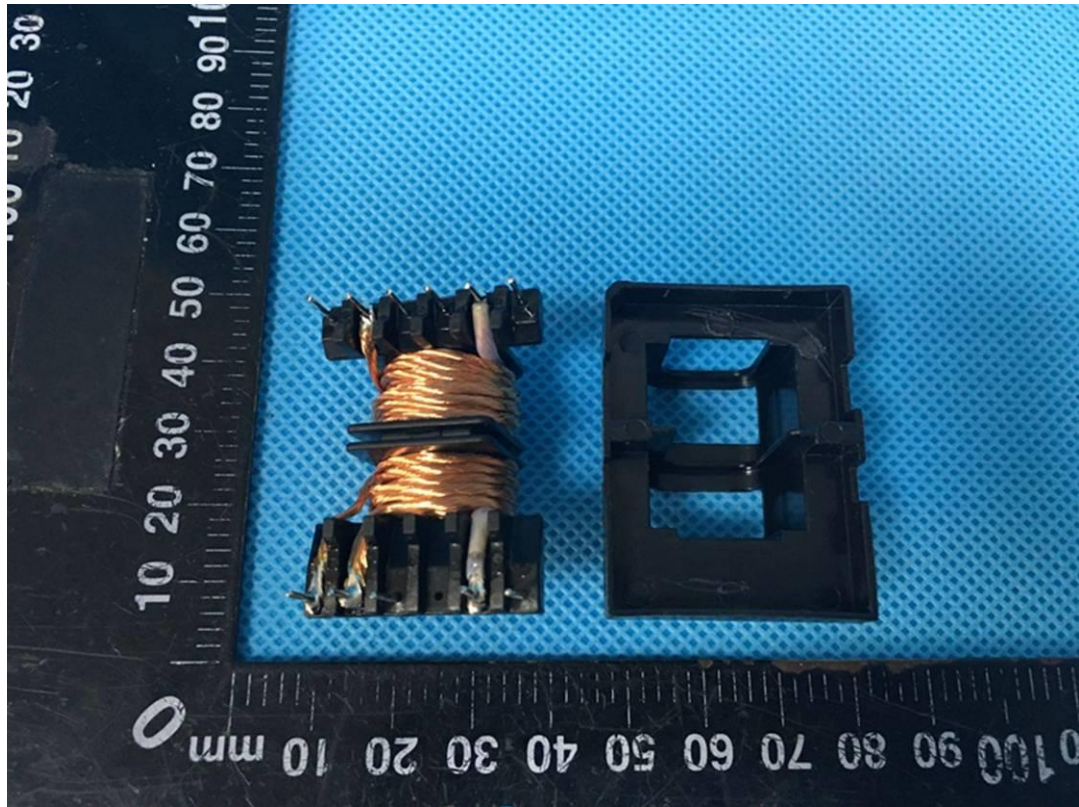


Photo 27 Transformer TH2/TH3 view

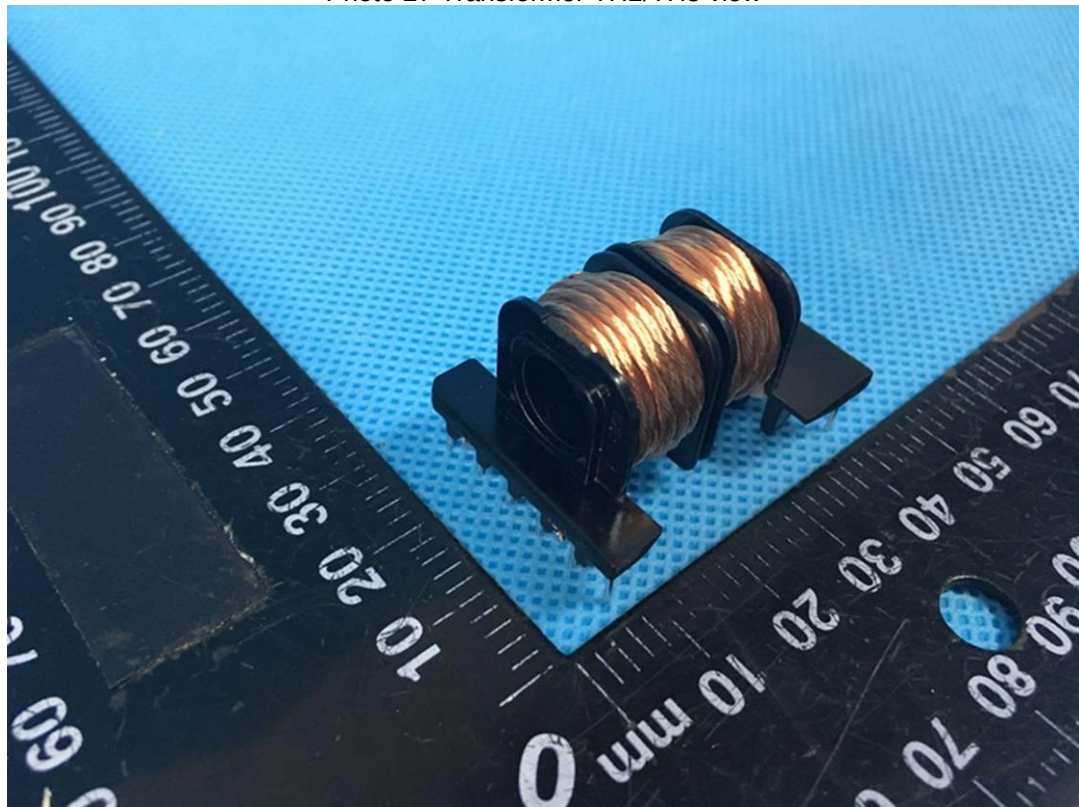


Photo 28 Transformer TH2/TH3 view



Photo 29 Transformer TH2/TH3 view

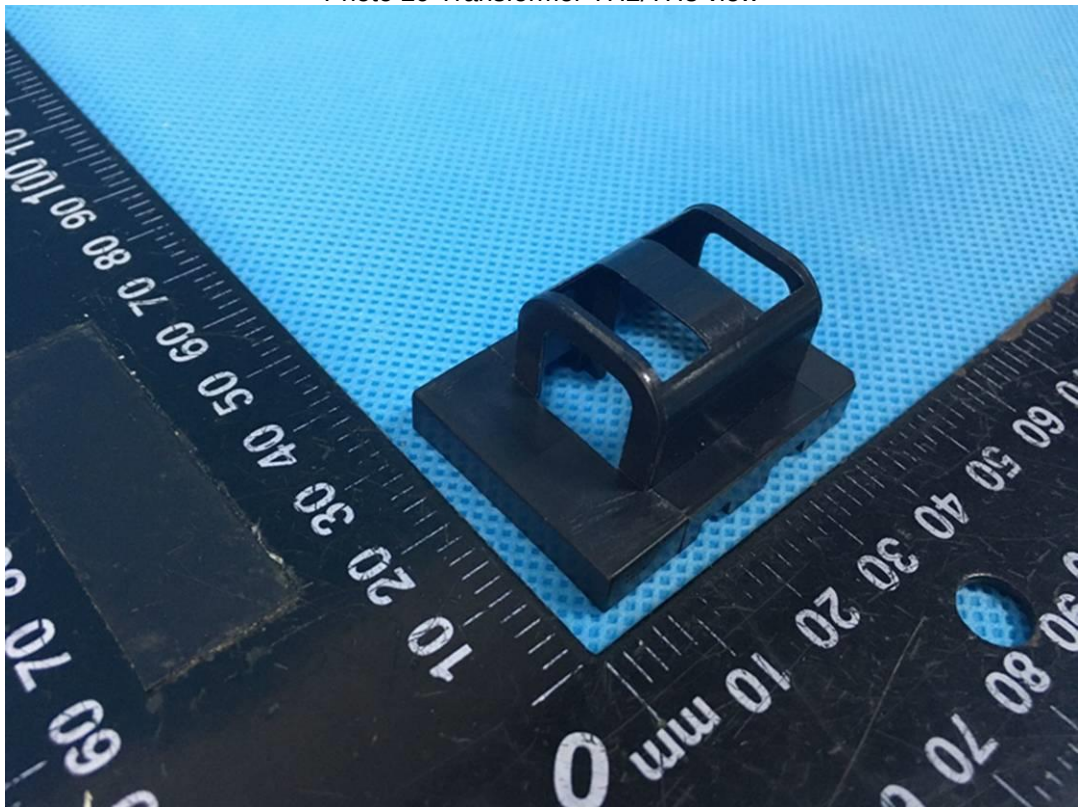


Photo 30 Transformer TH2/TH3 view

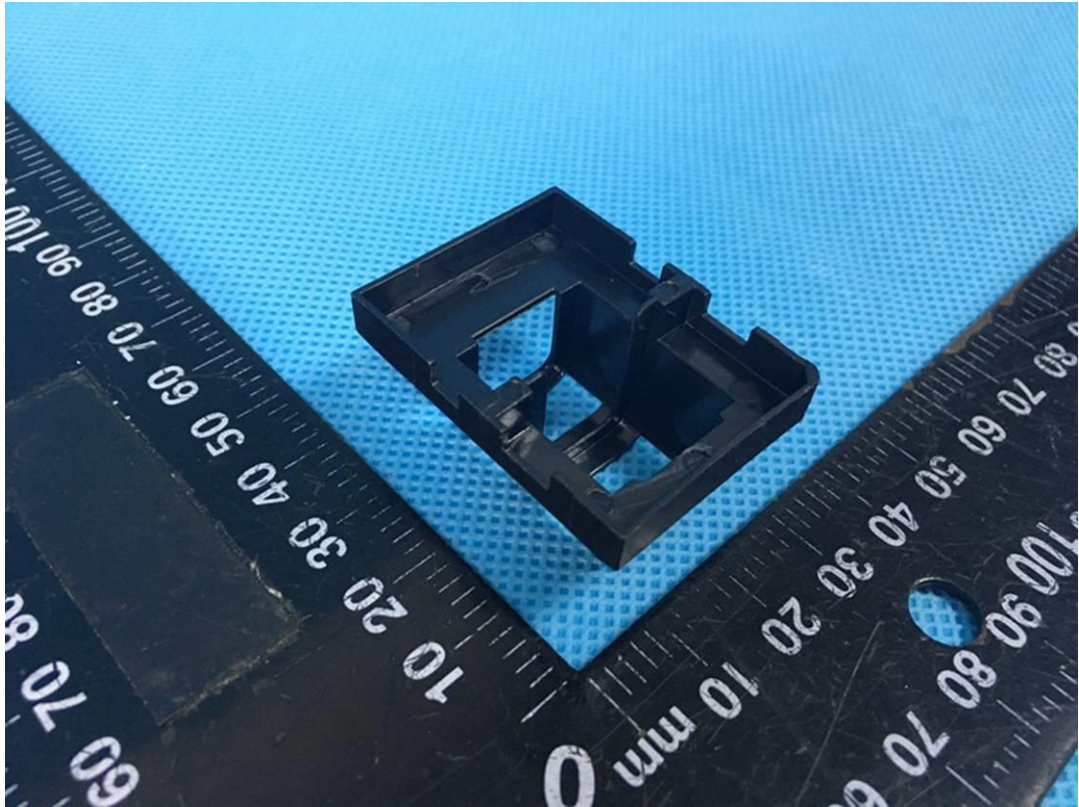


Photo 31 Transformer TH2/TH3 view



Photo 32 Transformer TH1 view

