

TEST REPORT

Applicant : SHENZHEN FENDA TECHNOLOGY CO., LTD.
Address : Fenda Hi-Tech Park, Zhoushi Road, Shiyan Town, Baoan District, Shenzhen City, Guangdong, China


Manufacturer : SHENZHEN FENDA TECHNOLOGY CO., LTD.
Address : Fenda Hi-Tech Park, Zhoushi Road, Shiyan Town, Baoan District, Shenzhen City, Guangdong, China

Product Name : Bluetooth speaker
Trade Mark : F&D
Model No. : W130X, W130BT, W130BTU, A180X, A180BT, A180U, A180F, A190X, A190BT, A190U, A190F
Ratings : 220-240V~, 50/60Hz, 0.3A
Standard : Audio, Video and Similar Electronic Apparatus: Safety Requirements EN 60065:2002+A1:2006+A11:2008+A2:2010+ A12:2011

Date of Receiver : June 06, 2014
Date of Test : June 07, 2014 to June 16, 2014
Date of Issue : November 26, 2015
Test Report Form No : NTCS-IEC60065-A1-E
Test Result : Pass *

This Test Report is Issued Under the Authority of :

Compiled by



Ivan Luo/ Engineer

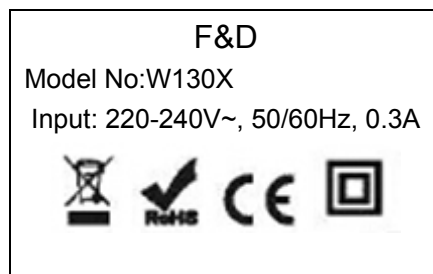


Han Song / Manager

*Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of Dongguan Nore Testing Center Co., Ltd. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

Copy of marking plate:



Note:

- The above markings are the minimum requirements required by the safety standard. For the final production samples, the additional markings which do not give rise to misunderstanding may be added.
- The CE marking and WEEE symbol should be at least 5.0mm and 7.0mm respectively in height.

Summary of testing:

The submitted samples were found to comply with the above standard.

Test item particulars	:	
Classification of installation and use	:	Desk-top
Supply Connection	:	Non-detachable power supply cord
Possible test case verdicts:		
- test case does not apply to the test object	:	N
- test object does meet the requirement	:	P (Pass)
- test object does not meet the requirement	:	F (Fail)
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 is used as the decimal separator.		
<u>History and modification:</u> Update the photo, add new Model, This report is issued and based on the report "NTC1406691S" dated on 2014-06-16, no test need to be conducted.		
Test report No: NTC1406691S-1, This test report replaces and cancels the previous test report No: NTC1406691S dated on 2014-06-16.		
General product information:		
1. The product has been tested according to standard EN 60065: 2002 +A1: 2006+A11:2008+ A2:2010+ A12:2011		
<ul style="list-style-type: none">• Tests performed on the bench• Maximum ambient temperature: <u>+35°C</u>• Tested for tropical climate conditions• Tests are conducted on model W130X.• All test results comply with therequirements of the standards.		
2. Model W130BT, W130BTU, A180X, A180BT, A180U, A180F, A190X, A190BT, A190U, A190F are identical to model W130X, except for model name and appearance.		
3. W130X was selected as representative sample to perform full test.		

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
3	GENERAL REQUIREMENTS		P
	Safety class of the apparatus	Class II apparatus	P
4	GENERAL CONDITIONS OF TESTS		P
4.1.4	Ventilation instructions require the use of the test box	The temperature measurement was carried out with the apparatus positioned in accordance with the user's manual.	P
5	MARKING		P
	Comprehensible and easily discernible		P
	Permanent durability against water and petroleum spirit	Slight rubbing by hand with a water soaked cloth and with a petroleum soaked cloth for 15s each. The printed markings were still legible	P
5.1	a) Identification, maker	See copy of marking plate	P
	b) Model number or type reference	W130X, W130BT, W130BTU, A180X, A180BT, A180U, A180F, A190X, A190BT, A190U, A190F	P
	c) Class II symbol if applicable	See copy of marking plate	P
	d) Nature of supply	See copy of marking plate	P
	e) Rated supply voltage	See copy of marking plate	P
	f) Mains frequency if safety dependant	See copy of marking plate	P
	g) Rated current or power consumption for apparatus supplied by supply apparatus for general use		N
	Measured current or power consumption	See above	N
	Deviation % (max 10%)	See above	N
	h) Rated current or power consumption for apparatus intended for connection to an a.c. mains supply . :	0.3A	P
	Measured current or power consumption	(see appended table)	P
	Measured current or power consumption for Television set	Not television set	N
	Deviation % (max 10%)	Less then 10%	P
5.2	a) Earth terminal	Class II apparatus	N
	b) Hazardous live terminals	No hazards live terminals	N
	c) Markings on supply output terminals	No such output terminals	N

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
5.3	a) Use of triangle with exclamation mark	In circuit diagram	P
	b) marking on loudspeaker grille, IEC 60417-5036		N
5.4	Instructions for use	English version checked. Versions of other languages will be provided when submitted for national approval.	P
5.4.1	a) Mains powered equipment not exposed to dripping or splashing. Warning concerning objects filled with liquid, etc.	The statement was provided in manual.	P
	b) Hazardous live terminals, instructions for wiring	No hazardous live terminal	N
	c) Instructions for replacing lithium battery	No lithium battery	N
	d) Class I earth connection warning	Class II apparatus	N
	e) Instructions for multimedia system connection		N
	f) Special stability warning for attachment of the apparatus to the floor/wall		N
	g) Warning: battery exposure to heat		N
	h) Warning: protective film on CRT face		N
5.4.2	a-b) Disconnect device: plug/coupler or all-pole mains switch location, accessibility and markings	Mains plug used as disconnect device and mentioned in the user manual	P
	c) Instructions for permanently connected equipment	The unit is not a permanently connected equipment	N
	Marking, signal lamps or similar for completely disconnection from the mains	No such construction	N
6	HAZARDOUS RADIATION		N
6.1	Ionizing radiation < 36 pA/kg (0,5 mR/h)	No picture tube inside the EUT.	N
6.1	European Council Directive 96/29/Euratom of 13 May 1996 10cm from outer surface of apparatus <1μSv/h (0,1mR/h)	No picture tube inside the EUT.	N
6.2	Laser radiation, emission limits to IEC 60825-1:		N
	Emission limits under fault conditions		N
7	HEATING UNDER NORMAL OPERATING CONDITIONS		P
7.1	Temperature rises not exceeding specified values, no operation of fuse links	(see appended table 7.1)	P
7.1.1	Temperature rise of accessible parts	(see appended table 7.1)	P

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
7.1.2	Temperature rise of parts providing electrical insulation	(see appended table 7.1)	P
7.1.3	Temperature rise of parts acting as a support or as a mechanical barrier	(see appended table 7.1)	P
7.1.4	Temperature rise of windings	(see appended table 7.1)	P
7.1.5	Parts not subject to a limit under 7.1.1 to 7.1.4	(see appended table 7.1)	P
7.2	Softening temperature of insulating material supporting parts conductively connected to the mains carrying a current > 0,2 A at least 150 °C		N

8	CONSTRUCTIONAL REQUIREMENTS WITH REGARD TO THE PROTECTION AGAINST ELECTRIC SHOCK		P
8.1	Conductive parts covered by lacquer, paper, untreated textile oxide films and beads etc. considered to be bare	No such components.	P
8.2	No shock hazard when changing voltage setting device, fuse-links or handling drawers etc.	Tools required.	P
8.3	Insulation of hazardous live parts not provided by hygroscopic material	No hygroscopic material used	P
8.4	No risk of electric shock following the removal of a cover which can be removed by hand	The EUT is complied with the requirements	P
8.5	Class I equipment	Class II apparatus	N
	Basic insulation between hazardous live parts and earthed accessible parts	No such insulation	N
	Resistors bridging basic insulation complying with 14.1 a)	No such component	N
8.6	Class II equipment and Class II constructions within Class I equipment	Class II apparatus	P
	Reinforced or double insulation between hazardous live parts and accessible parts	Hazardous live parts to accessible parts are separated by either reinforced or double insulation.	P
	Components bridging reinforced or double insulation complying with 14.1 a) or 14.3	Transformer complied with 14.3	P
	Basic insulation bridged by components complying with 14.3.4.3		N
	Basic and supplementary insulation each being bridged by a capacitor complying with 14.2.1 a)		N
	Reinforced or double insulation being bridged with 2 capacitors in series complying with 14.2.1 a)	No such components	N
	Reinforced or double insulation being bridged with a single capacitor complying with 14.2.1 b)	Y1-capacitor (CY1, C4) used.	P

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
8.7	This clause is void		--
8.8	Basic or supplementary insulation > 0,4 mm (mm) :	Approved power cord used	P
	Reinforced insulation > 0,4 mm (mm)	Bobbin of transformer (T1), optocouplers (U2), plastic enclosure complied with this requirement	P
	Thin sheet insulation (excluding non-separable thin sheet insulation. See 8.22)	See below.	P
	Basic or supplementary insulation, at least two layers, each meeting 10.3		N
	Basic or supplementary insulation, three layers any two of which meet 10.3		N
	Reinforced insulation, two layers each of which meet 10.3		N
	Reinforced insulation, three layers any two which meet 10.3	Between primary winding and secondary winding of transformer.	P
8.9	Adequate insulation between internal wiring hazardous live conductors and accessible parts	Reinforced insulation	P
	Adequate insulation between internal wiring hazardous live parts and conductors connected to accessible parts	Secondary wires safely secured away from hazardous live parts	P
8.10	Double insulation between conductors connected to the mains and accessible parts.	Double or reinforced insulation	P
	Double insulation between internal hazardous live parts and conductors connected to accessible parts.	Double or reinforced insulation	P
8.11	Detaching of wires	No risk of any wire becoming detached	P
	No undue reduction of creepages or clearance distances if wires become detached	Internal wirings were well routed and secured	P
	Vibration test carried out :	See clause 12.1.2.	P
8.12	This clause is void		--
8.13	Adequate fastening of windows, lenses, lamp covers etc. (pull test 20 N for 10 s)		N
8.14	Adequate fastening of covers (pull test 50 N for 10 s)		N
8.15	No risk of damage to the insulation of internal wiring due to hot parts or sharp edges		N
8.16	Only special supply equipment can be used	No such construction	N
8.17	Insulated winding wire without additional interleaved insulation		N
8.18	Endurance test as required by 8.17	No such construction	N
8.19	Disconnection from the mains	See below	P

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
8.19.1	Disconnect device	Mains plug was considered as disconnect device.see sub-clause 5.4.2	P
	All-pole switch or circuit breaker with >3mm contact separation	No all-pole switch or circuit breaker.	N
8.19.2	Mains switch ON indication	No such switch used	N
8.20	Switch not fitted in the mains cord	No such switch used	N
8.21	Bridging components comply with clause 14	No such components	N
8.22	Non-separable thin sheet material	No such materials	N

