LVD TEST REPORT

IEC 60065: 2014

&EN 60065:2014/A11:2017

Audio, video and similar Electronics apparatus- Safety requirements

For

Guangzhou Baolun Electronics Co., Ltd.

No.1, Building B Block, Zhongcun Street, Panyu District, Guangzhou, China

Model:T-4120MP,T-4060MP,MPT120,MPT240,T-2E120,T-2E240,T-120E,T-240E, T-120MT,T-240MT,T-40MT,T-60MT,TI-120MT,TI-240MT,TI-240S,TI-350S,TI-60MT, T-6203,MPT60,TI-60MT,TI-1206S,TI-2406S,TI-3506S,TI-5006S,TS-2060W, TS-2060WV,TS-2120W,TS-2120WV

January 25, 2019

This Report Concerns:	Equipment Type:
☒ Original Report	MINEX AMPLIFIER
Test Engineer:	Eric /
Report Number:	TH19AR-124S
Test Date:	January 18~25, 2019
Reviewed By:	Prince /
Approved By:	Prince /
Prepared By:	**Shenzhen Tian Hai Test Technology Co., Ltd.** 4F, A3 BLDG, The Silicon Valley Power intelligent terminal industrial park, Guanlan street, Longhua district, Shenzhen Tel : 86-755-86615100 Fax: 86-755-86615105

Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior written consent of Shenzhen Tian Hai Test Technology Co.,Ltd.

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

TEST REPORT
IEC 60065: 2014
&EN 60065:2014/A11:2017

Audio, video and similar Electronics apparatus- Safety requirements

Report Reference No.....	TH19AR-124S
Tested by (signature).....	Eric /
Reviewed by (signature).....	Prince /
Approved by (signature).....	Prince /
Date of issue.....	January 25, 2019
Testing Laboratory Name.....	**Shenzhen Tian Hai Test Technology Co., Ltd.**
Address.....	4F, A3 BLDG, The Silicon Valley Power intelligent terminal industrial park, Guanlan street, Longhua district, Shenzhen
Testing location.....	Same as above
Applicant's Name.....	**Guangzhou Baolun Electronics Co., Ltd.**
Address.....	No.1, Building B Block, Zhongcun Street, Panyu District, Guangzhou, China
Manufacturer's Name.....	**Guangzhou Baolun Electronics Co., Ltd.**
Address.....	No.1, Building B Block, Zhongcun Street, Panyu District, Guangzhou, China
Factory's Name.....	**Guangzhou Baolun Electronics Co., Ltd.**
Address.....	No.1, Building B Block, Zhongcun Street, Panyu District, Guangzhou, China
Test specification	
Standard.....	EN 60065: 2014/A11:2017/ IEC 60065: 2014
Test procedure	CE-LVD
Non-standard test method.....	N/A
Test item description.....:	MINEX AMPLIFIER
Trade mark.....	--
Model and/or type reference.....	T-4120MP
Rating(s).....	230V~,50-60Hz,450W,class I
Note:.....	--

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

Copy of marking plate

MINEX AMPLIFIER

Model No.:T-4120MP(T-4120)

Input :230V~,50/60Hz,450W

Guangzhou Baolun Electronics Co., Ltd.

Made In China

Summary of testing:

1) The sample tested complies with the requirements of the test specification.

2) Following symbols and abbreviations maybe used in this test report

B= Basic Insulation
S= Supplementary Insulation
D/R= Double or Reinforced Insulation

S/C= Short-Circuit.....
O/C= Open-Circuit
O/L= Over-Load
B/L= Block

CT= Constant temperatures were obtained
CD= Components damaged (list damaged components)
NCD= No components damaged (list damaged components)
NB= No indication of dielectric breakdown
NH= No Hazard Occurred
.....
Pri.= Primary
Sec.= Secondary
PCB= Printed Circuit Board
PSU= Power Supply Unit
EUT= Equipment Under Test

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

Test item particulars:	
Classification of installation……..……:	Transportable apparatus
Supply	Non-detachable power supply cord fitted with plug
Class of	
Possible test case verdicts:	
- Test case does not apply to the test object……	N/A (Not Applicable)
- Test object does meet the requirement……:	P (Pass)
- Test object does not meet the requireme….:	F (Fail)
Testing:	
Date of receipt of test item……...:	January 17, 2019
Date(s) of performance of tests……	January 18~25, 2019

General remarks:

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

This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

"(See Attachment #)" refers to additional information appended to the report.

"(See appended table)" refers to a table appended to the report.

Throughout this report, a point (coma) is used as the decimal separator.

List of test equipment must be kept on file and available for review.

General production information:

1. These models are MINEX AMPLIFIER, apparatus, for indoor only.
2. The enclosure is made of metal. The metal enclosure was connected to protective earthing.
3. Metal enclosure is considered as fire enclosure.

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

	IEC/EN 60065		
Clause	Requirement – Test	Result – Remark	Verdict
3	GENERAL REQUIREMENTS		P
	Safety class of the apparatus :	Class Ⅰ	P
4	GENERAL CONDITIONS OF TESTS		P
4.1.4	Ventilation instructions require the use of the test box		P
5	MARKING		P
	Comprehensible and easily discernible		P
	Permanent durability against water and petroleum spirit		P
5.1	Identification and supply ratings		P
	The apparatus shall be marked with the following:		
	a) Identification, maker :	Guangzhou Baolun Electronics Co., Ltd.	P
	b) Model number or type reference :	T-4120MP	P
	c) Class II symbol if applicable :		N/A
	d) Nature of supply :	~	P
	e) Rated supply voltage :	230v	P
	f) Mains frequency if safety dependant :	50/60Hz	P
	g) Rated current or power consumption for apparatus supplied by supply apparatus for general use :		N/A
	Measured current or power consumption :		N/A
	Deviation % (max 10%) :		N/A
	h) Rated current or power consumption for apparat-us intended for connection to an a.c. mains supply :	See rating label	P
	Measured current or power consumption :	(see appended table 7.1)	P
	Measured current or power consumption for Television set :	Not Television set	N/A
	Deviation % (max 10%) :	(see appended table 7.1)	P
5.2	Terminal		P
	a) Earth terminal	⏚ marked near earth terminal	P