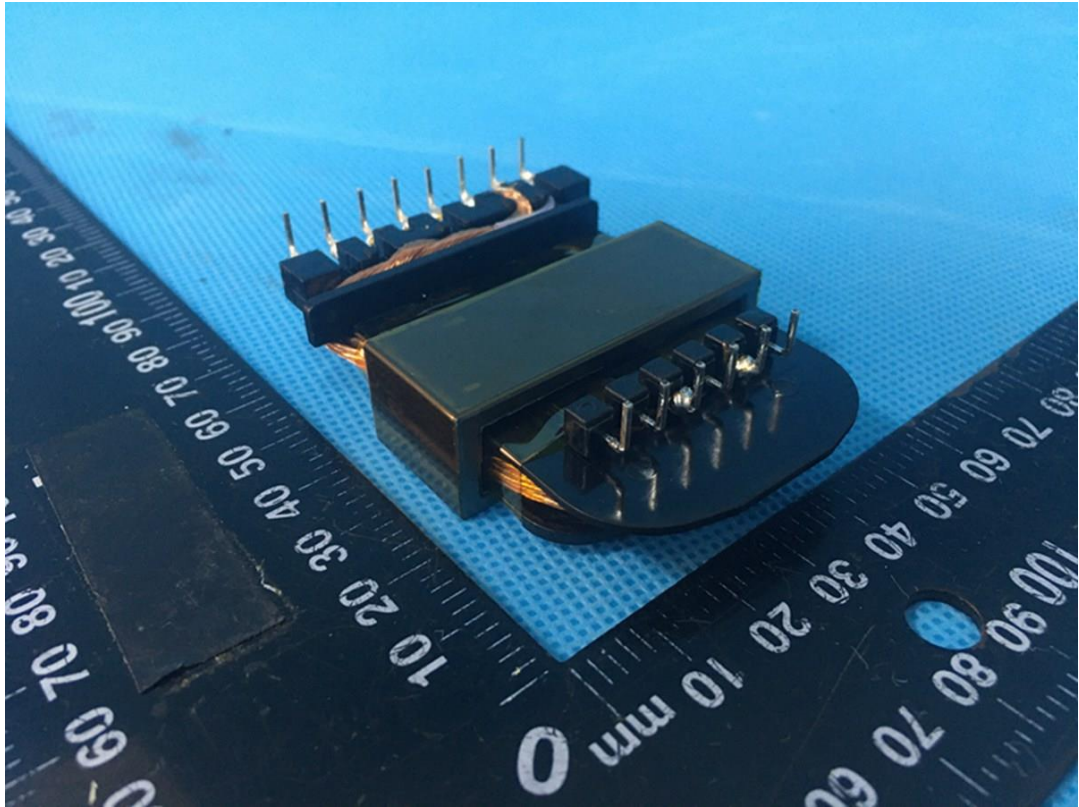


Photo 33 Transformer TH1 view

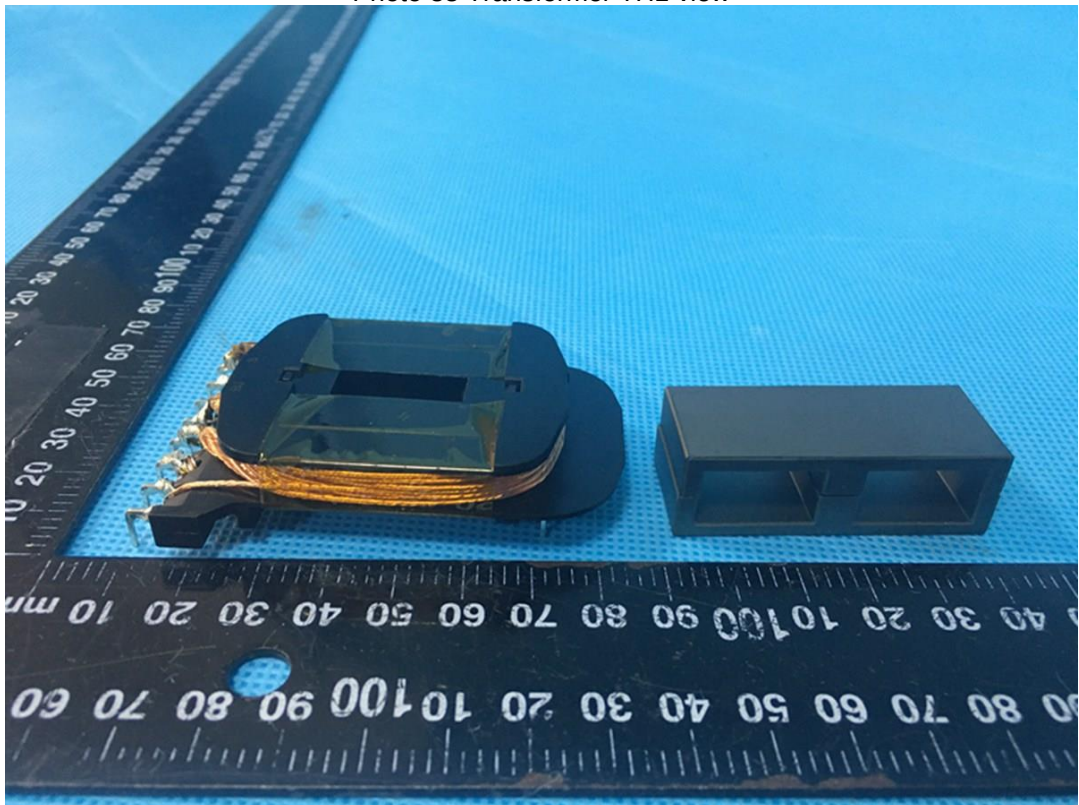


Photo 34 Transformer TH1 view

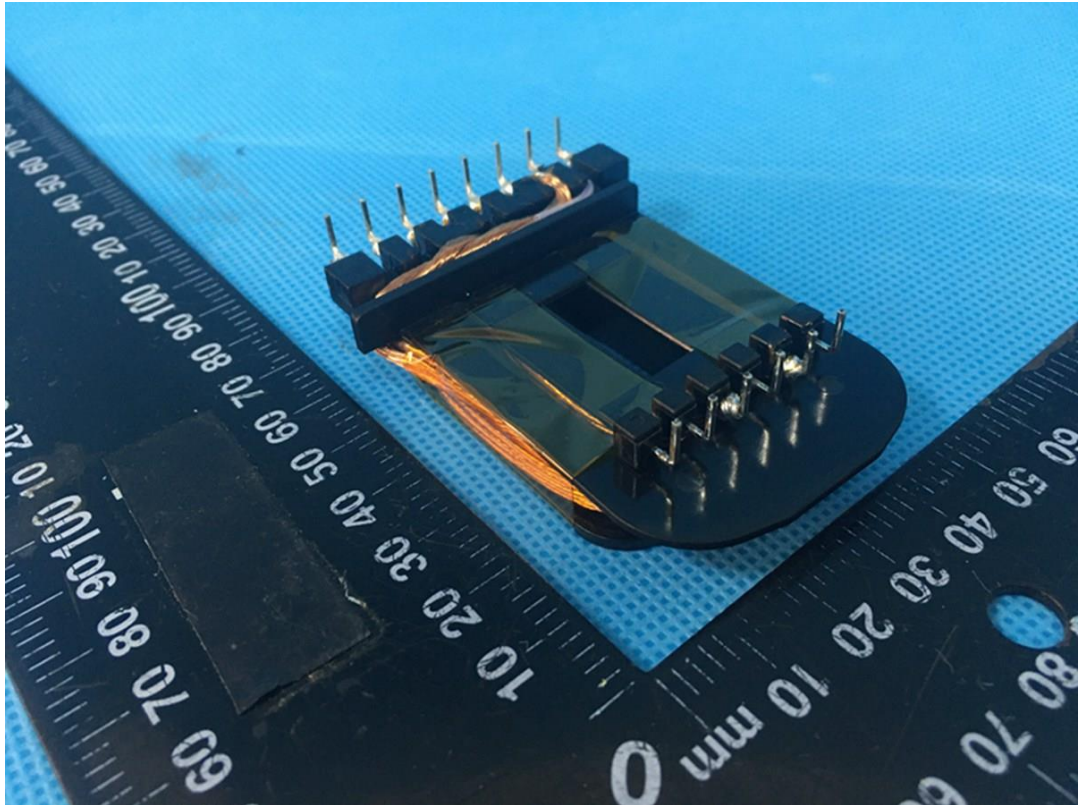


Photo 35 Transformer TH1 view

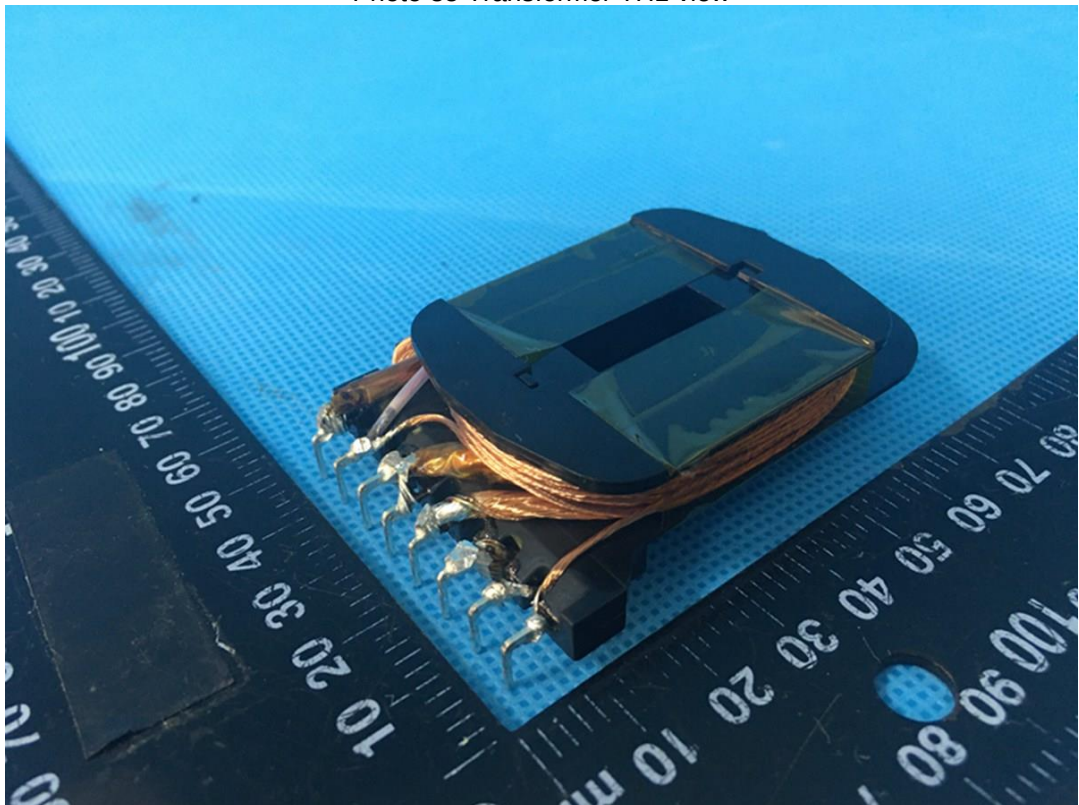


Photo 36 Transformer TH1 view



Photo 37 Transformer TH1 view

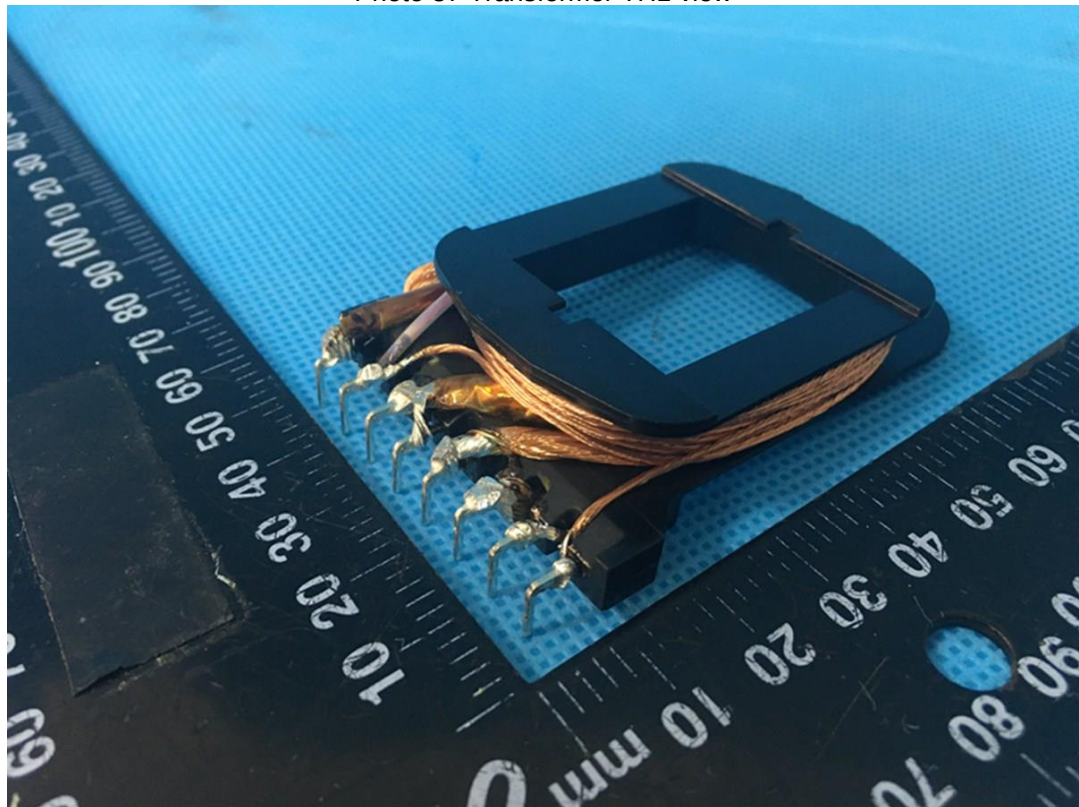


Photo 38 Transformer TH1 view