9	ELECTRIC SHOCK HAZARD UNDER NORMAL OPERATING CONDITIONS		P
9.1	Testing on the outside		P
9.1.1	For voltages >1000 V ac or >1500 V dc complies with clause 13.3.1 for basic insulation	No voltages exceeding 1000Vac or 1500Vdc	N
9.1.1.1	a) Open circuit voltages	See appended table 9.1.1	P
	b) Touch current measured from terminal devices using the network in annex D	See appended table 9.1.1	P
	c) Discharge not exceeding 45 µC	Less than 45µC	P
	d) Energy of discharge not exceeding 350 mJ	No voltage exceeding 15kV	N
9.1.1.2	Test with test finger and test probe	The test finger and test probe can not touch hazardous parts.	P
9.1.2	No hazardous live shafts of knobs, handles or levers	No live shafts, handles or levers.	N
9.1.3	Ventilation holes and other holes tested by means of 4 mm x 100 mm test pin	No enter	P
9.1.4	Terminal devices tested with 1 mm x 20 mm test pin (10 N); test probe D of IEC 61032	Test probe and test pin did not become hazardous live parts after test.	P
	Terminal devices tested with 1 mm x 100 mm straight wire (1 N); test probe D of IEC 61032	Test probe and test pin did not become hazardous live parts after test.	P
9.1.5	Pre-set controls tested with 2.5 mm x 100 mm test pin (10 N); test probe C of IEC 61032	No Pre-set controls	N
9.1.6	No shock hazard due to stored charge on withdrawal of the mains plug; voltage (V) after 2 s	Less than 8V.	P
	If C is not greater than 0,1 µF no test needed	0.22µF	N
9.1.7	Resistance to external forces		P
	a) Test probe 11 of IEC 61032 for 10 s (50 N)	No damage of enclosure and no hazardous live parts are accessible.	P
	b) Test hook of fig. 4 for 10 s (20 N)	No hazardous live parts are accessible.	P

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
	c) 30 mm diameter test tool for 5 s (100 or 250 N)		P
9.2	No hazard after removing a cover by hand	Tools required.	N

10	INSULATION REQUIREMENTS		P
10.1	Insulation resistance (MΩ) at least 2 MΩ min. after surge test for basic and 4 MΩ min. for reinforced insulation	See appended table 10.3	P
10.2	Humidity treatment 48 h or 120 h	Performed for 48h at temp. 30°C and humidity 95%.	P
10.3	Insulation resistance and dielectric strength between mains terminals	See appended table 10.3	P
	Insulation Resistance and dielectric strength across BASIC or SUPPLEMENTARY insulation (Class I)		N
	Insulation resistance and dielectric strength across REINFORCED insulation (Class II)	See appended table 10.3	P

11	FAULT CONDITIONS		P
11.1	No shock hazard under fault condition	No electric shock hazard under fault conditions	P
11.2	Heating under fault condition	See appended table 11.2	P
	Flames extinguish within 10 seconds	No any flames during fault conditions testing	P
	No hazard from softening solder	No softening of solder point and becoming fluid	P
	Soldered terminations not used as protective mechanism	No such construction	P
11.2.1	Measurement of temperature rises	See appended table 11.2.	P
11.2.2	Temperature rise of accessible parts	See appended table 11.2.	P
11.2.3	Temperature rise of parts, other than windings and printed boards, providing electrical insulation	See appended table 11.2.	P
11.2.4	Temperature rise of parts acting as a support or mechanical barrier		P
11.2.5	Temperature rise of windings	See appended table 11.2.	P
11.2.6	Temperature rise of printed boards shall not exceed the limits of table 3 by max. 100 K for max. 5 min		N
	Printed circuit boards (PCB) classified as V-0 according to 60695-11-10 or Clause G.1 may exceed the limit in table 3 in case a) and b):		N
	a) Temperature rise of printed circuit boards exceeding the limits of table 3 by not more than 100 K for an area not greater than 2 cm ²		N

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Clause	Requirement + Test	Result - Remark	Verdict
	b) Temperature rise of printed circuit boards exceeding the limits of table 3 up to 300 K for an area not greater than 2 cm ² for a maximum of 5 min		N
	Meets all the special conditions if conductors on printed circuit boards are interrupted		N
	Class I protective earthing maintained	Class II equipment.	N
11.2.7	Temperature rise of parts not subject to the limits of 11.2.1 to 11.2.6 shall not exceed the limits in table 3, item e), "Fault conditions".	See appended table 11.2	P

12	MECHANICAL STRENGTH		P
12.1.1	Bump test where mass >7 kg	The weight of the EUT is less than 7kg. Approx. 2.52Kg	N
12.1.2	Vibration test	No hazards after the test	P
12.1.3	Impact hammer test	No hazards after the test	P
	Steel ball test	No hazards after the test	P
12.1.4	Drop test for portable apparatus where mass ≤ 7 kg	No hazards after the test	P
12.1.5	Thermoplastic enclosures stress relief test	70°C, 7 hours (after tested, the hazardous live parts can not be touched.)	P
12.2	Fixing of knobs, push buttons, keys and levers		P
12.3	Remote controls with hazardous live parts	No remote control device with hazardous live parts	N
12.4	Drawers (pull test 50 N, 10 s)	No such device.	N
12.5	Antenna coaxial sockets providing isolation	No such device.	N
12.6	Telescoping or rod antennas construction	No such device.	N
12.6.1	Telescoping or rod antennas securement	No such device.	N

13	CLEARANCE AND CREEPAGE DISTANCES		P
13.1	Clearances in accordance with 13.3	Clearances measured according to annex E. Pollution degree 2 was considered	P
	Creepage distances in accordance with 13.4	Creepage measured according to annex E. Pollution degree 2 was considered	P
13.2	Determination of operating voltage		P
13.3	Clearances		P
13.3.1	General		P

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
13.3.2	Circuits conductively connected to the mains comply with table 8 and, where applicable, table 9	See appended table 13.3 & 13.4	P
13.3.3	Circuits not conductively connected to the mains comply with table 10		N
13.3.4	Measurement of transient voltages		N
13.4	Creepage distances	See appended table 13.3 & 13.4	P
	Creepage distances greater than table 11 minima	See appended table 13.3 & 13.4	P
13.5	Printed boards	No such construction	N
13.5.1	Clearances and creepage distances between conductors on printed circuit boards, one of which may be conductively connected to the mains, as in fig. 10		N
13.5.2	Type B coated printed circuit boards complying with IEC 60664-3 (basic insulation only)	No such construction	N
13.6	Conductive parts along uncemented joints clearances and creepage distances comply with 13.3 and 13.4	No such construction	N
	Conductive parts along reliably cemented joints comply with 8.8	No such construction	N
	Temperature cycle test and dielectric strength test	No such construction	N
13.7	Enclosed, enveloped or hermetically sealed parts: not conductively connected to the mains: clearances and creepage distances as in table 12	No such construction	N
13.8	Parts filled with insulating compound, meeting the requirements of 8.8	No such construction	N

14	COMPONENTS		P
14.1	Resistors		N
	a) Resistors between hazardous live parts and accessible metal parts	No such resistors used	N
	b) Resistors, other than between hazardous live parts and accessible parts	No such resistors used	N
	Resistors separately approved		N
14.2	Capacitors and RC units		P
	Capacitors separately approved	Yes	P
14.2.1	Y capacitors tested to IEC 60384-14, 2 nd edition ...:	Y1: C4, CY1	P
14.2.2	X capacitors tested to IEC 60384-14, 2 nd edition ...:	X2: CX1	P
14.2.3	Capacitors operating at mains frequency but not connected to the mains: tests for X2		N

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
14.2.5	Capacitors with volume exceeding 1750 mm ³ , where short-circuit current exceeds 0,2 A: compliance with IEC60384-1, 4.38 category B or better	No such components.	N
	Capacitors with volume exceeding 1750 mm ³ , mounted closer to a potential ignition source than table 5 permits: compliance with IEC 60 384-1, 4.38 category B or better	No such components.	N
	Shielded by a barrier acc. to 20.1.4/ table 21 or metal	No, electrolytic capacitor is fully shielded by metal case.	N
14.3	Inductors and windings	See below	P
	Comply with IEC 61558-1, IEC 61558-2 (as relevant) and clause 20.1.4		N
14.3.1	Transformers and inductors marked with manufacturer's name and type	See appended table 14	P
	Transformers and inductors separately approved ..	No, tested with appliance	N
14.3.2	General		P
	Isolating transformers shall comply with 14.3.3 and 14.3.4.1 or 14.3.4.2 and 14.3.5.1 or 14.3.5.2		P
	Separating transformers shall comply with 14.3.3 and 14.3.4.3 and 14.3.5.1 or 14.3.5.2		N
14.3.3	Constructional requirements		P
14.3.3.1	Clearances and creepage distances comply with clause 13		P
14.3.3.2	Transformers meet the constructional requirements		P
14.3.4.1	Class II transformers have adequate separation between hazardous live parts and accessible parts (double or reinforced insulation)		P
	Coil formers and partition walls > 0,4 mm		N
14.3.4.2	Class I transformers, with basic insulation and protective screening only if all 7 conditions of 14.3.4.2 are met	Class II transformer.	N
14.3.4.3	Separating transformers with at least basic insulation	Class II construction used	N
14.3.5	Insulation between HAZARDOUS LIVE parts and ACCESSIBLE parts		P
14.3.5.1	Class II transformers have adequate insulation between hazardous live parts and accessible parts (double or reinforced insulation)	Double or reinforced insulation separated between hazardous live windings and windings intended to be connected to output terminals.	P
	Coil formers and partition walls > 0,4 mm	Measured thickness of transformer bobbin>0.4mm	P

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
14.3.5.2	Class I transformers have adequate insulation between hazardous live parts and accessible conductive parts or those conductive parts or protective screens connected to a protective earth terminal	Class II construction used	N
	Winding wires connected to protective earth have adequate current-carrying capacity	No such components.	N
14.4	High voltage components	No such device within the EUT	N
	High-voltage components and assemblies: U > 4 kV (peak) separately approved		N
	Component meets category V-1 of IEC 60707		N
14.4.1	High voltage transformers and multipliers tested as part of the submission		N
14.4.2	High voltage assemblies and other parts tested as part of the submission		N
14.5	Protective devices		P
	Protective devices used within their ratings		P
	External clearances and creepage distances meet requirement of clause 13 for the voltage across the device when opened	See appended table 13.3&13.4.	P
14.5.1.1	a) Thermal cut-outs separately approved	No such device within the EUT	N
	b) Thermal cut-outs tested as part of the submission		N
14.5.1.2	a) Thermal links separately approved	No such device within the EUT	N
	b) Thermal links tested as part of the submission		N
14.5.1.3	Thermal devices re-settable by soldering	No such component used.	N
14.5.2.1	Fuse-links in the mains circuit according to IEC 60127	The fuse-link is approved according to IEC 60127	P
14.5.2.2	Correct marking of fuse-links adjacent to holder ...:	Fused marked on PCB adjacent to component as: F1 T3.15AL250V	P
14.5.2.3	Not possible to connect fuses in parallel	No fuse holder is designed to be connected in parallel in the same circuit	P
14.5.2.4	Not possible to touch hazardous live parts when replacing fuse-links without the use of a tool	Tools required	P
14.5.3	PTC-S thermistors comply with IEC 60730-1	No such device within the EUT	N
	PTC-S devices (15 W) category V-1 or better		N
14.5.4	Circuit protectors have adequate breaking capacity and their position is correctly marked	No such device within the EUT	N
14.6	Switches	No such device within the EUT	N