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

	IEC/EN 60065		
Clause	Requirement – Test	Result – Remark	Verdict
	b) Hazardous live terminals		P
	c) Markings on supply output terminals		N/A
5.3	Caution marking		N/A
	a) Use of triangle with exclamation mark	The triangle symbols are used on the circuit diagram for the replaceable safety relevant components.	P
	b) marking on loudspeaker grille, IEC 60417-5036		N/A
5.4	Instructions for use	English (Version in other language 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.	See user manual.	P
	b) Hazardous live terminals, instructions for wiring		P
	c) Instructions for replacing lithium battery	No battery.	N/A
	d) earth connection warning	See user manual.	P
	e) Instructions for multimedia system connection	See user manual.	P
	f) Special stability warning for attachment of the apparatus to the floor/wall	Not fixed installation.	N/A
	g) Warning: battery exposure to heat		N/A
	h) Warning: protective film on CRT face	No CRT	N/A
5.4.2	a-b) Disconnect device: plug/coupler or all-pole mains switch location, accessibility and markings	Mains plug as the disconnect device. Stated in user manual.	N/A
	c) Instructions for permanently connected equipment	Not permanently connected equipment	N/A
	Marking, signal lamps or similar for completely disconnection from the mains	No such marking, signal lamps or similar used	N/A
6	HAZARDOUS RADIATION		N/A
6.1	Ionizing radiation <36 pA/kg (0,5 mR/h)	There is no CRT. No Ionizing Radiation generated.	N/A
	Ionizing radiation under fault condition		N/A
6.2	Laser radiation, emission limits to IEC 60825-1:200..... :	No laser radiation inside the equipment	N/A

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

	IEC/EN 60065		
Clause	Requirement – Test	Result – Remark	Verdict
	Emission limits under fault conditions .....:		P
7	HEATING UNDER NORMAL OPERATING CONDITIONS		P
7.1	Temperature rises not exceeding specified values; fuse links and other protective devices defeated	See appended table	P
7.1.1	Temperature rise of accessible parts	See appended table	P
7.1.2	Temperature rise of parts providing electrical insulation	See appended table	P
7.1.3	Temperature rise of parts acting as a support or as a mechanical barrier		N/A
7.1.4	Temperature rise of windings	See appended table	P
7.1.5	Parts not subject to a limit under 7.1.1 to 7.1.4	See appended table	P
7.2	Softening temperature of insulating material supporting parts conductively connected to the mains carrying a current >0,2A at least 150 °C	PCB supporting primary connector.	N/A
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		P
8.2	No shock hazard when changing voltage setting device, fuse-links or handling drawers etc.		N/A
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	No cover removed by hand.	N/A
8.5	equipment		P
	Basic insulation between hazardous live parts and earthed accessible parts		P
	Resistors bridging basic insulation complying with 14.1 a)	No such parts	N/A
	Capacitors bridging basic insulation complying with 14.2.1 a)		P
	Protective earthing terminal	Protective earthing terminal fixed reliably	P
8.6	I equipment and I constructions within Class I equipment	I constructions	P
	Reinforced or double insulation between hazardous live parts and accessible parts		P
	Components bridging reinforced or double insulation complying with 14.1 a) or 14.3	No such components	P

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

	IEC/EN 60065		
Clause	Requirement – Test	Result – Remark	Verdict
	Basic insulation bridged by components complying with 14.3.4.3.	No such components	N/A
	Basic and supplementary insulation each being bridged by a capacitor complying with 14.2.1a)	No such components.	N/A
	Reinforced or double insulation being bridged with 2 capacitors in series complying with 14.2.1 a)	No such components.	N/A
	Reinforced or double insulation being bridged with a single capacitor complying with 14.2.1 b)		N/A
8.7	This clause is Void		N/A
8.8	Basic or supplementary insulation >0,4mm (mm)….:		P
	Reinforced insulation >0,4mm (mm) ..:	0.71	P
	Thin sheet insulation (excluding non-separable thin sheet insulation. See 8.22)		P
	Basic or supplementary insulation, at least two layers, each meeting 10.3		N/A
	Basic or supplementary insulation, three layers any two of which meet 10.3		N/A
	Reinforced insulation, two layers each of which meet 10.3		P
	Reinforced insulation, three layers any two which meet 10.3	No such insulation used.	N/A
8.9	Adequate insulation between internal hazardous live conductors and accessible parts	Adequate insulation between internal hazardous live conductors accessible parts	N/A
	Adequate insulation between internal hazardous live parts and conductors connected to accessible parts	Basic insulation, but safely anchored.	N/A
8.10	Double insulation between conductors connected to the mains and accessible parts.	apparatus	N/A
	Double insulation between internal hazardous live parts and conductors connected to accessible parts.		N/A
8.11	Detaching of wires	Primary wire is connected with multi-contact-housing.	P
	No undue reduction of creepages or clearance distances if wires become detached	Wires adequately protected against detachment by using two independent means	P
	Vibration test carried out :		P
8.13	Adequate fastening of windows, lenses, lamp covers etc. (pull test 20N for 10s)		P
8.14	Adequate fastening of covers (pull test 50N for 10s)		P

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

	IEC/EN 60065		
Clause	Requirement – Test	Result – Remark	Verdict
8.15	No risk of damage to the insulation of internal wiring due to hot parts or sharp edges	Internal wires are well routed and secured, no risk of damage to the internal wiring	P
8.16	Only special supply equipment can be used	Not such type of equipment	N/A
8.17	Insulated winding wire without additional interleaved insulation		N/A
8.18	Endurance test as required by 8.17		N/A
8.19	Disconnection from the mains		P
8.19.1	Disconnect device	Power plug as the device of disconnection from the mains	P
	All-pole switch or circuit breaker with >3mm contact separation		N/A
8.19.2	Mains switch ON indication		N/A
8.20	Switch not fitted in the mains cord		P
8.21	Bridging components comply with clause 14	No components bridging switch contact gap	N/A
8.22	Non-separable thin sheet material	No such parts	N/A
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 such high voltage	N/A
9.1.1.1	a) Open circuit voltages		P
	b) Touch current measured from terminal devices using the network in annex D :		P
	c) Discharge not exceeding 45µC		P
	d) Energy of discharge not exceeding 350mJ		N/A
9.1.1.2	Test with test finger and test probe	No accesses of hazardous live with test finger and test probe.	P
9.1.2	No hazardous live shafts of knobs, handles or levers	No live shafts, handles or levers.	P
9.1.3	Ventilation holes and other holes tested by means of 4mm x 100mm test pin	No access for the test pin.	P
9.1.4	Terminal devices tested with 1mm x 20mm test pin (10N); test probe D of IEC 61032	No access to live parts.	P
	Terminal devices tested with 1mm x 100mm straight wire (1N); test probe D of IEC 61032	No access to live parts.	P

