IEC IECEE CB SCHEME

Ref. Certif. No.

JPTUV-051322-M1

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	LCD Monitor
Name and address of the applicant Nom et adresse du demandeur	TPV Electronics (Fujian) Co., Ltd. Shangzheng, Yuan Hong Road Fuqing City, Fujian Province, P.R. China
Name and address of the manufacturer Nom et adresse du fabricant	TPV Electronics (Fujian) Co., Ltd. Shangzheng, Yuan Hong Road Fuqing City, Fujian Province, P.R. China
Name and address of the factory Nom et adresse de l'usine	See additional page(s)
Ratings and principal characteristics Valeurs nominales et charactéristiques principales	AC 100-240V; 50/60Hz; 1.5A; Class I
Trademark (if any) Marque de fabrique (si elle existe)	AOC
Type of Manufacturer's Testing Laboratories used Type de programme du laboratoire d'essais constructeur	N/A
Model / Type Ref. Ref. de type	238LM000**, 236LM000**, *2470*****, 230LM000**, *2370*****
Additional information (if necessary may also be reported on page 2) Les informations complémentaires (si nécessaire, peuvent être indiqués sur la 2ème page)	For model differences, refer to the test report. Re-issue of JPTUV-051322 dated 23.05.2013, due to first modification.
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 60950-1:2005+A1 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 partie de ce Certificat	17027138 002

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

TÜVRheinland®

TÜV Rheinland Japan Ltd.
Global Technology Assessment Center
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Date: 15.10.2013

Signature:

Dipl.-Ing. (FH) C. Nasca

1. TPV Technology (Beijing) Co., Ltd.
   No. 10, Jiu Xian Qiao Rd.
   Chao Yang District, Beijing 100016
   P.R. China

2. Tatung Mexico S.A. de. C.V.
   Ave. Rosa Ma. Fuentes #7050
   Complejo Industrial Fuentes
   C.P. 32320, Cd. Juarez. Chih,
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3. TPV Display Technology (Wuhan)
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   Unique No. 11, Zhuankou Development
   District of Economic Technological
   Development Zone, Wuhan City 430056, P.R. China

4. TPV Electronics (Fujian) Co., Ltd.
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   Fuqing City, Fujian Province
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5. Tatung Czech s.r.o
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   30100 Plzen
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6. Envision Industry of Electronic
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   Rodovia Anhanguera S/N-KM 49
   13.205-700 Tijuco Preto-Jundiaí-SP-
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7. L&T Display Technology (Fujian) Ltd.
   Optoelectronic Park, Rongqiao
   Economic and Technological
   Development Zone
   Fuqing, Fujian 350301, P.R. China

8. Trend Smart CE Mexico S de RL de CV
   Avenida Sor Juana Ines de la Cruz
   de 19602 Nueva Tijuana,
   22435 Tijuana Baja California
   MEXICO

9. TPV Display Technology (Beihai)
   Co., Ltd.
   China Electronic Beihai Industry
   Park, Northeast of the Crossing
   Between Taiwan Road and Jilin Road, Beihai City, Guangxi, P.R. China

Additional information (if necessary)
Information complémentaire (si nécessaire)

Report Ref. No.: 17027138 002

Date: 15.10.2013

Signature: Dipl.-Ing. (FH) C. Nasca

10. Envision Industry of Electronic Products Ltd.
Av Torquato Tapajós 7503,
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11. TPV Technology (Qingdao) Co., Ltd.
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12. TPV Display Technology (China) Co., Ltd.
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Beijing City 100176
P.R. China

Additional information (if necessary)
Information complémentaire (si nécessaire)

Report Ref. No.: 17027138 002

Date: 15.10.2013

Signature: Dipl.-Ing. (FH) C. Nasca

Test Report issued under the responsibility of:

TÜVRheinland®

TEST REPORT

IEC 60950-1
Information technology equipment – Safety – Part 1: General requirements

Report Number. ..... :	17027138 002
Date of issue..... :	12 Oct., 2013
Total number of pages	39
CB Testing Laboratory..... :	**TÜV Rheinland (Shenzhen) Co., Ltd.**
Address ..... :	3 & 4 F, Cybio Technology Building No. 1, Langshan No. 2 Road South, 5th Industrial Area, High-Tech Industry Park North, Nanshan District, 518057, Shenzhen, P.R. China
Applicant's name..... :	**TPV Electronics (Fujian) Co., Ltd.**
Address ..... :	Shangzheng, Yuan Hong Road, Fuqing City, Fujian Province, P.R. China
Manufacturer's name……..:	**TPV Electronics (Fujian) Co., Ltd.**
Address ..... :	Shangzheng, Yuan Hong Road, Fuqing City, Fujian Province, P.R. China
Test specification:	
Standard..... :	IEC 60950-1:2005 (Second Edition) + Am 1:2009
Test procedure ..... :	CB Scheme
Non-standard test method…….. :	N/A
Test Report Form No..... :	IEC60950_1C
Test Report Form(s) Originator ..... :	SGS Fimko Ltd
Master TRF..... :	Dated 2012-08

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

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

Test item description .....:	LCD Monitor
Trade Mark..... :	AOC
Manufacturer ..... :	See above
Model/Type reference..... :	238LM000**; 236LM000**; *2470*****; 230LM000**; *2370***** (for variable * see page 7)
Ratings ..... :	I/P: 100-240Vac, 50/60Hz, 1.5A

Testing procedure and testing location:		
☒	**CB Testing Laboratory:**	**TÜV Rheinland (Shenzhen) Co., Ltd.**
Testing location/ address ..... :		3 & 4 F, Cybio Technology Building No. 1, Langshan No. 2 Road South, 5th Industrial Area, High-Tech Industry Park North, Nanshan District, 518057, Shenzhen, P.R. China
☐	**Associated CB Laboratory:**	
Testing location/ address ..... :		
Tested by (name + signature)..... :		Sherry Chen
Approved by (name + signature) ..... :		Iris Du
☐	Testing procedure: **TMP**	
Testing location/ address ..... :		
Tested by (name + signature)..... :		
Approved by (name + signature) ..... :		
☐	Testing procedure: **WMT**	
Testing location/ address ..... :		
Tested by (name + signature)..... :		
Witnessed by (name + signature)..... :		
Approved by (name + signature) ..... :		
☐	Testing procedure: **SMT**	
Testing location/ address ..... :		
Tested by (name + signature)..... :		
Approved by (name + signature) ..... :		
Supervised by (name + signature).... :		
☐	Testing procedure: **RMT**	
Testing location/ address ..... :		
Tested by (name + signature)..... :		
Approved by (name + signature) ..... :		
Supervised by (name + signature).... :		

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

- Photo documentation (3 pages)

Summary of testing:

Tests performed (name of test and test clause):

Following tests performed during evaluation

name of test	test clause number
Input Current Test	1.6.2
Access to energized parts	2.1.1.1
Energy hazard in Operator Access Area	2.1.1.5
Discharge of Capacitors	2.1.1.7
SELV limits for Normal Conditions	2.2.2
SELV limits for Abnormal Conditions	2.2.3
Limited current circuits	2.4
Limited power source	2.5*
Resistance of Earthing Circuit	2.6.3.4
Humidity Conditioning	2.9.2
Working Voltage over Insulation	2.10.2
Clearance and creepage distance measurements	2.10.3 & 2.10.4
Maximum Temperature Test	4.5.2
Ball pressure test	4.5.5
Openings in enclosures	4.6
Touch Current and PE current	5.1.6
Electric Strength Test	5.2
Fault Condition Test	5.3

Note:

1. * Applied for DC outputs +5V, +5V1 +14.5V on power board.

2. All tests were performed on the combination with Panel HR236WU*-***, with power board: 715G4497, main board: 715G5863.

Testing location:

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

Summary of compliance with National Differences

See the original report 17027138 001

Copy of marking plate

See the original report 17027138 001.

Test item particulars.....:	
Equipment mobility.....:	[x] movable (for unit with base stand) [] hand-held [] transportable [x] stationary (for unit without base stand) [] for building-in [] direct plug-in
Connection to the mains .....:	[x] pluggable equipment [x] type A [] type B [] permanent connection [x] detachable power supply cord [] non-detachable power supply cord [] not directly connected to the mains
Operating condition.....:	[x] continuous [] rated operating / resting time:
Access location .....:	[x] operator accessible [] restricted access location
Over voltage category (OVC) .....:	[] OVC I [x] OVC II [] OVC III [] OVC IV [] other:
Mains supply tolerance (%) or absolute mains supply values .....:	±10% (requested by client)
Tested for IT power systems .....:	[] Yes [x] No
IT testing, phase-phase voltage (V) .....:	
Class of equipment .....:	[x] Class I [] Class II [] Class III [] Not classified
Considered current rating of protective device as part of the building installation (A) .....:	16A (20A for North America)
Pollution degree (PD) .....:	[] PD 1 [x] PD 2 [] PD 3
IP protection class .....:	IPX0
Altitude during operation (m) .....:	Up to 5000
Altitude of test laboratory (m) .....:	Less than 2000
Mass of equipment (kg) .....:	See the original report 17027138 001.
Possible test case verdicts:	
- test case does not apply to the test object ..... :	N/A
- test object does meet the requirement..... :	P (Pass)
- test object does not meet the requirement..... :	F (Fail)
Testing..... :	
Date of receipt of test item..... :	Sep. 25, 2013
Date(s) of performance of tests..... :	Sep. 26, 2013 to Oct. 10, 2013
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 Enclosure #)" refers to additional information appended to the report. "(see appended table)" refers to a table appended to the report. Throughout this report a ☐ comma / ☒ point is used as the decimal separator.	

