IEC | IECEE CB SCHEME

Ref. Certif. No.

JPTUV-015441

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

SYSTEME CEI D'ACCEPTATION MUTUELLE DE CERTIFICATS D'ESSAIS DES EQUIPEMENTS ELECTRIQUES (IECEE) METHODE OC

CB TEST CERTIFICATE
CERTIFICAT D'ESSAI OC

Product Produit	Switching Power Supply
Name and address of the applicant Nom et adresse du demandeur	GlobTek,Inc. 186 Veterans Dr Northvale, NJ07647, USA
Name and address of the manufacturer Nom et adresse du fabricant	GlobTek,Inc. 186 Veterans Dr Northvale, NJ07647, USA
Name and address of the factory Nom et adresse de l'usine	GlobTek
Rating and principal characteristics Valeurs nominales et caractéristiques principales	Input: AC 100-240V; 50/60Hz; 1.5A; Class I Output: refer to the test report
Trade mark (if any) Marque de fabrique (si elle existe)	GlobTek
Model/type Ref. Réf. de type	GTA81081-xy-z-a, GTA81081-xy-z-a-CC (x, y, z, a = refer to the test report)
Additional information (if necessary) Information complémentaire (si nécessaire)	For model differences, refer to the test report.
A sample of the product was tested and found to be in conformity with Un échantillon de ce produit a été essayé et a été considéré conforme à la	IEC 60065:2001 National differences see test report
As shown in the Test Report Ref. No.which forms part of this Certificate Comme indiqué dans le Rapport d'essais numéro de référence qui constitue une partie de ce Certificat	12014346 001

This CB Test Certificate is issued by the National Certification Body
Ce Certificat d'essai OC est établi par l'Organisme National de Certification

TÜV **TÜV Rheinland Group**

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Date: 05.07.2006

Signature: Dipl.-Ing. S. Hartter

TEST REPORT

IEC 60065

Audio, video and similar electronic apparatus Safety requirements

Report Reference No. ..... :	<12014346 001>
Compiled by (+ signature) ..... :	H. Irie
Approved by (+ signature) ..... :	M. Kera
Date of issue ..... :	Jun 22, 2006
Contents ..... :	55 pages
Testing laboratory Name ..... :	TÜV Rheinland Japan Ltd., Yokohama Laboratory
Address ..... :	4-25-2 Kita-Yamata, Tsuzuki-ku, Yokohama 224-0021, Japan
Testing location ..... :	Same as above
Client Name ..... :	GlobTek, Inc.
Address ..... :	186 Veterans Dr. Northvale, NJ07647, USA
Standard ..... :	IEC 60065:2001 EN 60065:2002
Test procedure ..... :	CB scheme
Non-standard test method ..... :	N.A.
Test Report Form/blank test report	
Test Report Form No. ..... :	IEC60065E
TRF originator ..... :	ASTA BEAB Certification Services
Master TRF ..... :	2004-08

Test item Description ..... :	Switching Power Supply
Trademark ..... :	GlobTek
Model and/or type reference ..... :	GTA81081-xy-z-a; GTA81081-xy-z-a-CC; for model list see page 4
Manufacturer ..... :	Same as client.
Rating(s) ..... :	Input: AC100-240V, 50/60Hz, 1,5A
..... :	Output: See page 4

Test case does not apply to the test object..... :	N/A
Test item does meet the requirement ..... :	P(ass)
Test item does not meet the requirement ..... :	F(ail)

Testing

Date of receipt of test item..... :	May 17, 2006
Date(s) of performance of test..... :	May 17, 2006 – May 19, 2006

General remarks

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

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

The test results presented in this report relate only to the item(s) tested.

"(see appended table)" refers to a table appended to the report.
"(see remark #)" refers to a remark appended to the report.
"(see Annex #) refers to an annex appended to the report.

Throughout this report a comma is used as the decimal separator.

Comments
Summary of compliance with National Differences (for explanation of codes see below):
AT, AU, BE, CH, CS, DE, DK, FI, FR, GB, GR, HU, IL, IT, MY, NL, NO, PL, SE, SG, SK, SI, UK

AT=Austria, AU=Australia, BE=Belgium, CH=Switzerland, CS=Serbia and Montenegro, DE=Germany, DK=Denmark, FI=Finland, FR=France, GB=United Kingdom, GR=Greece, HU=Hungary, IL=Israel, IT=Italy, MY=Malaysia, NL=The Netherlands, NO=Norway, PL=Poland, SE=Sweden, SG=Singapore, SK=Slovakia, SI=Slovenia, UK= Ukraine.

For National Differences see end of this test report.

Factory:

GlobTek

Brief description of the test sample:

1. The equipment models GTA81081-xy-z-a / GTA81081-xy-z-a-CC are Switching Power Supply (desktop type) used for DC supply of Audio/Video equipment.
2. The power supply's top enclosure is secured to bottom enclosure by ultrasonic welding.
3. The test samples are pre-production without serial numbers.
4. The model reference are GTA81081-xy-z-a / GTA81081-xy-z-a-CC, 'a' represents the inlet used, 'x-y' represents the output voltage, 'B' represents the output power, details see model list;
5. Models GTA81081-6012-T3A, GTA81081-6020-0.9-T3A, GTA81081-6024-T3A, GTA81081-6012-T3A-CC, GTA81081-6020-0.9-T3A-CC and GTA81081-6024-T3A-CC have been selected for test, and unless otherwise specified, the model GTA81081-6024-T3A was tested.

6. The normal heating test of GTA81081-6012-T3A, GTA81081-6020-0.9-T3A, GTA81081-6012-T3A-CC, GTA81081-6020-0.9-T3A-CC was performed in an ambient temperature 40℃ heating chamber.

Difference between models:

1. Transformer: The adaptors with different output voltage have different secondary winding of transformer, details see model list;
2. C1, R19, R19A, R15, D5, C9, C10, C11: The parameter of these components depend on output power and output voltage;
3. R3, R4, R26, R12, R18, R20, C3, C10, C11: The parameter of these components depend on output voltage.
4. The model GTA81081-60x-y-a is similar to GTA81081-xy-z-a-CC except the model number and the secondary voltage control method, the GTA81081-xy-z-a used U3, C17, R35 and D6 in secondary circuit to control the secondary voltage, and GTA81081-xy-z-a-CC used U2-A, U2-B, C13, C14, C15, C16, R27, R28, R29, R30, R32, R33 and R34 in secondary circuit to control the secondary voltage.

Summary of Testing and Conclusions

The sample(s) tested complies with the requirements of IEC 60065_2001, Compliance with the National requirements of “(countries) as given in CB Bulletin CB-Bulletin 109A was also confirmed.

Model list:

GTA81081-xy-z-a / GTA81081-xy-z-a-CC :

MODEL	INPUT	OUTPUT		T1 sec winding
	V,A	U (Vdc)	Pmax (W)	
GTA 81081-x12-a / GTA 81081-x12-a-CC	AC100-240V, 50/60Hz, 1.5A	12.0	60	Φ0.65mmx3px6Ts
GTA 81081-x14-z-a / GTA 81081-x14-z-a-CC		12.1-13.9	60	
GTA 81081-x14-a / GTA 81081-x14-a-CC		14.0	60	
GTA 81081-x15-z-a / GTA 81081-x15-z-a-CC		14.1-14.9	60	Φ0.60mmx2px8Ts
GTA 81081-x15-a / GTA 81081-x15-a-CC		15.0	60	
GTA 81081-x18-z-a / GTA 81081-x18-z-a-CC		15.1-17.9	60	
GTA 81081-x18-a / GTA 81081-x18-a-CC		18.0	60	
GTA 81081-x19-z-a / GTA 81081-x19-z-a-CC		18.1-18.9	60	
GTA 81081-x19-a / GTA 81081-x19-a-CC		19.0	60	
GTA 81081-x20-z-a / GTA 81081-x20-z-a-CC		19.1-19.9	60	Φ0.50mmx2px10Ts
GTA 81081-x20-a / GTA 81081-x20-a-CC		20.0	60	
GTA 81081-x22-z-a / GTA 81081-x22-z-a-CC		20.1-21.9	60	
GTA 81081-x22-a / GTA 81081-x22-a-CC		22.0	60	
GTA 81081-x24-z-a / GTA 81081-x24-z-a-CC		22.1-23.9	60	
GTA 81081-x24-a / GTA 81081-x24-a-CC		24.0	60	

Note:

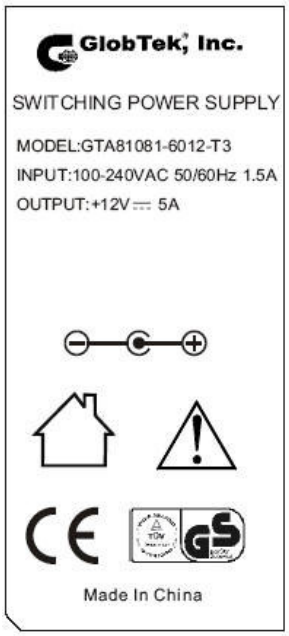
'y-z' represents output voltage , for example, when y = 18, z=2.5, y-z=18-2.5=15.5, the output voltage is 15.5V, '-z' will not be shown when z=0;

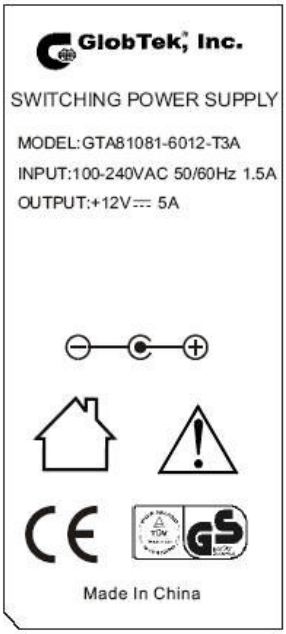
y	12	14	15	18	19	20	22	24
z	0	0-1.9	0-0.9	0-2.9	0-0.9	0-0.9	0-1.9	0-1.9

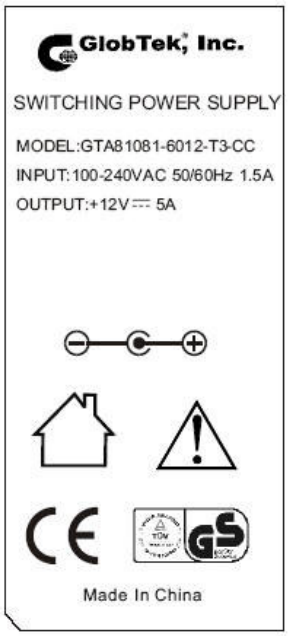
'a' can be 'T3' or 'T3A', which represents the inlet type, 'T3' represents C14 inlet type, 'T3A' represents C6 inlet type;

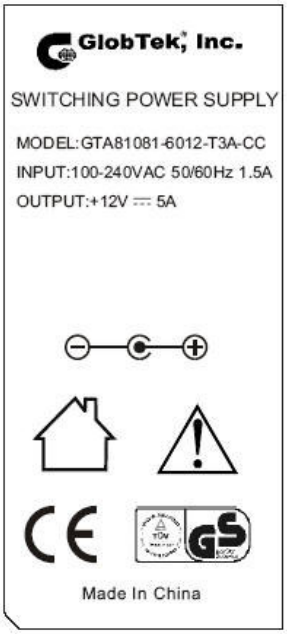
'x' is 2 digit number which represents the output power which is maximum 60W by step of 1W, for example, 58 represents the output power is 58W, 60 represents the output power is 60W.

Copy of marking plate:









These are representative labels, the others are identical to them except for the model name and output ratings.