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
14.6.1 a)	Separate testing to IEC 61058 including: 10 000 operations Normal pollution suitability Resistance to heat and fire level 3 And Make and break speed independent of speed of actuation V-0 compliance with annex G, G.1.1		N
14.6.1 b)	Tested in the apparatus:		N
	Switch controlling > 0.2A with open contact voltage > 35 V (peak)/24 V dc complying with 14.6.3, 14.6.4 and V-0 in annex G, G.1.1		N
	Switch controlling > 0.2A with open contact voltage < 35 V (peak)/24 V dc complying with 14.6.3 and V-0 in annex G, G.1.1		N
	Switch controlling < 0.2A with open contact voltage > 35 V (peak)/24 V dc complying with 14.6.4 and V-0 in annex G, G.1.1		N
14.6.2	Switch tested to 14.6.1 b) constructed to IEC 61058-1 subclause 13.1 and has making/breaking action independent of speed of actuation		N
14.6.3	Switch tested to 14.6.1 b) compliant with IEC 61058-1 subclause 16.2.2 d) and m) not attaining excessive temperatures in use		N
14.6.4	Switch tested to 14.6.1 b) has adequate dielectric strength		N
14.6.5	Mains switch controlling mains socket outlets additional tests to IEC 60058-1	No mains socket outlet.	N
	Socket outlet current marking correct		N
14.7	Safety interlocks	No such devices within the EUT	N
	Safety interlocks to 2.8 of IEC 60950		N
14.8	Voltage setting devices and the like	No such devices within the EUT	N
	Voltage setting device not likely to be changed accidentally		N
14.9	Motors	No such devices within the EUT	N
14.9.1	Endurance test on motors		N
	Motor start test		N
	Dielectric strength test		N
14.9.2	Not adversely affected by oil or grease etc.		N
14.9.3	Protection against moving parts		N
14.9.4	Motors with phase-shifting capacitors, three-phase motors and series motors meet clause. B.8, B.9 and B.10 of IEC 60950, Annex B		N

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
14.10	Batteries	No such devices within the EUT	N
14.10.1	Batteries mounted with no risk of accumulation of flammable gases		N
14.10.2	No possibility of recharging non-rechargeable batteries		N
14.10.3	Recharging currents and times within manufacturers limits		N
	Lithium batteries discharge and reverse currents within the manufacturers limits		N
14.10.4	Battery mould stress relief		N
14.10.5	Battery drop test		N
14.11	Optocouplers		P
	Comply with IEC 60747-5-5:2007	See appended table 14	P
	Internal and external dimensions to 13.1. or alternatively 13.6 (jointed insulation)	See appended table 14	P
14.12	Surge suppression varistors	No such device	N
	Comply with IEC 61051-2		N
	Not connected between mains and accessible parts except for earthed parts of permanently connected apparatus		N
	Complies with the current pulse, fire hazard and thermal stress requirements of 14.12		N

15	TERMINALS		P
15.1.1	Mains plug, appliance inlet, interconnection couplers and mains socket-outlet meet the appropriate standard	Approved mains plug used. (see appended table 14)	P
	Overloading of plugs or appliance inlets prevented if the apparatus has mains socket outlets	Not provide mains socket outlets to other apparatus.	N
	Overloading of internal wiring prevented if the apparatus has mains socket outlets	No mains socket-outlets.	N
15.1.2	Connectors for antenna, earth, audio, video or data:		P
	No risk of insertion in mains socket-outlets	No risk to insert into mains socket-outlets	P
	No risk of insertion into audio or video: outlets marked with the symbol of 5.2	No mains socket-outlet.	N
15.1.3	Output terminals of a.c. adaptors or similar devices not compatible with household mains socket-outlets	No mains socket-outlet.	N
15.2	Provision for protective earthing		N

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
	Accessible conductive parts of Class I equipment reliably connected to earth terminal, within equipment	Class II equipment.	N
	Protective earth conductors correctly coloured	Class II equipment.	N
	Equipment with non-detachable mains cord provided with separate protective earth terminal near mains input	Class II equipment.	N
	Protective earth terminal resistant to corrosion	Class II equipment.	N
	Earth resistance test: $< 0,1 \Omega$ at 25 A	Class II equipment.	N
15.3	Terminals for external flexible cords and for permanent connection to the mains supply	See below	P
15.3.1	Adequate terminals for connection of permanent wiring	Not permanently connected equipment	N
15.3.2	Reliable connection of non-detachable cords:	Appliance coupler used	N
	Not soldered to conductors of a printed circuit board	Supply conductors soldered to Isolating transformers fixed by screws	N
	Adequate clearances and creepage distances between connections should a wire break away	Supply conductors soldered to Isolating transformers fixed by screws	N
	Wire secured by additional means to the conductor	Supply conductors soldered to Isolating transformers fixed by screws	N
15.3.3	Screws and nuts clamping conductors have adequate threads: ISO 261, ISO 262 or similar	No such device	N
15.3.4	Soldered conductors wrapped around terminal prior to soldering or held in place by additional means	Supply conductors soldered to Isolating transformers fixed by screws	N
	Clamping of conductor and insulation if not soldered or held by screws	No such device	N
15.3.5	Terminals allow connection of appropriate cross-sectional area of conductors, for the rated current of the equipment	No such terminals used	N
15.3.6	Terminals to 15.3.3 have sizes required by table 16	No such terminals used	N
15.3.7	Terminals clamp conductors between metal and have adequate pressure	No such terminals used	N
	Terminals designed to avoid conductor slipping out when tightened or loosened	No such terminals used	N
	Terminals adequately fixed to avoid loosening when the clamping is tightened or loosened and stress on internal wiring is avoided	No such terminals used	N
15.3.8	Terminals carrying a current more than 0,2 A: contact pressure not transmitted by insulating material except ceramic	No such terminals used	N

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
15.3.9	Termination of non-detachable cords: wires terminated near to each other	No such terminals used	N
	Terminals located and shielded: test with 8 mm strand	No such terminals used	N
15.4	Devices forming a part of the mains plug	No such construction	N
15.4.1	No undue strain on mains socket-outlets	No such construction	N
15.4.2	Device complies with standard for dimensions of mains plugs	No such construction	N
15.4.3	Device has adequate mechanical strength (tests a,b,c)	No such construction	N

16	EXTERNAL FLEXIBLE CORDS		P
16.1	Mains cords sheathed type, complying with IEC 60227 for PVC or IEC 60245 for synthetic rubber cords	PVC Insulation	P
	Non-detachable cords for Class I have green/yellow core for protective earth	Class II apparatus	N
16.2	Mains cords conductors have adequate cross-sectional area for rated current consumption of the equipment	Approved power cords used within its rating	P
16.3	a) Flexible cords not complying with 16.1, used for interconnections between separate units of equipment used in combination and carrying hazardous live voltages, have adequate dielectric strength	No such kind of flexible cords used.	N
	b) Flexible cords not complying with 16.1, withstand bending and mechanical stress (3.2 of IEC 60227-2)	No such kind of flexible cords used.	N
16.4	Flexible cords used for connection between equipment have adequate cross-sectional areas to avoid temperature rise under normal and fault conditions	No such kind of flexible cords used.	N
16.5	Adequate strain relief on external flexible cords	See below:	N
	Not possible to push cord back into equipment	No hazard after tested.	N
	Strain relief device unlikely to damage flexible cord	No hazard after tested.	N
	For mains cords of Class I equipment, hazardous live conductors become taut before earth conductor	Class II apparatus	N
16.6	Apertures for external flexible cord: no risk of damage to the cord during assembly or movement in use	No damage	P
16.7	Transportable musical instruments and amplifiers fitted with detachable cord set with appliance inlet to IEC 60320-1	No such apparatus	N
	Transportable musical instruments and amplifiers fitted with detachable cord sets or with means of stowage to protect the cord	No such apparatus	N

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
17	ELECTRICAL CONNECTIONS AND MECHANICAL FIXINGS		P
17.1	Torque test to table 20:	See below:	P
	- screws into metal: 5 times	No such screws	N
	- screws into non-metallic material: 10 times	No damaged.	P
17.2	Correct introduction into female threads in non-metallic material	No such screws	N
17.3	Cover fixing screws: captive	Non-captive fixing screw used.	N
	Non-captive fixing screws: no hazard when replaced by a screw whose length is 10 times its diameter	No hazard when replaced	P
17.4	No loosening of conductive parts carrying a current > 0,2 A	No such construction	N
17.5	Contact pressure not transmitted through plastic other than ceramic for connections carrying a current > 0,2 A	No such construction	N
17.6	Stranded conductors of flexible supply cords carrying a current > 0,2 A with screw terminals not consolidated by solder	No such construction	N
17.7	Cover fixing devices other than screws have adequate strength and their positioning is unambiguous	No such construction	N
17.8	Fixing devices for detachable legs or stands provided	No such construction	N
17.9	Internal pluggable connections, affecting safety, unlikely to become disconnected	After applying the 2N force, no hazard occurs.	P
18	MECHANICAL STRENGTH OF PICTURE TUBES AND PROTECTION AGAINST THE EFFECTS OF IMPLOSION		N
18.1	Picture tube separately approved to IEC 61965	No picture tube used	N
	Picture tube separately approved to 18.2	No picture tube used	N
18.2	Non-intrinsically protected tubes tested to 18.2	No picture tube used	N
19	STABILITY AND MECHANICAL HAZARDS		P
	Mass of the equipment exceeding 7 kg	No, Approx. 2.52Kg.	N
	Apparatus intended to be fastened in place – suitable instructions	The weight of EUT less than 7kg.	N
19.1	Test on a plane, inclined at 10° to the horizontal	The weight of EUT less than 7kg.	N
19.2	100 N force applied vertically downwards	The weight of EUT less than 7kg.	N
19.3	100 N force, or 13% of weight, applied horizontally to point of least stability.	The weight of EUT less than 7kg.	N

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
19.4	Edges or corners not hazardous	The outer surface of the EUT is smoothed. No sharp edges and corners	P
19.5	Glass surfaces (exc.laminated) with an area exceeding 0,1 m ² or maximum dimension > 450 mm, pass the test of 19.5.1	No glass surface in the EUT	N
19.6	Wall or ceiling mountings adequate	The EUT is not a such mounted apparatus	N

20	RESISTANCE TO FIRE		P
20.1	Electrical components and mechanical parts		P
	a) Exemption for components contained in an enclosure of material V-0 to IEC 60707 with openings not exceeding 1 mm in width		N
	b) Exemption for small components as defined in 20.1	Components are mounted on a PCB of V-0	P
20.1.1	Electrical components meet the requirements of Clause 14 or 20.1.4	The bobbin of T1 complied with sub-clause 20.1.4; The enclosure is plastic and wooden complied with subclause 20.1.4	P
20.1.2	Insulation of internal wiring working at voltages > 4 Kv or leaving an internal fire enclosure, or located within the areas mentioned in Table 21, not contributing to the spread of fire	No voltage exceeds 4kV.	N
20.1.3	Material of printed circuit boards on which the available power exceeds 15 W at a voltage between 50 V and 400 V (peak) a.c. or d.c. meets V-1 or better to IEC60707, unless used in a fire enclosure		N
	Material of printed circuit boards on which the available power exceeds 15 W at a voltage >400 V (peak) a.c. or d.c. meets V-0 to IEC 60707	The PCB has the flammability rating of V-0	P
20.1.4	Components and parts not covered by 20.1.1, 20.1.2 and 20.1.3 (other than fire enclosures) mounted nearer to a potential ignition source than the distances in Table 21 comply with the relevant flammability category in Table 21		P
	Components and parts as above but shielded from a potential ignition source, with the barrier area in accordance with Table 21 and fig. 13		N
	Apparatus with voltages >4kV under normal operating conditions and distances to the enclosure exceed those specified Table 21, flammability classification HB40 or better is required for the enclosure.	No voltages exceeding 4kV	N
20.2	Fire enclosure	See below:	N