Manufacturer's Declaration per sub-clause 6.2.5 of IECEE 02:

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided.....:

☒ Yes

☐ Not applicable

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies) ..... :

1 TPV Technology (Beijing) Co., Ltd.
No.10 Jiu xian qiao Rd., Chao yang District, Beijing 100016, P.R. China

2 Tatung Mexico S.A. de. C.V.
Ave. Rosa Ma. Fuentes #7050, Complejo Industrial Fuentes, C.P. 32320, Cd. Juarez. Chih, MEXICO

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9 TPV Display Technology (Beihai) Co., Ltd.
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11 TPV Technology (Qingdao) Co.,Ltd.
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12 TPV Display Technology (China) Co., Ltd.
No.106 Jinghai 3 Rd., BDA, Beijing City 100176, P.R. China.

General product information:

Description of change(s):

1. Add one alternative construction, in this new construction:

- New power board used (type no.: 715G4497 manufactured by TPV);

- Two speakers used, which are optional;

- A piece of mylar sheet used between the power board trace side and panel. The mylar sheet is optional and the added constructions were evaluated without mylar sheet.

- Remove the two barriers located on the top and the bottom metal enclosure:

- The bottom opening which was covered by the barrier now is covered by audio port.
- The top opening which was covered by the barrier now is used for the wires to the speaker and then covered by the plastic enclosure and no hazardous part within projection of 5°.

See below table for construction details:

Model	Panel size	Main board	Power board	Plastic enclosure	Metal enclosure
238LM000**, *2470*****	23.8 inch LCD panel with LED backlight	715G5863 with VGA & DVI ports	715G5527, **715G4497**	Type A	Type A
236LM000**, *2470*****, *2370*****	23.6 inch LCD panel with LED backlight			Type A'	Type A
230LM000**, *2370*****	23 inch LCD panel with LED backlight			Type A''	Type A
Note(s): Plastic enclosure type A, A', A'' are identical except for dimensions due to different panel size (type A > type A' > type A'')					

For the above described change(s) the following was considered to be necessary:

Change	Testing	Comments
1.	See summary of testing on page 3.	Details see clause 1.5.1, 1.6, 2.1, 2.2, 2.4, 2.5, 2.6, 2.7, 2.9, 2.10, 4.5, 4.6, 5.1, 5.2, 5.3 and appended tables 1.5.1, 1.6.2, 2.1.1.5, 2.1.1.7, 2.2.2, 2.4.2, 2.5, 2.6.3.4, 2.10.2, 2.10.3&2.10.4, 2.10.5, 4.5, 4.6.2, 4.7, 5.1.6, 5.2 and 5.3.

Definition of variable:

Variable	Range of variable:	Content:
*	can be A to Z, a to z, 0 to 9, "+", "-", "/", "\" or blank	For marketing purpose only

History of amendments and modifications:

Ref. No. 17027138 001, dated 16 May, 2013 (original test report)

Ref. No. 17027138 002, dated 12 Oct., 2013 (1st modification)

Abbreviations used in the report:

- normal conditions	N.C.	- single fault conditions	S.F.C
- functional insulation	OP	- basic insulation	BI
- double insulation	DI	- supplementary insulation	SI
- between parts of opposite polarity	BOP	- reinforced insulation	RI

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.5	**Components**		
1.5.1	General		**P**
	Comply with IEC 60950-1 or relevant component standard	(see appended tables 1.5.1)	**P**
1.5.2	Evaluation and testing of components	Components which are certified to IEC and/or national standards are used correctly within their ratings. Components not covered by IEC standards are tested under the conditions present in the equipment.	**P**
1.5.4	Transformers	Transformers used are suitable for their intended application and comply with the relevant requirements of the standard and particularly Annex C.	**P**
1.5.5	Interconnecting cables	Interconnecting cable does not carry voltage higher than SELV and no higher energy level than 240VA.	**P**
1.5.6	Capacitors bridging insulation	Between lines: X1 or X2 capacitor (C908) according to IEC 60384-14 used. Between line and earth: Y1 or Y2 capacitors (C902, C903) according to IEC 60384-14 used. Between primary and secondary: Y1 capacitor (C900) according to IEC 60384-14 used.	**P**
1.5.7	Resistors bridging insulation		**P**
1.5.7.1	Resistors bridging functional, basic or supplementary insulation	Only discharge resistors bridging insulation between L&N.	**P**
1.6	**Power interface**		**P**
1.6.1	AC power distribution systems	TN power system	**P**
1.6.2	Input current	(see appended table 1.6.2)	**P**
1.6.4	Neutral conductor	The neutral conductor insulated from earth and from the body throughout the equipment as if it were a line conductor	**P**

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

2	**PROTECTION FROM HAZARDS**		**P**
2.1	Protection from electric shock and energy hazards		**P**
2.1.1	Protection in operator access areas	Only SELV signal interface accessible by operator.	**P**
2.1.1.1	Access to energized parts	See below	**P**
	Test by inspection .....:	Protection established by plastic enclosure.	**P**
	Test with test finger (Figure 2A) .....:	Protection established by plastic enclosure.	**P**
	Test with test pin (Figure 2B) .....:	No access to any energized parts with the removable stand detached.	**P**
	Test with test probe (Figure 2C) .....:		**N/A**
2.1.1.5	Energy hazards .....:	The energy does not exceed 240VA between any two points in accessible connector of secondary circuit. (see appended table 2.1.1.5.)	**P**
2.1.1.7	Discharge of capacitors in equipment	No risks of electric shock. See below.	**P**
	Measured voltage (V); time-constant (s) .....:	(See appended table 2.1.1.7)	—

2.2	**SELV circuits**		**P**
2.2.1	General requirements	The secondary circuits were tested as SELV. See 2.2.2 to 2.2.4.	**P**
2.2.2	Voltages under normal conditions (V) .....:	Between any conductors of the SELV circuits 42.4 V peak or 60 V d.c. are not exceeded. See appended table 2.2.	**P**
2.2.3	Voltages under fault conditions (V) .....:	Single fault did not cause excessive voltage in accessible SELV circuits. Limits of 71V peak and 120V d.c. were not exceeded within 0.2 sec. and limits 42.4V peak and 60V d.c. were not exceeded for longer than 0.2 sec., see appended tables 2.2.3 and 5.3.	**P**

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.2.4	Connection of SELV circuits to other circuits .....:	See sub-clauses 1.5.6, 2.2.2 2.2.3 and 2.4.3. No direct connection between SELV and any primary circuits.	**P**
2.4	**Limited current circuits**		**P**
2.4.1	General requirements	Primary and secondary circuits bridged by Y1 type capacitors C900 on power board. The pin connected with secondary circuits was disconnected and a non-inductive resistor of 2000Ω ± 10% was connected between secondary pin and earth during the test.	**P**
2.4.2	Limit values	(see appended table 2.4.2)	**P**
	Frequency (Hz) .....:	(see appended table 2.4.2)	—
	Measured current (mA) .....:	(see appended table 2.4.2)	—
	Measured voltage (V) .....:	(see appended table 2.4.2)	—
	Measured circuit capacitance (nF or µF).....:	C900=3300pF	—
2.4.3	Connection of limited current circuits to other circuits	Only intended to be connected with SELV circuits.	**P**
2.5	**Limited power sources**		**P**
	a) Inherently limited output		**N/A**
	b) Impedance limited output		**N/A**
	c) Regulating network limited output under normal operating and single fault condition	The output of +14.5V on power board compliance with table 2B. See appended table 2.5.	**P**
	d) Overcurrent protective device limited output	Fuses F902, F903 limits the output of +5V compliance with table 2C under normal and fault operating conditions.	**P**
	Max. output voltage (V), max. output current (A), max. apparent power (VA).....:	(see appended table 2.5)	—
	Current rating of overcurrent protective device (A) .:	F902 (for +5V): 4A F903 (for +5V1): 4A	—
	Use of integrated circuit (IC) current limiters		