IEC 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	It is used in open area.	**P**

5	**MARKING**		**P**
	Comprehensible and easily discernible	The whole markings are stuck on outer enclosures of this appliance.	**P**
	Permanent durability against water and petroleum spirit	The label was subjected to the permanence of marking test. The label was rubbed with cloth soaked with water for 15 sec. And then again for 15 sec. With the cloth soaked with petroleum spirit. After this test there was no damage to the label. The marking on the label did not fade. There was no curling nor lifting of the label edge.	**P**
5.1 a), b)	Identification, maker, model ..... :	Trademark of 'GlobTek' and model No. 'GTA81081-xy-z-a' and 'GTA81081-xy-z-a-CC' are marked on label, see copy of the marking plate.	**P**
c)	Class II symbol if applicable	Class I appliance	**N/A**
d), e)	Rated supply voltage and symbol ..... :	100-240V ~	**P**
f)	Frequency if safety dependant	50/60Hz	**P**
g), h), i)	Rated current or power consumption ..... :	1,5A	**P**
5.2 a)	Earth terminal	Earthing symbol applied.	**P**
b)	Hazardous live terminals	No hazardous live terminals	**N/A**
c)	Supply output terminals (other than mains)	(see model list)	**P**
5.3	Use of triangle with exclamation mark	On the circuit diagram.	**P**
5.4	Instructions for use	Provided in English language.	**P**

IEC 60065			
Clause	Requirement – Test	Result - Remark	Verdict
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	No hazardous live terminals.	**N/A**
c)	Instructions for replacing lithium battery	No lithium battery.	**N/A**
	Instructions for modem if fitted	No modem.	**N/A**
d)	Class I earth connection warning	See user manual.	**P**
e)	Instructions for multimedia system connection	Not multimedia system.	**N/A**
f)	Special stability warning for fixed installation	Not fixed installation.	**N/A**
5.4.2	Disconnect device: plug/coupler or all-pole mains switch location, accessibility and markings	Appliance inlet used as disconnect device.	**P**
	Instructions for permanently connected equipment	Not permanently connected.	**N/A**

6	**HAZARDOUS RADIATION**		**N/A**
6.1	Ionizing radiation < 36 pA/kg (0,5 mR/h)	No ionization radiation or laser inside the equipment.	**N/A**
6.2	Laser radiation, emission limits to IEC 60825-1 ..... :		**N/A**
	Emission limits under fault conditions ..... :		**N/A**

7	**HEATING UNDER NORMAL OPERATING CONDITIONS**		**P**
7.1	Temperature rises not exceeding specified values, any single protective device defeated except those of Cl. 7.1 a) and b)	(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	(see appended table)	**P**
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 > 0,2 A at least 150 °C		**N/A**

IEC 60065			
Clause	Requirement – Test	Result - Remark	Verdict
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.	Fuse-link is not replaceable.	**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 can be removed by hand.	**N/A**
8.5	Class I equipment		**P**
	Basic insulation between hazardous live parts and earthed accessible parts	Hazardous live parts to earthed parts are separated by basic insulation.	**P**
	Capacitors bridging basic insulation complying with 14.2.1 a)	No such resistors provided.	**N/A**
8.6	Class II equipment and Class II constructions within Class I equipment		**P**
	Reinforced or double insulation between hazardous live parts and accessible parts	The insulation between the live part and output terminals is double insulation (the insulation system of isolation transformer is double insulation system).	**P**
	Components bridging reinforced or double insulation complying with 14.1 a) or 14.3	Transformer T1 comply with 14.3	**P**
	Basic and supplementary insulation each being bridged by a capacitor complying with 14.2.1 a)	Y2 capacitors CY1, CY2 and CY3 see appended table 14.	**P**
	Reinforced or double insulation being bridged with 2 capacitors in series complying with 14.2.1 a)		**N/A**
	Reinforced or double insulation being bridged with a single capacitor complying with 14.2.1 b)		**N/A**
	Basic insulation bridged by components complying with 14.3.4.3		**N/A**
8.7	Basic insulation between parts at 35 V to 71 V (peak) a.c. or 60 V to 120 V d.c. and accessible parts	No such circuit.	**N/A**
	Reinforced or double insulation between circuits operating at voltages between 35 V and 71 V (peak) a.c. or between 60 V and 120 V d.c. and hazardous live parts at higher voltage		**N/A**
	Separation by Class II isolating transformer		**N/A**

IEC 60065			
Clause	Requirement – Test	Result - Remark	Verdict
	Separation by Class I transformer		**N/A**
	Separation by earthed conductive part		**N/A**
8.8	Double Insulation: the Basic or Supplementary insulation > 0,4 mm (mm) ..... :	Thickness of bobbin of switching transformer: 0,8mm.	**P**
	Reinforced insulation > 0,4 mm (mm) ..... :	Thickness of ▪ Enclosure: min 2.0mm ▪ Bobbin of switching transformer: 0,8mm. Approved opto-coupler for details see appended table 14.	**P**
	Thin sheet insulation used inside the enclosure.	Polyester tape provided as reinforced insulation: a) 3 layers covered core of T1 b) 3 layers covered heatsink of Q1 and D5.	**P**
	Basic or supplementary insulation, at least two layers, each meeting 10.3 dielectric		**N/A**
	Basic or supplementary insulation, three layers any two of which meet 10.3 dielectric		**N/A**
	Reinforced insulation, two layers each of which meet 10.3 dielectric		**N/A**
	Reinforced insulation, three layers any two which meet 10.3 dielectric	See appended table 10.3	**P**
8.9	Primary Wiring: Adequate insulation between internal hazardous live conductors and accessible parts	The internal wire is the UL-Approved wire with thickness of more than 0,4mm.	**P**
	Secondary Wiring: Adequate insulation between internal hazardous live parts and conductors connected to accessible parts		**P**
8.10	Class II Wiring: (1) Primary: Double insulation between conductors connected to the mains and accessible parts. (2) Secondary: Double insulation between conductors connected to accessible parts and the mains		**N/A**

IEC 60065			
Clause	Requirement – Test	Result - Remark	Verdict
8.11	Detaching of wires	The lead wires of inlet are anchored to the tag before soldering. The output cords and lead wires are inserted into a hole in PCB before soldering. There's no risk of a wire becoming detached in the sense of this standard.	**P**
	No undue reduction of creepages or clearance distances if wires become detached		**P**
	Vibration test carried out .....:	Vibration test is carried out according to clause 12.1.2	**P**
8.12	Adequate cross-sectional area of internal wiring to mains socket-outlets	No main socket-outlet used.	**N/A**
8.13	Adequate fastening of windows, lenses, lamp covers etc. (pull test 20 N for 10 s)	No such things.	**N/A**
8.14	Adequate fastening of covers (pull test 50 N for 10 s)	50N pull test for enclosure.	**P**
8.15	No risk of damage to the insulation of internal wiring due to hot parts or sharp edges (2N force)		**P**
8.16	Only special supply equipment can be used		**N/A**
8.17	Insulated winding wire without additional interleaved insulation	Approved triple insulated wire used for secondary winding of T1.	**P**
8.18	Endurance test as required by 8.17		**N/A**
8.19	Disconnection from the mains		**P**
8.19.1	Disconnect device	Appliance inlet is used as disconnect device. See clause 5.4.2.	**P**
	All-pole switch or circuit breaker with >3mm contact separation	See above.	**N/A**
8.19.2	Mains switch ON indication		**N/A**
8.20	Switch not fitted in the mains cord		**N/A**
8.21	Bridging components comply with clause 14	No such components provided.	**N/A**

IEC 60065			
Clause	Requirement – Test	Result - Remark	Verdict
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)	Determination of Hazardous Live parts	The highest open-circuit voltage between output terminals is 25.1Vd.c.	**P**
b)	Touch current measured from terminal devices using the network in annex D .....:	(see appended table)	**P**
c)	Discharge not exceeding 45 µC		**N/A**
d)	Energy of discharge not exceeding 350 mJ		**N/A**
9.1.1.2	Test with test finger and test probe		**P**
9.1.2	No hazardous live shafts of knobs, handles or levers		**N/A**
9.1.3	Ventilation holes tested by means of 4 mm x 100 mm test pin	No ventilation holes.	**N/A**
9.1.4	Terminal devices - within 25mm tested with 1 mm x 20 mm test pin (10 N); test probe D of IEC 61032	No such terminals.	**N/A**
	Terminal devices tested with 1 mm x 100 mm straight wire (1 N); test probe D of IEC 61032	No such terminals.	**N/A**
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 such parts.	**N/A**
9.1.6	No shock hazard due to stored charge on withdrawal of the mains plug; voltage (V) after 2 s :	(see appended table)	**P**
	If C is not greater than 0,1 µF no test needed	0,62µF	**P**
9.1.7	Enclosure sufficiently resistant to external force		**P**
a)	Test probe 11 of IEC 61032 for 10 s (50 N)		**P**
b)	Test hook of fig. 4 for 10 s (20 N)		**P**
c)	Conductive enclosure: 30 mm diameter test tool for 5 s (100 or 250 N) .....:	100N	**P**
9.2	No hazard 2s after removing a cover by hand	The cover of apparatus is fixed by ultrasonic welding.	**N/A**

IEC 60065			
Clause	Requirement – Test	Result - Remark	Verdict
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 ..... :	Main supply terminal and output terminal were subjected to 50 discharges.	**P**
10.2	Humidity treatment 48 h or 120 h ..... :	48 h at 25°C, 93% RH	**P**
10.3	Insulation resistance and dielectric strength	(see appended table 10.3)	**P**

11	**FAULT CONDITIONS**		**P**
11.1	No shock hazard under fault condition	No electric shock during fault operation. For details refer to appended table 11.2.	**P**
11.2	Heating under fault condition	See below.	**P**
	No hazard from softening solder	No solder point became soft.	**P**
	No flaming more than 10s	No flaming.	**P**
	Soldered terminations not used as protective mechanism		**P**
11.2.1	Measurement of temperature rises	(see appended table 11)	**P**
11.2.2	Temperature rise of accessible parts	(see appended table 11)	**P**
11.2.3	Temperature rise of parts, other than windings, providing electrical insulation	(see appended table 11)	**P**
	Temperature rise of printed circuit boards (PCB) exceeding the limits of table 3 by max. 100 K for max. 5 min	No point on the PCB exceeds the limit.	**N/A**
	a) Temperature rise of printed circuit boards (PCB) to 20.1.3, exceeding the limits of table 3 by not more than 100 K for an area not greater than 2 cm^2		**N/A**
	b) Temperature rise of printed circuit boards (PCB) to 20.1.3 up to 300 K for an area not greater than 2 cm^2 for a maximum of 5 min		**N/A**
	Meets all the special conditions if conductors on printed circuit boards are interrupted		**N/A**
	Class I protective earthing maintained		**N/A**
11.2.4	Temperature rise of parts acting as a support or mechanical barrier	(see appended table 11)	**P**
11.2.5	Temperature rise of windings	(see appended table 11)	**P**
11.2.6	Temperature rise of parts not subject to the limits of 11.2.1 to 11.2.5 Table 3 e) "Other Parts"		**N/A**

IEC 60065			
Clause	Requirement – Test	Result - Remark	Verdict
12	**MECHANICAL STRENGTH**		**P**
12.1.1	Bump test where mass >7 kg	Weight is 0.3 kg.	**N/A**
12.1.2	Vibration test (portable, metal, musical amps)		**P**
12.1.3	Impact hammer test	After the test, dielectric strength test of cl. 10.3 was performed. Result: no damage in the sense of the standard	**P**
	Steel ball test (for non-ventilated solid areas)		**P**
12.1.4	Drop test for portable apparatus where mass = 7 kg	No damage.	**P**
12.1.5	Thermoplastic enclosures stress relief test	After 7 hours at 87℃ and cooling down to room temperature, no shrinkage, distortion or loosening of any enclosure part was noticeable on the adapter (for all sources of material).	**P**
12.2	Fixing of knobs, push buttons, keys and levers	No such device.	**N/A**
12.3	Remote controls with hazardous live parts	No 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 coaxial socket provided.	**N/A**
12.6	Telescoping or rod antennas construction	Not such a construction	**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	Clearance measured according to annex E. Pollution degree 2 was considered	**P**
	Creepage distances in accordance with 13.4	Creepage distance measured according to annex E. Pollution degree 2 was considered.	**P**
13.2	Determination of operating voltage	For obtaining the operating voltages the EUT was connected to a 240V TN power system. The highest operating voltages are measured as follows: T1 pin 1-S 237Vrms; T1 pin 1-F 565Vpeak	**P**

IEC 60065			
Clause	Requirement – Test	Result - Remark	Verdict
13.3	Clearances	See below.	**P**
13.3.2	Circuits conductively connected to the mains comply with table 8 and, where applicable, table 9	(see appended table)	**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)	**P**
	Creepage distances greater than table 11 minima		**P**
13.5	Printed boards	Not applied for.	**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)		**N/A**
13.6	Conductive parts along uncemented joints clearances and creepage distances comply with 13.3 and 13.4	No such parts provided.	**N/A**
	Conductive parts along reliably cemented joints comply with 8.8		**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**
13.8	Parts filled with insulating compound, meeting the requirements of 8.8	The source of optical isolators are in compliance with the requirements of subclause 8.8, for details refer to appended table 14.	**P**

14	**COMPONENTS**		**P**
14.1	Resistors		**N/A**
	a) Resistors between hazardous live parts and accessible metal parts	No such resistors provided.	**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	(see appended table)	**P**

IEC 60065			
Clause	Requirement – Test	Result - Remark	Verdict
14.2.1	Y capacitors tested to IEC 60384-14, 2nd edition ... :	The CY1, CY2 and CY3 connected between the hazardous live part and earthing is subclass Y2 capacitor approved according to IEC 60384-14: 1993.	**P**
14.2.2	X capacitors tested to IEC 60384-14, 2nd edition ... :	The capacitors CX1 and CX2 conductively connected between the lines of the mains supply are subclass X2 capacitors approved according to IEC 60384-14:1993.	**P**
14.2.3	Capacitors operating at mains frequency but not connected to the mains: tests for X2 ..... :	No such capacitors provided.	**N/A**
14.2.5 a)	Capacitors with volume exceeding 1750 mm³, where short-circuit current exceeds 0,2 A: compliance with IEC60384-1, 4.38 category B or better ..... :	Electrolytic capacitors provided with metal can.	**N/A**
b)	Capacitors with volume exceeding 1750 mm³, mounted closer to a potential ignition source than table 5 permits: compliance with IEC 60 384-1, 4.38 category B or better ..... :		**N/A**
	Shielded by a barrier per Table 21 ..... :		**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 ..... :	The switching transformer (T1) is marked with type and manufacturer information, provided as label on the cores.	**P**
	Transformers and inductors separately approved . :	Tested with appliance.	**N/A**
14.3.2	General		**P**
14.3.3	Constructional requirements (complete appended tables or include manufacturers constructional insulation descriptions)	See below.	**P**
14.3.3.1	Clearances and creepage distances comply with clause 13	(see appended table 13.3 and 13.4)	**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)	Reinforce or double insulation between primary windings/parts and secondary windings/parts. Details see appended table 13.3 and 13.4.	**P**