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

	IEC/EN 60065		
Clause	Requirement – Test	Result – Remark	Verdict
9.1.5	Pre-set controls tested with 2.5mm x 100mm test pin (10N); test probe C of IEC 61032	No pre-set controls	N/A
9.1.6	No shock hazard due to stored charge on withdrawal of the mains plug; voltage (V) after 2 s..... :	Measured: Normal condition:18V. fault condition:18V	P
	If C is not greater than 0,1 µF no test needed		N/A
9.1.7	Resistance to external forces		P
	a) Test probe 11 of IEC 61032 for 10 s (50 N)	Test with test finger results in no hazard.	P
	b) Test hook of fig. 4 for 10 s (20 N)	Test with test hook results in no hazard.	P
	c) 30 mm diameter test tool for 5 s (100 or 250 N) :	100N 5s	P
9.2	No hazard after removing a cover by hand	Cover cannot be removed without use of a tool.	N/A
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 :		N/A
10.2	Humidity treatment 48 h or 120 h :	48h,93%RH,26℃	P
10.3	Insulation resistance and dielectric strength between mains teminals	See appended table	P
	Insulation Resistance and dielectric strength across BASIC or SUPPLEMENTARY insulation (Class 1)		P
	Insulation resistance and dielectric strength across REINFORCED insulation (I)		P
11	FAULT CONDITIONS		P
11.1	No shock hazard under fault condition		P
11.2	Heating under fault condition		P
	No hazard from softening solder	No solder of soften.	N/A
	Flames extinguish within 10 seconds	No flames occurred	N/A
	Soldered terminations not used as protective mechanism	No soldered terminations for protective mechanism.	N/A
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	See appended table 11.2	P

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

	IEC/EN 60065		
Clause	Requirement – Test	Result – Remark	Verdict
	insulation		
11.2.4	Temperature rise of parts acting as a support or mechanical barrier		N/A
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/A
	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
	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 cm² :		N/A
	b) Temperature rise of printed circuit boards exceeding the limits of table 3 up to 300 K for an area not greater than 2 cm² for a maximum of 5 min		N/A
	Meets all the special conditions if conductors on printed circuit boards are interrupted		N/A
	protective earthing maintained		P
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	Less than 7kg.	P
12.1.2	Vibration test		P
12.1.3	Impact hammer test	no damage	P
	Steel ball test	After 2J applied, comply with dielectric strength requirements.	P
12.1.4	Drop test for portable apparatus where mass < 7 kg		N/A
12.1.5	Thermoplastic enclosures strain relief test		N/A
12.2	Fixing of knobs, push buttons, keys and levers		P
12.3	Remote controls with hazardous live parts	No hazardous live parts contained in remote control	N/A
12.4	Drawers (pull test 50 N, 10 s)	No drawer	N/A
12.5	Antenna coaxial sockets providing isolation	No antenna socket which isolate hazardous live parts from accessible parts.	N/A

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

	IEC/EN 60065		
Clause	Requirement – Test	Result – Remark	Verdict
12.6	Telescoping or rod antennas construction	No telescoping or rod antennas.	N/A
12.6.1	Telescoping or rod antennas securement		N/A
13	CLEARANCE AND CREEPAGE DISTANCES		P
13.1	Clearances in accordance with 13.3	See clause 13.3.	P
	Creepage distances in accordance with 13.4	See clause 13.4.	P
13.2	Determination of operating voltage		P
13.3	Clearances		P
13.3.1	General		P
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/A
13.3.4	Measurement of transient voltages		N/A
13.4	Creepage distances	See appended table 13.3 &13.4	P
	Creepage distances greater than table 11 minima		P
13.5	Printed boards		N/A
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/A
13.5.2	Type B coated printed circuit boards complying with IEC 60664-3 (basic insulation only)	No type B coated printed circuit boards.	N/A
13.6	Conductive parts along uncemented joints clearances and creepage distances comply with 13.3 and 13.4	No uncemented joints.	N/A
	Conductive parts along reliably cemented joints comply with 8.8		N/A
	Temperature cycle test and dielectric strength test		N/A
	500V test for transformers, magnetic coupler and similar devices, if insulation is relied upon for safety		N/A
13.7	Enclosed, enveloped or hermetically sealed parts: not conductively connected to the mains: clearances and creepage distances as in table 12	Not such a construction.	N/A

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

	IEC/EN 60065		
Clause	Requirement – Test	Result – Remark	Verdict
13.8	Parts filled with insulating compound, meeting the requirements of 8.8		N/A
14	COMPONENTS		P
14.1	Resistors		N/A
	a) Resistors between hazardous live parts and accessible metal parts	Not such resistors used	N/A
	b) Resistors, other than between hazardous live parts and accessible parts		N/A
	Resistors separately approved .....:		N/A
14.2	Capacitors and RC units		P
	Capacitors separately approved	YES	P
14.2.1	Y capacitors tested to IEC 60384-14:2005 ..... :		P
14.2.2	X capacitors tested to IEC 60384-14:2005 ..... :		P
14.2.3	Capacitors operating at mains frequency but not connected to the mains: tests for X2 ..... :	No such capacitors	N/A
14.2.5	Capacitors with volume exceeding 1750 mm³, where short-circuit current exceeds 0,2 A: compliance with IEC60384-1, 4.38 category B or better .....:		N/A
	Capacitors with volume exceeding 1750 mm³, mounted closer to a potential ignition source than table 5 permits: compliance with IEC 60384-1, 4.38 category B or better ..... :		N/A
	Shielded by a barrier acc. to 20.1.4/ table 21 or metal .....:		N/A
14.3	Inductors and windings		P
	Comply with IEC 61558-1, IEC 61558-2 (as relevant) and clause 20.1.4		N/A
14.3.1	Transformers and inductors marked with manufacturer's name and type .....:	ITC Electronics, T-61500-BP-1.	P
	Transformers and inductors separately approved .....:	Tested with appliance	N/A
14.3.2	General		N/A
	Insulation material complies with clause 20.1.4		P
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

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

	IEC/EN 60065		
Clause	Requirement – Test	Result – Remark	Verdict
14.3.4	Separation between windings		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	0.71mm	P
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		N/A
14.3.4.3	Separating transformers with at least basic insulation	No separating transformers	N/A
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)		P
	Coil formers and partition walls > 0,4 mm		P
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		N/A
	Winding wires connected to protective earth have adequate current-carrying capacity		N/A
14.4	High voltage components	No such components	N/A
	High-voltage components and assemblies: U > 4 kV (peak) separately approved		N/A
	Component meets category V-1 of IEC 60695-11-10		N/A
14.4.1	High voltage transformers and multipliers tested as part of the submission		N/A
14.4.2	High voltage assemblies and other parts tested as part of the submission		N/A
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		N/A
	b) Thermal cut-outs tested as part of the submission		N/A
14.5.1.2	a) Thermal links separately approved		P