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

2.6	**Provisions for earthing and bonding**		**P**
2.6.1	Protective earthing	Class I appliance inlet terminal provided as protective earthing terminal, and accessible metal fire enclosure is earthed. The test of 2.6.3.4 complied.	**P**
2.6.2	Functional earthing	Functional earthing circuit is separated from parts at hazardous voltages by double or reinforced insulation.	**P**
2.6.3	Protective earthing and protective bonding conductors	See below.	**P**
2.6.3.1	General	Appliance inlet used. No power cord provided with the unit.	**P**
2.6.3.2	Size of protective earthing conductors	AC inlet used	**N/A**
	Rated current (A), cross-sectional area (mm^2), AWG.....:		—
2.6.3.3	Size of protective bonding conductors	Screws fixing earthed PCB trace to metal enclosure for protective bonding.	**P**
	Rated current (A), cross-sectional area (mm^2), AWG.....:	Refer to appended table 2.6.3.4	—
	Protective current rating (A), cross-sectional area (mm^2), AWG.....:		—
2.6.3.4	Resistance of earthing conductors and their terminations; resistance (Ω), voltage drop (V), test current (A), duration (min).....:	See appended table 2.6.3.4	**P**
2.6.3.5	Colour of insulation.....:	Protective bonding conductor as in 2.6.3 and assembled by printed wiring on power board.	**N/A**
2.6.4	Terminals	See below.	**P**
2.6.4.1	General	See below.	**P**
2.6.4.2	Protective earthing and bonding terminals	Earthing terminal in appliance inlet provided as protective earthing terminal.	**P**
	Rated current (A), type, nominal thread diameter (mm).....:	Rated current: 1.5A max. The earthing terminal in approved AC inlet serves as main PE terminal. Each screw connection to metal enclosure, as the protective bonding terminal, Φ=3.0, spring washer used. The test of 2.6.3.4 complied.	—

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.6.4.3	Separation of the protective earthing conductor from protective bonding conductors	Separated PE and protective bonding conductor used.	**P**
2.6.5	Integrity of protective earthing	See below.	**P**
2.6.5.1	Interconnection of equipment	Not depending on interconnection for protective earthing.	**P**
2.6.5.2	Components in protective earthing conductors and protective bonding conductors	No switch or overcurrent protective device provided in earthing conductors and protective bonding conductors.	**P**
2.6.5.3	Disconnection of protective earth	Appliance inlet used for disconnection of protective earth.	**P**
2.6.5.4	Parts that can be removed by an operator	AC inlet with PE terminal used.	**P**
2.6.5.5	Parts removed during servicing	It is not necessary to disconnect protective earth except for the removing of the earthed parts itself.	**P**
2.6.5.6	Corrosion resistance	All safety earthing connections comply with Annex J.	**P**
2.6.5.7	Screws for protective bonding	No self-tapping screws are used. For the earth connection to the metal chassis a spring washer and a screw are used.	**N/A**
2.6.5.8	Reliance on telecommunication network or cable distribution system	No TNV circuit.	**N/A**
2.7	**Overcurrent and earth fault protection in primary circuits**		**P**
2.7.1	Basic requirements	The equipment relies on fuse or circuit breaker of the wall outlet protection of the building installation in regard to L to N short-circuits. A build-in fuse provided as overcurrent protection device (see 5.3)	**P**
	Instructions when protection relies on building installation	Pluggable equipment type A.	**N/A**
2.7.2	Faults not simulated in 5.3.7	The protection devices are well dimensioned and mounted.	**P**
2.7.3	Short-circuit backup protection	Building installation is considered as providing short-circuit backup protection.	**P**

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.7.4	Number and location of protective devices .....:	Overcurrent protection by one built-in fuse	**P**
2.7.5	Protection by several devices	Protections by one fuse only.	**N/A**
2.7.6	Warning to service personnel.....:	No service work necessary.	**N/A**
2.9	**Electrical insulation**		**P**
2.9.1	Properties of insulating materials	Natural rubber, asbestos or hygroscopic material not used.	**P**
2.9.2	Humidity conditioning	Performed at 40 °C, 95% R.H. for 120 h by client's request.	**P**
	Relative humidity (%), temperature (°C) .....:	See above.	—
2.9.3	Grade of insulation	See above.	**P**
2.9.4	Separation from hazardous voltages	The adequate levels of safety insulation provided and maintained to comply with the requirements of this standard.	**P**
	Method(s) used .....:	SELV separated from primary by reinforced or double insulation.	—
2.10	**Clearances, creepage distances and distances through insulation**		**P**
2.10.1	General	See sub-clauses 2.10.3, 2.10.4 and 2.10.5.	**P**
2.10.1.1	Frequency .....:	Considered	**P**
2.10.1.2	Pollution degrees .....:	2	**P**
2.10.1.3	Reduced values for functional insulation	Considered	**P**
2.10.1.4	Intervening unconnected conductive parts	Considered	**P**
2.10.1.5	Insulation with varying dimensions	Insulation kept homogenous.	**N/A**
2.10.1.6	Special separation requirements	Not applied.	**N/A**
2.10.1.7	Insulation in circuits generating starting pulses	No such circuits.	**N/A**
2.10.2	Determination of working voltage		**P**
2.10.2.1	General	The rms and the peak voltage were measured with unit connected to a 240V TN power system. The input neutral and secondary ground were connected during measurement. Pollution Degree 2 and Overvoltage Category II considered.	**P**

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.10.2.2	RMS working voltage	See table 2.10.2	**P**
2.10.2.3	Peak working voltage	See table 2.10.2	**P**
2.10.3	**Clearances**	See below and advantage of annex G is not considered.	**P**
2.10.3.1	General	Considered.	**P**
2.10.3.2	Mains transient voltages		**P**
	a) AC mains supply .....:	240V a.c. and Overvoltage Category II	**P**
	b) Earthed d.c. mains supplies .....:		**N/A**
	c) Unearthed d.c. mains supplies .....:		**N/A**
	d) Battery operation .....:		**N/A**
2.10.3.3	Clearances in primary circuits	(see appended table 2.10.3 and 2.10.4)	**P**
2.10.3.4	Clearances in secondary circuits	Sub-clause 5.3.4 considered.	**P**
2.10.3.5	Clearances in circuits having starting pulses		**N/A**
2.10.3.6	Transients from a.c. mains supply .....:	Normal transient voltage considered (overvoltage category II for primary circuit).	**N/A**
2.10.3.7	Transients from d.c. mains supply .....:		**N/A**
2.10.3.8	Transients from telecommunication networks and cable distribution systems .....:		**N/A**
2.10.3.9	Measurement of transient voltage levels		**N/A**
	a) Transients from a mains supply		**N/A**
	For an a.c. mains supply .....:		**N/A**
	For a d.c. mains supply .....:		**N/A**
	b) Transients from a telecommunication network :		**N/A**
2.10.4	**Creepage distances**		**P**
2.10.4.1	General		**P**
2.10.4.2	Material group and comparative tracking index		**P**
	CTI tests .....:	Material group IIIb is assumed to be used.	—
2.10.4.3	Minimum creepage distances	(see appended table 2.10.3 and 2.10.4)	**P**
2.10.5	**Solid insulation**		**P**
2.10.5.1	General		**P**
2.10.5.2	Distances through insulation	(see appended table 2.10.5)	**P**
2.10.5.3	Insulating compound as solid insulation	Only inside approved optocoupler.	**N/A**

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Clause	Requirement + Test	Result - Remark	Verdict
2.10.5.4	Semiconductor devices	Approved optocoupler complies to IEC 60747-5-2 and having dti ≧0.4mm.	**P**
2.10.5.5.	Cemented joints	Not applied.	**N/A**
2.10.5.6	Thin sheet material – General		**P**
2.10.5.7	Separable thin sheet material	Used in transformer T901 of power board.	**P**
	Number of layers (pcs) .....:	3 layers for reinforced insulation.	—
2.10.5.8	Non-separable thin sheet material	Not applied for.	**N/A**
2.10.5.9	Thin sheet material – standard test procedure		**N/A**
	Electric strength test		—
2.10.5.10	Thin sheet material – alternative test procedure		**P**
	Electric strength test	(see appended table 5.2)	—
2.10.5.11	Insulation in wound components	See only 2.10.5.6	**P**
2.10.5.12	Wire in wound components		**N/A**
	Working voltage .....:		**N/A**
	a) Basic insulation not under stress .....:		**N/A**
	b) Basic, supplementary, reinforced insulation .....:		**N/A**
	c) Compliance with Annex U .....:		**N/A**
	Two wires in contact inside wound component; angle between 45° and 90° .....:		**N/A**
2.10.5.13	Wire with solvent-based enamel in wound components	Not applied.	**N/A**
	Electric strength test		—
	Routine test		**N/A**
2.10.5.14	Additional insulation in wound components	Not applied.	**N/A**
	Working voltage .....:		**N/A**
	- Basic insulation not under stress .....:		**N/A**
	- Supplementary, reinforced insulation .....:		**N/A**
2.10.6	**Construction of printed boards**		**P**
2.10.6.1	Uncoated printed boards	(see appended table 2.10.3 and 2.10.4)	**P**
2.10.6.2	Coated printed boards	Not applied.	**N/A**
2.10.6.3	Insulation between conductors on the same inner surface of a printed board	Not multi-layer printed board.	**N/A**
2.10.6.4	Insulation between conductors on different layers of a printed board	See above.	**N/A**
	Distance through insulation		**N/A**