IEC 60065			
Clause	Requirement – Test	Result - Remark	Verdict
	Coil formers and partition walls = 0,4 mm	Partition wall of T1 with 0,8mm thickness minimum.	**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	Not class I transformer design.	**N/A**
14.3.4.3	Separating transformers with at least basic insulation	Not such a transformer design.	**N/A**
14.3.5.1	Class II transformers have adequate insulation between hazardous live parts and accessible parts (double or reinforced insulation)	See subclause 14.3.4.1 above.	**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	Not a class I transformer design.	**N/A**
	Winding wires connected to protective earth have adequate current-carrying capacity		**N/A**
14.4	High voltage components		**N/A**
	High-voltage components and assemblies: U > 4 kV (peak) separately approved	No component operating at voltages exceeding 4kV.	**N/A**
	Component meets category V-1 of IEC 60707		**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	See subclause 14.5.2.1	**P**
	External clearances and creepage distances meet requirement of clause 13 for the voltage across the device when opened	(see appended table 13.3 and 13.4)	**P**
14.5.1.1	a) Thermal cut-outs separately approved	No thermal cut-outs provided.	**N/A**
	b) Thermal cut-outs tested as part of the submission		**N/A**
14.5.1.2	a) Thermal links separately approved	No thermal link provided.	**N/A**
	b) Thermal links tested as part of the submission		**N/A**
14.5.1.3	Thermal devices re-settable by soldering	No such components provided.	**N/A**

IEC 60065			
Clause	Requirement – Test	Result - Remark	Verdict
14.5.2.1	Fuse-links in the mains circuit according to IEC 60127	Fuse link sources comply with IEC 60127. For source detail refer to appended table 14.	**P**
14.5.2.2	Correct marking of fuse-links adjacent to holder ... :	FUSE: F3.15AL 250V	**P**
14.5.2.3	Not possible to connect fuses in parallel ..... :	No such holders provided that would allow parallel connection.	**P**
14.5.2.4	Not possible to touch hazardous live parts when replacing fuse-links without the use of a tool ..... :	No fuse link can be replaced without use a tool.	**P**
14.5.3	PTC-S thermistors comply with IEC 60730-1	No such component provided.	**N/A**
	PTC-S devices (15 W) category V-1 or better		**N/A**
14.5.4	Circuit protectors have adequate breaking capacity and their position is correctly marked	No such component provided.	**N/A**
14.6	Switches	No such component provided.	**N/A**
14.6.1 a)	Separate testing to IEC 61058 including: 10 000 operations Normal pollution suitability Resistance to heat and fire level 3 V-0 compliance with annex G, G.1.1 and Peak inrush rating of switch Measured/calculated inrush……:		**N/A**
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), l) and m) not attaining excessive temperatures in use		**N/A**

IEC 60065			
Clause	Requirement – Test	Result - Remark	Verdict
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	No socket-outlet.	**N/A**
	Socket outlet current marking correct		**N/A**
14.7	Safety interlocks		**N/A**
	Safety interlocks to 2.8 of IEC 60950	No safety interlocks provided.	**N/A**
14.8	Voltage setting devices		**N/A**
	Voltage setting device not likely to be changed accidentally	Full range voltage design, no voltage setting devices provided.	**N/A**
14.9	Motors		**N/A**
14.9.1	Endurance test on motors	No motors provided.	**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, Annex B		**N/A**
14.10	Batteries		**N/A**
14.10.1	Batteries mounted with no risk of accumulation of flammable gases	No batteries provided.	**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		**P**
	Optocouplers comply with Cl. 8	Certified sources of optocoupler used. (see appended table)	**P**
	Internal and external dimensions to 13.1. or alternatively 13.6 (jointed insulation)	(see appended table).	**P**

IEC 60065			
Clause	Requirement – Test	Result - Remark	Verdict
14.12	Surge suppression varistors		**N/A**
	Comply with IEC 61051-2	No such component provided.	**N/A**
	Not connected between mains and accessible parts except for earthed parts of permanently connected apparatus		**N/A**
	Complies with the current pulse, fire hazard and thermal stress requirements of 14.12		**N/A**

15	**TERMINALS**		**P**
15.1.1	Mains plug, appliance inlet, interconnection couplers and mains socket-outlet meet the appropriate standard	Approved power cord, plug and appliance inlet used. (see appended table)	**P**
15.1.2	Connectors for antenna, earth, audio, video or data:		**N/A**
	No risk of insertion in mains socket-outlets	No such connectors.	**N/A**
	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		**N/A**
15.2	Provision for protective earthing		**P**
	Accessible conductive parts of Class I equipment reliably connected to earth terminal, within equipment	Class II appliance.	**P**
	Class I supply equipment with non-hazardous live output voltage: output circuit not connected to earth		**N/A**
	Protective earth conductors correctly coloured	Yellow / green.	**P**
	Equipment with non-detachable mains cord provided with separate protective earth terminal near mains input	Appliance inlet used.	**N/A**
	Earthing connection of parts removable by hand.		**N/A**
	Protective earth terminal resistant to corrosion		**P**
	Earth resistance test: < 0,1 Ω at 25 A ..... :	0.01 Ω	**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	Not permanent connection.	**N/A**
15.3.2	Reliable connection of non-detachable cords:	Appliance inlet used.	**N/A**

IEC 60065			
Clause	Requirement – Test	Result - Remark	Verdict
	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		**N/A**
15.3.3	Screws and nuts clamping conductors have adequate threads: ISO 261, ISO 262 or similar	No such fixing.	**N/A**
15.3.4	Soldered conductors wrapped around terminal prior to soldering or held in place by additional means	Appliance inlet used.	**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		**N/A**
15.3.7	Terminals clamp conductors between metal and have adequate pressure		**N/A**
	Terminals designed to avoid conductor slipping out when tightened or loosened		**N/A**
	Terminals adequately fixed to avoid loosening when the clamping is tightened or loosened and stress on internal wiring is avoided		**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	Appliance inlet used.	**N/A**
	Terminals located and shielded: test with 8 mm strand		**N/A**
15.4	Devices forming a part of the mains plug		**N/A**
15.4.1	No undue strain on mains socket-outlets	Not direct plug-in equipment.	**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**

IEC 60065			
Clause	Requirement – Test	Result - Remark	Verdict
16	**EXTERNAL FLEXIBLE CORDS**		**N/A**
16.1	Mains cords sheathed type, complying with IEC 60227 for PVC or IEC 60245 for synthetic rubber cords ..... :	Appliance inlet used.	**N/A**
	Non-detachable cords for Class I have green/yellow core for protective earth		**N/A**
16.2	Mains cords conductors have adequate cross-sectional area for rated current consumption of the equipment		**N/A**
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		**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		**N/A**
	Not possible to push cord back into equipment		**N/A**
	Strain relief device unlikely to damage flexible cord		**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		**N/A**
16.7	Transportable musical instruments and amplifiers fitted with detachable cord set with appliance inlet to IEC 60320-1		**N/A**
	Transportable musical instruments and amplifiers fitted with detachable cord sets or with means of stowage to protect the cord		**N/A**

IEC 60065			
Clause	Requirement – Test	Result - Remark	Verdict
17	**ELECTRICAL CONNECTIONS AND MECHANICAL FIXINGS**		**P**
17.1	Torque test to table 20:	No screw used.	**N/A**
	- screws into metal: 5 times		**N/A**
	- 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		**N/A**
	Non-captive fixing screws: no hazard when replaced by a screw whose length is 10 times its diameter		**N/A**
17.4	No loosening of conductive parts carrying a current > 0,2 A		**N/A**
17.5	Contact pressure not transmitted through plastic other than ceramic for connections carrying a current > 0,2 A		**N/A**
17.6	Stranded conductors of flexible supply cords carrying a current > 0,2 A with screw terminals not consolidated by solder		**N/A**
17.7	Cover fixing devices other than screws have adequate strength and their positioning is unambiguous	The enclosure parts are fixed by ultrasonic welding.	**P**
17.8	Fixing devices for detachable legs or stands provided		**N/A**
17.9	Internal pluggable connections, affecting safety, unlikely to become disconnected		**N/A**

18	**MECHANICAL STRENGTH OF PICTURE TUBES AND PROTECTION AGAINST THE EFFECTS OF IMPLOSION**		**N/A**
	Picture tube separately approved to IEC 61965:	No picture tube.	**N/A**
	Picture tube separately approved to 18.1		**N/A**
18.1	Picture tubes > 16 cm intrinsically protected		**N/A**
	Non-intrinsically protected tubes > 16 cm used with protective screen		**N/A**
18.2	Intrinsically protected tubes: tests on 12 samples		**N/A**
18.2.1	Samples subject to ageing: 6		**N/A**
18.2.2	Samples subject to implosion test: 6		**N/A**

IEC 60065			
Clause	Requirement – Test	Result - Remark	Verdict
18.2.3	Samples subject to mechanical strength test (steel ball): 6		**N/A**
18.3	Non-intrinsically protected tubes tested to 18.3		**N/A**

19	**STABILITY AND MECHANICAL HAZARDS**		**P**
	Mass of the equipment exceeding 7 kg ..... :	Max. mass: 0,3kg	**N/A**
	Apparatus intended to be fastened in place – suitable instructions		**N/A**
19.1	Test on a plane, inclined at 10° to the horizontal		**N/A**
19.2	100 N force applied vertically downwards		**N/A**
19.3	Apparatus mass > 25 kg or height > 1 M or supplied with cart or stand		**N/A**
19.4	Edges or corners not hazardous		**P**
19.5	Glass surfaces with an area exceeding 0,1 m² or maximum dimension > 450 mm, pass the test of 19.5.1		**N/A**
19.6	Wall or ceiling mountings adequate		**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 60707 with openings not exceeding 1 mm in width	See subclause 20.1.4.	**P**
	b) Exemption for small components as defined in 20.1	Small components mounted on a PCB with ratings as described in table 14. Furthermore, refer to sub-clause 20.1.4.	**P**
20.1.1	Electrical components meet the requirements of Clause 14 or 20.1.4	See subclauses 14 and 20.1.4.	**P**
20.1.2	Insulation of internal wiring working at voltages > 4 Kv or leaving an internal fire enclosure, not contributing to the spread of fire	Internal wiring working at voltages not exceeding 4kV.	**N/A**
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	Flammability of PCB: V-0 or better. (see appended table 14)	**P**

IEC 60065			
Clause	Requirement – Test	Result - Remark	Verdict
	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	(see appended table 14)	**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	(see appended table 14)	**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 > 4 kV under normal conditions, and distances to enclosure exceed those specified by Table 21, HB40 min enclosure	No such high voltage.	**N/A**
20.2	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 such high voltage.	**N/A**
20.2.2	Internal fire enclosures with openings not exceeding 1 mm in width and with openings for wires completely filled		**N/A**
20.2.3	Requirements of 20.2.1 and 20.2.2 met by an internal fire enclosure		**N/A**

A	**ANNEX A, ADDITIONAL REQUIREMENTS FOR APPARATUS WITH PROTECTION AGAINST SPLASHING WATER**		**N/A**
A.5.1	j) Marked with IPX4 (IEC 60529), 5.4.1 a) does not apply	IPX0	**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	No TNV circuit.	**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**

IEC 60065			
Clause	Requirement – Test	Result - Remark	Verdict
	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 clause 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**

7.1	TABLE: temperature rise measurements: Conditions		P
	Power consumption in the OFF/Stand-by……..:	0 / --	--
	Position of the functional switch (W) .....:	--	—

Cond.	Un (V)	Hz	In (A)	Pn (W)	V out	Pout (W)	Operating Condition
Model GTA81081-6012-T3A (with load: 2,40Ω 5,00A)							
1	90	60	1,30	71,8	11,4	57,0	Rated load
2	264	50	0,51	68,3	11,3	56,5	Rated load
Model GTA81081-6012-T3A-CC (with load: 2,4Ω 5,00A)							
3	90	60	1,22	71,4	11,5	57,5	Rated load
4	264	50	0,53	68,9	11,3	56,5	Rated load
Model GTA81081-6020-0.9-T3A (with load: 6,08Ω 3,14A)							
5	90	60	1,25	70,2	18,5	58,3	Rated load
6	264	50	0,51	68,2	18,3	57,6	Rated load
Model GTA81081-6020-0.9-T3A-CC (with load: 6,08Ω 3,14A)							
7	90	60	1,17	66,9	17,9	56,2	Rated load
8	264	50	0,55	70,4	19,3	60,6	Rated load
Model GTA81081-6024-T3A (with load: 9,6Ω 2,50A)							
9	90	60	1,26	69,4	23,5	58,8	Rated load
10	264	50	0,53	67,7	23,2	58,1	Rated load
Model GTA81081-6024-T3A-CC (with load: 9,6Ω 2,50A)							
11	90	60	1,22	68,9	23,8	59,3	Rated load
12	264	50	0,55	70,4	23,2	58,0	Rated load

	Loudspeaker impedance (Ω) .....:	--	—
	Several loudspeaker systems	--	
	Marking of loudspeaker terminals	--	