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
20.2.1	Potential ignition sources with open circuit voltage > 4 kV (peak) a.c. or d.c. contained in a fire enclosure to V-1	No voltage exceeds 4kV.	N
20.2.2	Internal fire enclosures with openings not exceeding 1 mm in width and with openings for wires completely filled	No internal fire enclosure.	N
20.2.3	Requirements of 20.2.1 and 20.2.2 met by an internal fire enclosure	Ditto	N

A	APPENDIX A, ADDITIONAL REQUIREMENTS FOR APPARATUS WITH PROTECTION AGAINST SPLASHING WATER		N
A.5	Marking and instructions	The EUT is for Indoor used only	N
A.5.1	j) Marked with IPX4 (IEC 60529), 5.4.1 a) does not apply	The EUT is for Indoor used only	N
A.10	Insulation requirements	The EUT is for Indoor used only	N
A.10.2	Splash and humidity treatment	The EUT is for Indoor used only	N
A.10.2.1	Enclosure provides protection against splashing water	The EUT is for Indoor used only	N
A.10.2.2	Humidity treatment carried out for 7 days	The EUT is for Indoor used only	N

B	APPENDIX B, APPARATUS TO BE CONNECTED TO THE TELECOMMUNICATION NETWORKS		N
	Complies with IEC 62151 clause 1	No connection to the telecommunication network	N
	Complies with IEC 62151 clause 2	No connection to the telecommunication network	N
	Complies with IEC 62151 clause 3 but with 3.5.4 modified to 2.4.10 of this standard	No connection to the telecommunication network	N
	Complies with IEC 62151 clause 4 but with 4.1.2, 4.1.3 and 4.2.1.2 modified in accordance with annex B of this standard	No connection to the telecommunication network	N
	Complies with IEC 62151 cause 5 but with 5.3.1 modified in accordance with annex B of this standard	No connection to the telecommunication network	N
	Complies with IEC 62151 clause 6	No connection to the telecommunication network	N
	Complies with IEC 62151 clause 7	No connection to the telecommunication network	N
	Complies with IEC 62151 annex A, B and C	No connection to the telecommunication network	N

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict

L	APPENDIX L, ADDITIONAL REQUIREMENTS FOR ELECTRONIC FLASH APPARATUS FOR PHOTOGRAPHIC PURPOSES.		N
L. 5	Marking and instructions	See below	N
L. 5.4	Instructions for battery chargers and Supply apparatus indicating type or model number of flash apparatus with which it is to be used	No such device	N
	Instructions for flash apparatus indicating type or model number of battery chargers or Supply apparatus with which it is to be used	No such device	N
L. 7	Heating under normal operating conditions	see below:	N
L7.1.5 & L11.2.7	Lithium batteries meet permissible temp rise in Table 3, unless comply with 6.2.2.1 or 6.2.2.2 of IEC 60086-4	No such batteries used	N
L. 9	Electric shock hazard under normal operating conditions	See below	N
L. 9.1.1	Terminals to connection to synchroniser not HAZARDOUS LIVE	No such device	N
L.10	Insulation requirements	See below	N
L. 10.3.2	High frequency pulse ignition	No such device	N
L. 12	Mechanical strength	See below	N
L. 12.1.3	Windows for flash tubes are excluded from steel ball impact test	No such device	N
L. 14	Components	See below	N
L14.6.6	Mains switch characteristics appropriate to its function under normal conditions	No such device	N
L. 20	Resistance to fire	See below	N
L. 20.1 c)	Trigger coil for discharge purpose is not considered to be a POTENTIAL IGNITION SOURCE	No such device	N

IEC 60065, GROUP DIFFERENCES (CENELEC common modifications (EN))			
EN 60065:2002 + A1:2006 + A11:2008 + A2:2010+A12:2011			
Clause	Requirement + Test	Result - Remark	Verdict
Contents	Add the following annexes: Annex ZA (normative) Other international publications quoted in this standard with the references of the relevant European publications (See the CB Bulletin) Annex ZB (nominative) Special national conditions Annex ZC (informative) A-deviations		P


IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
Definition 2.2.Z1 (A11:2008)	<p>Add after the definition 2.2.12 the following new definition:</p> <p>PORTABLE SOUND SYSTEM small battery powered audio equipment:</p> <ul style="list-style-type: none"> • whose prime purpose is to listen to recorded or broadcasted sound; and • that uses headphones or earphones that can be worn in or on or around the ears; and • that allows the user to walk around <p>NOTE Examples are mini-disc or CD players, MP3 audio players or similar equipment.</p>		N
2.2 (A12:2011)	<p>In EN 60065:2002/A11:2008 Delete the definition 2.2.Z1</p>		N
3.1	<p>Add the following indent at the end of the list</p> <ul style="list-style-type: none"> - Exposure to excessive sound pressures from headphones or earphones <p>NOTE A new method of measurement is described in EN 50332-1, Sound system equipment: Headphones and earphones associated with portable audio equipment – Maximum sound pressure level measurement methodology and limit considerations – Part 1: General method for "one package equipment", and in EN 50332-2, Sound system equipment: Headphones and earphones associated with portable audio equipment – Maximum sound pressure level measurement methodology and limit considerations – Part 2: Guidelines to associate sets with headphones coming from different manufacturers.</p>		N
3.1 (A12:2011)	<p>In EN 60065:2002 Delete the addition of indent regarding sound pressure excessive</p>		N

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
3.Z1 (A2:2010)	<p>After 3.2 add a new clause 3.Z1:</p> <p>To protect against excessive current, short-circuits and earth faults in 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):</p> <p>a) except as detailed in b) and c), protective devices necessary to comply with the requirements of 11 shall be included as parts of the equipment;</p> <p>b) for components in series or parallel 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;</p> <p>c) it is permitted for equipment supplied via an industrial mains plug or for PERMANENTLY CONNECTED APPARATUS, to rely on dedicated over current 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.</p> <p>If reliance is placed on protection in the building installation, the installation instructions shall so state, except that for not via an industrial mains plug or for PERMANENTLY CONNECTED APPARATUS the building installation shall be regarded</p>		N
4.1.1	Replace the text of the note by: NOTE For ROUTINE TEST reference is made to EN 50333.		N
5.4.1 za) (A11:2008)	Modify indent za) as follows: za) For a PORTABLE SOUND SYSTEM, a warning that excessive sound pressure from earphones and headphones can cause hearing loss.		N
5.4.1 (A12:2011)	In EN 60065:2002/A1:2006 and EN 60065;2002/A11:2008 Delete the modification in indent za) Add the following clause and annex to the existing standard and amendments		N
	Zx Protection against excessive sound pressure from personal music players		N
	Zx.1 General This sub-clause specifies requirements for protection against excessive sound pressure from		N

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>personal music players that are closely coupled to the ear. It also specifies requirements for earphones and headphones intended for use with personal music players.</p> <p>A personal music player is a portable equipment for personal use, that:</p> <ul style="list-style-type: none"> is designed to allow the user to listen to recorded or broadcast sound or video; and primarily uses headphones or earphones that can be worn in or on or around the ears; and allows the user to walk around while in use. <p>NOTE 1 Examples are hand-held or body-worn portable CD players, MP3 audio players, mobile phones with MP3 type features, PDA's or similar equipment.</p> <p>A personal music player and earphones or headphones intended to be used with personal music players shall comply with the requirements of this sub-clause.</p> <p>The requirements in this sub-clause are valid for music or video mode only.</p> <p>The requirements do not apply:</p> <ul style="list-style-type: none"> while the personal music player is connected to an external amplifier; or while the headphones or earphones are not used. <p>NOTE 2 An external amplifier is an amplifier which is not part of the personal music player or the listening device, but which is intended to play the music as a standalone music player.</p> <p>The requirements do not apply to:</p> <ul style="list-style-type: none"> hearing aid equipment and professional equipment; <p>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.</p> <ul style="list-style-type: none"> analogue personal music players (personal music players without any kind of digital processing of the sound signal) that are brought to the market before the end of 2015. <p>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.</p> <p>For equipment which is clearly designed or</p>		

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
	intended for use by young children, the limits of EN 71-1 apply.		
	<p>Zx.2 Equipment requirements No safety provision is required for equipment that complies with the following: equipment provided as a package (personal music player with its listening device), where the acoustic output LAeq,T is 85 dBA measured while playing the fixed “programme simulation noise” as described in EN 50332-1; and a personal music player provided with an analogue electrical output socket for a listening device, where the electrical output is 27 mV measured as described in EN 50332-2, while playing the fixed “programme simulation noise” as described in EN 50332-1. NOTE 1 Wherever the term acoustic output is used in this clause, the 30 s A-weighted equivalent sound pressure level LAeq,T is meant. See also Zx.5 and Annex Zx. All other equipment shall: a) protect the user from unintentional acoustic outputs exceeding those mentioned above; and b) have a standard acoustic output level not exceeding those mentioned above, and automatically return to an output level not exceeding those mentioned above when the power is switched off; and c) provide a means to actively inform the user of the increased sound pressure when the equipment is operated with an acoustic output exceeding those mentioned above. Any means used shall be acknowledged by the user before activating a mode of operation which allows for an acoustic output exceeding those mentioned above. The acknowledgement does not need to be repeated more than once every 20 h of cumulative listening time; and NOTE 2 Examples of means include visual or audible signals. Action from the user is always required. NOTE 3 The 20 h listening time is the accumulative listening time, independent how often and how long the personal music player has been switched off. d) have a warning as specified in Zx.3; and e) not exceed the following:</p>		N

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>1) equipment provided as a package (player with its listening device), the acoustic output shall be 100 dBA measured while playing the fixed "programme simulation noise" described in EN 50332-1; and</p> <p>2) a personal music player provided with an analogue electrical output socket for a listening device, the electrical output shall be 150 mV measured as described in EN 50332-2, while playing the fixed "programme simulation noise" described in EN 50332-1.</p>		
Cont.	<p>For music where the average sound pressure (long term LAeq,T) measured over the duration of the song is lower than the average produced by the programme simulation noise, the warning does not need to be given as long as the average sound pressure of the song is below the basic limit of 85 dBA. In this case T becomes the duration of the song.</p> <p>NOTE 4 Classical music typically has an average sound pressure (long term LAeq,T) which is much lower than the average programme simulation noise. Therefore, if the player is capable to analyse the song 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 is below the basic limit of 85 dBA.</p> <p>For example, if the player is set with the programme simulation noise to 85 dBA, but the average music level of the song is only 65 dBA, 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 dBA.</p>		N
	<p>Zx.3 Warning The warning shall be placed on the equipment, or on the packaging, or in the instruction manual and shall consist of the following: the symbol of Figure 1 with a minimum height of 5 mm; and the following wording, or similar: "To prevent possible hearing damage, do not</p>		N