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Clause	Requirement + Test	Result - Remark	Verdict
	Number of insulation layers (pcs) .....:		**N/A**
4.5	**Thermal requirements**		**P**
4.5.1	General	No parts exceeding temperature limits.	**P**
4.5.2	Temperature tests	(see appended table 4.5)	**P**
	Normal load condition per Annex L .....:	Equipment loaded with rated output current.	—
4.5.3	Temperature limits for materials	(see appended table 4.5)	**P**
4.5.4	Touch temperature limits	(see appended table 4.5)	**P**
4.5.5	Resistance to abnormal heat .....:	Bobbin materials of all transformers T901 and some line chocks L901 are phenolic that are accepted without further tests. Others see appended table 4.5.5.	**P**
4.6	**Openings in enclosures**		**P**
4.6.1	Top and side openings	No hazardous parts or energy within a vertical projection of 5°.	**P**
	Dimensions (mm) .....:	(see appended table 4.6.1 and 4.6.2)	—
4.6.2	Bottoms of fire enclosures	(see appended table 4.6.1 and 4.6.2)	**P**
	Construction of the bottomm, dimensions (mm) ..:		—
5	**ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS**		**P**
5.1	**Touch current and protective conductor current**		**P**
5.1.1	General	See sub-clauses 5.1.2 to 5.1.6.	**P**
5.1.2	Configuration of equipment under test (EUT)	See below.	**P**
5.1.2.1	Single connection to an a.c. mains supply	EUT has only one mains connection.	**P**
5.1.2.2	Redundant multiple connections to an a.c. mains supply		**N/A**
5.1.2.3	Simultaneous multiple connections to an a.c. mains supply		**N/A**
5.1.3	Test circuit	Using figure 5A.	**P**
5.1.4	Application of measuring instrument	Using measuring instrument in annex D.	**P**

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Clause	Requirement + Test	Result - Remark	Verdict
5.1.5	Test procedure		**P**
5.1.6	Test measurements	(see appended table 5.1.6)	**P**
	Supply voltage (V) ..... :		—
	Measured touch current (mA) ..... :		—
	Max. allowed touch current (mA) ..... :		—
	Measured protective conductor current (mA) ..... :		—
	Max. allowed protective conductor current (mA)... :		—
5.1.7	Equipment with touch current exceeding 3,5 mA	Touch current does not exceed 3.5mA.	**N/A**
5.1.7.1	General ..... :		**N/A**
5.1.7.2	Simultaneous multiple connections to the supply		**N/A**
5.1.8	Touch currents to telecommunication networks and cable distribution systems and from telecommunication networks	No TNV circuits.	**N/A**
5.1.8.1	Limitation of the touch current to a telecommunication network or to a cable distribution system		**N/A**
	Supply voltage (V) ..... :		—
	Measured touch current (mA) ..... :		—
	Max. allowed touch current (mA) ..... :		—
5.1.8.2	Summation of touch currents from telecommunication networks		**N/A**
	a) EUT with earthed telecommunication ports ..... :		**N/A**
	b) EUT whose telecommunication ports have no reference to protective earth		**N/A**

5.2	**Electric strength**		**P**
5.2.1	General	(see appended table 5.2)	**P**
5.2.2	Test procedure	(see appended table 5.2)	**P**

5.3	**Abnormal operating and fault conditions**		**P**
5.3.1	Protection against overload and abnormal operation	Ventilation openings blocked, output overloaded no unaccepted overheating of parts (see appended table 5.3)	**P**
5.3.2	Motors	Motors not used.	**N/A**
5.3.3	Transformers	(see appended Annex C and table 5.3)	**P**
5.3.4	Functional insulation..... :	By short-circuited, results see appended table 5.3.	**P**

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.3.5	Electromechanical components	No electromechanical component.	**N/A**
5.3.6	Audio amplifiers in ITE .....:		**N/A**
5.3.7	Simulation of faults	(see appended table 5.3.)	**P**
5.3.8	Unattended equipment	No such equipment.	**N/A**
5.3.9	Compliance criteria for abnormal operating and fault conditions		**P**
5.3.9.1	During the tests	No fire or molten metal occurred and no deformation of enclosure during the tests.	**P**
5.3.9.2	After the tests	No reduction of clearance and creepage distance. Electric strength test is made on basic, supplementary and reinforced insulation after test.	**P**

1.5.1	TABLE :list of critical components				P
Object/part no.	Manufacture/ trademark	Type/model	Technical data	Standard	Mark(s) of conformity [1)]
Power Supply with LED driver board, type No. 715G4497 by TPV					
Appliance Inlet (CN901)	Rong Feng Industrial Co., Ltd.	SS-120, SS-7B	10A, Min.250 V, 70°C	IEC 60320-1, UL 498	VDE, UL
	Shenzhen Delikang	CDJ-3, CDJ-3-1	10A, Min.250 V, 70°C	IEC 60320-1, UL 498	VDE, UL
	Solteam Electronics Co., Ltd.	ST-01	10A, Min.250 V, 70°C	IEC 60320-1, UL 498	VDE, UL
	TECX-UNIONS	TU-301 series	10A, Min.250 V, 70°C	IEC 60320-1, UL 498	VDE, UL
	Zhang Jia Gang Hua Jie Electronics Co., Ltd.	SA-4S	10A, Min.250 V, 70°C	IEC 60320-1, UL 498	VDE, UL
Fuse (F901 in primary)	Conquer	MET, MST, PTU	T4AL, Min.250Vac	IEC 60127-1, IEC 60127-3, UL 248-1, UL 248-14	VDE, UL
	Cooper Bussmann	SR-5, SS-5	T4AL, Min.250Vac	IEC 60127-1, IEC 60127-3, UL 248-1, UL 248-14	VDE, UL
	Ever Island Electric Co. ltd and Walter electric	2000, 2010	T4AL, Min.250Vac	IEC 60127-1, IEC 60127-3, UL 248-1, UL 248-14	VDE, UL
	Littelfuse	392, 382	T4AL, Min.250Vac	IEC 60127-1, IEC 60127-3, UL 248-1, UL 248-14	VDE, UL
Fuse (F902, F903 for L.P.S +5V, +5V1)	Conquer	MET, MST, PTU	T4AL, Min.250Vac	IEC 60127-1, IEC 60127-3, UL 248-1, UL 248-14	VDE, UL
	Cooper Bussmann	SR-5, SS-5	T4AL, Min.250Vac	IEC 60127-1, IEC 60127-3, UL 248-1, UL 248-14	VDE, UL
	Ever Island Electric Co. Ltd and Walter Electric	2000, 2010	T4AL, Min.250Vac	IEC 60127-1, IEC 60127-3, UL 248-1, UL 248-14	VDE, UL

	Littelfuse	392, 382	T4AL, Min.250Vac	IEC 60127-1, IEC 60127-3, UL 248-1, UL 248-14	VDE, UL
Y-Capacitor (C902, C903) (Y1 or Y2 type) (optional)	Haohua	CT 7	Max. 1000pF, Min. 250Vac, 85°C	IEC 60384-14, UL 1414	VDE, UL
	Dongguan South Hongming	F	Max. 1000pF, Min. 250Vac, 85°C	IEC 60384-14, UL 1414	VDE, UL
	JYA-NAY	JN, JY	Max. 1000pF, Min. 250Vac, 85°C	IEC 60384-14, UL 1414	VDE, UL
	Murata	KX, KH	Max. 1000pF, Min. 250Vac, 85°C	IEC 60384-14, UL 1414	VDE, UL
	Samwha	SD	Max. 1000pF, Min. 250Vac, 85°C	IEC 60384-14, UL 1414	VDE, UL
	Success	SE	Max. 1000pF, Min. 250Vac, 85°C	IEC 60384-14, UL 1414	VDE, UL
	TDK-EPC	CD, CS	Max. 1000pF, Min. 250Vac, 85°C	IEC 60384-14, UL 1414	VDE, UL
	Walsin	AH, AC	Max. 1000pF, Min. 250Vac, 85°C	IEC 60384-14, UL 1414	VDE, UL
	KUNSHAN WANSHENG ELECTRONICS CO LTD	CT7	Max. 1000pF, Min. 250Vac, 85°C	IEC 60384-14, UL 1414	VDE, UL
	YINAN DON'S ELECTRONIC COMPONENT CO.,LTD	CT81	Max. 1000pF, Min. 250Vac, 85°C	IEC 60384-14, UL 1414	VDE, UL
Y- Capacitor (C900) (Y1 type) (optional)	Haohua	CT 7	Max. 3300pF, Min. 250Vac, 85°C	IEC 60384-14, UL 1414	VDE, UL
	Dongguan South Hongming	F	Max. 3300pF, Min. 250Vac, 85°C	IEC 60384-14, UL 1414	VDE, UL
	JYA-NAY	JN, JY	Max. 3300pF, Min. 250Vac, 85°C	IEC 60384-14, UL 1414	VDE, UL
	Murata	KX, KH	Max. 3300pF, Min. 250Vac, 85°C	IEC 60384-14, UL 1414	VDE, UL
	Samwha	SD	Max. 3300pF, Min. 250Vac, 85°C	IEC 60384-14, UL 1414	VDE, UL
	Success	SE	Max. 3300pF, Min. 250Vac, 85°C	IEC 60384-14, UL 1414	VDE, UL
	TDK-EPC	CD, CS	Max. 3300pF, Min. 250Vac, 85°C	IEC 60384-14, UL 1414	VDE, UL
	Walsin	AH, AC	Max. 3300pF, Min. 250Vac, 85°C	IEC 60384-14, UL 1414	VDE, UL
	KUNSHAN WANSHENG ELECTRONICS CO LTD	CT7	Max. 3300pF, Min. 250Vac, 85°C	IEC 60384-14, UL 1414	VDE, UL