Temperature Rise dT of Part	dT (K)		Limit dT (K)
Test Condition No.	264Vac 50Hz	90Vac 60Hz	--
Model GTA81081-6012-T3A			
T1 winding	50	41	70
LF1 winding	38	42	90
LF3 winding	31	26	90

Temperature Rise dT of Part	dT (K)		Limit dT (K)
T1 core	43	39	--
PCB under Q1	44	33	90
PCB under D5	47	33	90
Capacitor C1	40	29	65
Capacitor CX1	32	22	60
Capacitor CY3	42	32	85
Opto-coupler IC2	45	33	60
Inlet	12	12	30
Output cord	28	13	40
Enclosure (inside)	31	15	65
Enclosure (outside)	15	9	55
Ambient (in ℃)	40℃	40℃	--
Model GTA81081-6012-T3A-CC			
T1 winding	55	47	70
LF1 winding	40	36	90
LF3 winding	33	31	90
T1 core	47	39	--
PCB under Q1	49	37	90
PCB under D5	51	42	90
Capacitor C1	42	36	65
Capacitor CX1	35	29	60
Capacitor CY3	47	38	85
Opto-coupler IC2	46	39	60
Inlet	14	15	30
Output cord	35	18	40
Enclosure (inside)	35	24	65
Enclosure (outside)	19	15	55
Ambient	40°C	40°C	--
Model GTA81081-6020-0.9-T3A			
T1 winding	55	46	70
LF1 winding	41	45	90

Temperature Rise dT of Part	dT (K)		Limit dT (K)
LF3 winding	36	29	90
T1 core	47	37	--
PCB under Q1	51	39	90
PCB under D5	51	37	90
Capacitor C1	38	35	65
Capacitor CX1	36	27	60
Capacitor CY3	47	33	85
Opto-coupler IC2	48	35	60
Inlet	18	14	30
Output cord	26	11	40
Enclosure (inside)	31	22	65
Enclosure (outside)	18	12	55
Ambient	40°C	40°C	--
Model GTA81081-6020-0.9-T3A-CC			
T1 winding	54	44	70
LF1 winding	39	32	90
LF3 winding	34	23	90
T1 core	42	31	--
PCB under Q1	47	30	90
PCB under D5	48	34	90
Capacitor C1	41	29	65
Capacitor CX1	33	20	60
Capacitor CY3	43	28	85
Opto-coupler IC2	44	30	60
Inlet	12	12	30
Output cord	30	16	40
Enclosure (inside)	30	15	65
Enclosure (outside)	18	7	55
Ambient	40°C	40°C	--
Model GTA81081-6024-T3A			
T1 winding	49	56	70

Temperature Rise dT of Part	dT (K)		Limit dT (K)
LF1 winding	40	58	90
LF3 winding	33	43	90
T1 core	40	47	--
PCB under Q1	47	52	90
PCB under D5	47	50	90
Capacitor C1	42	48	65
Capacitor CX1	31	40	60
Capacitor CY3	44	50	85
Opto-coupler IC2	44	47	60
Inlet	13	17	30
Output cord	23	36	40
Enclosure (inside)	29	37	65
Enclosure (outside)	14	29	55
Ambient	40°C	40°C	--
Model GTA81081-6024-T3A-CC			
T1 winding	49	50	70
LF1 winding	36	56	90
LF3 winding	32	43	90
T1 core	41	44	--
PCB under Q1	46	46	90
PCB under D5	48	47	90
Capacitor C1	39	46	65
Capacitor CX1	32	47	60
Capacitor CY3	43	45	85
Opto-coupler IC2	43	45	60
Inlet	13	27	30
Output cord	29	29	40
Enclosure (inside)	28	35	65
Enclosure (outside)	18	30	55
Ambient	40°C	40°C	--
Winding temperature rise measurements			

Temperature Rise dT of Part	dT (K)		Limit dT (K)
Ambient temperature t1 (°C) .....:	--	--	—
Ambient temperature t2 (°C) .....:	--	--	—

Temperature rise dT of winding: $dT = \frac{(R_2 - R_1)}{R_1} \times (234.5 + t1) - (t2 - t1)$	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.

With a rated maximum ambient temperature of 40°C, the max. temperature rise is calculated as follows:

T1 winding:

- class B → dTmax = 85K – (40 - 35) - 10K = 70K

LF1, LF3:

- class B → dTmax = 130 – 40 = 90K

Electrolyte capacitors or components with:

- max. absolute temp. of 105°C → dTmax = (105 - 40) K = 65K

Inlet (near pin): dTmax = 70 – 40 = 30K

Enclosure: dTmax = 60K – (40 – 35) = 55K

PCB: dTmax = (130 - 40)K = 90K

Y capacitor: dTmax = 125 – 40 = 85K

X capacitor and opto-coupler: dTmax = 100 – 40 = 60K

Output cord: dTmax = 80 – 40 = 40K

9.1	**Shock Hazard**	**P**
	Under normal operating conditions: > 35Vpk ac / 60V dc Notes: Reference Annex D	**-**

CLASS I: (single phase)

	AC		DC	
	U1: Vpk	mArms	U1: -- V	-- mA

L, N-accessible output (+) (switch ON)	--	--		
L, N-accessible output (-) (switch ON)	--	--		
L, N-enclosure (switch ON)	0,02	--		
	U2: -- Vpk	-- mA rms		
L, N-accessible output (+) (switch ON)	0,26	--		
L, N-accessible output (-) (switch ON)	0,26	--		
L, N-enclosure (switch ON)	0,01	--		
CLASS II: (single phase)				
	AC		DC	
	U1: Vpk	mA rms	U1: V	mA
	--	--	--	--
	U2: Vpk	mA rms		
	--	--		
Note: Class I appliance.				

10.3	TABLE: Insulation Resistance Measurements	P

Insulation resistance R between:	R (MΩ)	Required R (MΩ)
Poles of supply (after fuse open)	100	2
Poles of supply and output terminal	100	4
Poles of supply and earthing	100	2
Poles of supply and enclosure wrapped into metal foil	100	4

10.3	TABLE: Electric Strength Measurements	P

Test voltage applied between:	Test voltage (V)	Breakdown
Poles of supply (after fuse open)	2121	No
Poles of supply and output terminal	4242	No
Poles of supply and earthing	2121	No
Poles of supply and enclosure wrapped into metal foil	4242	No
T1: primary and secondary	4242	No
T1: primary and core	2121	No
T1: secondary and core	2121	No
Two layers of insulation tape	4242	No

11.2	**TABLE: summary of fault condition tests**		**P**
	Voltage (V) 0,9 or 1,1 times rated voltage .....:	0,9x100=90V; 1,1x240=264V	—
	Frequency (Hz)……..:	50/60	—
	Ambient temperature (°C) .....:	--	—

No	Component	Fault	Temp Rise/ Component	Other results (include description and test duration)
For model GTA81081-6024-T3A				
1	BD1	s-c	--	Input voltage: 264V F1 opened immediately, no hazards.
2	BD1	s-c	--	Input voltage: 90V F1 opened immediately, no hazards.
3	C1	s-c	--	Input voltage: 264V F1 opened immediately, no hazards.
4	C1	s-c	--	Input voltage: 90V F1 opened immediately, no hazards.
5	D1	s-c	--	Input voltage: 264V Unit shut down immediately, no components damaged, no hazards.
6	C2	s-c	--	Input voltage: 264V Unit shut down immediately, no components damaged, no hazards.
7	D7	s-c	--	Input voltage: 264V Normal operation, no hazards.

8	D2	s-c	--	Input voltage: 264V Circuit protected immediately, no hazards
9	Q1 pin G-S	s-c	--	Input voltage: 264V Unit shut down immediately, no hazards
10	Q1 pin D-S	s-c	--	Input voltage: 264V Fuse opened immediately, Q1, D3 damaged, no hazards
11	Q1 pin D-S	s-c	--	Input voltage: 90V Fuse opened immediately, Q1, R19A and R19B damaged, no hazards
12	Q1 pin G-D	s-c	--	Input voltage: 264V Fuse opened immediately, Q1 damaged, no hazards
13	Q1 pin G-D	s-c	--	Input voltage: 90V Fuse opened immediately, Q1 damaged, no hazards
14	T1 pin 6-4	s-c	--	Input voltage: 264V Circuit protected, no hazards
15	T1 pin S-F	s-c	--	Input voltage: 264V Fuse opened immediately, Q1, D5 damaged, no hazards
16	T1 pin S-F	s-c	--	Input voltage: 90V Unit shut down immediately, no hazards
17	R19A	s-c	--	Input voltage: 264V Fuse opened immediately, Q1 damaged, no hazards
18	R19A	s-c	--	Input voltage: 90V Unit shut down immediately, no hazards
19	R19A	o-c	--	Input voltage: 264V Unit shut down immediately, no hazards
20	ZD3	s-c	--	Input voltage: 264V Unit shut down immediately, no hazards
21	C4	s-c	--	Input voltage: 264V Unit shut down immediately, no hazards
22	U4 pin 1-2	s-c	--	Input voltage: 264V Unit shut down immediately, no hazards

23	U4 pin 3-4	s-c	--	Input voltage: 264V Unit shut down immediately, no hazards
24	D5	s-c	--	Input voltage: 264V Unit shut down immediately, no hazards
25	Output	s-c	--	Input voltage: 264V Unit shut down immediately, no hazards
26	Output	o-l	--	Input voltage: 264V Overload to 3,80A, temp. was stable, no hazards, detail test results see appended table.
For model GTA81081-6024-T3A-CC				
27	Output	s-c	--	Input voltage: 264V Unit shut down immediately, no components damaged, no hazards.
28	Output	o-l	--	Input voltage: 264V Output overloaded to 4.00A, no hazards, detail test results see appended table.
For model GTA81081-6012-T3A				
29	Output	s-c	--	Input voltage: 264V Unit shut down immediately, no components damaged, no hazards.
30	Output	o-l	--	Input voltage: 264V Output overloaded to 7,80A, no hazards, detail test results see appended table.
For model GTA81081-6012-T3A-CC				
31	Output	s-c	--	Input voltage: 264V Unit shut down immediately, no components damaged, no hazards.
32	Output	o-l	--	Input voltage: 264V Output overloaded to 5,80A, no hazards, detail test results see appended table.
For model GTA81081-6020-0.9-T3A				
33	Output	s-c	--	Input voltage: 264V Unit shut down immediately, no components damaged, no hazards.
34	Output	o-l	--	Input voltage: 264V Output overloaded to 4.70A, no hazards, detail test results see appended table.

For model GTA81081-6020-0.9-T3A-CC					
35	Output	s-c	--	Input voltage: 264V Unit shut down immediately, no components damaged, no hazards.	
36	Output	o-l	--	Input voltage: 264V Output overloaded to 4.25A, no hazards, detail test results see appended table.	
	Winding temperature rise measurements				
	Ambient temperature t1 (°C)		--		—
	Ambient temperature t2 (°C)		--		—

11.2	TABLE: temperature rise measurements under abnormal condition		P
	Power consumption in the OFF/Stand-by (W) ….:	0 / --	--
	Position of the functional switch.....:	--	—

Cond.	Un (V)	Hz	In (A)	Pn (W)	Uout (V)	Pout (W)	Operating Condition
1	264	50	0,63	73,9	16,0	60,8	Output overload

For model: GTA81081-6024-T3A
t1= 40,0 °C t2= 40,0 °C

	Loudspeaker impedance (Ω)	---	—
	Several loudspeaker systems	---	—
	Marking of loudspeaker terminals	---	—

Temperature Rise dT of Part	dT (K)	Limit dT (K)
T1 winding	56	125
LF1 winding	47	125
LF3 winding	39	125
T1 core	46	--
PCB under Q1	57	90
PCB under D5	54	90
Capacitor C1	49	65
Output cord	28	95
Enclosure (inside)	34	65
Enclosure (outside)	17	60
Winding temperature rise measurements		--

Ambient temperature t1 (°C) .....:	40,0				
Ambient temperature t2 (°C) .....:	40,0				
Temperature rise dT of winding: $dT = \frac{(R_2 - R_1)}{R_1} \times (234.5 + t1) - (t2 - t1)$	R_1 (Ω)	R_2 (Ω)	dT (K)	Limit dT (K)	Insulation class
Pri. winding of transformer	--	--	--	--	--
Sec winding of transformer	--	--	--	--	--

Note:

► Winding temperature rise limit: Class B → 175 – 40 = 135K;

For windings, thermocouple method was applied and therefore another 10K is reduced from the limit.