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>listen at high volume levels for long periods.”</p>  <p>Figure 1 – Warning label (IEC 60417-6044) Alternatively, the entire warning may be given through the equipment display during use, when the user is asked to acknowledge activation of the higher level.</p>		
Cont.	Zx.4 Requirements for listening devices (headphones and earphones)		N
	<p>Zx.4.1 Wired listening devices with analogue input With 94 dBA sound pressure output LAeq,T, the input voltage of the fixed “programme simulation noise” described in EN 50332-2 shall be 75 mV. This requirement is applicable in any mode where the headphones can operate (active or passive), including any available setting (for example built-in volume level control). NOTE The values of 94 dBA – 75 mV correspond with 85dBA –27 mV and 100 dBA – 150 mV.</p>		N
Cont.	<p>Zx.4.2 Wired listening devices with digital input With any playing device playing the fixed “programme simulation noise” described in EN 50332-1 (and respecting the digital interface standards, where a digital interface standard exists that specifies the equivalent acoustic level), the acoustic output LAeq,T of the listening device shall be 100 dBA. This requirement is applicable in any mode where the headphones can operate, including any available setting (for example built-in volume level</p>		N

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>control, additional sound feature like equalization, etc.). NOTE An example of a wired listening device with digital input is a USB headphone.</p> <p>Zx.4.3 Wireless listening devices In wireless mode: with any playing and transmitting device playing the fixed programme simulation noise described in EN 50332-1; and respecting the wireless transmission standards, where an air interface standard exists that specifies the equivalent acoustic level; and with volume and sound settings in the listening device (for example built-in volume level control, additional sound feature like equalization, etc.) set to the combination of positions that maximize the measured acoustic output for the abovementioned programme simulation noise, the acoustic output LAeq,T of the listening device shall be 100 dBA. NOTE An example of a wireless listening device is a Bluetooth headphone.</p>		N
Cont.	<p>Zx.5 Measurement methods Measurements shall be made in accordance with EN 50332-1 or EN 50332-2 as applicable. Unless stated otherwise, the time interval T shall be 30 s. NOTE Test method for wireless equipment provided without listening device should be defined.</p>		N

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
6.1 (A11:2008)	<p>Replace the entire subclause in EN 60065:2002 and EN 60065:2002/A1:2006 by: Ionizing radiation</p> <p>Apparatus including a potential source of ionizing radiation shall be so constructed that personal protection against ionizing radiation is provided under normal operating conditions and under fault conditions.</p> <p><i>Compliance is checked by measurement under the following conditions:</i></p> <p><i>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.</i></p> <p>NOTE 1 Soldered joints and paint lockings are examples of adequate locking.</p> <p><i>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.</i></p> <p><i>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.</i></p> <p><i>The dose-rate shall not exceed 1μSv/h (0,1 mR/h) taking account of the background level.</i></p> <p>NOTE 2 These values appear in Directive 96/29/Euratom of 13th May 1996.</p> <p><i>A picture is considered to be intelligible if the following conditions are met:</i></p> <ul style="list-style-type: none"> - a scanning amplitude of at least 70 % of the usable screen width; - a minimum luminance of 50 cd/m² with locked blank raster provided by a test generator; - a horizontal resolution corresponding to at least 1,5 MHz in the centre, with a similar vertical degradation; - not more than one flashover per 5 min. 		N

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
Z1 (A11:2008)	<p>Add the following new clause after Clause 20: Z1 Resistance to candle flame ignition A television set shall be so designed that the likelihood of ignition and the spread of fire caused by a candle flame is reduced. NOTE 1 An apparatus with a viewing screen is not regarded to be a television set if it is declared not to be so by the manufacturer. This requirement does not apply to the display screen of rear projection TV's. NOTE 2 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. NOTE 3 The frame around the screen is not exempted from the requirements. Wood and WOOD-BASED MATERIAL with a thickness of at least 6 mm is considered to fulfil the V-1 requirement when applying CLC/TS 62441. Compliance is checked according to CLC/TS 62441. NOTE 4 The term vertical, as used in the first dash of clause 5.2 of CLC/TS 62441, does not mean a perfectly vertical position. It should be interpreted as any surface that can be touched by the flame of a candle of 150 mm height and 20mm diameter while the candle is still touching the supporting surface. A typical candle used in the home is assumed to be 20 mm diameter. NOTE 5 It is expected that CLC/TS 62441 will in the future be replaced by a standard, at which time that standard will become applicable, subject to a vote by National Committees at the time.</p>	HB enclosure used.	N
General	<p>13.3.1 Delete note 4. 14 Delete note 4 and note 5. 15.1.1 Delete notes 1 and 2. 15.2 Delete note 2. 16.1 Delete note 1. 16.2 Delete the note. 20 Delete note 2. Annex B Replace note 1 by: In the CENELEC countries listed in IEC 62151, special national conditions apply. Annex G Delete the note. Annex J.2 Delete the notes of Table J.1. Annex N Add after the introduction: For ROUTINE TEST reference is made to to EN 50333.</p>		—

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
General (A2:2010)	In IEC 60065:2001/A2 Delete all the “country” notes according to the following list: 5.3 Note 5.4.1 Note 20 Note For special national conditions, see Annex ZB.		—
Bibliography	Additional EN standards.		—

ZA	Normative references to international publications with their corresponding European publications	N
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ZB	ANNEX ZB TO EN 60065, SPECIAL NATIONAL CONDITIONS (EN)	P
2.6.1	DK: The following is added : Certain types of CLASS I apparatus, see 15.1.1, may be provided with a plug not establishing earthing continuity when inserted in Danish socket-outlets. <i>Justification:</i> Heavy Current Regulations, Section 107.	N
3.Z1 (A2:2010)	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

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
5.3 (A2:2010)	<p>Finland, Norway and Sweden</p> <p>To the end of the subclause the following is added: CLASS I apparatus which is intended for connection to the building installation wiring via a plug or an appliance coupler, or both and in addition is intended for connection to other apparatus or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network TERMINALS and ACCESSIBLE parts, have a marking stating that the apparatus must be connected to an earthed MAINS socket-outlet. The marking text in the applicable countries shall be as follows:</p> <p>In Finland: "Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan"</p> <p>In Norway: "Apparatet må tilkoples jordet stikkontakt"</p> <p>In Sweden: "Apparaten skall anslutas till jordat uttag"</p>		N
5.4 (A11:2008)	<p>Finland, Norway and Sweden</p> <p>To the end of 5.4 the following is added: CLASS I apparatus which is intended for connection to the building installation wiring via a plug or an appliance coupler, or both and in addition is intended for connection to other apparatus or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network TERMINALS and ACCESSIBLE parts, have a marking stating that the apparatus must be connected to an MAINS socket-outlet with protective earth. The marking text in the applicable countries shall be as follows:</p> <p>In Finland: "Laite on liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan"</p> <p>In Norway: "Apparatet må tilkoples jordet stikkontakt"</p> <p>In Sweden: "Apparaten skall anslutas till jordat uttag"</p>		N

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.1 (A11:2008)	<p>Norway and Sweden</p> <p>To the end of 5.4.1 (after the compliance statement) the following is added:</p> <p>The screen of the cable 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 need to be isolated from the screen of a cable distribution system.</p> <p>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 e.g. a retailer.</p> <p>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:</p> <p>“Equipment connected to the protective earthing of the building installation through the mains connection or through other equipment with a connection to protective earthing – and to a cable distribution system using coaxial cable, may in some circumstances create a fire hazard. Connection to a cable distribution system has therefore to be provided through a device providing electrical isolation below a certain frequency range (galvanic isolator, see EN 60728-11)”</p> <p>NOTE In Norway, due to regulation for installations of cable distribution systems, 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.</p> <p>Translation to Norwegian (the Swedish text will also be accepted in Norway):</p> <p>“Utstyr som er koplet til beskyttelsesjord via nettplugg og/eller via annet jordtilkoplet utstyr – og er tilkoplet et kabel-TV nett, kan forårsake brannfare. For å unngå dette skal det ved tilkopling av utstyret til kabel-TV nettet installeres en galvanisk isolator mellom utstyret og kabel-TV nettet.”</p> <p>Translation to Swedish:</p> <p>”Utrustning 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.</p> <p>För att undvika detta skall vid anslutning av utrustningen till kabel-TV nät galvanisk isolator finnas mellan utrustningen och kabel-TV nätet.”</p>		N

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
13.3.1	<p>NO: To the second paragraph the following is added:</p> <p>In Norway, due to the IT power distribution system used, the a.c. MAINS supply voltage is considered to be equal to the line-to-line voltage, and will remain 230 V in case of a single earth fault.</p> <p><i>Justification:</i> Based on a use in Norway of an IT power distribution system where the neutral is not provided.</p>		N
15.1.1 (A11:2008)	<p>Denmark</p> <p>The text of the Danish SNC in EN 60065:2002 has been modified as follows:</p> <p>To the first paragraph the following is added:</p> <p>In Denmark, supply cords of single-phase appliances having a rated current not exceeding 13 A shall be provided with a plug according to the Heavy Current Regulations Section 107-2-D1.</p> <p>Appliances of CLASS I provided with socket-outlets with earth contact 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 the Heavy Current Regulations, Section 107-2-D1 standard sheet DK 2-1a.</p> <p>To the second paragraph the following is added:</p> <p>Socket outlets intended for providing power to CLASS II apparatus with a rated current of 2,5 A shall be in accordance with the Heavy Current Regulation, Section 107-2-D1 standard sheet DKA 1-4a.</p> <p>Other current ratings socket outlets shall be in compliance with the Heavy Current Regulation, Section 107-2-D1 standard sheet DKA 1-3a or DKA 1-3b.</p> <p>To the third paragraph the following is added:</p> <p>Mains socket-outlets with earthing contact shall be in compliance with the Heavy Current Regulation, Section 107-2-D1 standard sheet DK 1-3a, DK 1-5a or DK 1-7a.</p> <p><i>Justification:</i> Heavy Current Regulations, Section 107-2-D1</p>		N
15.1.1	<p>IE: Apparatus which is fitted with a flexible cable or cord shall be provided with a 13 A plug in accordance with Statutory Instrument 525:97, "13 A Plugs and Conversion Adapters for Domestic Use Regulations:1997.</p> <p><i>Justification:</i> SI 525: 1997</p>		N

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
15.1.1	<p>NO: Mains socket-outlets mounted on CLASS II apparatus shall comply with the specifications given in CEE Publ. 7 as far as applicable, with the following amendments:</p> <p>§ 8 Dimensions a 2.5 A 250 V two-pole socket-outlets for electronic apparatus shall comply with the enclosed Standard Sheet I.</p> <p>Mains socket-outlets mounted on CLASS II apparatus shall comply with the specifications given in CEE Publ. 7 as far as applicable, with the following amendments: § 8 Dimensions a 2.5 A 250 V two-pole socket-outlets for electronic apparatus shall comply with the enclosed Standard Sheet I</p> <p>§ 24 Mechanical strength a 2.5 A, 250 V socket-outlets for CLASS II electronic apparatus are tested as specified in 12.1.3 of EN 60065. Also the protecting rim shall be tested.</p> <p>§ 24 Mechanical strength A 2,5 A 250 V socket-outlets for CLASS II electronic apparatus are tested as specified in 12.1.3 of EN 60065. Also the protecting rim shall be tested <i>Justification:</i> Act of 24 May 1929 relating to supervision of electrical installation (TEA 1929/FEL 1998).</p>		P
15.1.1	<p>UK: Apparatus 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 and plug shall be fitted with a "standard plug" in accordance with Statutory Instrument 1768: 1994: The Plugs and Sockets etc. (Safety) Regulations 1994, unless exempted by those Regulations.</p> <p>NOTE "Standard plug" is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.</p> <p><i>Justification:</i> SI 1768: 1994</p>		N