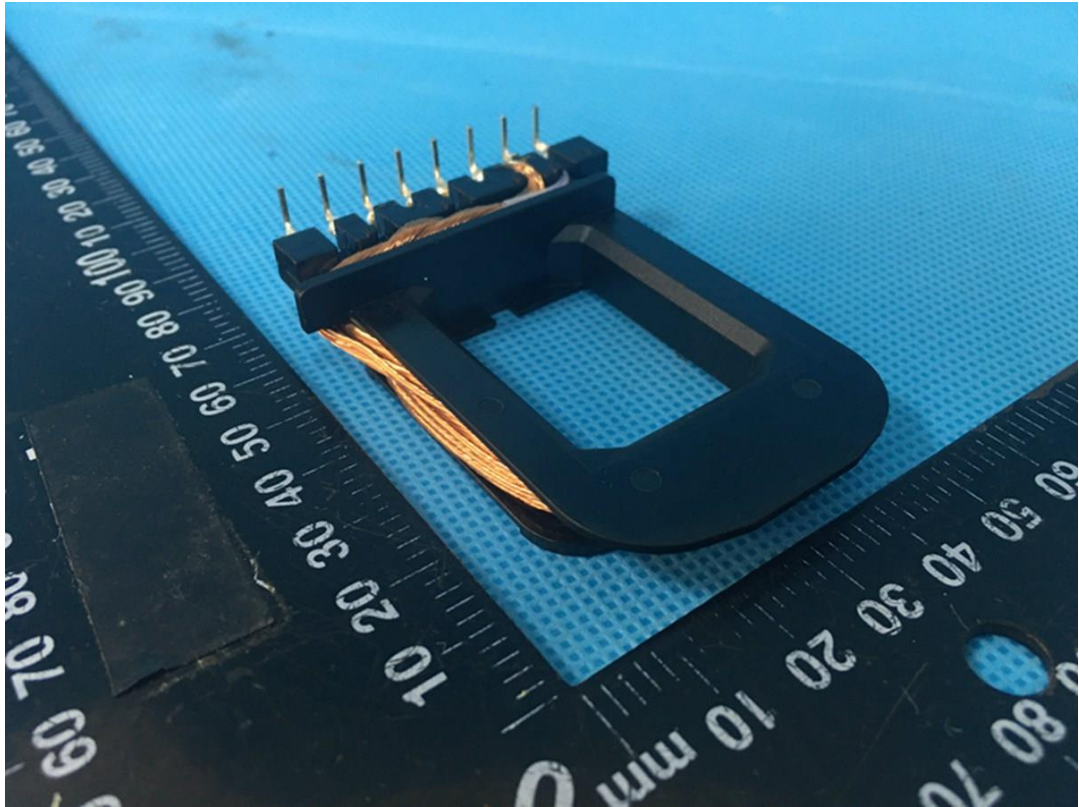


Photo 39 Transformer TH1 view

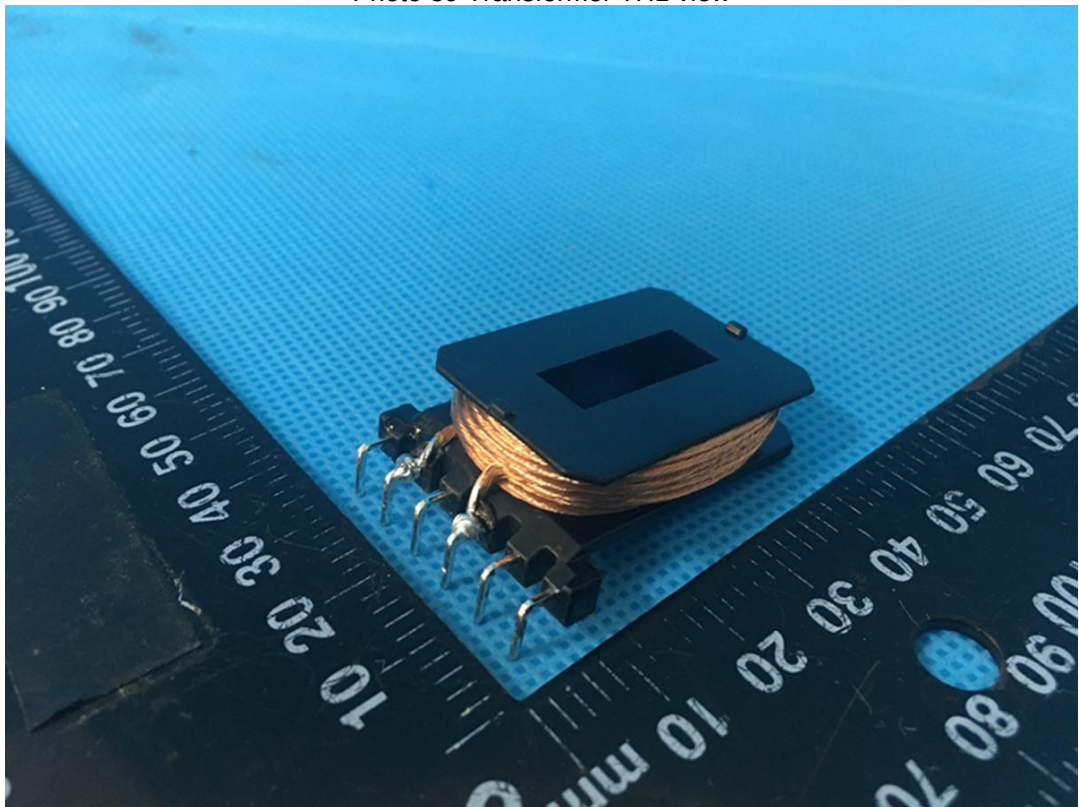


Photo 40 Transformer TH1 view

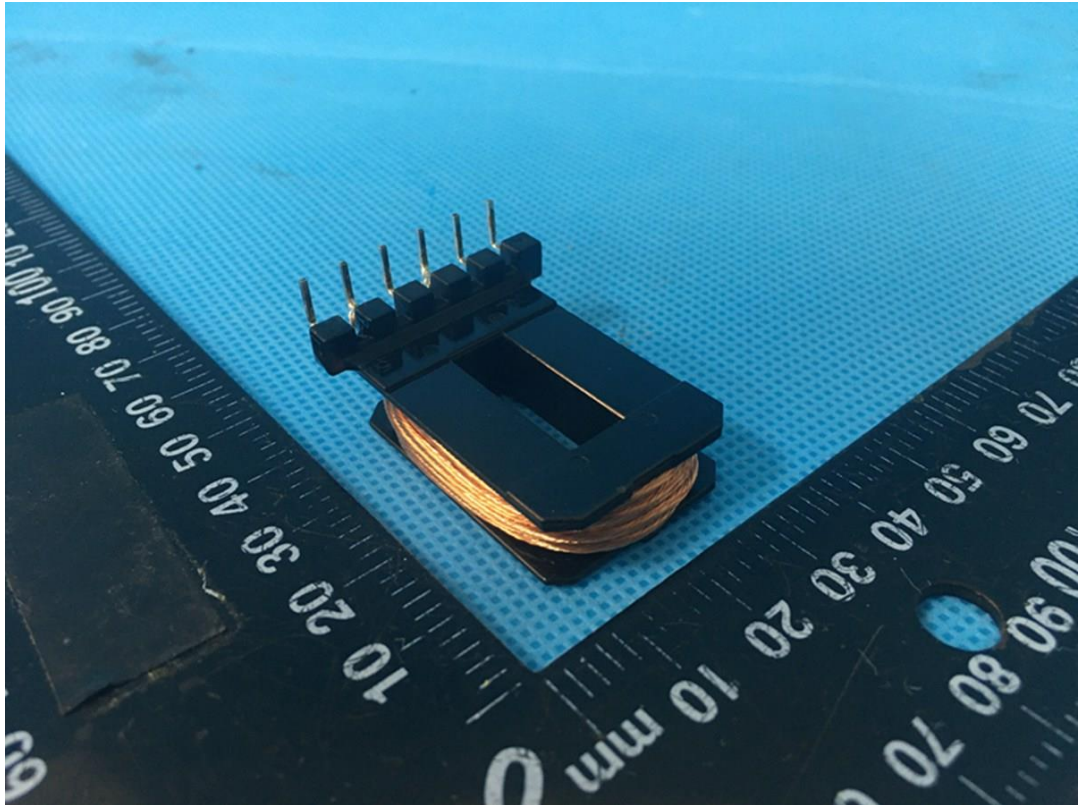


Photo 41 Transformer TH1 view

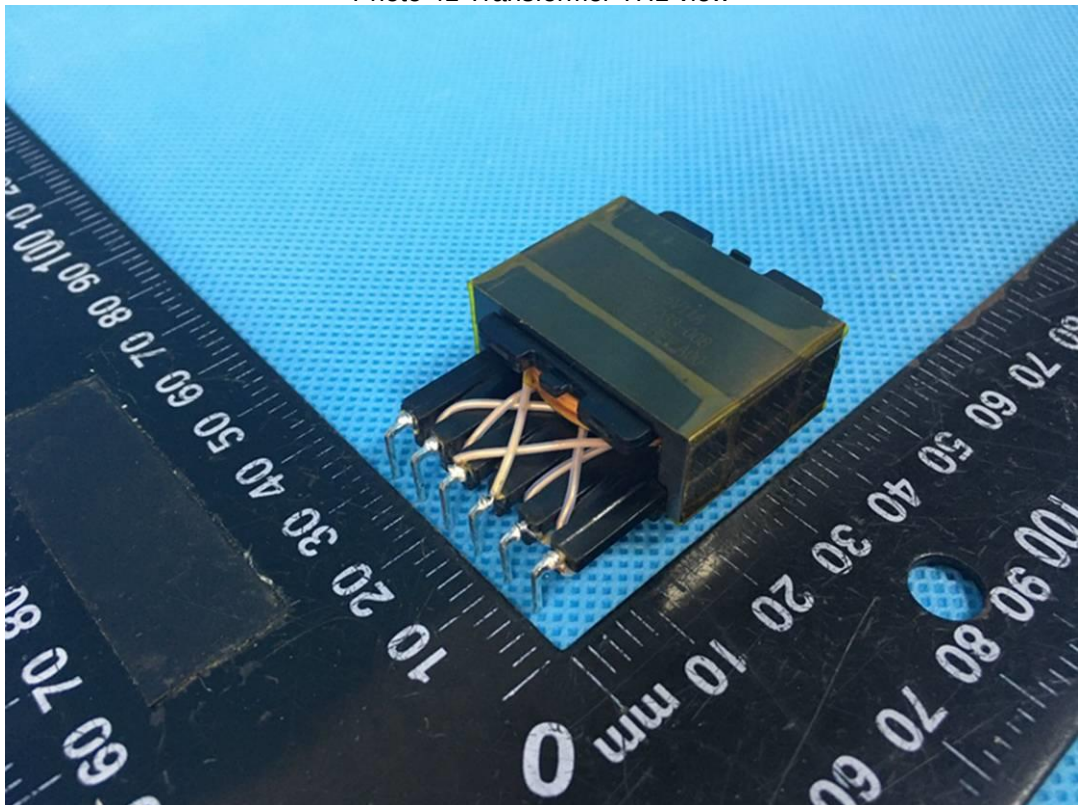


Photo 42 Transformer TF2 view

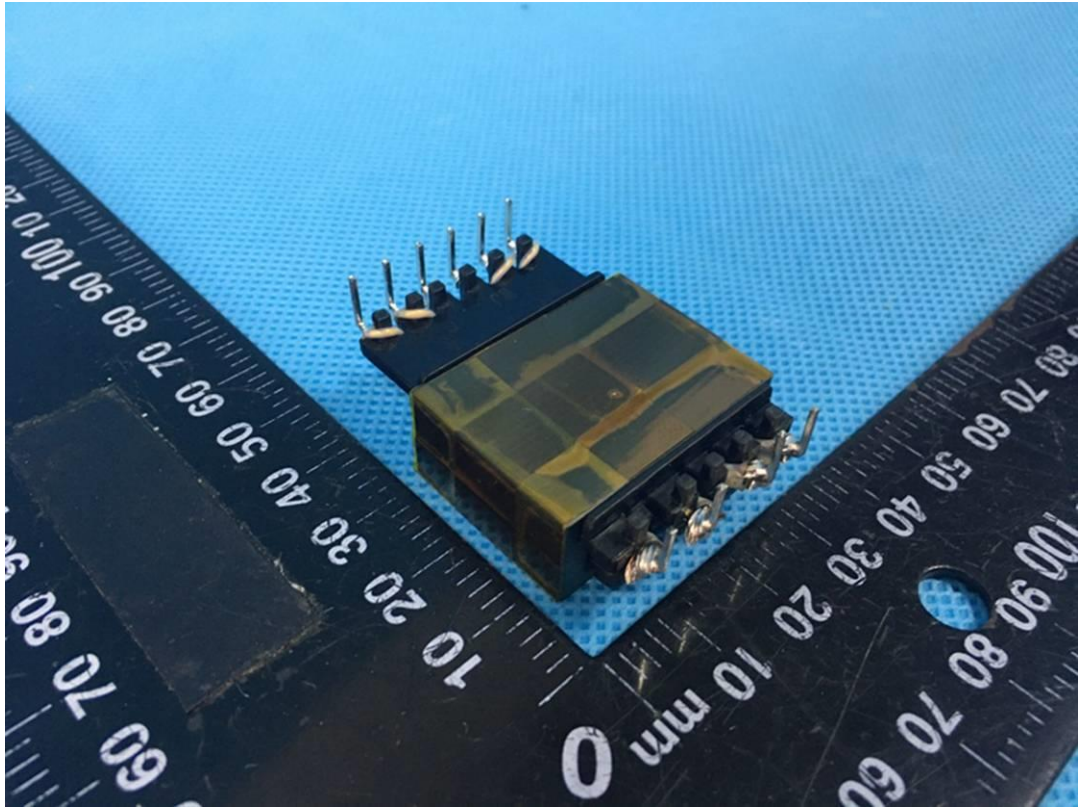


Photo 43 Transformer TF2 view

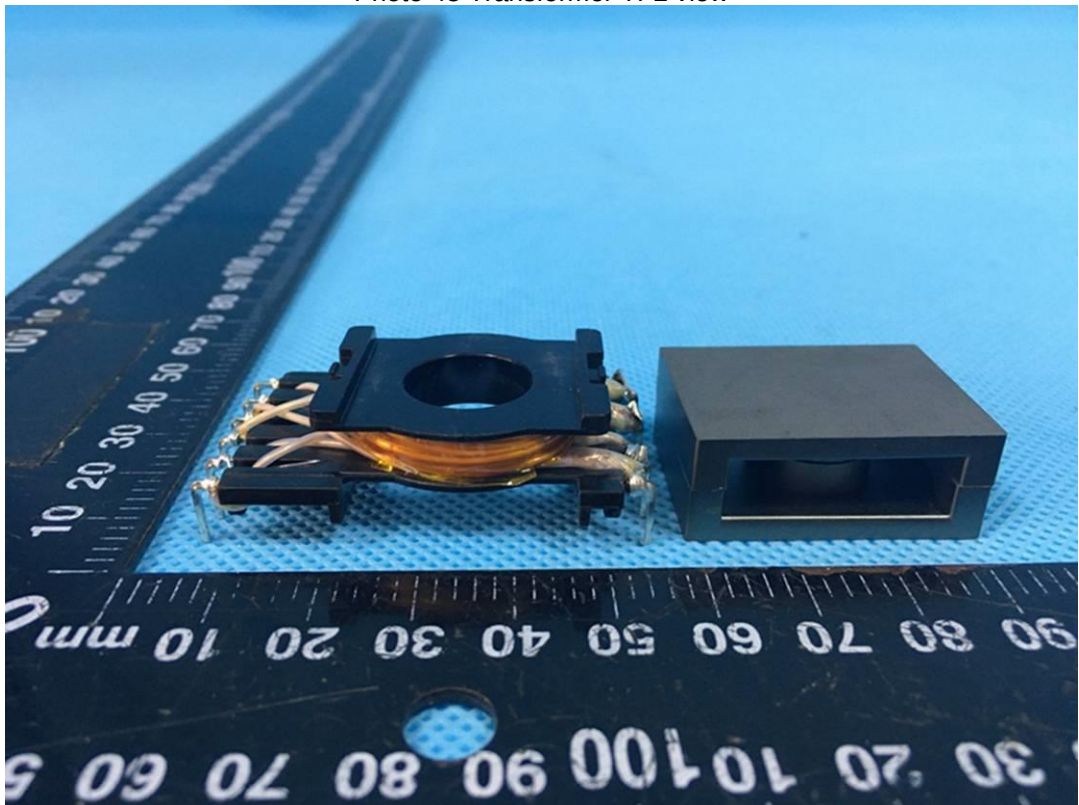