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

	IEC/EN 60065		
Clause	Requirement – Test	Result – Remark	Verdict
	b) Thermal links tested as part of the submission		N/A
14.5.1.3	Thermal devices re-settable by soldering		N/A
14.5.2.1	Fuse-links in the mains circuit according to IEC 60127		P
14.5.2.2	Correct marking of fuse-links adjacent to holder :	T6.3AL 250V	P
14.5.2.3	Not possible to connect fuses in parallel .....:		P
14.5.2.4	Not possible to touch hazardous live parts when replacing fuse-links without the use of a tool .....:	Not replaced without a tool.	P
14.5.3	PTC thermistors comply with IEC 60730-1:2007	No PTC thermistors used	N/A
	PTC devices (15 W) category V-1 or better	No PTC devices used	N/A
14.5.4	Circuit protectors have adequate breaking capacity and their position is correctly marked	No circuit protectors used	N/A
14.6	Switches	(see appended table)	P
14.6.1 a)	Separate testing to IEC 61058-1 including: - 10 000 operations - Normal pollution suitability - Make and break speed independent of speed of actuation V-0 compliance with annex G, G.1.1	Approved main switch used (see appended table 14)	P
14.6.1 b)	Tested in the apparatus:		N/A
	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/A
	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/A
	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/A
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/A
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/A
14.6.4	Switch tested to 14.6.1 b) has adequate dielectric strength		N/A
14.6.5	Mains switch controlling mains socket outlets additional tests to IEC 60058-1		N/A

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

	IEC/EN 60065		
Clause	Requirement – Test	Result – Remark	Verdict
	Socket outlet current marking correct		N/A
14.7	Safety interlocks	No safety interlocks used	N/A
	Safety interlocks to 2.8 of IEC 60950-1		N/A
14.8	Voltage setting devices and the like		N/A
	Voltage setting device not likely to be changed accidentally		N/A
14.9	Motors	No motors.	N/A
14.9.1	Endurance test on motors		N/A
	Motor start test		N/A
	Dielectric strength test		N/A
14.9.2	Not adversely affected by oil or grease etc.		N/A
14.9.3	Protection against moving parts		N/A
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 60950-1, Annex B		N/A
14.10	Batteries	No batteries used	N/A
14.10.1	Batteries mounted with no risk of accumulation of flammable gases		N/A
14.10.2	No possibility of recharging non-rechargeable batteries		N/A
14.10.3	Recharging currents and times within manufacturers limits		N/A
	Lithium batteries discharge and reverse currents within the manufacturers limits		N/A
14.10.4	Battery mould stress relief		N/A
14.10.5	Battery drop test		N/A
14.11	Optocouplers		N/A
	a) Comply with 13.6 (jointed insulation) and N.2.1		N/A
	b) Comply with IEC 60747-5-5:2007		N/A
	Alternative to a) and b) optocoupler comply with 13.8		N/A
	a) Comply with 13.6 (jointed insulation) and N.2.1		N/A

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

	IEC/EN 60065		
Clause	Requirement – Test	Result – Remark	Verdict
14.12	Surge suppression varistors	No surge suppression varistors used	P
	Comply with IEC 61051-2		P
	Not connected between mains and accessible parts except for earthed parts of permanently connected apparatus		P
	Complies with the current pulse, fire hazard and thermal stress requirements of 14.12		P
15	TERMINALS		P
15.1.1	Mains plug, appliance inlet, interconnection couplers and mains socket-outlet meet the appropriate standard	By mains plug	P
	Overloading of plugs or appliance inlets prevented if the apparatus has mains socket outlets	No mains socket outlets.	N/A
	Overloading of internal wiring prevented if the apparatus has mains socket outlets	No mains socket outlets	N/A
15.1.2	Connectors for antenna, earth, audio, video or data		P
	No risk of insertion in mains socket- outlets		P
	No risk of insertion into audio- or video- outlets marked with the symbol of 5.2		N/A
15.1.3	Output terminals of a.c. adaptors or similar devices not compatible with household mains socket-outlets	No such terminals	N/A
15.2	Provision for protective earthing		P
	Accessible conductive parts of Class I equipment reliably connected to earth terminal, within equipment	Metal enclosure of the appliance is reliably connected to the protective earth.	P
	Protective earth conductors correctly coloured	Green/yellow wire used.	P
	Equipment with non-detachable mains cord provided with separate protective earth terminal near mains input		N/A
	Protective earth terminal resistant to corrosion		P
	Earth resistance test: < 0,1 Ω at 25 A ..... :	0.05Ω	P
15.3	Terminals for external flexible cords and for permanent connection to the mains supply		N/A
15.3.1	Adequate terminals for connection of permanent wiring		N/A

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

	IEC/EN 60065		
Clause	Requirement – Test	Result – Remark	Verdict
15.3.2	Reliable connection of non-detachable cords:		N/A
	Not soldered to conductors of a printed circuit board		N/A
	Adequate clearances and creepage distances between connections should a wire break away		N/A
	Wire secured by additional means to the conductor	Adequately anchored. Tested with 5 N.	N/A
15.3.3	Screws and nuts clamping conductors have adequate threads: ISO 261, ISO 262 or similar	.	N/A
15.3.4	Soldered conductors wrapped around terminal prior to soldering or held in place by additional means		N/A
	Clamping of conductor and insulation if not soldered or held by screws		N/A
15.3.5	Terminals allow connection of appropriate cross-sectional area of conductors, for the rated current of the equipment	No such terminals.	N/A
15.3.6	Terminals to 15.3.3 have sizes required by table 16	No such terminals.	N/A
15.3.7	Terminals clamp conductors between metal and have adequate pressure	Terminals have adequate pressure without damage the connector.	N/A
	Terminals designed to avoid conductor slipping out when tightened or loosened	Adequate construction.	N/A
	Terminals adequately fixed to avoid loosening when the clamping is tightened or loosened and stress on internal wiring is avoided	Adequate fixed.	N/A
15.3.8	Terminals carrying a current more than 0,2 A: contact pressure not transmitted by insulating material except ceramic		N/A
15.3.9	Termination of non-detachable cords: wires terminated near to each other		N/A
	Terminals located and shielded: test with 8 mm strand		N/A
15.4	Devices forming a part of the mains plug	Not direct plug-in equipment	N/A
15.4.1	No undue strain on mains socket-outlets		N/A
15.4.2	Device complies with standard for dimensions of mains plugs		N/A
15.4.3	Device has adequate mechanical strength (tests a,b,c)		N/A