Electrolyte capacitors or components with:

- max. absolute temp. of 105℃ → dTmax = (105 - 40) K = 65K

PCB: dTmax = (130 - 40)K = 90K

Output cord: dTmax = 80 – 40 = 40K

Touchable surfaces with:

- max. temp. rise 65K → ΔTmax = 65K-(40-35) K = 60K

11.2	**TABLE: temperature rise measurements under abnormal condition**		**P**
	Power consumption in the OFF/Stand-by (W) …..:	0 / --	--
	Position of the functional switch.....:	--	—

Cond.	Un (V)	Hz	In (A)	Pn (W)	Uout (V)	Pout (W)	Operating Condition
1	264	50	0,4	74,8	14,7	58,8	Output overload

For model: GTA81081-6024-T3A-CC

t1= 40,0 °C t2= 40,0 °C

	Loudspeaker impedance (Ω)	---	—
	Several loudspeaker systems	---	—
	Marking of loudspeaker terminals	---	—

Temperature Rise dT of Part	dT (K)	Limit dT (K)
T1 winding	60	125
LF1 winding	45	125
LF3 winding	40	125
T1 core	52	--
PCB under Q1	67	90
PCB under D5	57	90

Capacitor C1	50	65
Output cord	42	95
Enclosure (inside)	36	65
Enclosure (outside)	22	60
Winding temperature rise measurements		--

Ambient temperature t1 (°C) .....:	40,0
Ambient temperature t2 (°C) .....:	40,0

Temperature rise dT of winding: $dT = \frac{(R_2 - R_1)}{R_1} \times (234.5 + t1) - (t2 - t1)$	R_1 (Ω)	R_2 (Ω)	dT (K)	Limit dT (K)	Insulation class
Pri. winding of transformer	--	--	--	--	--
Sec winding of transformer	--	--	--	--	--

Note:

► Winding temperature rise limit: Class B → 175 – 40 = 135K;

For windings, thermocouple method was applied and therefore another 10K is reduced from the limit.

Electrolyte capacitors or components with:

- max. absolute temp. of 105℃ → dTmax = (105 - 40) K = 65K

PCB: dTmax = (130 - 40)K = 90K

Output cord: dTmax = 80 – 40 = 40K

Touchable surfaces with:

- max. temp. rise 65K → ΔTmax = 65K-(40-35) K = 60K

11.2	**TABLE: temperature rise measurements under abnormal condition**	**P**
	Power consumption in the OFF/Stand-by (W) ….: 0 / --	--
	Position of the functional switch.....: --	—

Cond.	Un (V)	Hz	In (A)	Pn (W)	Uout (V)	Pout (W)	Operating Condition
1	264	50	0,5	69	15,7	55,0	Output overload

For model: GTA81081-6020-0.9-T3A

t1= 40,0 °C t2= 40,0 °C

Loudspeaker impedance (Ω)	---	—
Several loudspeaker systems	---	—
Marking of loudspeaker terminals	---	—

Temperature Rise dT of Part	dT (K)	Limit dT (K)
T1 winding	58	125

LF1 winding	44	125
LF3 winding	39	125
T1 core	50	--
PCB under Q1	56	90
PCB under D5	54	90
Capacitor C1	39	65
Output cord	28	95
Enclosure (inside)	34	65
Enclosure (outside)	19	60
Winding temperature rise measurements		---

Ambient temperature t1 (°C) .....:	40,0
Ambient temperature t2 (°C) .....:	40,0

Temperature rise dT of winding: $dT = \frac{(R_2 - R_1)}{R_1} \times (234.5 + t1) - (t2 - t1)$	R_1 (Ω)	R_2 (Ω)	dT (K)	Limit dT (K)	Insulation class
Pri. winding of transformer	--	--	--	--	--
Sec winding of transformer	--	--	--	--	--

Note:

► Winding temperature rise limit: Class B → 175 – 40 = 135K;

For windings, thermocouple method was applied and therefore another 10K is reduced from the limit.

Electrolyte capacitors or components with:

- max. absolute temp. of 105℃ → dTmax = (105 - 40) K = 65K

PCB: dTmax = (130 - 40)K = 90K

Output cord: dTmax = 80 – 40 = 40K

Touchable surfaces with:

- max. temp. rise 65K → ΔTmax = 65K-(40-35) K = 60K

11.2	**TABLE: temperature rise measurements under abnormal condition**		**P**
	Power consumption in the OFF/Stand-by (W) ….:	0 / --	--
	Position of the functional switch.....:	--	—

Cond.	Un (V)	Hz	In (A)	Pn (W)	Uout (V)	Pout (W)	Operating Condition
1	264	50	0,54	72	16,0	60,8	Output overload

For model: GTA81081-6020-0.9-T3A-CC

t1= 40,0 °C t2= 40,0 °C

	Loudspeaker impedance (Ω)	---	—
	Several loudspeaker systems	---	—
	Marking of loudspeaker terminals	---	—

Temperature Rise dT of Part	dT (K)	Limit dT (K)
T1 winding	63	125
LF1 winding	46	125
LF3 winding	40	125
T1 core	49	--
PCB under Q1	56	90
PCB under D5	55	90
Capacitor C1	48	65
Output cord	36	95
Enclosure (inside)	36	65
Enclosure (outside)	21	60
Winding temperature rise measurements		--

Ambient temperature t1 (°C) .....:	40,0
Ambient temperature t2 (°C) .....:	40,0

Temperature rise dT of winding: $dT = \frac{(R_2 - R_1)}{R_1} \times (234.5 + t1) - (t2 - t1)$	R_1 (Ω)	R_2 (Ω)	dT (K)	Limit dT (K)	Insulation class
Pri. winding of transformer	--	--	--	--	--
Sec winding of transformer	--	--	--	--	--

Note:

► Winding temperature rise limit: Class B → 175 – 40 = 135K;

For windings, thermocouple method was applied and therefore another 10K is reduced from the limit.

Electrolyte capacitors or components with:

- max. absolute temp. of 105°C → dTmax = (105 - 40) K = 65K

PCB: dTmax = (130 - 40)K = 90K

Output cord: dTmax = 80 – 40 = 40K

Touchable surfaces with:

- max. temp. rise 65K → ΔTmax = 65K-(40-35) K = 60K

11.2	TABLE: temperature rise measurements under abnormal condition		P
	Power consumption in the OFF/Stand-by (W) …..:	0 / --	--
	Position of the functional switch.....:	--	—

Cond.	Un (V)	Hz	In (A)	Pn (W)	Uout (V)	Pout (W)	Operating Condition
1	264	50	0,56	80,9	9,3	64,0	Output overload

For model: GTA81081-6012-T3A

t1= 40,0 °C t2= 40,0 °C

	Loudspeaker impedance (Ω)	---	—
	Several loudspeaker systems	---	—
	Marking of loudspeaker terminals	---	—

Temperature Rise dT of Part	dT (K)	Limit dT (K)
T1 winding	64	125
LF1 winding	52	125
LF3 winding	44	125
T1 core	56	--
PCB under Q1	68	90
PCB under D5	62	90
Capacitor C1	59	65
Output cord	42	95
Enclosure (inside)	42	65
Enclosure (outside)	20	60
Winding temperature rise measurements		--

Ambient temperature t1 (°C) .....:	40,0
Ambient temperature t2 (°C) .....:	40,0

Temperature rise dT of winding: $dT = \frac{(R_2 - R_1)}{R_1} \times (234.5 + t1) - (t2 - t1)$	R_1 (Ω)	R_2 (Ω)	dT (K)	Limit dT (K)	Insulation class
Pri. winding of transformer	--	--	--	--	--
Sec winding of transformer	--	--	--	--	--

Note:

► Winding temperature rise limit: Class B → 175 – 40 = 135K;

For windings, thermocouple method was applied and therefore another 10K is reduced from the limit.

Electrolyte capacitors or components with:

- max. absolute temp. of 105℃ → dTmax = (105 - 40) K = 65K

PCB: dTmax = (130 - 40)K = 90K

Output cord: dTmax = 80 – 40 = 40K

Touchable surfaces with:

- max. temp. rise 65K → ΔTmax = 65K-(40-35) K = 60K

11.2	**TABLE: temperature rise measurements under abnormal condition**	**P**
	Power consumption in the OFF/Stand-by (W) …..: 0 / --	--
	Position of the functional switch.....: --	—

Cond.	Un (V)	Hz	In (A)	Pn (W)	Uout (V)	Pout (W)	Operating Condition
1	264	50	0,6	82,7	11,4	66,1	Output overload

For model: GTA81081-6012-T3A-CC

t1= 40,0 °C t2= 40,0 °C

	Loudspeaker impedance (Ω)	---	—
	Several loudspeaker systems	---	—
	Marking of loudspeaker terminals	---	—

Temperature Rise dT of Part	dT (K)	Limit dT (K)
T1 winding	80	125
LF1 winding	56	125
LF3 winding	46	125
T1 core	68	--
PCB under Q1	73	90
PCB under D5	70	90
Capacitor C1	60	65
Output cord	51	95
Enclosure (inside)	50	65
Enclosure (outside)	26	60
Winding temperature rise measurements		--

Ambient temperature t1 (°C) .....:	40,0

Ambient temperature t2 (°C) .....:	40,0				
Temperature rise dT of winding: $dT = \frac{(R_2 - R_1)}{R_1} \times (234.5 + t1) - (t2 - t1)$	R_1 (Ω)	R_2 (Ω)	dT (K)	Limit dT (K)	Insulation class
Pri. winding of transformer	--	--	--	--	--
Sec winding of transformer	--	--	--	--	--

Note:

► Winding temperature rise limit: Class B → 175 – 40 = 135K;

For windings, thermocouple method was applied and therefore another 10K is reduced from the limit.

Electrolyte capacitors or components with:

- max. absolute temp. of 105°C → dTmax = (105 - 40) K = 65K

PCB: dTmax = (130 - 40)K = 90K

Output cord: dTmax = 80 – 40 = 40K

Touchable surfaces with:

- max. temp. rise 65K → ΔTmax = 65K-(40-35) K = 60K

13	TABLES: clearances and creepage distances					P
Rated supply voltage:	100-240V	Pollution degree:	II	Material Group:	IIIb	
2 N force on internal parts applied:				Yes		
30 N force on outside of conductive enclosure applied:				Yes		

Location	Operating Voltage		Clearance (mm)		Creepage (mm)	
	V rms	V peak	Min	Actual	Min	Actual
Circuits conductively connected to the mains (use Tables 8, 9 and 11): see note below.						
Secondary winding → core of T1	250	577	4,6	10,0	5,0	10,0
Primary winding → secondary winding (through bobbin)	250	577	4,6	10,0	5,0	10,0
Primary circuit → secondary circuit (through PCB)	250	577	4,6	6,1	5,0	6,1
Primary circuit → secondary circuit (core of T1 → heatsink of D5)	250	577	4,6	8,3	5,0	8,3
Primary circuit → accessible enclosure	250	577	4,6	8,5	5,0	8,5
Between two pins of current fuse F1	250	420	2,0	3,1	2,5	3,1

Notes:

1. Functional insulation shorted, see sub-clause 5.3.4.
2. F1 was covered by heat shrinkable tube.
3. Reinforced insulation provided between primary and secondary winding.
4. Concentric windings on PQ2620 size phenolic bobbin. Outer winding is primary, three layers of insulation tape around outer winding. Secondary winding is triple insulated wire, core considered as primary circuit. Winding ends additionally fixed with tape, tubing provided at all winding exits. The outerwrap provided on core of Transformer.

"Min" = minimum required.
"Actual = Actual dimensions measured.

14	TABLE: list of critical components and materials				P
Object/Part No.	Manufacturer /Trademark	Type/Model	Technical Data[2])	Standard	Mark(s) of Conformity[1])
Transformer (T1)	GlobTek	90E266012-00F; 90E266016-00F; 90E266020-00F	Pri. Winding (pin 3-1): Φ 0,45mmx35Ts Auxiliary primary winding (pin 6-4): Φ 0,16mmx4px6Ts Sec. Winding (pin S-F): for 90E266012-00F: Φ 0,65mmx3px6Ts 90E266016-00F: Φ 0,60mmx2px8Ts; 90E266020-00F: Φ 0,50mmx2px10Ts Class B	Applicable part of IEC 60065 and according to IEC 60085	Accepted by TÜV Rheinland
Primary line choke (LF3)	GlobTek	30R200010-00F	Pin a-c: Φ 0.60mmx10Ts Pin b-d: Φ 0.60mmx10Ts 130°C with phenolic bobbin	Applicable part of IEC 60065 and according to IEC 60085	Accepted by TÜV Rheinland
Triple insulated wire (secondary winding of T1, winding of a-c of LF3	Furukawa Electric Co., Ltd.	TEX-B	130°C	IEC/EN 60950	VDE

Object/Part No.	Manufacturer /Trademark	Type/Model	Technical Data[2])	Standard	Mark(s) of Conformity[1])
Primary line choke (LF1)	GlobTek	30R022058-00F	Pin a-d: Φ 0,45mmx60Ts Pin b-d: Φ 0,45mmx60Ts 130°C with phenolic bobbin	Applicable part of IEC 60065 and according to IEC 60085	Accepted by TÜV Rheinland
Fuse (F1)	Bel	MRT	T3,15AL; 250Vac; miniature fuse	IEC/EN 60127	VDE
(Alternative)	SCHURTER	MST250	T3,15AL; 250Vac; miniature fuse	IEC/EN 60127	VDE
(Alternative)	Wickmann	372	T3,15AL; 250Vac; miniature fuse	IEC/EN 60127	VDE
Resistor between L/N (R1A; R1B; R1C)	--	--	470kΩ ± 5%; 1/4W	--	Tested with appliance
Y capacitor (CY1, CY2); Y2 or Y1 type for GTA81081-xy-z-a	Success	SE, SB	Max. 470pF, Min. 250VAC, 30/125/56	IEC 60384	VDE
(Alternative)	TDK	CD, CS	Max. 470pF, Min. 250VAC, 25/125/21	IEC 60384	VDE
(Alternative)	Murata	KX, KY	Max. 470pF, Min. AC250V, 25/125/21	IEC 60384	VDE
(Alternative)	JYA-NAY	JN, JY	Max. 470pF, Min. AC250V, 25/125/21/C	IEC 60384	VDE
Y capacitor (CY3); Y2 or Y1 type for GTA81081-xy-z-a	Success	SE, SB	Max. 3300pF, Min. 250VAC, 30/125/56	IEC 60384	VDE
(Alternative)	TDK	CD, CS	Max. 3300pF, Min. 250VAC, 25/125/21	IEC 60384	VDE
(Alternative)	Murata	KX, KY	Max. 3300pF, Min. AC250V, 25/125/21	IEC 60384	VDE
(Alternative)	JYA-NAY	JN, JY	Max. 3300pF, Min. AC250V, 25/125/21/C	IEC 60384	VDE