Photo 44 Transformer TF2 view

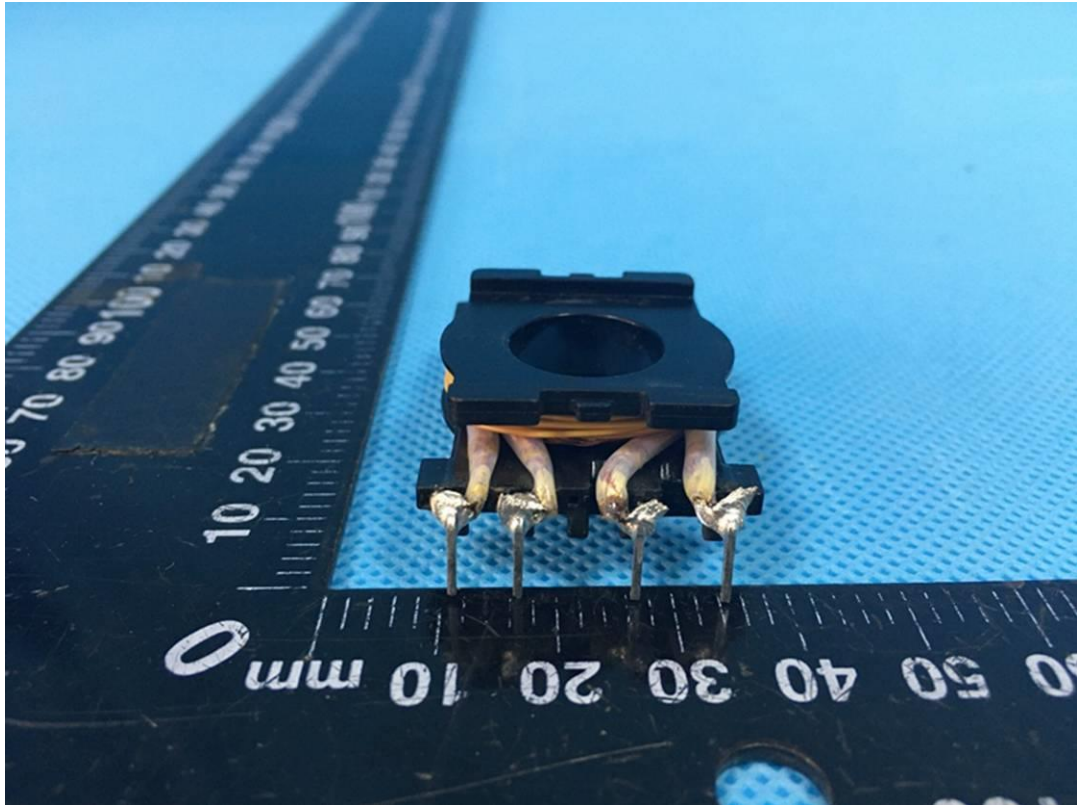


Photo 45 Transformer TF2 view

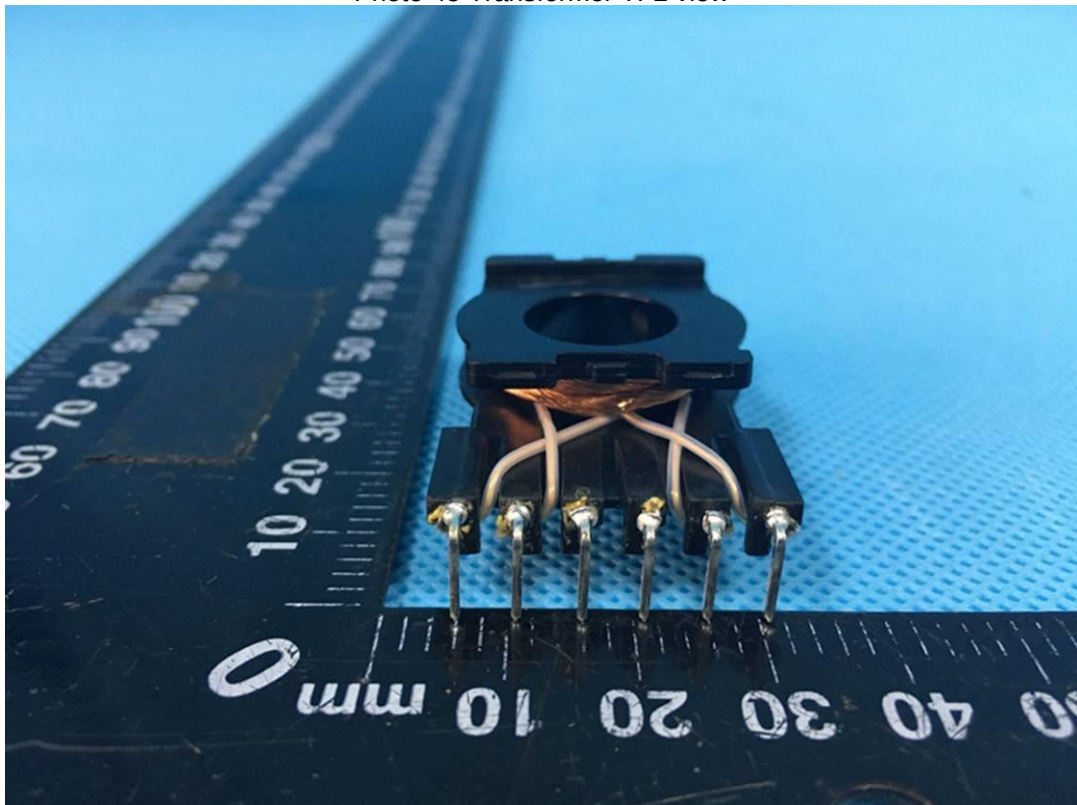


Photo 46 Transformer TF2 view

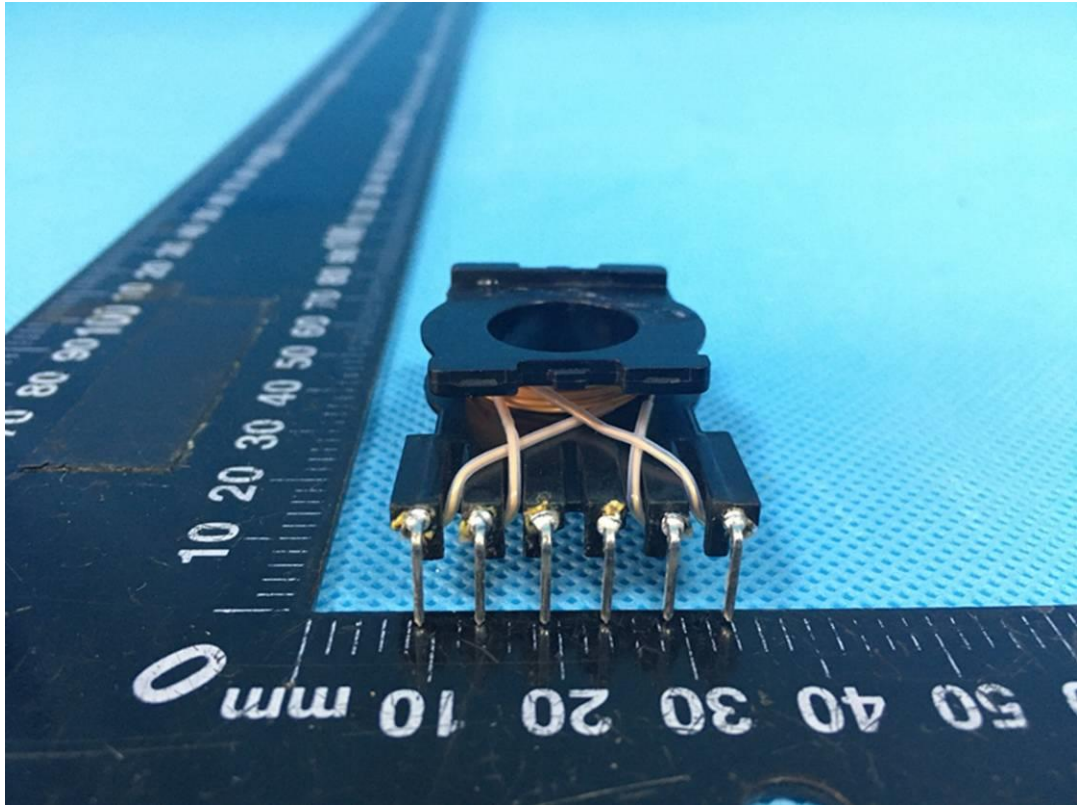


Photo 47 Transformer TF2 view

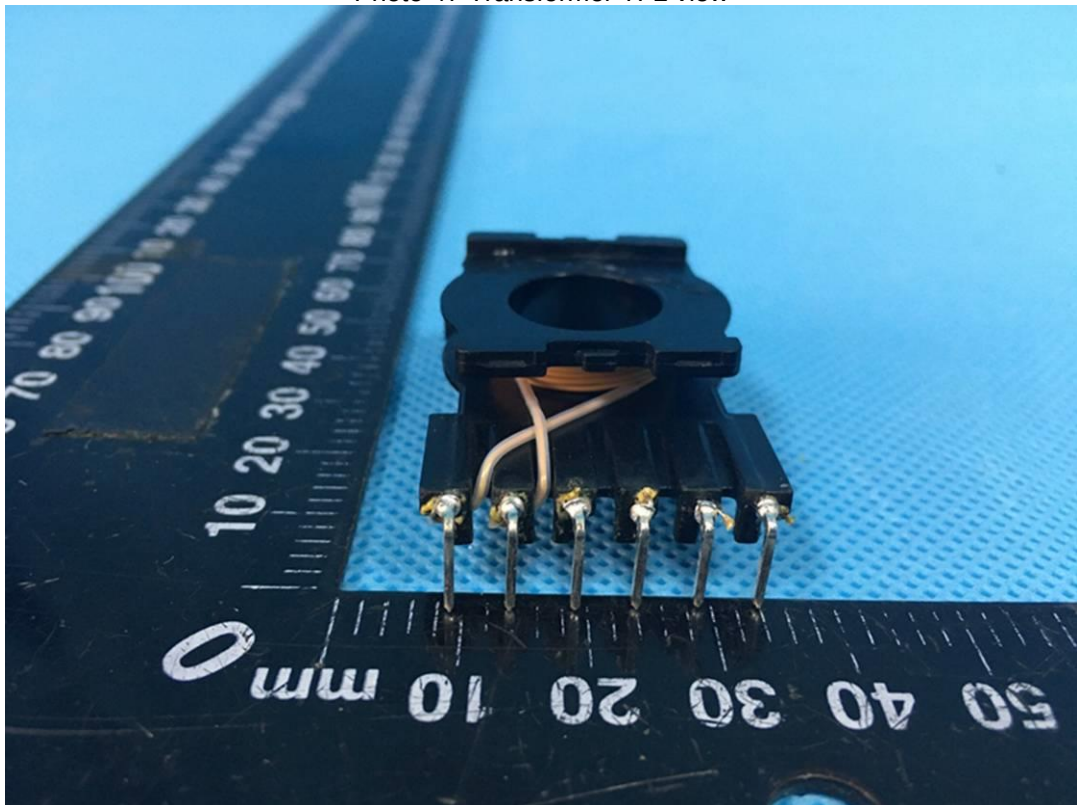


Photo 48 Transformer TF2 view

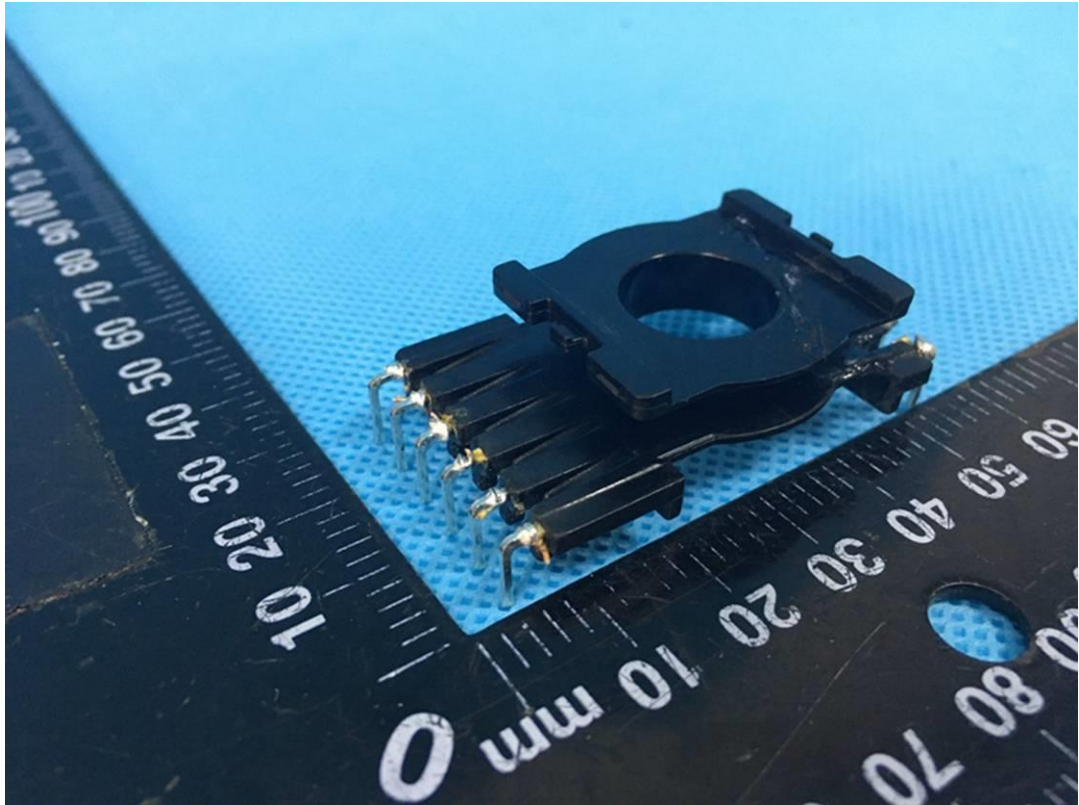


Photo 49 Transformer TF2 view