	YINAN DON'S ELECTRONIC COMPONENT CO.,LTD	CT81	Max. 3300pF, Min. 250Vac, 85°C	IEC 60384-14, UL 1414	VDE, UL
X-Capacitor (C908) (X1 or X2 type) (optional)	Epcos Electronic Components SA	B3292#	Max. 0.33µF, Min. 250Vac, 85°C	IEC 60384-14, UL 1414	VDE, UL
	Europtronic	MKX, MPX2	Max. 0.33µF, Min. 250Vac, 85°C	IEC 60384-14, UL 1414	VDE, UL
	Hua Jung	MKP	Max. 0.33µF, Min. 250Vac, 85°C	IEC 60384-14, UL 1414	ENEC (Semko), UL
	Liow Gu Electronics Industry Co., Ltd.	GS-L	Max. 0.33µF, Min. 250Vac, 85°C	IEC 60384-14, UL 1414	VDE, UL
	Ultra Tech Xiphi Enterprise Co., Ltd.	HQX	Max. 0.33µF, Min. 250Vac, 85°C	IEC 60384-14, UL 1414	VDE, UL
	Xiamen Faratronic Co., Ltd.	MKP62	Max. 0.33µF, Min. 250Vac, 85°C	IEC 60384-14, UL 1414	VDE, UL
	ZHUHAI SUNG HO ELECTRONICS CO LTD	CMPP	Max. 0.33µF, Min. 250Vac, 85°C	IEC 60384-14, UL 1414	VDE, UL
Optocoupler (U902)	Everlight	EL 817 V (V=VDE option)	Dti = 0.4mm, min. Clearance/creepage between input and output = 7.06mm, 100°C	DIN EN 60747-5-2:2003, IEC 60950-1, UL 1577	VDE, UL
	Lite-on	LTV-817	Dti = 0.4mm, min. Clearance/creepage between input and output = 7.0mm, 110°C	DIN EN 60747-5-2:2003, IEC 60950-1, UL 1577	VDE, UL
	Renesas	PS2561-1 PS2561L-1 PS2561L1-1 PS2561L2-1	Dti = 0.4mm, min. Clearance/creepage between input and output = 7.0mm, 110°C	DIN EN 60747-5-2:2003, IEC 60950-1, UL 1577	VDE, UL
	Sharp	PC123	Dti = 0.4mm min. Clearance/creepage between input and output = 8.0mm, 110°C	DIN EN 60747-5-2:2003, IEC 60950-1, UL 1577	VDE, UL
	TOSHIBA	TLP421F	Dti = 0.4mm min. Clearance/creepage between input and output = 6.5mm, 115°C	DIN EN 60747-5-2:2003, IEC 60950-1, UL 1577	VDE, UL

	TOSHIBA	TLP781F TLP781	Di=0.4mm, int.cr=thermal cycling, ext.cr=8.0mm, 3000Vac, 100°C	DIN EN 60747-5-2:2003, IEC 60950-1, UL 1577	VDE, UL
	Vishay Semiconductor	TCET1103	Dti = 0.4mm min. Clearance/creepage between input and output = 7.0mm, 100°C	DIN EN 60747-5-2:2003, IEC 60950-1, UL 1577	VDE, UL
Mylar sheet (optional)	--	--	Min. 0.4mm, min. V-2, 80°C.	UL 94	UL
Speaker (optional)	--	--	4Ω, 2.5W	--	--
Thermistor (NR901)	--	--	Min. 3Ω, Min. 2A, 25°C	--	--
Bleeder Resistor (R900, R901, R902)	--	--	Max. 1MΩ, min. 1/4 W (three in series, located after fuse)	--	--
Bridging Diode (BD901)	--	--	Min. 2A, Min 600V.	--	--
Ripple Capacitor (C907)	--	--	45-150μF, Max. 450 V, 105°C	--	--
Current sense resistor (R924)	--	--	0.47Ω, 2W	--	--
Line Choke (L901) (optional)	Yaxingdianzi	73G174-65-X	120°C	--	--
- Bobbin	Chang chun plastic	PBT-4115	V-0, 120°C	UL 94	UL
Alt. Line Choke (L901) (optional)	Dadon	73G174-65-H	120°C	--	--
- Bobbin	Chang chun plastic	PBT-4115	V-0, 120°C	UL 94	UL
Alt.	Chang Chun Plastics Co., Ltd.	T375J	V-0, Phenolic, 150°C	UL 94	UL
Alt. Line Choke (L901) (optional)	TPV	73G174-65-V	120°C	--	--
- Bobbin	Chang chun plastic	PBT-4115	V-0, 120°C	UL 94	UL

Alt. Line Choke (L901) (optional)	TDK	73G174-65-T	120°C	--	--
- Bobbin	Chang chun plastic	PBT-4115, 4130	V-0, 120°C	UL 94	UL
Alt. Line Choke (L901) (optional)	LI SHIN	73G174-65-L	120°C	--	--
- Bobbin	Chang chun plastic	PBT-4115	V-0, 120°C	UL 94	UL
Alt. Line Choke (L901) (optional)	YUVA	73G 174-65-N	120°C	--	--
- Bobbin	Chang chun plastic	PBT-4115	V-0, 120°C	UL 94	UL
Alt. Line Choke (L901) (optional)	TAI CHANG	73G 174-65-S	120°C	--	--
- Bobbin	Chang chun plastic	PBT-4115	V-0, 120°C	UL 94	UL
Alt. Line Choke (L901) (optional)	LI SHIN	73G174- 65-LS	120°C	--	--
- Bobbin	Chang chun plastic	PBT-4115	V-0, 120°C	UL 94	UL
Alt.	Chang Chun Plastics Co., Ltd.	T355J	V-0, Phenolic, 150°C	UL 94	UL
Alt. Line Choke (L901) (optional)	Tonation	73G174- 65-YS	120°C	--	--
- Bobbin	Chang chun plastic	PBT-4115	V-0, 120°C	UL 94	UL
Transformer (T901)	Jiangsu Channelon Electronic Group Co., LTD	80GL22T-3-H	130°C	--	--
- Bobbin	Sumitomo	PM-9820	V-0, Phenolic, 150°C	UL 94	UL
- Margin Tape	Symbio	35661$	130°C	UL 510	UL
- Insulation Tape	Jingjiang Yahua Pressure Sensitive Glue Co., Ltd	CT	130°C	UL 510	UL

Alt.	Symbio	35660Y*(%)	130°C	UL 510	UL
Alt. Transformer (T901)	YUVA	80GL22T-3-N	130°C	--	--
- Bobbin	Chang Chun Plastics Co., Ltd.	T375J	V-0, Phenolic, 150°C	UL 94	UL
- Margin Tape	Symbio	35661$	130°C	UL 510	UL
Alt.	3M COMPANY ELECTRICAL MARKETS DIV (EMD)	44(a)	130°C	UL 510	UL
- Insulation Tape	Jingjiang Yahua Pressure Sensitive Glue Co., Ltd	CT	130°C	UL 510	UL
Alt.	Symbio	35660Y*(%)	130°C	UL 510	UL
Alt. Transformer (T901)	TPV	S80GL22T-3-V	130°C	--	--
- Bobbin	Sumitomo	PM-8375	V-0, Phenolic, 150°C	UL 94	UL
- Margin Tape	Symbio	35661$	130°C	UL 510	UL
Alt.	Jingjiang Yahua Pressure Sensitive Glue Co., Ltd	WF	130°C	UL 510	UL
- Insulation Tape	Jingjiang Yahua Pressure Sensitive Glue Co., Ltd	CT-280	130°C	UL 510	UL
Alt.	Symbio	35660Y*(%)	130°C	UL 510	UL

Note(s):

1. An asterisk indicates a mark that assures the agreed level of surveillance.
2. “Dti” means distance through insulation, “int.” means internal creepage distance, “ext.” means external creepage distance.

1.6.2	TABLE: Electrical data (in normal conditions)					**P**
Fuse #	U (V)	I (A)	Irated (A)	P (W)	Ifuse (A)	Condition/status
Tested with Panel HR236WU*-*, with power board: 715G4497, main board: 715G5863, VGA mode**						
F901	90V/50Hz	0.508	--	29.67	0.508	Normal load condition
F901	90V/60Hz	0.502	--	29.53	0.502	Normal load condition
F901	100V/50Hz	0.449	1.5	29.48	0.449	Normal load condition
F901	100V/60Hz	0.451	1.5	29.26	0.451	Normal load condition
F901	240V/50Hz	0.226	1.5	29.20	0.226	Normal load condition
F901	240V/60Hz	0.235	1.5	29.37	0.235	Normal load condition
F901	264V/50Hz	0.209	--	29.38	0.209	Normal load condition
F901	264V/60Hz	0.220	--	29.62	0.220	Normal load condition
Tested with Panel HR236WU*-*, with power board: 715G4497, main board: 715G5863, DVI mode**						
F901	90V/50Hz	0.500	--	29.45	0.500	Normal load condition
F901	90V/60Hz	0.497	--	29.38	0.497	Normal load condition
F901	100V/50Hz	0.445	1.5	29.40	0.445	Normal load condition
F901	100V/60Hz	0.450	1.5	29.22	0.450	Normal load condition
F901	240V/50Hz	0.227	1.5	29.25	0.227	Normal load condition
F901	240V/60Hz	0.233	1.5	29.30	0.233	Normal load condition
F901	264V/50Hz	0.207	--	29.30	0.207	Normal load condition
F901	264V/60Hz	0.218	--	29.48	0.218	Normal load condition
Note(s): 1. Operated under 100% brightness, 100% contrast, full white screen, speaker output with max. non-clipped output power and optimal resolution@60Hz, which consumed maximum output power.						