Object/Part No.	Manufacturer /Trademark	Type/Model	Technical Data[2])	Standard	Mark(s) of Conformity[1])
Y capacitor (CY1, CY2); Y2 or Y1 type for GTA81081-xy-z-a-CC	Success	SE, SB	Max. 2200pF, Min. 250VAC, 30/125/56	IEC 60384	VDE
(Alternative)	TDK	CD, CS	Max. 2200pF, Min. 250VAC, 25/125/21	IEC 60384	VDE
(Alternative)	Murata	KX, KY	Max. 2200pF, Min. AC250V, 25/125/21	IEC 60384	VDE
(Alternative)	JYA-NAY	JN, JY	Max. 2200pF, Min. AC250V, 25/125/21/C	IEC 60384	VDE
Y capacitor (CY3); Y2 or Y1 type for GTA81081-xy-z-a-CC	Success	SE, SB	Max. 3300pF, Min. 250VAC, 30/125/56	IEC 60384	VDE
(Alternative)	TDK	CD, CS	Max. 3300pF, Min. 250VAC, 25/125/21	IEC 60384	VDE
(Alternative)	Murata	KX, KY	Max. 3300pF, Min. AC250V, 25/125/21	IEC 60384	VDE
(Alternative)	JYA-NAY	JN, JY	Max. 3300pF, Min. AC250V, 25/125/21/C	IEC 60384	VDE
Photo Coupler (U4)	Sharp	PC817; PC123	Cr. =Min. 4,8mm; Dti. > 0,4mm	VDE 0884 IEC/EN 60950	VDE
(Alternative)	Lite-on	LTV-817	Cr. =Min. 5,2mm; Dti. = 0,8mm	VDE 0884 IEC/EN 60950	VDE
(Alternative)	Cosmo	K1010; KP1010	Cr. =Min. 5,3mm; Dti. = 0,5mm	VDE 0884 IEC/EN 60950	VDE
(Alternative)	Q.T.C Corporation	H11A817B	Cr. > 7,0mm; Dti. > 1mm	VDE 0884 IEC/EN 60950	VDE
X-Cap. (CX2)	Chiefcon	CKX	Max. 0,15µF; Min. 275VAC; 40/100/21/C; X2 type	IEC/EN 60384	VDE

Object/Part No.	Manufacturer /Trademark	Type/Model	Technical Data[2])	Standard	Mark(s) of Conformity[1])
(Alternative)	UTX	HQX	Max. 0,15µF; Min. 275VAC; 25/100/21/C; X2 type	IEC/EN 60384	VDE
(Alternative)	Iskra	KNB1560 KNB1530	Max. 0,15µF; Min. 275VAC; 25/85/21/C; X2 type	IEC/EN 60384	VDE
(Alternative)	Carli	MPX	Max. 0,15µF; Min. 275VAC; 25/85/21/C; X2 type	IEC/EN 60384	VDE
X-Cap. (CX1)	Chiefcon	CKX	Max. 0,47µF; Min. 275VAC; 40/100/21/C; X2 type	IEC/EN 60384	VDE
(Alternative)	Iskra	KNB1560, KNB1530	Max. 0,47µF; Min. 275VAC; 25/85/21/C; X2 type	IEC/EN 60384	VDE
(Alternative)	UTX	HQX	Max. 0,47µF; Min. 275VAC; 25/100/21/C; X2 type	IEC/EN 60384	VDE
(Alternative)	Carli	MPX	Max. 0,47µF; Min. 275VAC; 25/85/21/C; X2 type	IEC/EN 60384	VDE
Storage Cap. (C1)	Various	Various	47-120µF; Min. 400VDC; 105°C	--	--
Inlet	Rong Feng	SS-120 (b=1)	10A; 250VAC	IEC/EN 60320-1	VDE
(Alternative)	Rong Feng	RF-190 (b=3)	2,5A; 250VAC	IEC/EN 60320-1	VDE
(Alternative)	Sunfair	S-02 (b=3)	2,5A; 250VAC	IEC/EN 60320-1	VDE
(Alternative)	Bei Er Jia	ST-A04-001 (b=3)	2,5A, 250VAC	IEC/EN60320-1	FIMKO
(Alternative)	Bei Er Jia	ST-A01-003J (b=1)	10A, 250VAC	IEC/EN60320-1	VDE
(Alternative)	Bei Er Jia	ST-A03-005	2.5A, 250VAC	IEC/EN60320-1	FIMKO
(Alternative)	Sun Fair	S-03 (b=1)	10A, 250VAC	IEC/EN 60320-1	VDE

Object/Part No.	Manufacturer /Trademark	Type/Model	Technical Data[2])	Standard	Mark(s) of Conformity[1])
(alternative)	Tecx-Unions Tech.	TU-301 (b=1)	10A, 250VAC	IEC/EN 60320-1	VDE
(alternative)	Tecx-Unions Tech.	TU-333 (b=3)	2,5A, 250VAC	IEC/EN 60320-1	VDE
Enclosure	GE Plastics Co., Ltd.	SE1	PPE+PS; V-1; 105°C; thickness: min. 2,0mm	--	UL
Insulation tape	Four Pillars (SYMBIO)	35660Y	130°C	--	UL
Output cord	Various	SPT-1	80°C; VW-1; min. 18AWG	--	UL
Heat shrinkable tube	Various	Various	125°C; 600V; VW-1	--	UL
Extruded tube	Various	Various	105°C; 300V; VW-1	--	UL
PCB	Various	Various	V-0 or better; min. 130°C	--	UL

[1]) An asterisk indicates a mark which assures the agreed level of surveillance.
[2]) Description to include adjacent markings for critical fuse/s.

National Deviation			
Clause	Requirement – Test	Result - Remark	Verdict
ZB	ANNEX ZB TO EN 60 065, SPECIAL NATIONAL CONDITIONS		**N/A**
2.6.1	DK: 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	Shall be evaluated during national approval.	**N/A**
13.3.1	NO: In Norway, due to 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 230V in case of a single earth fault.	Shall be evaluated during national approval.	**N/A**
15.1.1	DK: mains cord for single-phase equipment having a rated current not exceeding 10 A shall be provided with a plug according to Heavy Current Regulations Section 107-2-D1	Shall be evaluated during national approval.	**N/A**
	DK: Class I equipment with socket-outlets with earthing contact, or which are intended to be used in locations where protection against indirect contact is required shall be provided with a plug in compliance with Standard Sheet DK 2-1a	No socket-outlet.	**N/A**
	DK: socket-outlets for providing power to Class II equipment with a rated current of 2,5 A shall have dimensions according to the drawing on page 131 of EN 60 065:98 other dimensions shall be to IEC 60 083 Standard Sheet C 1a for portable socket-outlets	No socket-outlet.	**N/A**
	DK: mains socket-outlets with earthing contact shall comply with Heavy Current Regulations Section 107-2-D1, Standard Sheet DK 1-3a, DK 1-5a or DK 1-7a	No socket-outlet.	**N/A**
	GB: equipment fitted with a flexible cable or cord provided with a 13A BS 1363 plug as in Statutory Instrument 1768:94	Shall be evaluated during national approval.	**N/A**
	IE: equipment fitted with a flexible cable or cord provided with a 13 A plug in accordance with Statutory Instrument 525:97	Shall be evaluated during national approval.	**N/A**
	NO: mains socket-outlets on Class II equipment meet CEE Publication 7 with the following amendments:		**N/A**
	- dimensions 2,5 A, 250 V socket-outlets shall comply with Standard Sheet 1 page 132 of EN 60 065:98	No socket-outlet	**N/A**
	- mechanical strength 2,5 A, 250 V socket-outlets tested as specified in EN 60 065, 12.1.3		**N/A**
	- protecting rim also tested		**N/A**
	NO: method b) of 8.1 is not permitted. Double or reinforced insulation is required between parts connected to the mains and parts connected to the public telecommunications network		**N/A**

National Deviation			
Clause	Requirement – Test	Result - Remark	Verdict
J.2	NO: In Norway, due to 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 230V in case of a single earth fault.	Shall be evaluated during national approval.	**N/A**
ZC	ANNEX ZC TO EN 60 065, A-DEVIATIONS		**N/A**
5	DE: additional markings required in German language:		**N/A**
	- cathode ray tubes with an accelerating voltage between 20 kV and 30 kV (marking on the tube)	No CRT.	**N/A**
	- TV receivers whose picture tube has an accelerating voltage between 20 kV and 30 kV	Not TV	**N/A**
	- TV receivers whose picture tube has an accelerating voltage greater than 30 kV		**N/A**
	- TV receivers whose picture tube has an accelerating voltage less than 20 kV		**N/A**
5.1	IT: additional markings on the outside of the TV receiver in Italian language	Not TV	**N/A**
	IT: user instructions in Italian language including a conformity declaration	Shall be evaluated during national approval.	**N/A**
	IT: certification number on the back cover		**N/A**
14	SE: Switches containing mercury such as thermostats, relays and level controllers are not allowed.	Shall be evaluated during national approval.	**N/A**

National Deviation			
Clause	Requirement – Test	Result - Remark	Verdict
APPENDIX	Australia National Differences to CB Bulletin No. 109A, December 2005 (IEC Publication 60065 7th edition, 2001)		**P**
EXPLANATION FOR ABBREVIATIONS P=Pass, F=Fail, N=Not applicable. Placed in the column to the right.			
ZZ.1	Introduction This Annex sets out variations between this Standard and IEC 60065:2001. These variations indicate national variations for purposes of the IECEE CB Scheme and will be published in the IECEE CB Bulletin. These variations are indicated within the body of the Standard by shading and strikethrough.	Considered.	**P**
ZZ.2	Variations The variations are as follows:		**N/A**
7.1.5	In table 3, under item c) *add* an [h)] in both columns against "thermoplastic materials' and *add* the following new footnote: h As an alternative to the method described in footnote f) the following variation may be used where there is any doubt about the suitability of the material: The ball-pressure test described in AS/NZS 60695.10.2 may be carried out. To assess compliance under normal operating conditions the test is made in a heating cabinet at a temperature of 40°C ±2°C plus the maximum temperature rise determined under normal operating conditions but, it shall be at least - for external parts.....75°C±2°C - for materials supporting parts CONDUCTIVELY CONNECTED TO THE MAINS.....125°C±2°C	Added.	**N/A**
7.2	After the second paragraph, add the following: The alternative method described in footnote h) of Table 3 may be used.	Added.	**N/A**
15.1.1	After the second paragraph, add the following: Plugs for the connection of apparatus to mains-powered socket-outlets shall comply with AS/NZS 3112 or AS/NZS 3123. Apparatus with a plug portion, suitable for insertion into a 10A 3 pin flat-pin flat-pin socket-outlet complying with AS/NZS 3112, shall comply with the requirements of AS/NZS 3112 for equipment with integral pins for insertion into socket-outlets.	Appliance inlet used.	**N/A**

National Deviation			
Clause	Requirement – Test	Result - Remark	Verdict
15.3.5	In Table 15, in the second and third rows of the first column replace “6” with “7.5”.	Appliance inlet used.	**N/A**
16.2	In Table 18, in the second and third rows of the first column replace “6” with “7.5”.	Appliance inlet used.	**N/A**
16.3	After item (b) *add* the following: A flexible cord complying with AS/NZS 3191 need not undergo this test.		**N/A**
20	Add the following after NOTE 2: For alternative test refer to Clause 20.201.		**N/A**
20.1.4	In Table 21, in the third and fourth columns *change* both “HB75” and “No requirement” to “V-1”.		**P**
20.2.3	After this Clause, add the following variation: 20.201 Resistance to fire - Alternative tests 20.201.1 General Parts of non-metallic material shall be resistant to ignition and the spread of fire. This requirement does not apply to decorative trims, knobs and other parts unlikely to be ignited or to propagate flames originating from inside the apparatus, or the following: (a) Components that are contained in an enclosure having a flammability category of V-0 according to AS/NZS 60695.11.10 and having openings only for the connecting wires filling the openings completely, and for ventilation not exceeding 1 mm in width regardless of length. (b) The following parts which would contribute negligible fuel to a fire: - small mechanical parts, the mass of which does not exceed 4g, such as mounting parts, gears, cams, belts and bearings; - small electrical components, such as capacitors with a volume not exceeding 1750mm^3, integrated circuits, transistors and optocoupler packages, if these components are mounted on material of flammability category V-1 or better according to AS/NZS 60695.11.10	Glow wire test: Enclosure: 550°C; Bobbin: 750°C; PCB: 750°C.	**P**