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
J.2	<p>NO: After Table J.1 the following is added: In Norway, due to the IT power distribution system used, the a.c. MAINS supply voltage is considered to be equal to the line-to-line voltage, and will remain 230 V in case of a single earth fault.</p> <p><i>Justification:</i> Based on a use in Norway of an IT power distribution system where the neutral is not provided.</p>		N
ZC	ANNEX ZC TO EN 60065, A-DEVIATIONS (EN)		N
5.1	IT: Additional markings on the outside of the TV receiver in Italian language		N
	IT: User instructions in Italian language including a conformity declaration		N
	IT: Certification number on the back cover		N
6.1	<p>DE: 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.</p> <p><i>Justification:</i> German ministerial decree against ionizing radiation (Röntgenverordnung), in force since 2002-07-01, implementing the European Directive 96/29/EURATOM.</p> <p>NOTE Contact address: Physikalisch-Technische Bundesanstalt, Bundesallee 100, D-38116 Braunschweig, Tel.: Int+49-531-592-6320, Internet: http://www.ptb.de</p>		N
14	<p>SE: Switches containing mercury such as thermostats, relays and level controllers are not allowed.</p> <p><i>Justification:</i> Ordinance (1990:944) on Prohibition in Connection with handling. Importation and exportation of Chemical Products (Certain Cases)</p>		N

7.1	TABLE: temperature rise measurements			P
	Power consumption in the OFF/Stand-by	Stand-by position: -- W OFF position: -- W		P
	Position of the functional switch (W) :	--		--
Operating conditions: Audio signal input mode, Maximum load and 1/8 max. Non-clipped output power for speaker				
	Un (V)	In (A)	Pn (W)	Pout (W)
	198V/60Hz	0.232	23.7	SW: 2.142 L/R: 0.745
	264V/50Hz	0.192	18.4	SW: 2.142 L/R: 0.745
	Loudspeaker impedance (Ω) :	R/L 4 Ω X2 SW 4 Ω X1		P
	Several loudspeaker systems	--		--
	Marking of loudspeaker terminals	+/-		--
Monitored point:	198Vac/60Hz	264acV/50Hz	Limit dT (K)	
	dT (K)	dT (K)	--	
AC wiring inside near T1	13.4	13.8	70	
CON1 body	20.7	21.3	50	
CX1 body near L1	21.9	22.5	90	
L1 coil	29.5	28.5	85	
PCB under D2 and D3	31.4	31.8	95	
C1 body near Q1 side	24.1	24.6	70	
PCB under Q1	43.2	43.7	95	
PCB under U1 body	30.4	30.9	95	
CY1 body	38.4	38.9	50	
C4 body	28.7	29.2	70	
PCB under U2 body	35.2	35.7	95	
T1 coil	38.2	38.8	85	
D7 body	56.5	56.9	95	
C5 body near heatsink	35.6	36.0	70	
PCB under U3	58.9	59.3	95	
PCB under U5	61.3	61.8	95	
Power switch	10.4	10.5	50	
Bass switch	8.4	8.8	50	
Top enclosure near heatsink, inside	28.5	28.3	Ref.	
Top enclosure near heatsink, outside	17.8	17.7	60	
Source switch	20.7	20.2	50	

Inside exhaust outlet near circuit board	8.7	9.4	Ref.
Plastic enclosure on control panel, inside	12.4	12.6	Ref.
Plastic enclosure on control panel, outside	11.2	11.3	60
Ambient	27.3	29.3	--
Winding temperature rise measurements			
Ambient temperature t1 (°C)	--		--
Ambient temperature t2 (°C)	--		--
Temperature rise dT of winding: $dT = \frac{(R_2 - R_1)}{R_1} \times (234.5 + t_1) - (t_2 - t_1)$	R ₁ (Ω)	R ₂ (Ω)	dT (K)
	Limit dT (K)	Insulation class	
--	--	--	--
Notes: According to the user manual, the appliance is intended to be used in moderate climate, so the basic ambient temperature is 35°C.			

7.2	TABLE: softening temperature of thermoplastics			N
Temperature T of part	T - normal conditions(°C)	T - fault conditions(°C)	Min T softening(°C)	
--				

9.1.1	TABLE: Electric shock hazard under normal condition				P
Touch current measured between:	U1 (Vpk)	U1 (Vpk) limit	U2 (Vpk)	U2 (Vpk) limit	
L to output terminal	2.16V	35	224mV	0.35	
N to output terminal	2.16V	35	224mV	0.35	
L to plastic enclosure (with metal foil)	264mV	35	40mV	0.35	
N to plastic enclosure (with metal foil)	264mV	35	40mV	0.35	
Notes: 1) The touch current was measured according to 9.1.1 b) with the test circuit of Annex D connected between the specified points. 2) EUT was supplied with 264Vac/50Hz					

9.1.6	TABLE: withdraw of mains plug test				N
Location	T calculated (s)	T measured (s)	T u→0v (s)	Comments	
--					
Note(s): 1) Input voltage: -- 2) Overall capacity: -- 3) Discharge resistor: --					

10.3	TABLE: electric strength measurements			P
Test voltage applied between:		Test voltage (V)	Breakdown	
Bl: Between L & N (Fuse removed)		2120Vdc	No	
Rl: Between L&N and output terminals		4240Vdc	No	
Rl: Between L&N and plastic enclosure (with metal foil)		4240Vdc	No	
Rl: T1 primary winding and secondary winding		4240Vdc	No	
Bl: T1 primary winding and core		2120Vdc	No	
Bl: T1 secondary winding and core		2120Vdc	No	
Rl: Any one layer insulation tape of transformer		4240Vdc	No	
Note(s):				

10.3	TABLE: insulation resistance measurements			P
Insulation resistance R between:		R (MΩ)	Required R (MΩ)	
Bl: Between L & N (Fuse removed)		>50	Min. 2	
Rl: Between L&N and output terminals		>100	Min. 4	
Rl: Between L&N and plastic enclosure (with metal foil)		>100	Min. 4	
Rl: T1 primary winding and secondary winding		>100	Min. 4	
Bl: T1 primary winding and core		>50	Min. 2	
Bl: T1 secondary winding and core		>50	Min. 2	
Rl: Any one layer insulation tape of transformer		>100	Min. 4	
Note(s):				

11.1	TABLE: Electric shock hazard under abnormal condition						P
Touch current measured between:	Condition	Uoc (V)	U1 (V)	U1 (Vpk) Limit	U2 (V)	U2 (Vpk) Limit	
L/N to output terminal	Max. non-clipping	200	2.24	70	320mV	1.4	
L/N to wooden enclosure (with metal foil)		40	304mV	70	47mV	1.4	
L/N to output terminal	Speaker S-C	200	2.32	70	128mV	1.4	
L/N to wooden enclosure (with metal foil)		41.6	312mV	70	53.6mV	1.4	
Note: 1. The touch current is measured according to 9.1.1 b) with the test circuit of Annex D connected between the specified points. Input: 264V, 50Hz.							

11.2	TABLE: summary of fault condition tests						P
--	Voltage (V) 0,9 or 1,1 times rated voltage		240V x 1,1 =264V			—	
--	Ambient temperature (°C)		See below			—	
Monitored point: Under fault conditions specified below							
Comp onent No.	Fault condition	Test Voltage (V)	Test time	Input current	Input Power	Fuse #	Remark
C1	s-c	264	10s	0.192A→ 0	18.4W→ 0.01W	F1	EUT shutdown immediately, Fuse F1 opened, D2 damaged, no hazards.
Q1 D- S	s-c	264	10s	0.192A→ 0	18.4W→ 0.01W	F1	EUT shutdown immediately, Fuse F1 opened, Q1 damaged, no hazards.
Q1 D- G	s-c	264	10s	0.192A→ 0	18.4W→ 0.01W	F1	EUT shutdown immediately, Fuse F1 opened, Q1 damage, no hazards.
Q1 G- S	s-c	264	10min	0.192A→ 0	18.4W→ 0.01w	F1	EUT shutdown immediately, recoverable, no damaged, no hazards.
U1 pin 2-8	s-c	264	10min	0.192A→ 0.042A	18.4W→ 0.18W	F1	EUT shutdown immediately, recoverable, recoverable, no damaged, no hazards.
D2	s-c	264	10s	0.192A→ 0.041A	18.4W→ 0.18W	F1	EUT shutdown immediately, F1 opened, D1 damaged, no hazards.
D7	s-c	264	10min	0.192A→ 0	18.4W→ 0.01W	F1	EUT shutdown immediately, recoverable, no damaged, no hazards.
T1 pin 2-4	s-c	264	10min	0.192A→ 0.042A	18.4W→ 0.26W	F1	EUT shutdown immediately, recoverable, recoverable, no damaged, no hazards.
T1 pin 5-6	s-c	264	10min	0.192A→ 0.043A	18.4W→ 0.18W	F1	EUT shutdown immediately, recoverable, recoverable, no damaged, no hazards.
T1 pin 10-11	s-c	264	10min	0.192A→ 0.204A	18.4W→ 26.6W	F1	EUT power 18.4W up to 26.6W, until 10 minute shutdown, no hazards.
T1 pin 8-9	s-c	264	10min	0.192A→ 0.221A	18.4W→ 27.7W	F1	EUT power 18.4W up to 27.7W, until 10 minute shutdown, no hazards.
D8	s-c	264	10min	0.192A→ 0.042A	18.4W→ 0.26W	F1	EUT shutdown immediately, recoverable, no damaged, no hazards.
U2 pin 1-2	s-c	264	10min	0.192A→ 0.243A	18.4W→ 31.2W	F1	TheUT power 18.4 up to 31.2W, until 10 minute shutdown, no hazards.

U2 pin 3-4	s-c	264	10s	0.192A→ 0	18.4W→ 0.01W	F1	EUT shutdown immediately, F1 opened, U2 damaged, no hazards.
U2 pin 1	o-c	264	10min	0.192A→ 0.038A	18.4W→ 0.18W	F1	EUT shutdown, recoverable, no damaged, no hazards.
U2 pin 3	o-c	264	10min	0.192A→ 0.041A	18.4W→ 0.20W	F1	EUT shutdown, recoverable, no damaged, no hazards.
Speaker L	s-c	264	10min	0.192A→ 0.207A	18.4W→ 22.7 W	F1	EUT power 16.8W rose 22.7W, until 10 minute shutdown, no hazards.
Speaker SW	s-c	264	10min	0.192A→ 0.237A	18.4W→ 27.6 W	F1	EUT power 16.8W rose 27.6W, until 10 minute shutdown, no hazards.
Speaker	Max. non-clipping	264	2h	0.297A	78.4 W	F1	EUT normal operation, unit temperature stable: CX1: 51.7°C, L1 coil: 57.7°C, CY1 body: 68.1°C, TI coil: 68.0°C, no hazards, no damaged
Ventilation	Blocked	264	2h	0.192A	18.4W	F1	EUT normal operation, unit temperature stable: CX1: 49.0°C, L1 coil: 53.6°C, CY1 body: 63.4°C, TI coil: 62.7°C, no hazards, no damaged

Notes :

After each of above test, EUT can pass the dielectric strength test which specified in clause 10.3

Supplementary information : o-c: open circuit, s-c: short circuit, o-l: overload.