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

	IEC/EN 60065		
Clause	Requirement – Test	Result – Remark	Verdict
16	EXTERNAL FLEXIBLE CORDS		P
16.1	Mains cords sheathed type, complying with IEC 60227 for PVC or IEC 60245 for synthetic rubber cords .....:	Approved PVC complying with IEC60227	P
	Non-detachable cords for Class I have green/yellow core for protective earth	Yellow/Green	P
16.2	Mains cords conductors have adequate cross-sectional area for rated current consumption of the equipment	3×0.75mm^2	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 interconnection wires used	N/A
	b) Flexible cords not complying with 16.1, withstand bending and mechanical stress (3.2 of IEC 60227-2)		N/A
16.4	Flexible cords used for connection between equipment have adequate cross-sectional areas to avoid temperature rise under normal and fault conditions		N/A
16.5	Adequate strain relief on external flexible cords	External flexible cords provided adequate strain relief.	N/A
	Not possible to push cord back into equipment	After the 40N, 100 times and 1 min. to a torque of 0.25 Nm test, the cord displaced is<2mm.	N/A
	Strain relief device unlikely to damage flexible cord	No sharp edge.	N/A
	For mains cords of Class I equipment, hazardous live conductors become taut before earth conductor		N/A
16.6	Apertures for external flexible cord: no risk of damage to the cord during assembly or movement in use	No sharp edge.	N/A
16.7	Transportable musical instruments and amplifiers fitted with detachable cord set with appliance inlet to IEC 60320-1	Not transportable apparatus	N/A
	Transportable musical instruments and amplifiers fitted with detachable cord sets or with means of stowage to protect the cord	Not transportable apparatus	N/A
17	ELECTRICAL CONNECTIONS AND MECHANICAL FIXINGS		P
17.1	Torque test to table 20:		P

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

	IEC/EN 60065		
Clause	Requirement – Test	Result – Remark	Verdict
	- Screws into metal: 5 times		P
	- Screws into non-metallic material: 10 times		N/A
17.2	Correct introduction into female threads in non-metallic material		N/A
17.3	Cover fixing screws: captive		P
	Non-captive fixing screws: no hazard when replaced by a screw whose length is 10 times its diameter		P
17.4	No loosening of conductive parts carrying a current > 0,2 A		P
17.5	Contact pressure not transmitted through plastic other than ceramic for connections carrying a current > 0,2 A		P
17.6	Stranded conductors of flexible supply cords carrying a current > 0,2 A with screw terminals not consolidated by solder	No such screw terminals used	N/A
17.7	Cover fixing devices other than screws have adequate strength and their positioning is unambiguous	Screws used for fixing enclosure	N/A
17.8	Fixing devices for detachable legs or stands provided	Delivered with relevant fixing means.	N/A
17.9	Internal pluggable connections, affecting safety, unlikely to become disconnected	Connections comply, checked by inspection.	P
18	Mechanical strength of picture tubes and protection against the effects of implosion		N/A
18.1	Picture tube separately approved to IEC 61965 :	No picture tubes used	N/A
	Picture tube separately approved to 18.2 .....:		N/A
18.2	Non-intrinsically protected tubes tested to 18.2		N/A
19	STABILITY AND MECHANICAL HAZARDS		P
19.1	Mass of the equipment exceeding 7 kg ..... :	17Kg	P
	Apparatus intended to be fastened in place – suitable instructions		N/A
19.2	Test on a plane, inclined at 10° to the horizontal		P
19.3	100 N force applied vertically downwards		P
19.4	100 N force, or 13% of weight, applied horizontally to point of least stability.	Less than 25Kg,test no required	N/A

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

	IEC/EN 60065		
Clause	Requirement – Test	Result – Remark	Verdict
19.5	Edges or corners not hazardous	Edges or corners are smooth and rounded.	P
19.6	Glass surfaces (exc.laminated) with an area exceeding 0,1 m² or maximum dimension > 450 mm, pass the test of 19.5.1	Not such mounting	N/A
19.7	Wall or ceiling mountings means		N/A
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 60695-11-10 with openings not exceeding 1 mm in width		N/A
	b) Exemption for small components as defined in 20.1	Small electrical components are mounted on V-0 PWB, other components see below.	P
20.1.1	Electrical components meet the requirements of Clause 14 or 20.1.4	See 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 wires working at voltages > 4kV	P
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 IEC 60707, unless used in a fire enclosure		N/A
	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		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/A
	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	Operating voltage is less than 4kV.	N/A

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

	IEC/EN 60065		
Clause	Requirement – Test	Result – Remark	Verdict
20.2	Fire enclosure	Metal enclosure as fire enclosure	N/A
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 exceeding 4kV, no fire enclosure requirement.	N/A
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/A
20.2.3	Requirements of 20.2.1 and 20.2.2 met by an internal fire enclosure	No internal fire enclosure.	N/A
A	ANNEX A, ADDITIONAL REQUIREMENTS FOR APPARATUS WITH PROTECTION AGAINST SPLASHING WATER		N/A
A.5	Marking and instructions		N/A
A.5.1	j) Marked with IPX4 (IEC 60529), 5.4.1 a) does not apply		N/A
A.10	Insulation requirements		N/A
A.10.2	Splash and humidity treatment		N/A
A.10.2.1	Enclosure provides protection against splashing water		N/A
A.10.2.2	Humidity treatment carried out for 7 days		N/A
B	ANNEX B, APPARATUS TO BE CONNECTED TO THE TELECOMMUNICATION NETWORKS		N/A
	Complies with IEC 62151 clause 1	Not intended for telecommunication networks.	N/A
	Complies with IEC 62151 clause 2		N/A
	Complies with IEC 62151 clause 3 but with 3.5.4 modified to 2.4.10 of this standard		N/A
	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		N/A
	Complies with IEC 62151 cause 5 but with 5.3.1 modified in accordance with annex B of this standard		N/A
	Complies with IEC 62151 clause 6		N/A
	Complies with IEC 62151 clause 7		N/A
	Complies with IEC 62151 annex A, B and C		N/A

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

	IEC/EN 60065		
Clause	Requirement – Test	Result – Remark	Verdict
L	ANNEX L, ADDITIONAL REQUIREMENTS FOR Electronics FLASH APPARATUS FOR PHOTOGRAPHIC PURPOSES.		N/A
L. 5	Marking and instructions		N/A
L5.4	Instructions for battery chargers and Supply apparatus indicating type or model number of flash apparatus with which it is to be used		N/A
	Instructions for flash apparatus indicating type or model number of battery chargers or Supply apparatus with which it is to be used		N/A
L. 7	Heating under normal operating conditions		N/A
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		N/A
L. 9	Electric shock hazard under normal operating conditions		N/A
L9.1.1	Terminals to connection to synchroniser not HAZARDOUS LIVE		N/A
L9.1.1.1	If possible, flashing is made during the measurements		N/A
L.10	Insulation requirements		N/A
L10.3.2	High frequency puls ignition		N/A
L. 12	Mechanical strength		N/A
L12.1.3	Windows for flash tubes are excluded from the steel ball inpact test		N/A
L. 14	Components		N/A
L14.6.6	Mains switch characteristics appropriate to its function under normal conditions		N/A
L. 20	Resistance to fire		N/A
L20.1 c)	Trigger coil for discharge purpose is not considered to be a POTENTIAL IGNITION SOURCE		N/A