2.1.1.5	TABLE: max. V, A, VA test			**P**
Voltage (rated) (V)	Current (rated) (A)	Voltage (max.) (V)	Current (max.) (A)	VA (max.) (VA)
+5V[1)]	--	5.12	4.75	19.48
+5V1[2)]	--	5.12	4.75	19.48
14.5V[3)]	--	16.45	2.1	32.52
Note(s): Test voltage is 264Vac, 60Hz 1. Test on the circuit after F902 on power board. 2. Test on the circuit after F903 on power board. 3. Test on the circuit after F801 on power board.				

2.1.1.7	TABLE: discharge test			**P**
Condition	τ calculated (s)	τ measured (s)	t u→ 0V (s)	Comments
System on/off (with fuse in) [1.]	0.61	0.560	2.14	Vo= 375Vpk,37% of Vo= 138.75V, voltage after 1 s=52V
Note(s): 1. Overall capacity: (C908= 0.33μF), Discharge resistor: 1.86MΩ (R900=R901=R902=620kΩ). 2. Supplied with 264V/60Hz.				

2.2.2	TABLE: Hazardous voltage measurement			**P**
Transformer	Location	max. Voltage		Voltage Limitation Component
		V peak	V d.c.	
T901	Pin 7,8- Pin 9,10	26.2	--	--
T901	Pin 9,10 – Pin 11,12	83.0	--	
--	After R929/R930/R903	77.0	--	
--	After C916	43.0	--	
--	After C928	--	16.6	C928
--	After D901/D902	--	16.8	D901/D902
--	After L801	56.4	--	
--	After D801A		47.2	D801A
Fault test performed on voltage limiting components		Voltage measured (V) in SELV circuits (V peak or V d.c.)		
D901 (s-c)		0 (for +14.5V output)		
C928 (s-c)		0V (for +14.5V output)		
D801A (s-c)		19.2 V (for +14.5V output)		
Note(s): Input Voltage is 240Vac, 60Hz, s-c=short circuit.				

2.4.2	TABLE: limited current circuit measurement				**P**
Location	Voltage (V)	Current (mA)	Freq. (kHz)	Limit (mA)	Comments
C900	1.6	0.8	29	20.3	--
C900	0.7	0.35	0.06	0.7	--
Note(s): Input Voltage is 240Vac, 60Hz					

2.5	TABLE: limited power source measurement		P
	Limits	Measured	Verdict
Location: +5V output of power supply			
According to Table 2C (normal condition), Uoc=5.0V			
current (in A)	1000/Uoc=200	4.75	**P**
apparent power (in VA)	250	19.5	**P**
Location: +5V1 output of power supply			
According to Table 2C (normal condition), Uoc=5.0V			
current (in A)	1000/Uoc=200	4.75	**P**
apparent power (in VA)	250	19.5	**P**
Location: +14.5V output of power supply			
According to Table 2B (normal condition), Uoc=16.5V			
current (in A)	8.0	2.1	**P**
apparent power (in VA)	100	32.6	**P**
According to Table 2B (single fault), U902 Pin 1 – 2 s-c			
current (in A)	8.0	0 (Unit shutdown)	**P**
apparent power (in VA)	100	0 (Unit shutdown)	**P**
According to Table 2B (single fault), U902 Pin 3 – 4 s-c			
current (in A)	8.0	0 (Unit shutdown)	**P**
apparent power (in VA)	100	0 (Unit shutdown)	**P**
According to Table 2B (single fault), R917 s-c			
current (in A)	8.0	0 (Unit shutdown)	**P**
apparent power (in VA)	100	0 (Unit shutdown)	**P**
According to Table 2B (single fault), R923 s-c			
current (in A)	8.0	0 (Unit shutdown)	**P**
apparent power (in VA)	100	0 (Unit shutdown)	**P**
According to Table 2B (single fault), D901 s-c			
current (in A)	8.0	0 (Unit shutdown)	**P**
apparent power (in VA)	100	0 (Unit shutdown)	**P**
`According to Table 2B (single fault), U902 Pin1 o-c			
current (in A)	8.0	0 (Unit shutdown)	**P**
apparent power (in VA)	100	0 (Unit shutdown)	**P**
Note(s): 1) Input Voltage is 240Vac, 60Hz. 2) +5V, +5V1 output protected by fuse that will break the circuit within 120s with a current equal to 210%.			

2.6.3.4	TABLE: ground continue test		**P**
Location	Resistance measured (mΩ)	Comments	
AC inlet earth pin to metal enclosure	5	32A, 2min	
AC inlet earth pin to metal enclosure	5	40A, 2min	
AC inlet earth pin to C902/C903 sec. pin	6	32A, 2min	
AC inlet earth pin to C902/C903 sec. pin	6	40A, 2min	
Note(s):			

2.10.2	Table: working voltage measurement		**P**
Location	Peak voltage (V)	RMS voltage (V)	Comments
T901 pin 1 – pin 7,8	352	213	
T901 pin 1 – pin 9,10	348	213	
T901 pin 1 – pin 11,12	364	216	
T901 pin 3 – pin 7,8	388	215	
T901 pin 3 – pin 9,10	408	215	
T901 pin 3 – pin 11,12	348	216	
T901 pin 4 – pin 7,8	368	208	
T901 pin 4 – pin 9,10	344	208	
T901 pin 4 – pin 11,12	416	210	
T901 pin 6 – pin 7,8	440	244	
T901 pin 6 – pin 9,10	**460**	**248**	**Max Vpeak and Vrms**
T901 pin 6 – pin 11,12	424	238	
C900 primary to secondary	340	210	
U902 pin 1-pin 3	348	216	
U902 pin 1-pin 4	352	215	
U902 pin 2-pin 3	348	216	
U902 pin 2-pin 4	352	215	

2.10.3 and 2.10.4	TABLE: clearance and creepage distance measurements					**P**
Clearance cl and creepage distance dcr at/of:	U p (V)	U r.m.s. (V)	Required cl (mm)	cl (mm)	Required dcr (mm)	dcr (mm)
Functional:						
- Different polarities of L/N (before fuse)	**420**	**250**	**2.3 (1.5x1.48)**	6.7	**2.5**	7.6
- Under fuse				2.8		3.7
Basic / supplementary:						
Primary traces to earthed traces	**420**	**250**	**3.0 (2.0x1.48)**	**See below**	**3.0**	**See below**
- L/N traces to earthed trace				3.1		3.4
- C902 trace to earthed trace				4.4		5.0
- C902 trace to earthed trace				6.4		6.4
- Primary traces to LED panel earthed parts	**460**	**250**	**3.2 (2.1x1.48)**	**5.9**	**3.2**	**10.0**
Primary components (with 10N) to earthed part	**420**	**250**	**3.0 (2.0x1.48)**	**See below**	**3.0**	**See below**
- NR901 body to metal enclosure				4.4		9.1
Reinforced:						
Primary traces to secondary traces	**420**	**250**	**6.0 (4.0x1.48)**	**See below**	**6.0**	**See below**
- Primary component BD1 to secondary trace				6.1		6.1
- Primary component HS1 to secondary trace				6.7		6.7
- Primary component HS1 to secondary component L907				7.4		7.4
- C900 primary to secondary				7.7		7.7
- U902 primary to secondary				7.8		7.8
- Primary component R932 to secondary trace				7.6		7.6
- Primary component L901 to secondary trace				7.7		7.7
- Primary component NR901 to secondary trace				8.1		8.1
- Under T901	**460**	**250**	**6.3 (4.2x1.48)**	8.2	**6.3**	8.2
Primary components (with 10N) to secondary components (with 10N)	**460**	**250**	**6.3 (4.2x1.48)**	**See below**	**6.3**	**See below**

- Primary component C911to T901 core				9.4		9.4
- Primary component R906 to T901 core				10.0		10.0
- Primary component D904 to T901 core				9.5		9.5
- Secondary component D901 to T901 core				10.2		10.2

Supplementary information:

1. Altitude correction factor (1.48) for clearances for an altitude of 5000m (Based on IEC 60664-1:1992 + A1:2000 + A2:2002)
2. Other functional insulation according to sub-clause 5.3.4 item c).
3. Glued components (safety relevant): C907.
4. NR901 is the highest component in primary.
5. Internal wire was cut off in order to not touch the primary parts.
6. All constructions were evaluated without mylar sheet under power board.

2.10.5	TABLE: distance through insulation measurements				**P**
Distance through insulation di at/of:		U r.m.s. (V)	Test voltage (V)	Required di (mm)	di (mm)
Photo coupler (reinforced insulation)		250	3000	0.4	1.
Note(s): 1. For approved component source see appended table 1.5.1.					