13.2	TABLE: working voltage measurement			P
Location	RMS voltage(V)	Peak voltage(V)	Comments	
T1 pin 2 - pin 8	235	456	Max. Vrms and Vpeak	
T1 pin 2 - pin 10	231	448	--	
T1 pin 2 - pin 11	228	424	--	
T1 pin 4 - pin 8	224	376	--	
T1 pin 4 - pin 10	224	368	--	
T1 pin 4 - pin 11	224	352	--	
T1 pin 5- pin 8	221	352	--	
T1 pin 5- pin 10	221	368	--	
T1 pin 5- pin 11	221	368	--	
T1 pin 6- pin 8	222	364	--	
T1 pin 6- pin 10	221	360	--	
T1 pin 6- pin 11	221	360	--	
CY1 primary to secondary	214	352	--	
U2 pin 1-pin 3	230	376	--	
U2 pin 1-pin 4	228	376	--	
U2 pin 2-pin 3	229	376	--	
U2 pin 2-pin 4	227	376	--	
C4 primary to secondary	211	352	--	

Note(s): Tests were applied on main transformer with input of 240V/50Hz.

13.3 and 13.4		TABLE: clearance and creepage distance measurements				P	
Rated supply voltage:	230VAC	Pollution degree:	2	Material Group:	IIIb		
2 N force on internal parts applied:			Component		P		
30 N force on outside of conductive enclosure applied:			Enclosure		P		
Location	Working Voltage		Clearance (mm)		Creepage (mm)		
	V rms	V peak	Min.	Actual	Min.	Actual	
Between two poles of fuse F1 (B)	<420	<250	2.0	2.7	2.5	2.7	
Between L and N terminal (B)	<420	<250	2.0	4.7	2.5	4.7	
Two terminal of capacitor CY1 (R)	<420	<250	4.0	6.3	5.0	6.3	
Two terminal of capacitor U2 (R)	<420	<250	4.0	6.1	5.0	6.1	
Two terminal of capacitor CY4 (B)	<420	<250	2.0	6.3	2.5	6.3	
Primary component CY1 to iron core of transformer T1(B)	<420	<250	2.0	7.4	2.5	7.4	
Secondary component D7 to iron core of transformer T1(B)	<420	<250	2.0	3.9	2.5	3.9	
Primary trace to secondary trace across the PCB (R)	<420	<250	4.0	6.1	5.0	6.1	
Transformer T1 primary to secondary(R)	456	<250	4.2	6.0	5.0	6.0	
Transformer T1 primary to core (B)	456	<250	2.1	2.2	2.5	2.6	
Transformer T1 secondary to core (B)	456	<250	2.1	4.5	2.5	4.5	
Notes: "Min." = minimum required. "Actual" = Actual dimensions measured.							

14	TABLE: LIST OF CRITICAL COMPONENTS AND MATERIALS					P
Component	manufacturer/trademark	type/model	Value/rating	Standard	Approval/Reference	
Power cord	SHENZHEN BAO HING ELECTRIC WIRE & CABLE MANUFACTURE CO. LTD.	H03VVH2-F	2x 0.5 mm ²	DIN VDE 0281-5, VDE 0281	VDE: 131689	
Alternate	AWIN WIRE & CABLE CO., LTD.	H03VVH2-F	2x 0.5 mm ²	DIN VDE 0281-5, VDE 0281	VDE: 40023114	
Power plug	AWIN WIRE & CABLE CO., LTD.	AW112	2.5A, 250Vac	DIN VDE 0620, EN 50075	VDE: 40010116	
Alternate	Various	Various	2.5A, 250Vac	DIN VDE 0620, EN 50075	VDE	
Power switch	ZHONGXUN ELECTRONICS INDUSTRY COMPANY	KCD1-104	6A 250V /10A 250V	EN 61058-1:2002	TUV: 50049218 R	
Alternate	YUEQING HUANSHENG ELECTRONICS	KCD-117	6A, 250V	EN 61058-1:2002	VDE 40024304	
Plastic enclosure	FORMOSA CHEMICALS & FIBRE CORP PLASTICS DIV	AG15A1	HB, 60°C	UL94	UL: E162823	
Heat Shrinkable tube	DONGGUAN QUANTAI INDUSTRIAL CO LTD	T-2	VW-1, 125 °C, 600V.	UL 224	UL: E227336	
Alternate	SHENZHEN WOER HEAT-SHRINKABLE MATERIAL CO LTD	RSFR-H	VW-1, 125 °C, 600V.	UL 224	UL: E203950	
Alternate	Various	Various	Min. VW-1, 125 °C, 600V.	UL 224	UL	
Wooden material	--	--	Min. 6.0mm thickness	--	--	
PCB	CHEERFUL INDUSTRIAL (HK) LTD	CC-3	V-0, 130°C	UL 796	UL: E141796	
Alternate	Various	Various	V-0 or better, Min. 130 °C	UL 796	UL	
Fuse (F1)	XC ELECTRONICS(SHENZHEN) CORP LTD	3T	T3.15AL, 250Vac	EN 60127-1, EN 60127-3	VDE: 40019614	
X- capacitor (CX1)	HSUAN TAI ELECTRONICS CO LTD	MCY	Min. AC 250V, Max. 0.22uF, 85°C	UL 1414, IEC 60384-14	UL: E199069, VDE: 125205	

Alternate	SHANTOU HIGH-NEW TECHNOLOG Y DEVELOPMNT ZONE SONGTIAN ENTERPRISE CO LTD	MPX	Min. AC 250V, Max. 0.22uF, 85°C	UL 1414, IEC 60384-14	UL:E208107 VDE:40034679
Alternate	SHANTOU HIGH-NEW TECHNOLOG Y DEVELOPMNT ZONE SONGTIAN ENTERPRISE CO LTD	MPX	Min. AC 250V, Max. 0.22uF, 85°C	UL 1414, IEC 60384-14	UL: E208107 VDE:40034679
Alternate	Tenta Electric Industrial Co. Ltd.	MEX	Min. AC 250V, Max. 0.22uF, 85°C	IEC 60384-14	VDE: 119119
Alternate	Shenzhen Su Rong Capacitors Co., Ltd.	MPX/MKP	Min. AC 250V, Max. 0.22uF, 85°C	IEC 60384-14	VDE: 40008924
Alternate	Various	Various	Min. AC 250V, Max. 0.22uF, 85°C	EC 60384-14	VDE
Y1- capacitor (CY1)	SHENZHEN HAOTIAN ELECTRONIC CO LTD	HT	Min. AC 400V, Y1 type, Max. 2200pF, 125°C.	UL 1414, IEC 60384-14	UL: E326483, VDE: 40029300
Alternate	XIAMEN WANGMING ELECTRONIC S CO LTD	HJ	Min. AC 400V, 85°C, 2200pF Min.	UL 1414, IEC 60384-14	UL: E221839, VDE:40025754
Alternate	SHANTOU HIGH-NEW TECHNOLOG Y DEVELOPMNT ZONE SONGTIAN ENTERPRISE CO LTD	CD	Min. AC 400V, Y1 type, Max. 2200pF, 125°C.	UL 1414, IEC 60384-14	UL: E208107, VDE:40025754
Alternate	Jyh Chung Electronic Co., Ltd.	JD	Min. AC 400V, Y1 type, Max. 2200pF, 125°C.	IEC 60384-14	VDE:137027
Alternate	GUANGDONG SOUTH HONGMING ELECTRONIC SCIENCE AND TECHNOLOG Y CO., LTD.	F	Min. 250Vac, Y1 type, Max. 2200pF, 85°C.	IEC 60384-14	VDE: 118357

Alternate	Various	Various	Min. 250Vac, Y1 type, Max. 2200pF, Min 85°C.	IEC 60384-14	VDE
Y1- capacitor (C4)	SHENZHEN HAOTIAN ELECTRONIC CO LTD	HT	Min. AC 400V, Y1 type, Max. 1000pF, 125°C.	UL 1414, IEC 60384-14	UL: E326483, VDE: 40029300
Alternate	XIAMEN WANGMING ELECTRONIC S CO LTD	HJ	Min. AC 400V, 85°C, 2200pF Min.	UL 1414, IEC 60384-14	UL: E221839, VDE:40025754
Alternate	SHANTOU HIGH-NEW TECHNOLOGY DEVELOPMNT ZONE SONGTIAN ENTERPRISE CO LTD	CD	Min. AC 400V, Y1 type, Max. 1000pF, 125°C.	UL 1414, IEC 60384-14	UL: E208107, VDE:40025754
Alternate	JYH CHUNG ELECTRONIC CO., LTD.	JD	Min. AC 400V, Y1 type, Max.1000pF, 125°C.	UL 1414, IEC 60384-14	VDE:137027
Alternate	GUANGDONG SOUTH HONGMING ELECTRONIC SCIENCE AND TECHNOLOGY CO., LTD.	F	Min. 250Vac, Y1 type, Max. 1000pF, 85°C.	IEC 60384-14	VDE: 118357
Alternate	Various	Various	Min. 250Vac, Y1 type, Max. 1000pF, Min 85°C.	IEC 60384-14	VDE
Optocoupler (U2)	EVERLIGHT ELECTRONIC S CO LTD	EL817	Dti=0.5mm, Int. dcr=6.0mm, Ext. dcr=7.7mm, 110°C	UL 1577, IEC 60747-5-2	UL: E214129, VDE: 132249
Line filter (L1)	SHENZHEN KINGAHEAD ELECTRONIC CO.,LTD	UU9.8-20MH	Min. 20mH, 130°C	--	Tested with appliance
--Bobbin of L1	CHANG CHUN PLASTICS CO., LTD	T375J	Phenolic, V-0, 150°C, Min. 0.45mm thickness	UL 94, UL 746C	UL: E59481
--Magnet wire of L1	TAI-I ELECTRIC WIRE & CABLE CO LTD	UEW	Copper magnet wire, Min. 130°C	UL 1446	UL: E85640
--Varnish of L1	HANG CHEUNG PETROCHEMICAL LTD	8562/D	155°C	UL 1446	UL: E200154

Primary connector (CON1)	ZHEJIANG JINDA ELECTRONICS CO LTD	3.96T-02	250Vac, 5A, 85°C	UL 1977	UL: E237523
Transformer (T1)	SHENZHEN COSHIP ELECTRONICS CO.,LTD.	ZD180201	Class B	EN 60065	Test in appliance
--Bobbin	CHANG CHUN PLASTICS CO LTD	T375J	Phenolic, V-0, 150°C, Min. 0.75mm thickness	UL 94, UL 746C	UL: E59481
--Insulation tape	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	PZ	130°C	UL 510	UL: E165111
--Magnet wire	PACIFIC ELECTRIC WIRE & CABLE (SHENZHEN) CO LTD	UEW	Copper magnet wire, Min. 130°C	UL 1446	UL: E201757
--Alternate	Various	Various	Copper magnet wire, Min. 130°C	UL 1446	UL
--Tube	FLUO TECH INDUSTRIES CO LTD	TFT	300V, 200°C.	UL 224	UL: E175982
--Varnish	HANG CHEUNG PETROCHEMICAL LTD	8562	155°C	UL 1446	UL: E200154