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

IEC 60065, GROUP DIFFERENCES (CENELEC common modifications (EN))			
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
Definition 2.2.Z1 (A11:2008)	Add after the definition 2.2.12 the following new definition: PORTABLE SOUND SYSTEM small battery powered audio equipment: • 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 NOTE Examples are mini-disc or CD players, MP3 audio players or similar equipment.		N/A
2.2 (A12:2011)	In EN 60065:2002/A11:2008 Delete the definition 2.2.Z1		N/A

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

3.1	Add the following indent at the end of the list - Exposure to excessive sound pressures from headphones or earphones 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.		N/A
3.1 (A12:2011)	In EN 60065:2002 Delete the addition of indent regarding sound pressure excessive		N/A
3.Z1 (A2:2010)	After 3.2 add a new clause 3.Z1: 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): 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; 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; 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. 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

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

3.Z1 (A2:2010)	After 3.2 add a new clause 3.Z1: 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): 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; 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; 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. 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
4.1.1	Replace the text of the note by: NOTE For ROUTINE TEST reference is made to EN 50514.		N/A
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/A
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 excisting standard and amendments		N/A
	Zx Protection against excessive sound pressure from personal music players		

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

	Zx.1 General This sub-clause specifies requirements for protection against excessive sound pressure from 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. A personal music player is a portable equipment for personal use, that: 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. 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. 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. The requirements in this sub-clause are valid for music or video mode only. The requirements do not apply: while the personal music player is connected to an external amplifier; or while the headphones or earphones are not used. 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. The requirements do not apply to: hearing aid equipment and professional equipment; NOTE 3 Professional equipment is equipment sold through special sales channels. All products sold through normal Electronicss stores are considered not to be professional equipment. 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. 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. For equipment which is clearly designed or intended for use by young children, the limits of EN 71-1 apply.		N/A

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

Cont.	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 ncreased 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: 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 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.		N/A

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

	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. 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. 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.		N/A
	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 listen at high volume levels for long periods.”  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.		N/A
Cont.	Zx.4 Requirements for listening devices (headphones and earphones)		N/A

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

	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.		N/A
	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 control, additional sound feature like equalization, etc.). NOTE An example of a wired listening device with digital input is a USB headphone.		N/A
	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 above-mentioned 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.		N/A

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

	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.		N/A

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

6.1 (A11:2008)	Replace the entire subclause in EN 60065:2002 and EN 60065:2002/A1:2006 by: Ionizing radiation 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. 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 1 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. The dose-rate shall not exceed 1μSv/h (0,1 mR/h) taking account of the background level. NOTE 2 These values appear in Directive 96/29/Euratom of 13th May 1996. A picture is considered to be intelligible if the following conditions are met: - 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/A

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

Z1 (A11:2008)	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.		N/A
General	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 EN 50333. (Replaced by EN 50514)		N/A

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

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.	N/A
Bibliography	Additional EN standards.	

ZA	**Normative references to international publications with their corresponding European publications**	**P**

ZB	**ANNEX ZB TO EN 60065, SPECIAL NATIONAL CONDITIONS (EN)**		**P**
2.6.1	DK: The following is added: Certain types of apparatus, see 15.1.1, may be provided with a plug not establishing earthing continuity when inserted in Danish socket-outlets Justification: Heavy Current Regulations, Section 107.		N/A
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. Justification: In Denmark an existing 13 A socket outlet can be protected by a 20 A fuse.		N/A

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

5.3 (A2:2010)	Finland, Norway and Sweden To the end of the subclause the following is added: 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: In Finland: "Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan" In Norway: “Apparatet må tilkoples jordet stikkontakt” In Sweden: “Apparaten skall anslutas till jordat uttag”		N/A
5.4 (A11:2008)	Finland, Norway and Sweden To the end of 5.4 the following is added: 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: In Finland: “Laite on liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan” In Norway: “Apparatet må tilkoples jordet stikkontakt” In Sweden: "Apparaten skall anslutas till jordat uttag"		N/A

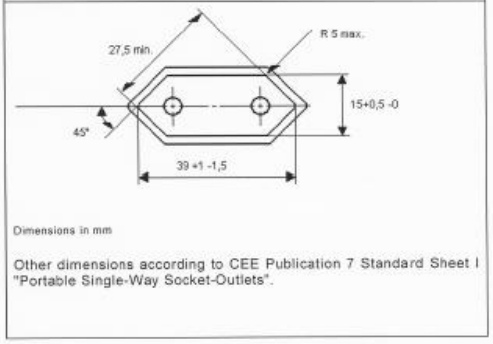
4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

5.4.1 (A11:2008)	Norway and Sweden To the end of 5.4.1 (after the compliance statement) the following is added: 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. 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. 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: “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)” 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. Translation to Norwegian (the Swedish text will also be accepted in Norway): “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.” Translation to Swedish: ”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. För att undvika detta skall vid anslutning av utrustningen till kabel-TV nät galvanisk isolator finnas mellan utrustningen och kabel-TV nätet.”		N/A

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

13.3.1	NO: To the second paragraph 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. Justification: Based on a use in Norway of an IT power distribution system where the neutral is not provided.		N/A
15.1.1 (A11:2008)	Denmark The text of the Danish SNC in EN 60065:2002 has been modified as follows: To the first paragraph the following is added: 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. Appliances of 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. To the second paragraph the following is added: Socket outlets intended for providing power to I 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. 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. To the third paragraph the following is added: 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. Justification: Heavy Current Regulations, Section 107-2-D1		N/A
15.1.1	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. Justification: SI 525: 1997		N/A

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

15.1.1	NO: Mains socket-outlets mounted on I apparatus shall comply with the specifications given in CEE Publ. 7 as far as a applicable, with the following amendments: § 8 Dimensions a 2.5 A 250 V two-pole socket-outlets for Electronics apparatus shall comply with the enclosed Standard Sheet I. Mains socket-outlets mounted on CLASS II apparatus shall comply with the specifications given in CEE Publ. 7 as fas as a 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. STANDARD SHEET I 2,5 A/250 V SOCKET-OUTLET FOR ELECTRONIC APPLIANCES OF CLASS II  Dimensions in mm Other dimensions according to CEE Publication 7 Standard Sheet I "Portable Single-Way Socket-Outlets". § 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. § 24 Mechanical strength A 2,5 A 250 V socket-outlets for I Electronics apparatus are tested as specified in 12.1.3 of EN 60065. Also the protecting rim shall be tested Justification: Act of 24 May 1929 relating to supervision of electrical installation (TEA 1929/FEL 1998).		N/A
15.1.1	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. NOTE ”Standard plug” is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug. Justification: SI 1768: 1994		N/A
J.2	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. Justification: Based on a use in Norway of an IT power distribution system where the neutral is not provided.		N/A