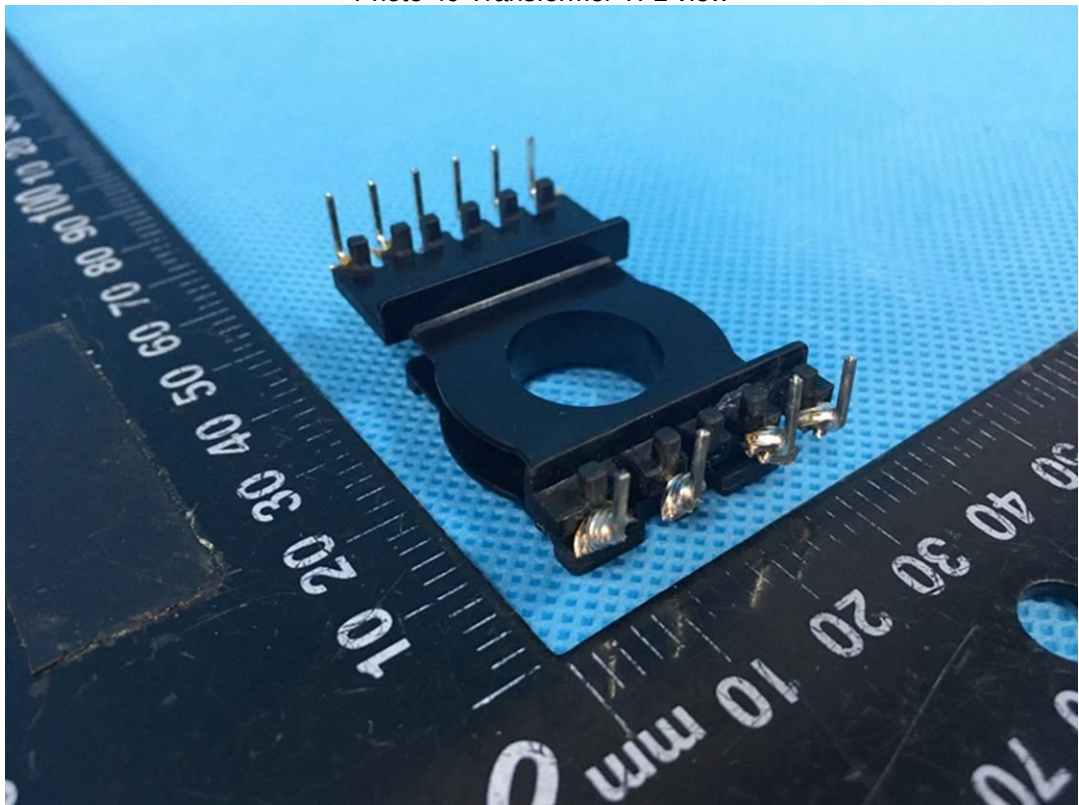
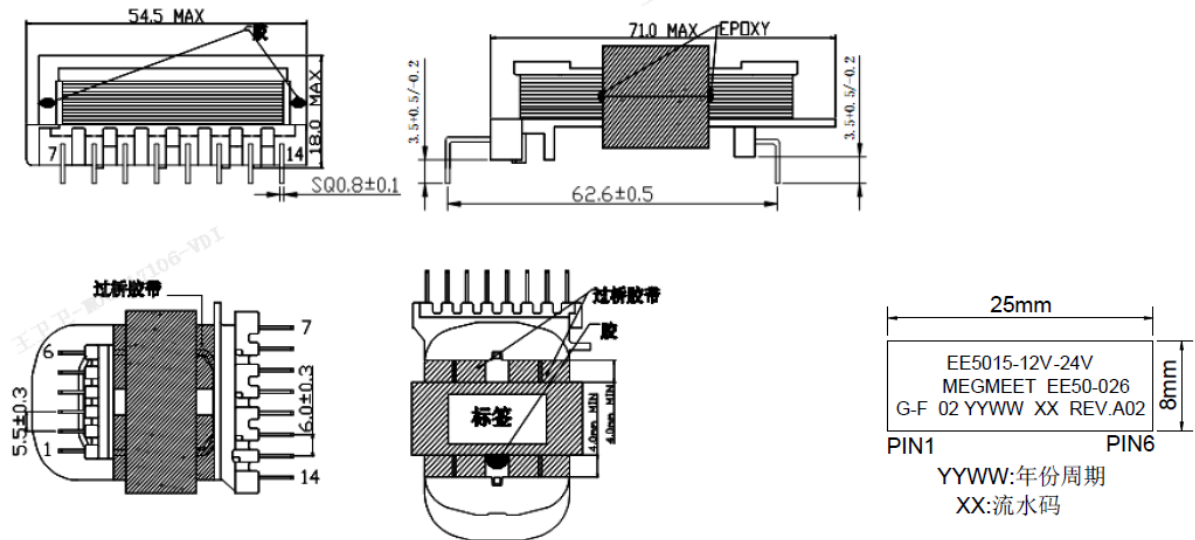


Photo 50 Transformer TF2 view

Transformer specification (TH1):

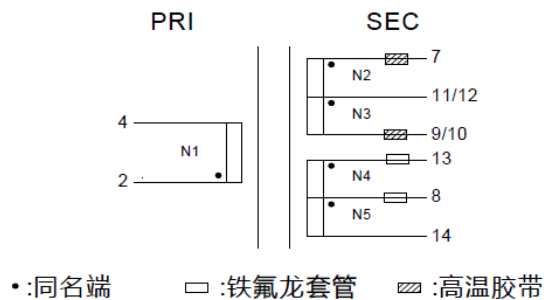
2. 外形尺寸(MECHANICAL DIMENSION/UNIT:mm)



工艺要求及备注:

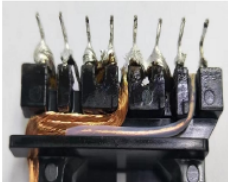
- 1、骨架为全脚;
- 2、磁芯开气隙, 气隙磁芯装于骨架顶部, 磁芯外包20mm高温胶带3TS;
- 3、磁芯中柱点软胶固定;
- 4、两磁芯结合处点胶固定, 共4点,