Photo documentation
Photo 1



Photo 2



Photo 3



Photo 4

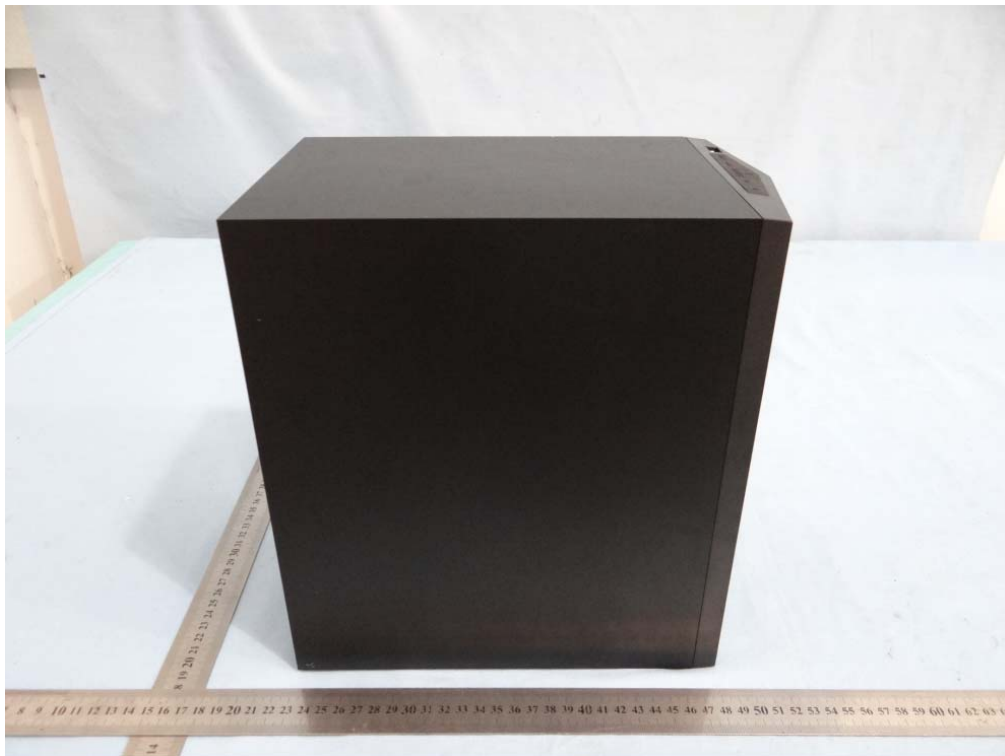


Photo 5



Photo 6



Photo 7



Photo 8



Photo 9

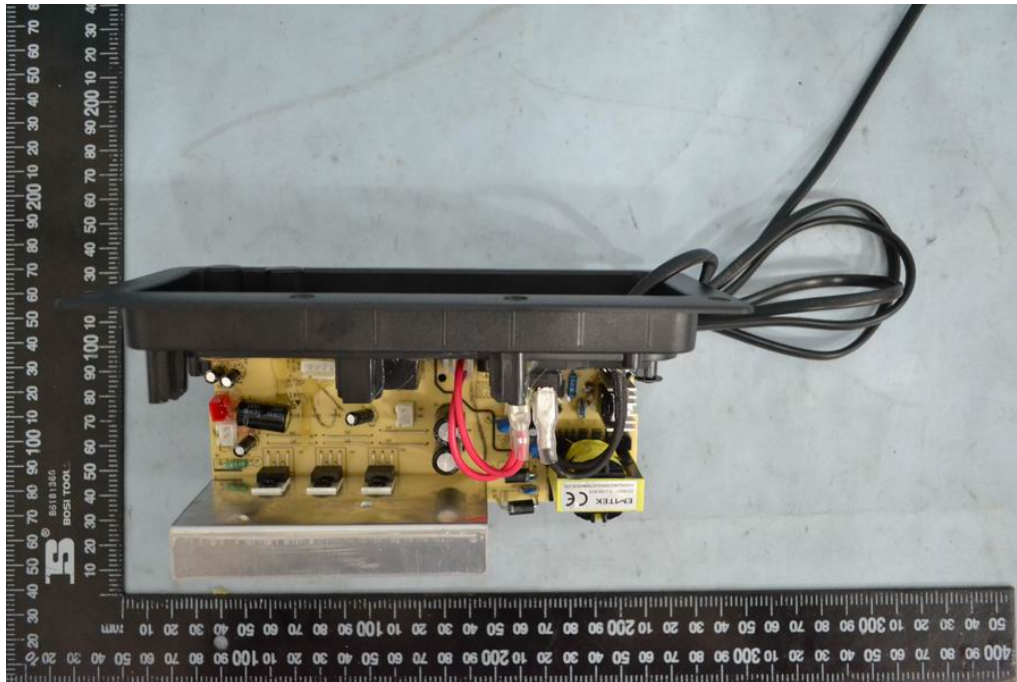


Photo 10

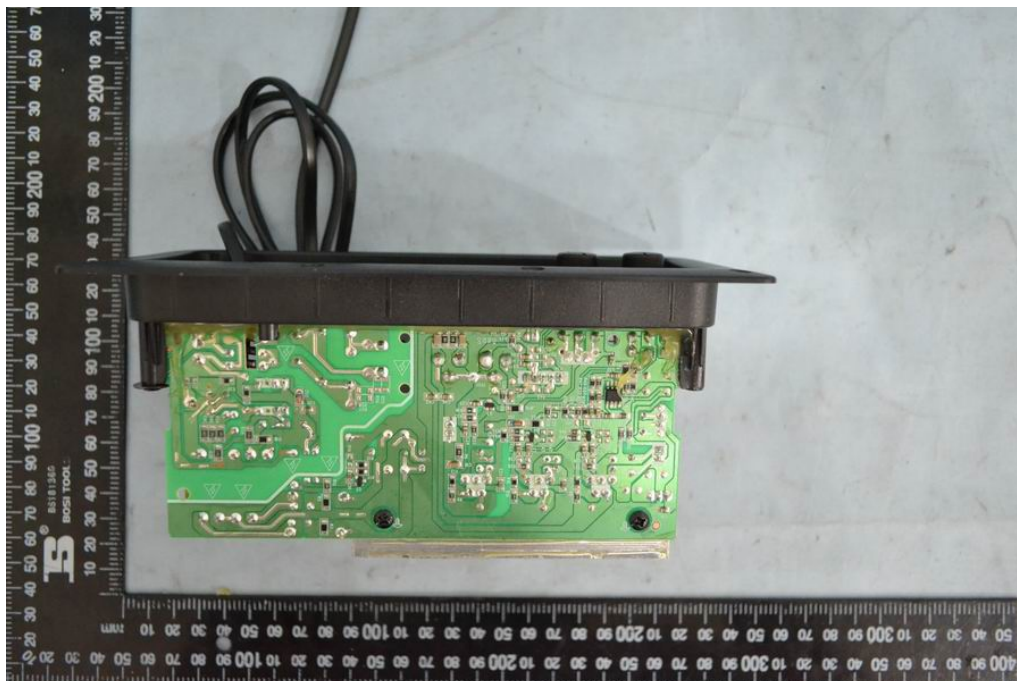


Photo 11

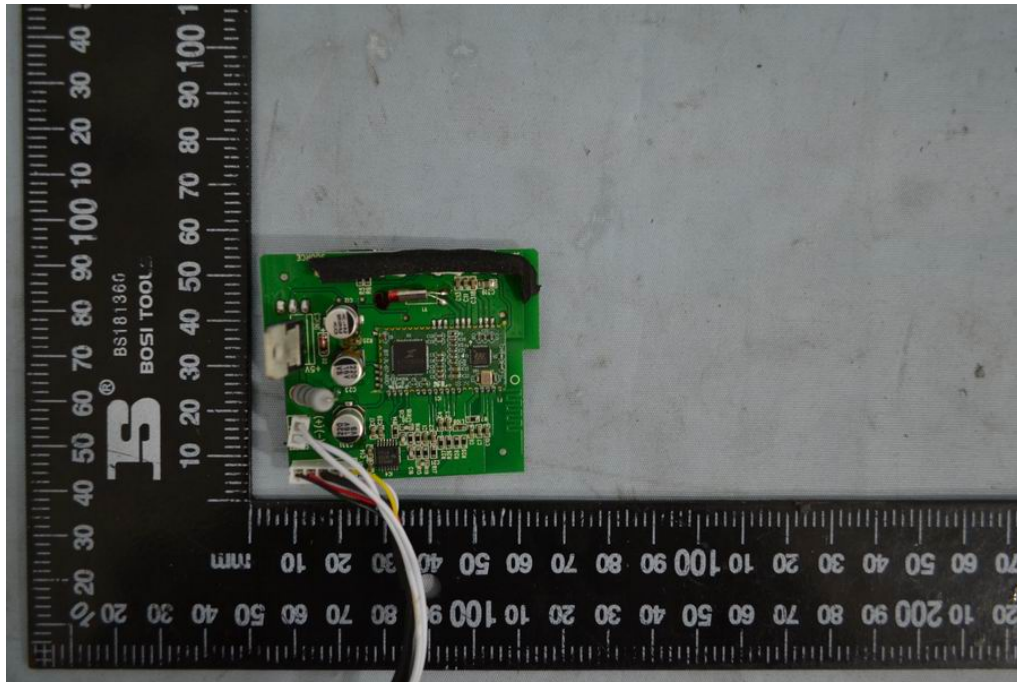
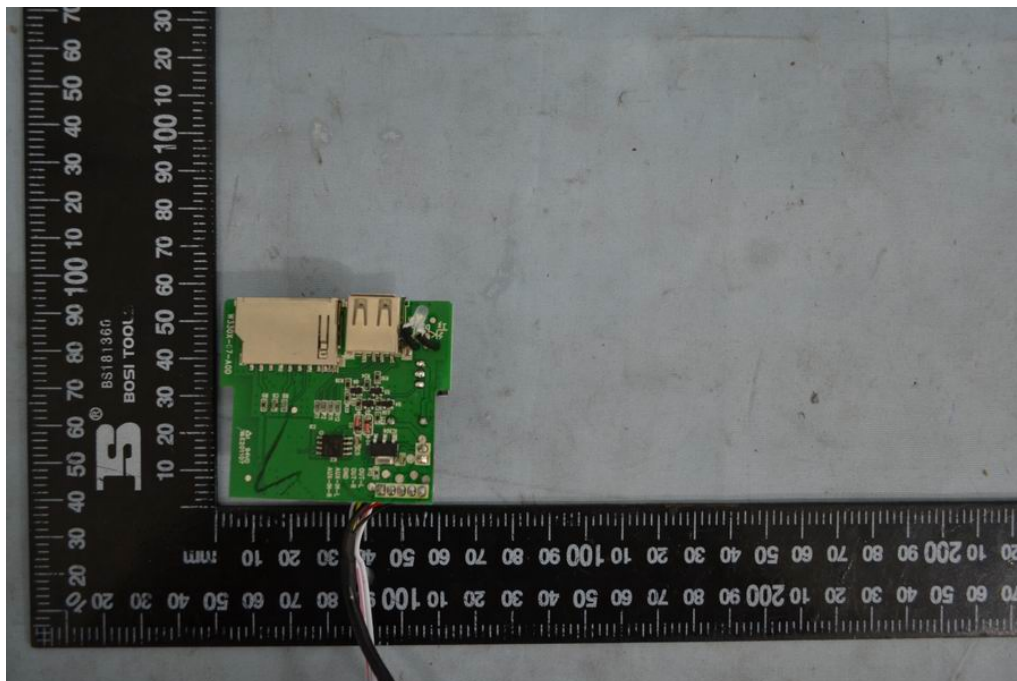


Photo 12



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