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

ZC	**ANNEX ZC TO EN 60065, A-DEVIATIONS (EN)**		N/A
5.1	IT: Additional markings on the outside of the TV receiver in Italian language		N/A
	IT:User instructions in Italian language including a conformity declaration		N/A
	IT: Certification number on the back cover		N/A
6.1	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. Justification: German ministerial decree against ionizing radiation (Röntgenverordnung), in force since 2002-07-01, implementing the European Directive 96/29/EURATOM. NOTE Contact address: Physikalisch-Technische Bundesanstalt, Bundesallee 100, D-38116 Braunschweig, Tel.: Int+49-531-592-6320, Internet: http://www.ptb.de		N/A
14	SE: Switches containing mercury such as thermostats, relays and level controllers are not allowed. Justification: Ordinance (1990:944) on Prohibition in Connection with handling. Importation and exportation of CheMINEX AMPLIFIERal Products (Certain Cases)		N/A

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

5.1	TABLE: Input test		P
	Power consumption in the OFF/Stand-by mode of the functional switch (W)	--	—

Cond.	Un (V)	Freq. (Hz)	In (A)	Pn (W)	Uout(V)	Pout (W)	Operating conditions
	207	50	2.34	418	--	--	Normal operation
	207	60	2.34	418	--	--	
	230	50	2.25	420	--	--	
	230	60	2.25	420	--	--	
	253	50	2.05	425	--	--	
	253	60	2.05	425	--	--	

7.1	TABLE: temperature rise measurements		P
	Loudspeaker impedance (Ω) :	8Ω	—
	Several loudspeaker systems :	/	
	Marking of loudspeaker terminals	/	

Monitored point:	dT (K)		Limit dT (K)
Test condition	207V/60Hz	253V/50Hz	
Power cord	2.7	2.5	60
Inlet near line	22.9	20.7	35
Power switch	10.5	8.2	50
Internal wires	18.9	18.4	70
PCB nearD17	34.2	31.9	85
L2 coil	31.8	29.6	70
C1 body	25.1	24.4	65
C31 body	30.0	28.9	70
C18 body	34.5	34.7	90
U1 body	35.1	35.0	65
T1 coil (primary)	60.8	61.5	75
T1 coil (secondary)	60.9	62.0	75
T1 core	60.0	60.9	Ref.
T3 coil (primary)	36.7	37.2	75
T3 coil(secondary)	39.9	44.7	75
T3 core	36.3	35.5	Ref.

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

Metallic enclosure	8.6	8.8	40
Knob body	6.0	6.2	50
Ambient	25.0℃	25.0℃	--
Winding temperature rise measurements			
Ambient temperature t1 ℃)…… :	--		—
Ambient temperature t2 ℃)..... :	--		—

Temperature rise dT of winding: $dT = \frac{(R2 - R1) \times (234.5 + t1) - (t2 - t1)}{R1}$	R_1 (Ω)	R_2 (Ω)	dT (K)	Limit dT (K)	Insulation class
Transformer rise dT of winding:	--	--	--	--	--
Note(s):					

7.2	TABLE: softening temperature of thermoplastics		N/A
Temperature T of part	T - normal con-ditions (℃)	T - fault condi-tions (℃)	Min T softening (℃)
--	--	--	--

10.3	TABLE: insulation resistance measurements	P

Insulation resistance R between:	R (MΩ)	Required R (MΩ)
Different poles of mains(primary fuse disconnected)	200	Min 2
Live parts of mains and metallic enclosure	200	Min 2
Live parts of mains and accessible secondary terminals	200	Min 4
Transformer(T1):primary and secondary windings	200	Min 4
Transformer(T1):primary and iron core	200	Min 2
Transformer(T1):secondary and iron core	200	Min 2
Transformer(T3):primary and secondary windings	200	Min 4
Transformer(T3):primary and iron core	200	Min 2
Transformer(T3):secondary and iron core	200	Min 2

10.3	TABLE: electric strength measurements	P

Test voltage applied between:	Test voltage (V)	Breakdown
Different poles of mains(primary fuse disconnected)	2120	No

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

Live parts of mains and metallic enclosure	2120	No
Live parts of mains and accessible secondary terminals	4240	No
Transformer(T1):primary and secondary windings	4240	No
Transformer(T1):primary and iron core	2120	No
Transformer(T1):secondary and iron core	2120	No
Transformer(T3):primary and secondary windings	4240	No
Transformer(T3):primary and iron core	2120	No
Transformer(T3):secondary and iron core	2120	No

11.2	TABLE: summary of fault condition tests		P
	Voltage (V) 0,9 or 1,1 times rated voltage ..... :	230V	—
	Ambient temperature (°C) ..... :	25	—

No.	Component	Fault	dT (K) / Component	Result
1	Output of transformer	Over-load	Surface of enclosure :14.7K; Mounting surface:7.2K; Winding of transformer:106.1K	No temperature rises above limits. No hazard.
Note(s): --				

13.3 & 13.4	TABLES: clearances and creepage distances				P
Rated supply voltage:	220-240V	Pollution degree:	2	Material Group:	IIIb
2 N force for internal components applied:					
30 N force on outside of conductive enclosure applied:					

Location	Operating Voltage		Clearance (mm)		Creepage (mm)		CTI
	V peak	V rms	Min	Actual	Min	Actual	-
Line to nautral before AC fuse	420	250	2.0	3.0	2.5	3.0	--
T1 primary trace to secondary trace	535	250	4.4	5.4	5.0	5.4	--
T2 primary trace to secondary trace	535	250	4.4	5.4	5.0	5.4	--
C18 primary trace to secondary trace	420	250	4.0	6.0	5.0	6.0	--
U1 primary trace to secondary trace	420	250	4.0	6.0	5.0	6.0	--
U3 primary trace to secondary trace	420	250	4.0	6.0	5.0	6.0	--
T1 primary to secondary windings	535	250	4.4	6.0	5.0	6.0	--

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

T1 primary winding to iron core	535	250	2.2	4.5	2.5	4.5	--
T1 secondary winding to iron core	535	250	2.2	4.5	2.5	4.5	--
Hazard parts to accessibility metallic enclosure	420	250	2.0	3.0	2.5	3.0	--
Hazard parts to secondary parts	420	250	4.0	6.0	5.0	6.0	--
Notes: "Min" = minimum required. "Actual " = Actual dimensions measured.							