产品1-6脚顶部骨架与磁芯结合处点胶固定, 共一点;(如图所示);
- 5、装磁芯前, 在骨架两侧装磁芯位置各贴二层厚0.025*33(W)*43(L)mm 1PCS过桥胶带(高温), 隔开绕组与磁芯;
- 6、焊点不高于骨架凸点;
- 7、产品真空浸油, 烘干处理;
- 8、标签(白底黑字, PET材质)贴于顶部, 字底朝1-6脚侧, 或喷印。

3. 电原理图(SCHEMATIC)



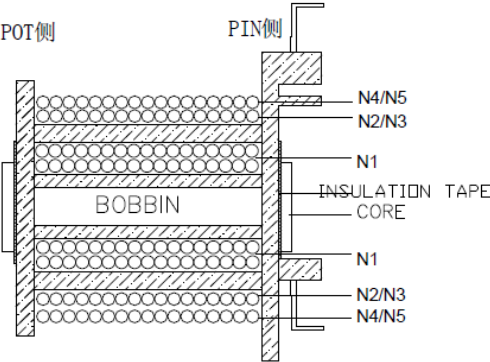
Winding No (组别)	Margin Tape (擋牆膠帶)	Wire 线材	Turns 圈數	端子/PIN		绝缘胶带 TAPE (茶色)	套管/Tube		备注NOTE
				入IN	出OUT		入IN	出OUT	
N1	A SECTION	2UEW-F Φ0.15mm*30P*1P	39TS	2	4	/	/	/	1, 7
N2	B SECTION	2UEW-F Φ0.15mm*75P*2P	2TS	7	11/12	/	TAPE	/	2, 4, 5, 6, 7
N3		2UEW-F Φ0.15mm*75P*2P	2TS	11/12	9/10		/	TAPE	
N4		2UEW-F Φ0.15mm*20P*1P	4TS	13	8	/	TFL	/	3, 4, 7
N5		2UEW-F Φ0.15mm*20P*1P	4TS	8	14		TFL	/	

- 注解:
- 1、平整密绕;
 - 2、N2/N3双线并绕;
 - 3、N4/N5双线并绕;
 - 4、N3/N4起线须经底部过线槽引出 (如图);
 - 5、9/10 脚需用高温胶带包裹隔离;
 - 6、PIN11, 12可以不连锡 (每个脚都挂线), PIN9, 10可不以连锡 (每个脚都挂线);
 - 7、使用F级绞合线; 线材不可交叉打结或损伤漆包膜;