4.5.1	TABLE: maximum temperatures			**P**
	test voltage (V) .....:	a) 90V/50Hz, b) 264V/60Hz		—
	t1 (°C) .....:	--		—
	t2 (°C) .....:	--		—
Maximum temperature T of part/at:		T (°C)		allowed T_{max} (°C)
Test voltage		**a)**	**b)**	--
Tested on 23.6 inch models with Panel HR236WU*-*, with power board: 715G4497, main board: 715G5863, VGA mode**				
AC inlet CN901		35.6	35.2	70-40+23.2=53.2
C907 body		41.8	40.5	105-40+23.2=88.2
C900 body		52.9	56.1	85-40+23.2=68.2
C902 body		36.4	36.4	85-40+23.2=68.2
C908 body		47.1	41.5	100-40+23.2=83.2
PCB near NR901		51.6	42.4	130-40+23.2=113.2
L901 coil		50.1	42.8	120-40+23.2=103.2
T901 core		53.5	56.1	110-40+23.2=93.2

T901 coil	58.2	61.1	110-40+23.2=93.2
U902 body	48.0	47.4	100-40+23.2=83.2
PCB near BD906	61.2	67.7	130-40+23.2=113.2
PCB near D906	41.4	45.2	130-40+23.2=113.2
PCB near Q901	45.5	48.0	130-40+23.2=113.2
L907 coil	51.9	37.1	130-40+23.2=113.2
PCB near U601	31.1	33.6	130-40+23.2=113.2
PCB near D901	51.9	44.2	130-40+23.2=113.2
C922 body	60.1	63.3	105-40+23.2=88.2
PCB near U401 (main board)	50.3	54.3	130-40+23.2=113.2
Metal enclosure inside near T901	45.2	49.2	For reference
Plastic enclosure inside near T901	45.8	47.6	For reference
Plastic enclosure outside near T901	28.5	31.1	60-40+23.2=43.2
Plastic enclosure outside near opening	30.7	34.5	60-40+23.2=43.2
Button	25.5	27.7	95-40+23.2=78.2
LCD panel surface	32.1	34.5	95-40+23.2=78.2
Ambient	23.2	26.3	--

Supplementary information:

1. The temperatures were measured under worst normal mode defined in 1.2.2.1 and as described in summary of testing and at voltages as described above.
2. With maximum ambient temperature declared at 40°C, and the minimum ambient temperature during all tests is 23.2 °C, the max. Temperature is calculated as follows:

   Winding components (with safety isolation):

   - Class B → Tmax = 120°C – 10°C – 40°C + 23.2

3. Components with maximum absolute temperature of others:

   - Tmax = Tmax of component – 40°C + 23.2

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

Supplementary information:

4.5.5	TABLE: ball pressure test of thermoplastic parts		**P**
	allowed impression diameter (mm) .....:	≤ 2 mm	—

Part	Test temperature (°C)	Impression diameter (mm)
Bobbin of L901 (CHANG CHUN PLASTICS CO LTD, Type 4115, thickness min. 2.5 mm)	125	1.1
Bobbin of L901 (CHANG CHUN PLASTICS CO LTD, Type 4130, thickness min. 2.5 mm)	125	1.0

Note(s):

4.6.1, 4.6.2	Table: enclosure openings		**P**
Location	Size (mm)	Comments	
Metal enclosure			
Top*	1) Numerous circle openings: ∅4.6mm; 2) One rectangle opening: 10.5mm x 12.5mm.	1) Openings do not exceed 5mm in any dimension. No hazards. 2) No hazardous part within projection of 5°.	
Rear	1) Two circle openings: ∅14.1mm. 2) One rectangle opening: 68.4mm x 10.7mm.	1)-2) Metal enclosure used as fire enclosure and electrical enclosure. No hazardous part within projection of 5°.	
Left	One rectangle opening: 12.4mm x 10.5mm	Openings covered by plastic enclosure. No hazardous part within projection of 5°.	
Right	One rectangle opening: 58.5mm x 26.8mm.	Openings covered by plastic enclosure. No hazardous part within projection of 5°.	
Bottom*	1) Under power board: Numerous ∅1.57mm holes; spacing of holes (centre to centre): 5.2 mm; thickness of metal: min.0.81mm 2) One rectangle opening: 12.4mm x 10.5mm	1) Earthed metal enclosure, which covered primary circuit and secondary circuit, is considered as fire enclosure. No hazardous part within projection of 5°.	
	4) Under main board: Numerous ∅1.57mm holes; spacing of holes (centre to centre): 6.0 mm	4) Main board is used with V-1 PCB and supplied by LPS. No hazardous part within projection of 5°.	
Note(s): The metal enclosure was seen as fire enclosure.			

4.7	Table: resistance to fire			**P**
Part	Manufacturer of material	Type of material	Thickness (mm)	Flammability class
PCB	--	--	--	V-1
Note(s): See table 1.5.1.				

5.1.6	TABLE: touch current measurement			**P**
Condition	L→ terminal A (mA)	N → terminal A (mA)	Limit (mA)	Comments
Unit on	0.4	0.4	3.5	Terminal A at earthed metal part
Unit on	0.05	0.05	0.25	Terminal A at pin of VGA
Unit on	0.01	0.01	0.25	Terminal A at accessible plastic enclosure with metal foil.
Note(s): Supplied with 264V/60Hz.				

5.2	TABLE: electric strength tests and impulse tests	**P**
Test voltage applied between:	Test voltage (V)	Breakdown
Unit: primary and secondary	AC 3000	No
Unit: primary and Earth	AC 1674	No
Unit: primary and Plastic enclosure with metal foil	AC 3000	No
T901 [1)]: primary and secondary	AC 3000	No
T901 [1)]: secondary and core	AC 1674	No
T901 [1)]: primary and core	AC 1674	No
T901 [1)]: two of three layers of insulation tape	AC 3000	No
Note(s): 1. For all sources of T901. 2. Test performed after test of Humidity conditioning.		

5.3	TABLE: Fault condition tests		**P**
	Ambient temperature (°C) .....:	See below	—
	Power source for EUT: ManuFacturer, model/type, output rating .....:		—

Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
BD901	s-c	240	1 sec	F901	0	F901 open, BD901 damage, no hazards.
C907	s-c	240	1 sec	F901	0	F901 open, no hazards.
R924	s-c	240	1 sec	F901	0	F901 open, Q901 damage, no hazards.
U901 pin2 –pin 6	s-c	240	1 sec	F901	0.03	F901 open, U901 damage, no hazards.
U901 pin2 –pin 8	s-c	240	10 min	F901	0.06	Unit shut down, no damage, no hazards.
U901 pin2 –pin 5	s-c	240	1 sec	F901	0.03	F901 open, U901 damage, no hazards.
U901 pin4 –pin 6	s-c	240	10 min	F901	0.03	Unit shut down, no damage, no hazards.

Q901 pin G –pin S	s-c	240	10 min	F901	0.03	Unit shut down, no damage, no hazards.
Q901 pin D –pin S	s-c	240	1 sec	F901	0	F901 open, R926, R917, Q1 damage, no hazards.
Q901 pin G – pin D	s-c	240	1 sec	F901	0	F901 open, R926, R917, Q1 damage, no hazards.
T901 pin1 –pin 3	s-c	240	10 min	F901	0.032	Unit shut down, no damage, no hazards.
T901 pin 4 –pin 6	s-c	240	10 min	F901	0.055	Unit shut down, no damage, no hazards.
T901 pin 7,8 – pin 9,10	s-c	240	10 min	F901	0.071	Unit shut down, no damage, no hazards.
T901 pin9,10 – pin 11,12	s-c	240	10 min	F901	0.052	Unit shut down, no damage, no hazards.
U902 pin 1 – 2	s-c	240	10 min	F901	0.033	Unit shut down, no damage, no hazards.
U902 pin 3 – 4	s-c	240	10 min	F901	0.033	Unit shut down, no damage, no hazards.
U902 pin1	o-c	240	10 min	F901	0.033	Unit shut down, no damage, no hazards.
U902 pin3	o-c	240	10 min	F901	0.033	Unit shut down, no damage, no hazards.
D901	s-c	240	10 min	F901	0.057	Unit shut down, no damage, no hazards.
D906	s-c	240	10 min	F901	0.035	Unit shut down, no damage, no hazards.
C918	s-c	240	10 min	F901	0.057	Unit shut down, no damage, no hazards.
C920	s-c	240	10 min	F901	0.035	Unit shut down, no damage, no hazards.
5V output	s-c	240	10 min	F901	0.089	Unit shut down, no damage, no hazards.
14.5V output	s-c	240	10 min	F901	0.040	Unit shut down, no damage, no hazards.
T901: 5V output	o-l	240	5hrs 04mins	F901	Max. 0.469	The maximum output load: 4.7A; when load upto 4.8A, unit shut down. Max. temperature: T901 coil=90.9°C; T901 core=76.0°C; Ambient= 26.1°C; no damaged, no hazards.