14	TABLE: list of critical components and materials				P
Component	Manufacturer/ trademark	Type / Model	Technical Data	Standard	Approval /Reference
AC inlet with integrated fuse-holder	DongGuan NarKen Industry Investment Co.,Ltd.	XD-102	10A, 250Vac	IEC 60320-1	VDE
AC Fuse	Shanghai Songshan Electrinics Co.,Ltd	RT1-20	T6,3AL, 250Vac	IEC 60127-2	VDE
Power switch	Ningbo Soken	RK1-01	10A, 250Vac, 85℃	IEC61058-1	VDE
Metal enclosure	--	--	Min. 1,0 mm	--	Tested with appliance
PCB	Various	Various	Min. V-0, 130 ℃	UL796 UL94	UL
Internal L/N wire, including earthing wire	LEADER ELECTRIC WIRE& CABLE CO LTD	1672	300V, 16AWG, VW-1, 105℃	--	UL
Inductor (L1,L2)	--	--	130℃	--	Tested with appliance
X capacitor (C1,C2)	Tenta Electric Industrial Co.,Ltd	MEX	0,47uF,275Vac, X2 type	IEC 60384-14	VDE
Varistor(R1)	Various	Various	300Vac	IEC61051-2	VDE
Relay(K1)	YONG NENC	YX208Z-S-112D	16A, 250Vac 16A, 14Vdc	--	TUV RH, UL
Ripple capacitor (C31,C32)	--	--	200Vac, 1500uF, 105℃	--	Tested with appliance
Opto-coupler (U1,U3)	Everlight Electronics Co Ltd	EL817	Cr.>6,0mm; Cl.>7,7mm, Dti=0,5mm, Reinforced insulation.	EN 60747-5-2	VDE

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

Component	Manufacturer/ trademark	Type / Model	Technical Data	Standard	Approval /Reference
Alternative	Bright Led Electronics Corp	BPC-817	Cr.>6,0mm; Cl.>7,7mm, Dti=0,5mm, Reinforced insulation.	EN 60747-5-2	VDE
Y capacitor (C18, C48, C49)	Zonkas Electronics Co.,Ltd	CD	2200pF, 250Vac, Y1 type	IEC 60384-14	VDE
Alternative	Various	Various	Max.2200pF, 250Vac, Y1 type.	EC 60384-14 I	VDE
Transformer (T1)	Just For You Enterprise Co.,Ltd	P048575 T	---	EN60065	Tested with appliance
- Thermal cut-out	---	KSD970 0	250Vac, 5A, 100℃	EN60691	VDE
- Magnet wire	Various	Various	130℃	--	UL
- Bobbin	Chang Chun Plastic Co.,Ltd	T375J	V-0, 150℃, min. 0,71mm.	UL94	UL
- Alternative	Changshu South-East plastic Co Ltd	PF2A5-1 51J	V-0, 150℃, min. 0,71mm.	UL94	UL
- Insulation tape	SUZHOU MAILADUONA ELECTRIC MATERIAL CO LTD	JY312	130℃	UL510	UL
- Alternative	Minnesota Mining & MFG Co.	1350F-1 1350F-2	130℃	UL510	UL
- Margin tape	Jingjiang Yahua Pressure Sensitive Glue Co.,Ltd	WF	130℃	UL510	UL
- Alternative	Chang Shu Liang Yi Tape In	LY-xx	130℃	UL510	UL
- Alternative	Jingjiang Fuwei Adhesive Product Co.,Ltd	WF101	130℃	UL510	UL
Transformer (T3)	Rongle Electrical Industrial Co.,Ltd	EEL-19-2	---	EN60065	Tested with appliance
- Magent wire	Various	UEW	130℃	--	UL

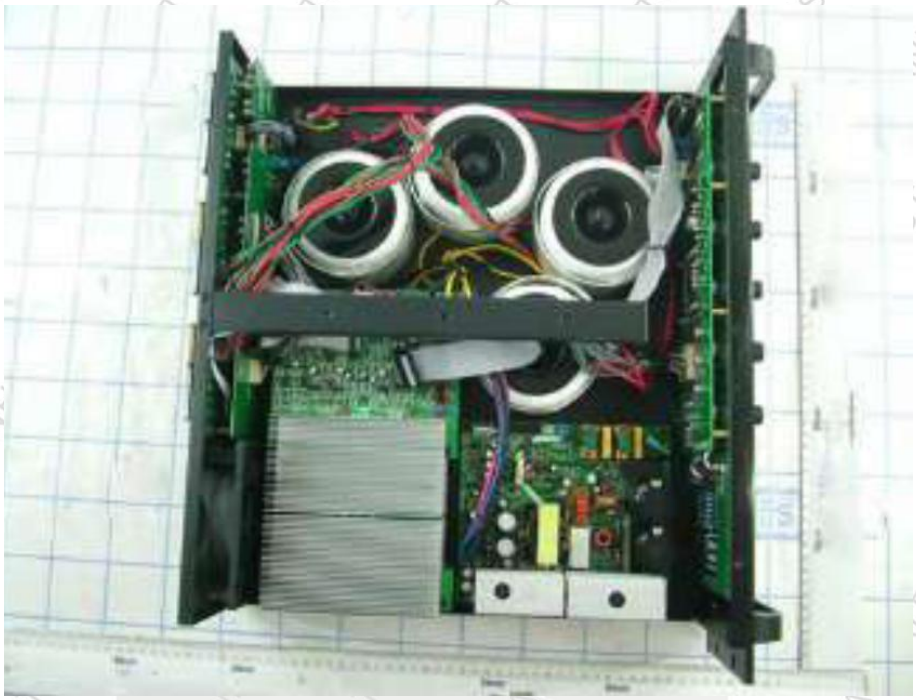
4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

Component	Manufacturer/ trademark	Type / Model	Technical Data	Standard	Approval /Reference
- Bobbin	Chang Chun Plastic Co.,Ltd	T375J	V-0, 150℃, min. 0,71mm.	UL94	UL
- Alternative	Changshu South-East plastic Co Ltd	PF2A5-151J	V-0, 150℃, min. 0,71mm.	UL94	UL
- Insulation tape	Suzhou Mailaduona Electric Material Co Ltd	JY312	130℃	UL510	UL
Supplementary information: 1) Provided evidence ensures the agreed level of compliance. See OD-CB2039.					

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com

ANNEX A- EUT PHOTOGRAPHS

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com



*******END OF THE REPORT*******

4F,A3 BLDG,The Silicon Valley Power intelligent terminal industrial park,Guan lan street,Longhua district,Shenzhen
Tel:+86-755-86615100 Fax:+86-755-86615105 http://www.tianhaitest.com