National Deviation			
Clause	Requirement – Test	Result - Remark	Verdict
	NOTE – In considering how to minimize propagation of fire and what "small parts" are, account should be taken of the cumulative effect of small parts adjacent to each other for the possible effect of propagating fire from one part to another. Compliance shall be checked by tests of 20.201.2.1, 20.201.2.2 and 20.201.2.3 For the base material of PRINTED BOARDS, compliance is checked by the test of 20.201.2.4. The test shall be carried out on parts of non-metallic material which have been removed from the apparatus. When the glow-wire test is carried out, they are placed in the same orientation as they would be in normal use. These tests are not carried out on internal wiring. 20.201.2 Test 20.201.2.1 Testing of non-matallic parts Parts of non-metallic material are subjected to the glow-wire test of AS/NZS 60695.2.11 which shall be carried out at 550°C. Parts for which the glow-wire test cannot be carried out, such as those made of soft or foamy material, shall meet the requirements specified in ISO 9772 for category FH-3 material. The glow-wire test shall not be carried out on parts of material classified at least FH-3 according to ISO 9772 provided that the sample tested was not thicker than the relevant part. 20.201.2.2 Testing of insulated parts Part of insulating material supporting POTENTIAL IGNITION SOURCES shall be subject to the glow-wire test of AS/NZS 64695.2.11 which shall be carried out at 750°C The test shall be also carried out on other parts of insulating material which are within a distance of 3 mm of the connection. NOTE-Contacts in components such as switch contacts are considered to be coneections. For parts which withstand the glow-wire test but produce a flame, other parts above the connection within the envelope of a vertical cylinder having a diameter of 20 mm and a height of 50 mm are subjected to the needle-flame test. However, parts shielded by a barrier which meets the needle-flame test need not be tested. The needle-flame test shall be made in accordance with AS/NZS 4695.2.2 with the following modifications:		

National Deviation			
Clause	Requirement – Test	Result - Remark	Verdict
	Clause of AS/NZS 4695.2.2 Change 5 Severities Replace with: The duration of application of the test flame is 30 s ± 1 s. 8 Test procedure 8.2 Replace the first sentence with: The specimen shall be arranged so that the flame can be applied to a vertical or horizontal edge as shown in the examples of figure 1. 8.4 The first paragraph does not apply. Addition: If possible, the flame shall be applied at least 10 mm from a corner. 8.5 Replace with: The test shall be made on one specimen. If the specimen does not withstand the test, the test may be repeated on two further specimens, both of which shall then withstand the test. 10 Evaluation of test results Replace with: The duration of burning (t_b) shall not exceed 30 s. However, for PRINTED BOARDS, it shall not exceed 15 s. The needle-flame test shall not be carried out on parts of material classified as V-0 or V-1 according to IEC 60695-11-10 provided that the sample tested was not thicker than the relevant part.		

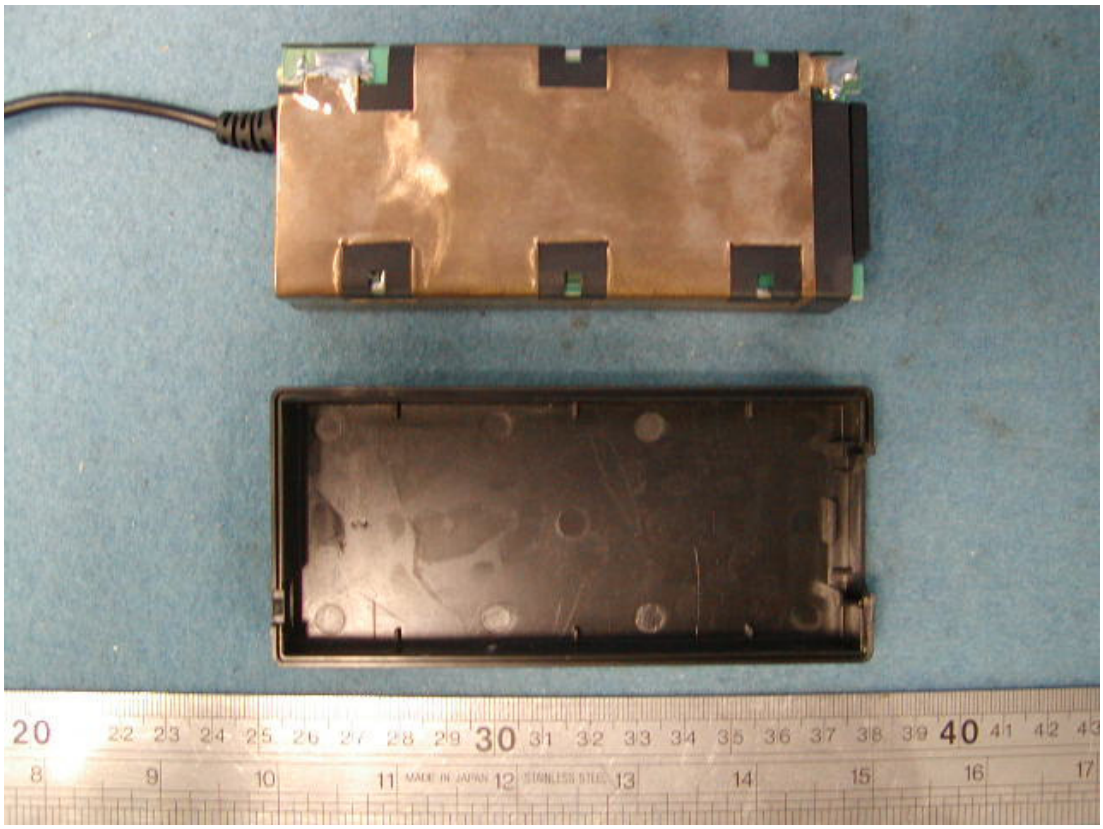
National Deviation			
Clause	Requirement – Test	Result - Remark	Verdict
	20.201.2.3 Testing by needle-flame test If parts, other than enclosures, do not withstand the glow wire tests of 20.201.2.2, by failure to extinguish within 30 s after the removal of the glow-wire tip, the needle-flame test detailed in 20.201.2.2 shall be made on all parts of non-metallic material which are whithin a distance of 50 mm or which are likely to be impinged upon by flame during the tests of 20.201.2.2. Parts shielded by a separate barrier which meets the needle-flame test shall not be tested. NOTE 1– If the enclosure does not withstand the glow-wire test the appliance is considered to have failed to meet the requirement of Clause 21.201 without the need for consequential testing. NOTE 2– If other parts do not withstand the glow-wire test due to ignition of the tissue paper and if this indicates that burning or glowing particles can fall onto an external surface underneath the apparatus, the apparatus is considered to have failed to meet the requirement of Clause 21.201 without the need for consequential testing. NOTE 3– Parts likely to be impinged upon by the flame are considered to be those within the envelope of a vertical cylinder having a radius of 10 mm and a height equal to the height of the flame, positioned above the point of the material supporting in contact with or in close proximity to connections. 20.201.2.4 Testing of printed boards The base material of PRINTED BOARDS shall be subjected to the needle-flame test of Clasue 21.201.2.3. The flame shall be applied to the edge of the board where the heatsink effect is lowest when the board is positioned as in normal use. The flame shall not be appllied to an edge consisting of broken perforations, unless the edge is less than 3 mm from a POTENTIAL IGNITION SOURCE. The test is not carried out if the — - printed board does not carry any potential ignition source;		

National Deviation			
Clause	Requirement – Test	Result - Remark	Verdict
	- base material of printed boards, on which the available power at a connection exceeds 15VA operating at a voltage exceeding 50V and equal or less than 400V (peak) a.c. or d.c. under normal operating conditions, is of flammability category V-1 or better according to AS/NZS 60695.11.10, or the printed boards are protected by an enclosure meeting the flammability category V-0 according to AS/NZS 60695.11.10, or made of metal, having openings only for connecting wires which fill the openings completely; or - Base material of printed boards, on which the available power at a connection exceeds 15VA operating at a voltage exceeding 400V (peak) a.c. or d.c. under normal operating conditions, and base material of printed boards supporting spark gaps which provides protection against overvoltages, is of flammability category V-0 according to AS/NZS 60695.11.10 or the printed boards are contained in a metal enclosure, having openings only for connecting wires which fill the openings completely. Compliance shall be determined using the smallest thickness of the material. NOTE – Available power is the maximum power which can be drawn from the supplying circuit through a resistive load whose value is chose to maximize the power for more than 2 min when the circuit supplied is disconnected. 21.201.3 For open circuit voltages greater than 4 kV potential ignition sources with open circuit voltages exceeding 4kV (peak) a.c. or d.c. under normal operating conditions shall be contained in a fire enclosure which shall comply with flammability category V-1 or better according to AS/NZS 60695.11.10.		
Annex B	After the heading add: For Australia only, this Annex is replaced by the requirements of the Telecommunications Labelling Notice issued under the Telecommunications Act. Note – The Telecommunications Act is administered by the Australian Communications Authority.		**N/A**