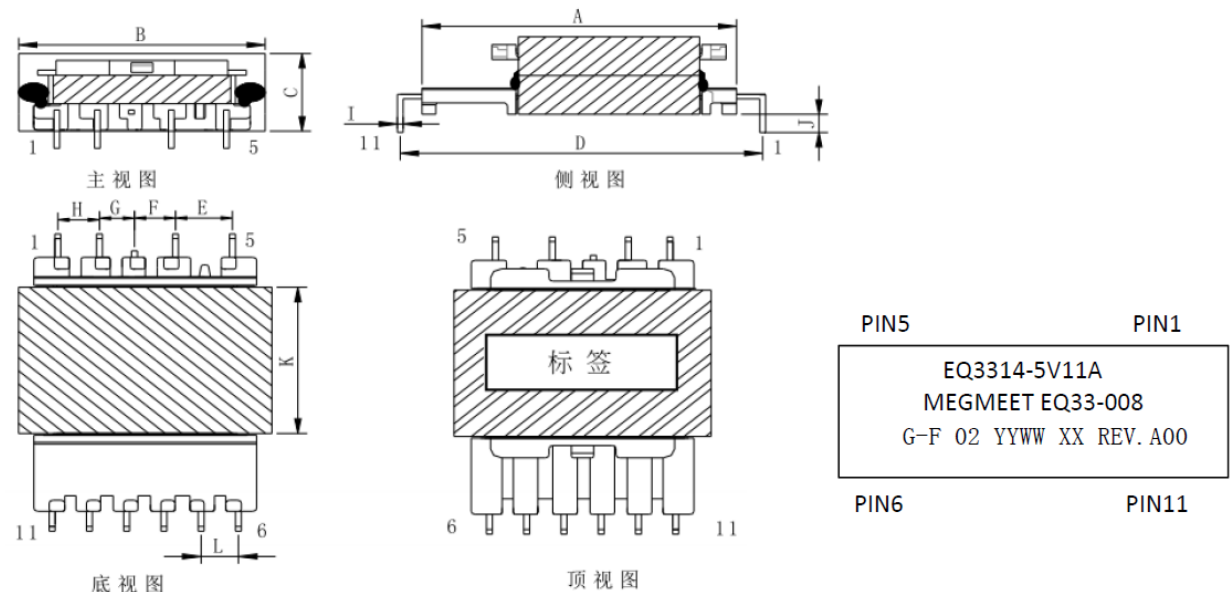
5. 内部结构图(WINDING CONSTRUCTION)

绕线方向: N1/N2/N3/N4/N5从PIN侧看为逆时针绕线(N1不交叉)



Transformer specification (TF2):

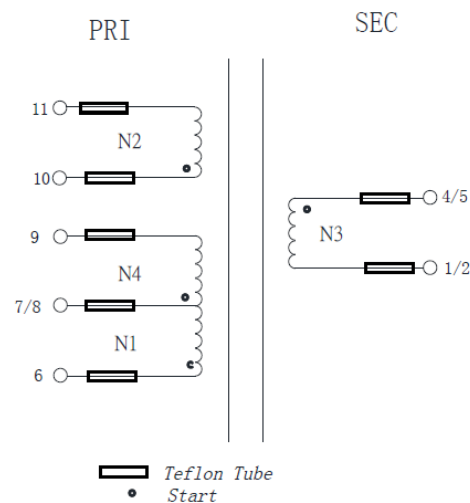
2. 外形尺寸(MECHANICAL DIMENSION/UNIT:mm)



工艺要求及备注:

- 1、PIN3剪掉;
- 2、磁芯开气隙,并装于骨架顶部,磁芯可先用10mm的高温胶带3圈固定,然后包25mm的茶色双层复合高温胶带1.3圈;
- 3、磁芯中柱点软胶,产品真空浸油,烘干处理;
- 4、在磁芯与磁芯结合处点胶固定,胶点与骨架相连,共4点(如图);
- 6、产品如图所示在顶部激光喷码,字底朝6-11侧(YYWW:年周,XX:流水码)。

3. 电原理图(SCHEMATIC)



Winding No (组别)	Margin Tape (擋牆膠帶)		Wire 线材	Turns 圈數	端子/PIN		绝缘胶带 茶色高温	套管/Tube		备注 NOTE
					入IN	出OUT		入IN	出OUT	
N1	/	/	E&B-Φ0.40mm*1P	13TS	6	7	2TS	CB-TT	CB-TT	1. 3. 5
N2	/	/	E&B-Φ0.30mm*1P	7TS	10	11	2TS	CB-TT	CB-TT	1. 2. 3
N3	/	/	2UEWF Φ0.15mm*60P*2C	2TS	4/5	1/2	2TS	CB-TT	CB-TT	1. 4
N4	/	/	E&B-Φ0.40mm*1P	13TS	8	9	2TS	CB-TT	CB-TT	1. 3. 5

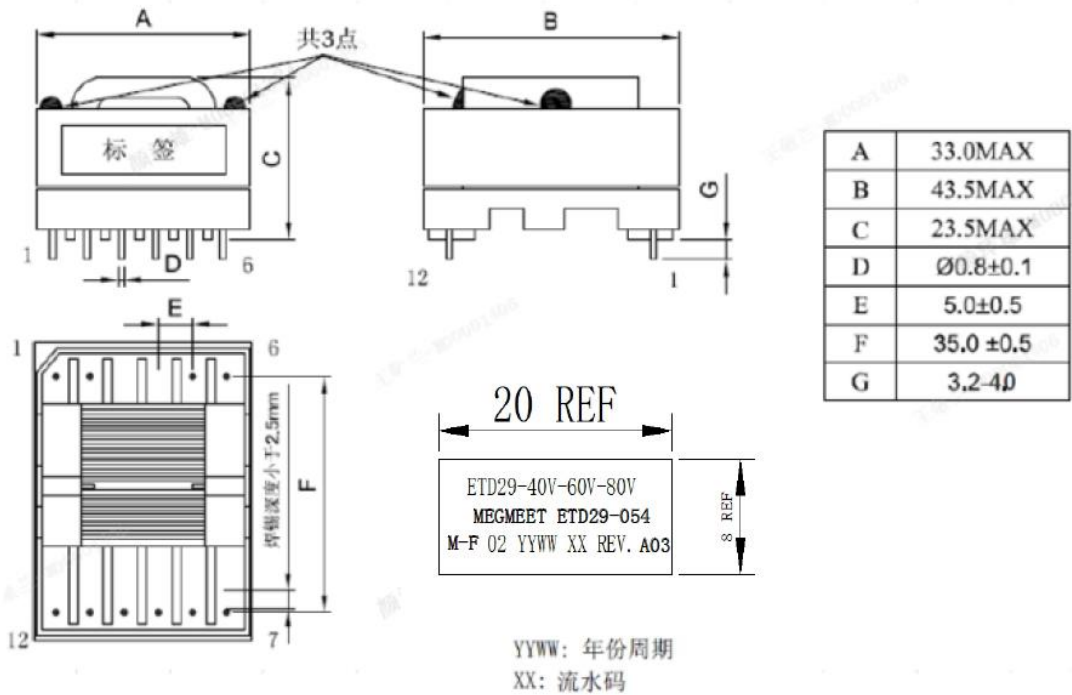
NOTE: 1、平整密绕; 2、疏绕; 3、使用三层绝缘线;
4、使用M-F绞合线; 5、PIN7、PIN8可连锡也可以不连锡。

5. 内部结构图(WINDING CONSTRUCTION) 入轴方向，从PIN脚看为顺时针绕线

The diagram illustrates the internal structure of the winding. It shows a cross-section of the bobbin with layers labeled N1, N2, N3, N4, and OVER CORE. The layers are stacked vertically, with N1 at the bottom and OVER CORE at the top. The bobbin is labeled BOBBIN. The top of the bobbin is labeled TOP, and the pin is labeled PIN. A small inset shows a perspective view of the winding with a clockwise arrow labeled '正转' and 'CNC'.

Transformer specification (TH2, TH3):

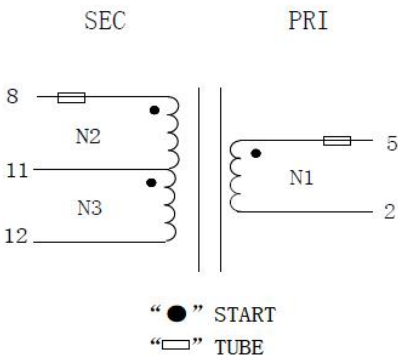
2. MECHANICAL DIMENSION(UNIT:mm)外形尺寸



工艺要求及备注:

- 1、骨架缺PIN9。
- 2、磁芯需研磨，装于PIN7-12,磁芯中柱点软胶固定，顶部磁芯接合处和次级顶部点胶固定（共3点）。
- 3、磁芯包9.5mm高温胶带3圈固定，焊点不高于骨架挡板。
- 4、产品真空含浸
- 5、标签(白底黑字，材质PET)或喷码于产品PIN1-6边，字朝底部，“YYWW”表示年份周期，“XX”为流水码

3.SCHEMATIC 电气原理图:



4、WINDING绕线明细表：

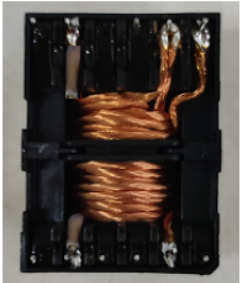
Winding No (组别)	Margin Tape (擋牆膠帶)		Wire 线材	Turns 圈數	端子/PIN		绝缘 胶带 TAPE	套管/Tube		备注NOTE
	顶端	PIN 端			入IN	出OUT		入IN	出OUT	
N1	/	/	UEW-F ø0.15mm*35*1P	24	5	2	/	TFL	/	1, 2, 5
N2	/	/	UEW-F ø0.15mm*40*1P	13	8	11	/	TFL	/	1, 3, 5
N3	/	/	UEW-F ø0.15mm*40*1P	4	11	12	/	/	/	1, 4, 5

注解：

1. 使用绞合线； 2. N1密绕三层, 最后一层居中密绕； 3. N2密绕+疏绕. 4. 均匀绕线
5. 绕线排列整齐，并均匀分布；漆包线不得打结，不交叉重叠，不损伤漆皮；

5、WINDING/内部结构图

从PIN1侧看逆时针绕，N1出入线不交叉。



图片仅供参考绕线方向