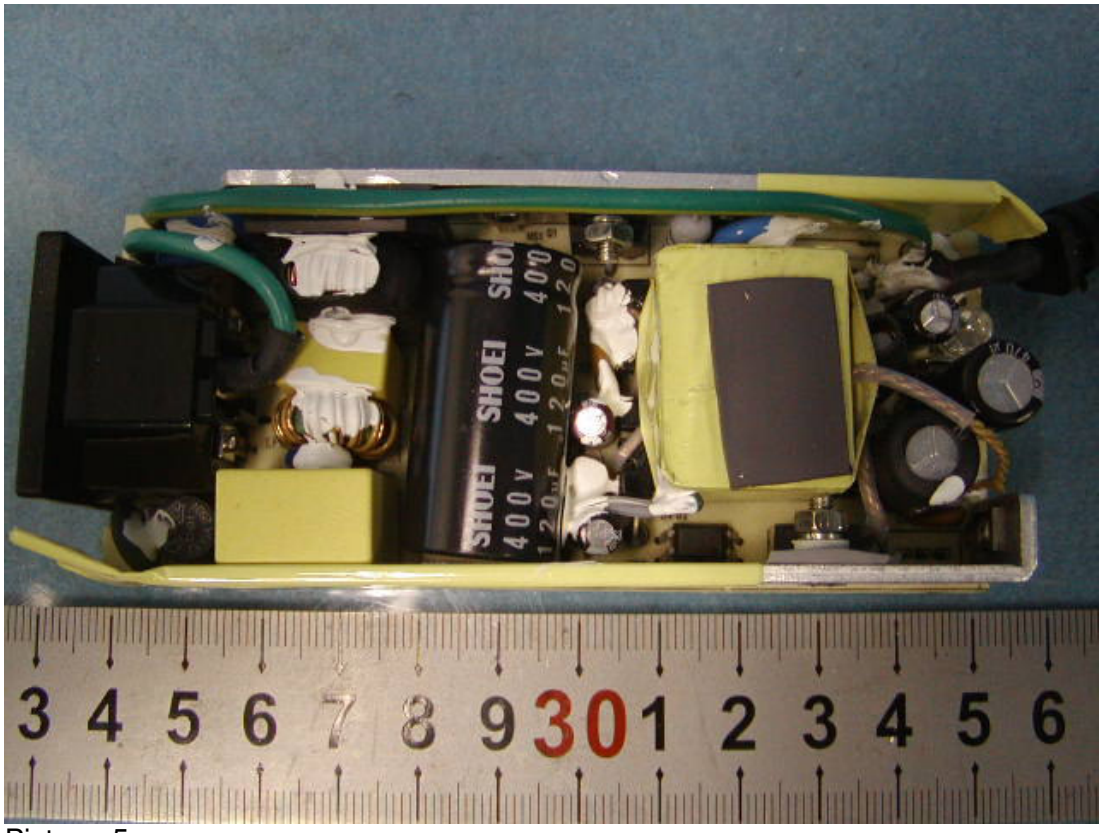
Picture 1

Picture 2

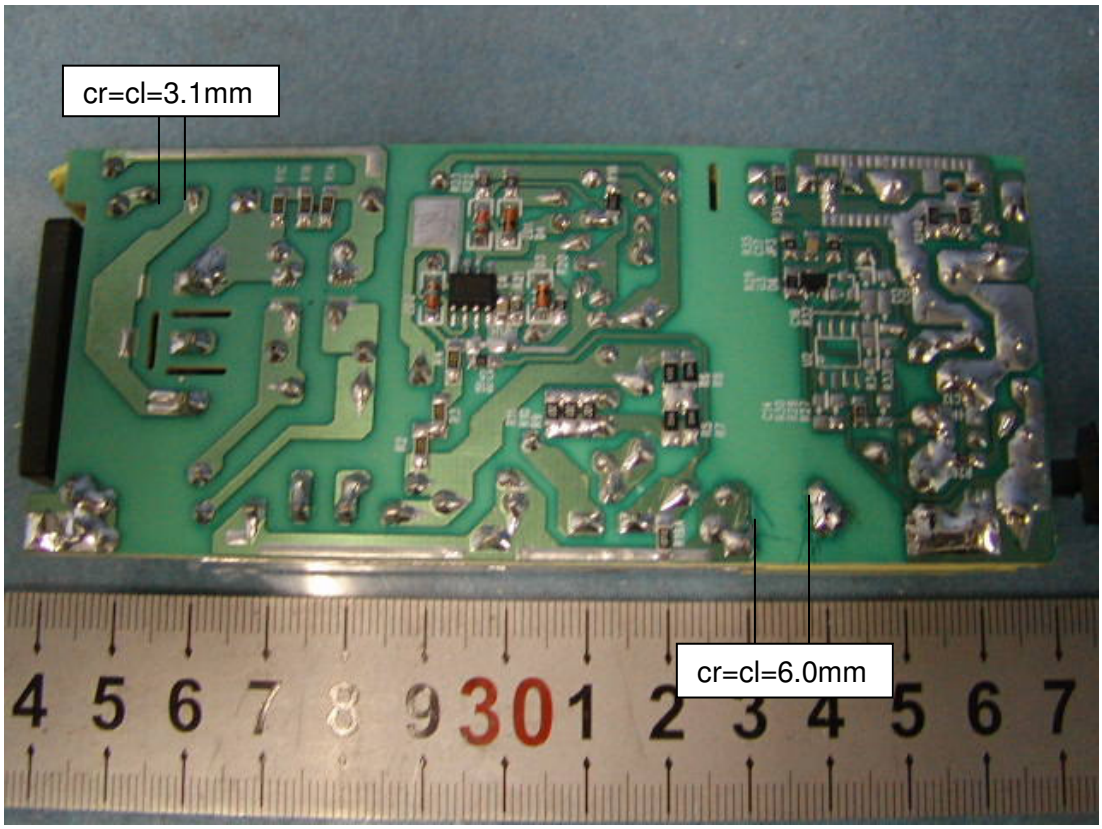
Picture 3



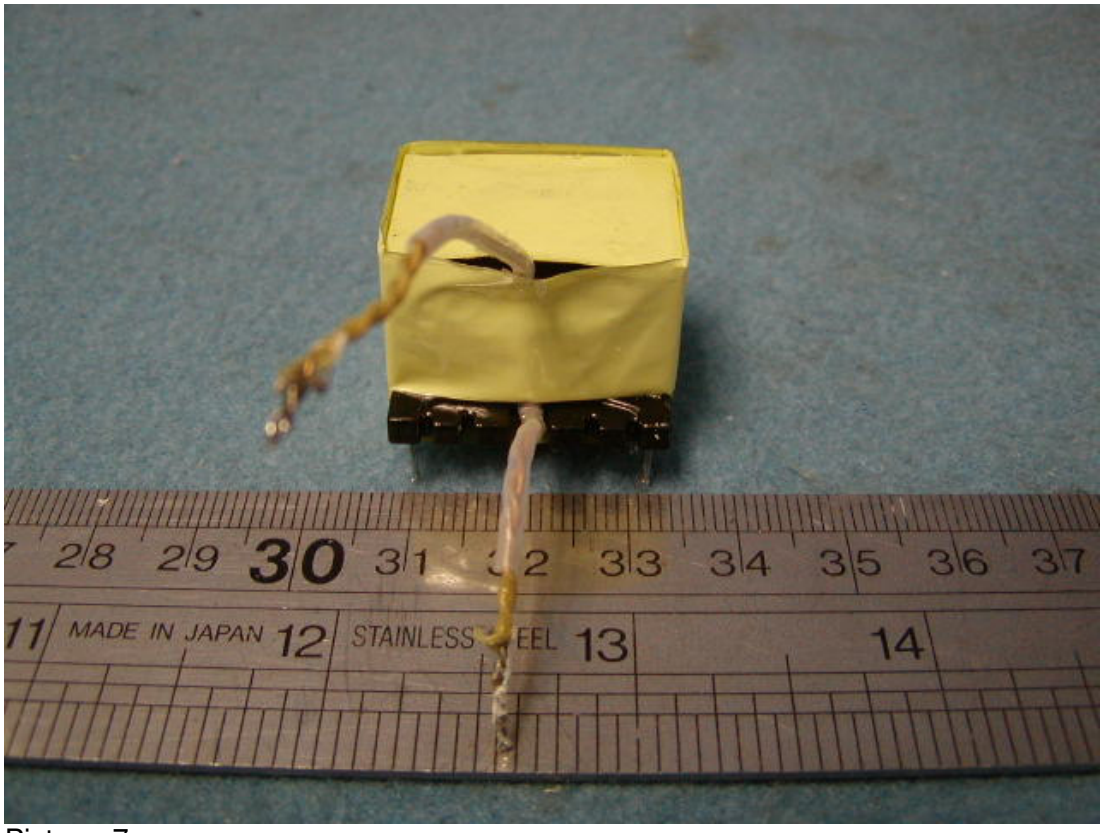
Picture 4



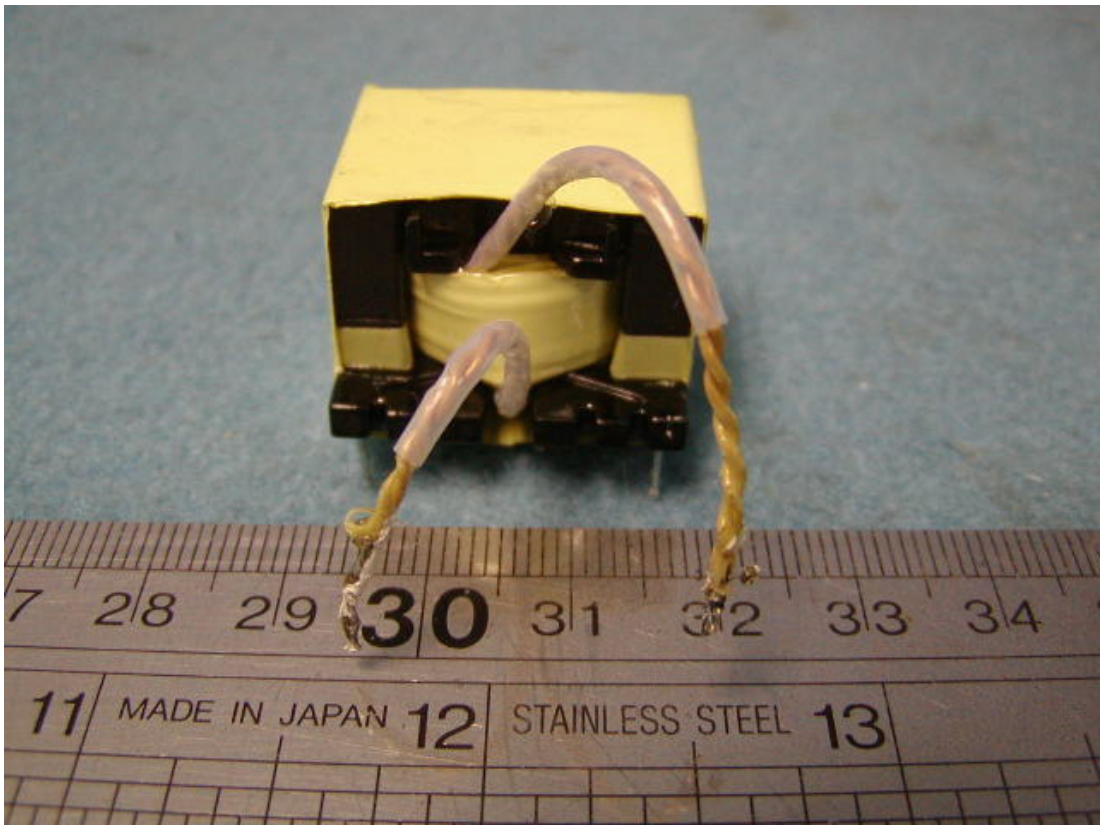
Picture 5



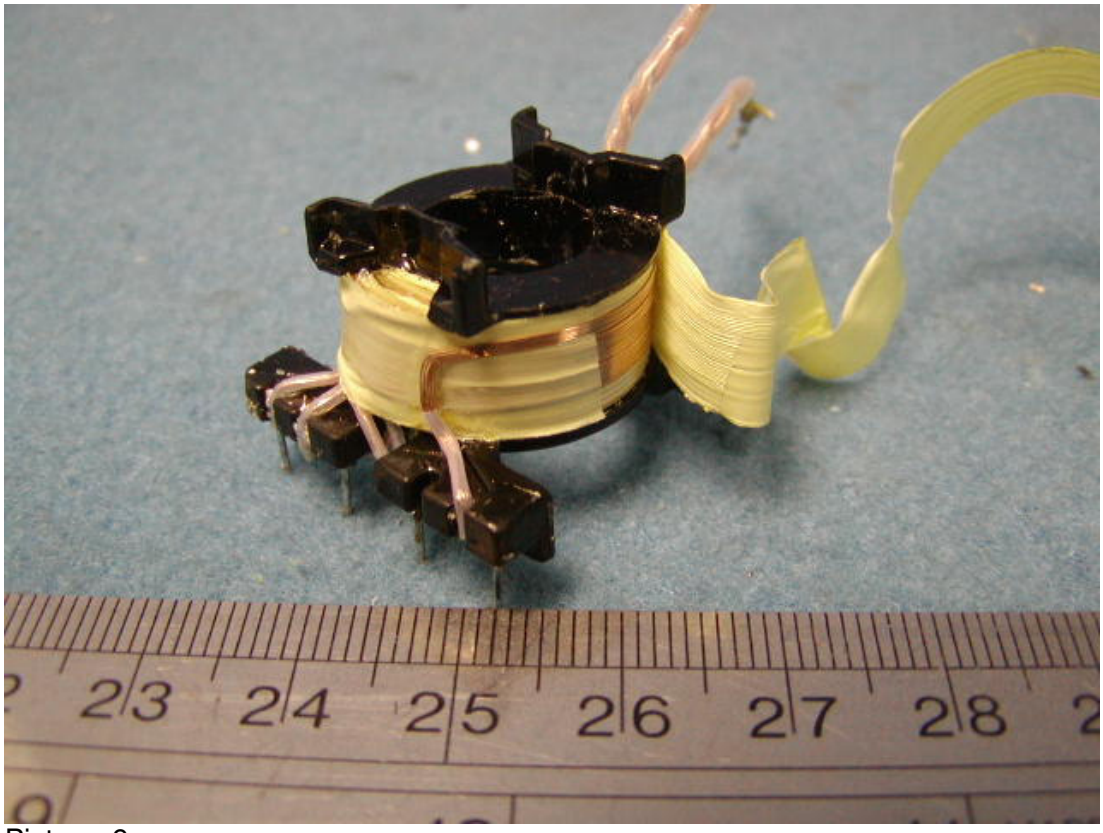
Picture 6



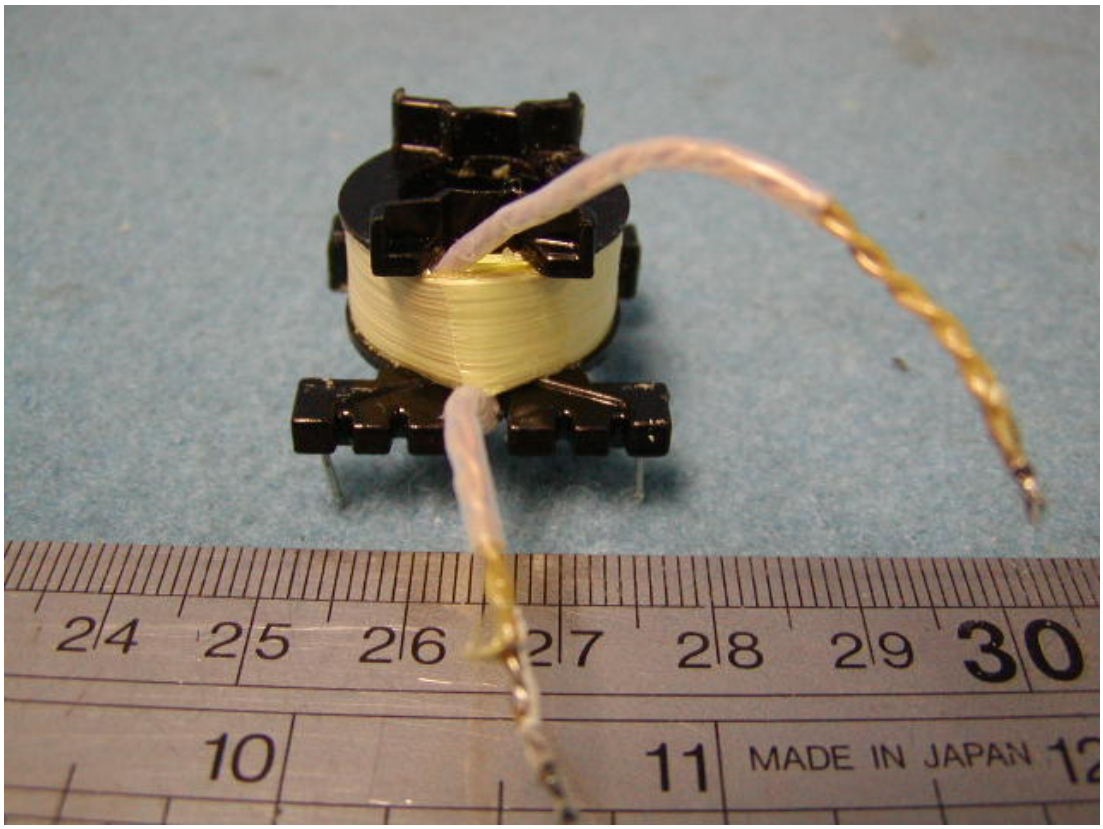
Picture 7



Picture 8



Picture 9



Picture 10