T901: +14.5V output	o-l	240	5hrs 42mins	F901	Max. 0.469	The maximum output load: 2.0A; when load upto 2.1A, unit shut down. Max. temperature: T901 coil=77.2°C; T901 core= 84.4°C; Ambient=27.7°C; no damaged, no hazards.
Speaker	s-c	240	3hrs 53mins	F901	0.185	Unit normal operated. Max. temperature: T901 coil=58.0°C; T901 core= 53.0°C; Ambient= 25.4°C; no damage, no hazards.
Ventilation opening	Blocked	240	1hrs 29mins	F901	0.189	Unit normal operated. Max. temperature: T901 coil=62.9°C; T901 core= 58.1°C; Ambient= 26.2°C; no damage, no hazards.

Supplementary information:
1).During fault condition where the fuse opened, fuse current is more than fuse rating times 2.1, and the tests repeated with all sources of fuse and same result obtained.

2). The temperature limit for Class B transformer T901 under single fault condition is

175-10-40+Tamb = Min. 150°C

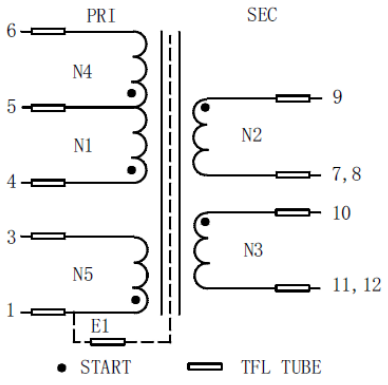
3). Unit passed the electric strength tests after each fault condition test.

4). In fault column, where s-c=short-circuited, o-c=open-circuited, o-l = overload.

C.2	TABLE: transformers						P
Loc.	Tested insulation	Working voltage peak / V (2.10.2)	Working voltage rms / V (2.10.2)	Required electric strength (5.2)	Required clearance / mm (2.10.3)	Required creepage distance / mm (2.10.4)	Required distance thr. insul. (2.10.5)
T901: Primary and secondary (internal)	Reinforced			3000Vac	6.3	6.3	--
T901: Primary and core (internal)	Basic			3000Vac	3.2	3.2	--
T901: Secondary and core (internal)	Supplementary			3000Vac	3.2	3.2	--
T901: Primary and secondary (external)	Reinforced			3000Vac	6.3	6.3	--
T901: Primary and core (external)	Basic			1674Vac	3.2	3.2	--
T901: Secondary and core (external)	Supplementary			1674Vac	3.2	3.2	--
Loc.	Tested insulation			Test voltage/ V	Measured clearance / mm	Measured creepage dist./ mm	Measured distance thr. insul. / mm; number of layers
T901: Primary and secondary (internal)	Reinforced			3000Vac	7.5	7.5	3 layers
T901: Primary and core (internal)	Basic			1674Vac	3.5	3.5	--
T901: Secondary and core (internal)	Supplementary			1674Vac	4.0	4.0	--
T901: Primary and secondary (external)	Reinforced			3000Vac	7.0	7.0	--
T901: Primary and core (external)	Basic			1674Vac	3.5	3.5	--
T901: Secondary and core (external)	Supplementary			1674Vac	3.5	3.5	--
Supplementary information: Core is considered as floating part. 2 layers insulation tape is used between primary and secondary windings. Winding leads are covered by tubing.							

C.2	TABLE: transformers		P
	Transformer part name ..... :	T901	—
	Manufacturer ..... :	See appended table 1.5.1	—
	Type ..... :	See appended table 1.5.1	—
Description of design:			
(a) Bobbin			
Primary/input pins..... :		1-3, 4-5-6	
Secondary/output pins..... :		9-7, 8; 10-11, 12	
Material (manufacturer, type, ratings) ..... :		- SUMITOMO BAKELITE CO., LTD / Type PM-9820, PM-8375, Phenolic material, V-0, 150°C - Chang Chun Plastics Co., Ltd. / Type T375J, Phenolic material, V-0, 150°C	
Thickness (mm) ..... :		min. 0.45mm	
(b) Insulation tape			
Material (manufacturer, type, ratings) ..... :		- JING JIANG YAHUA PRESSURE SENSITIVE GLUE CO.,LTD / Type CT(c), CT-280, V-0, 130°C - Symbio / Type 35660Y*(%), V-0, 130°C	
(c) Margin tape			
Material (manufacturer, type, ratings) ..... :		- JING JIANG YAHUA PRESSURE SENSITIVE GLUE CO.,LTD / Type WF, CT, V-0, 130°C - 3M COMPANY ELECTRICAL MARKETS DIV (EMD) / Type 44(a) , V-0, 130°C - Symbio / Type 35661$, V-0, 130°C	
(e) General			
Construction drawing:			

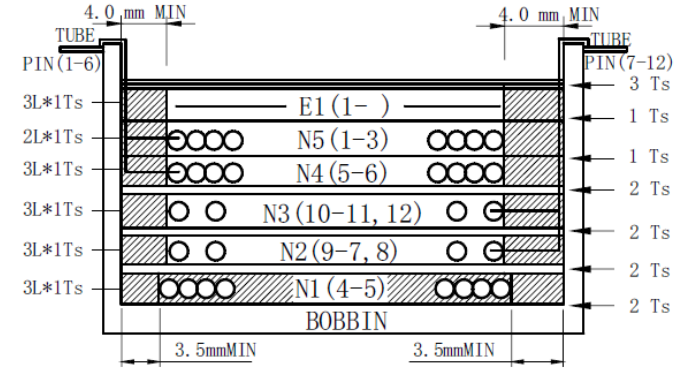
a. SCHEMATIC:



PIN	Tube length
1, 3, 4, 5, 6	12mm MIN
7, 8, 9, 10, 11, 12	14mm MIN

—

b. WINDING CONSTRUCTION:



MARGIN TAPE:
3L=0.43mm 2L=0.28mm 1L=0.14mm

NOTE:
1.) EVERY LEAD WIRE MUST HAVE FIX TAPE.
2.) START AND FINISH ADDED TUBE, THE TUBE MUST BE OVER MARGIN TAPE

Supplementary information:

Type Designation: **Refer to test report**
Report Number: **17027138 002**

Fig.1_ Construction with internal speaker

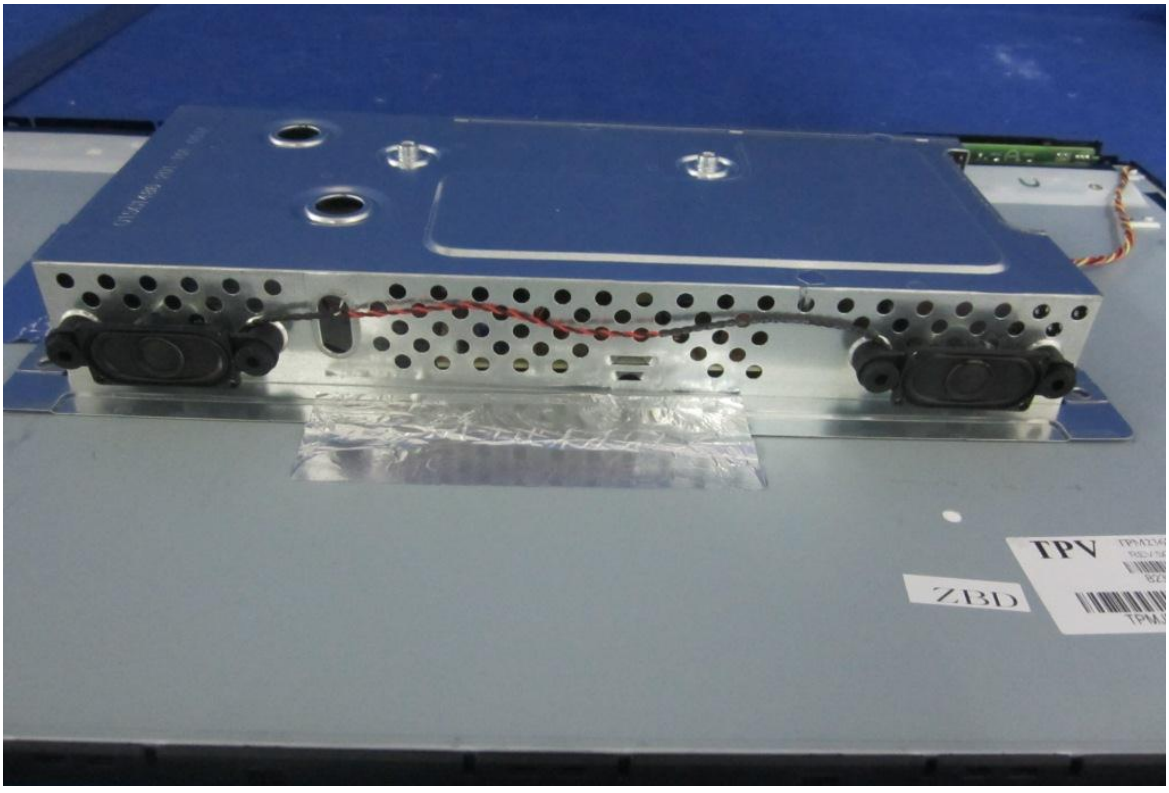


Fig.2_ Metal enclosure top view

Type Designation: **Refer to test report**
Report Number: **17027138 002**

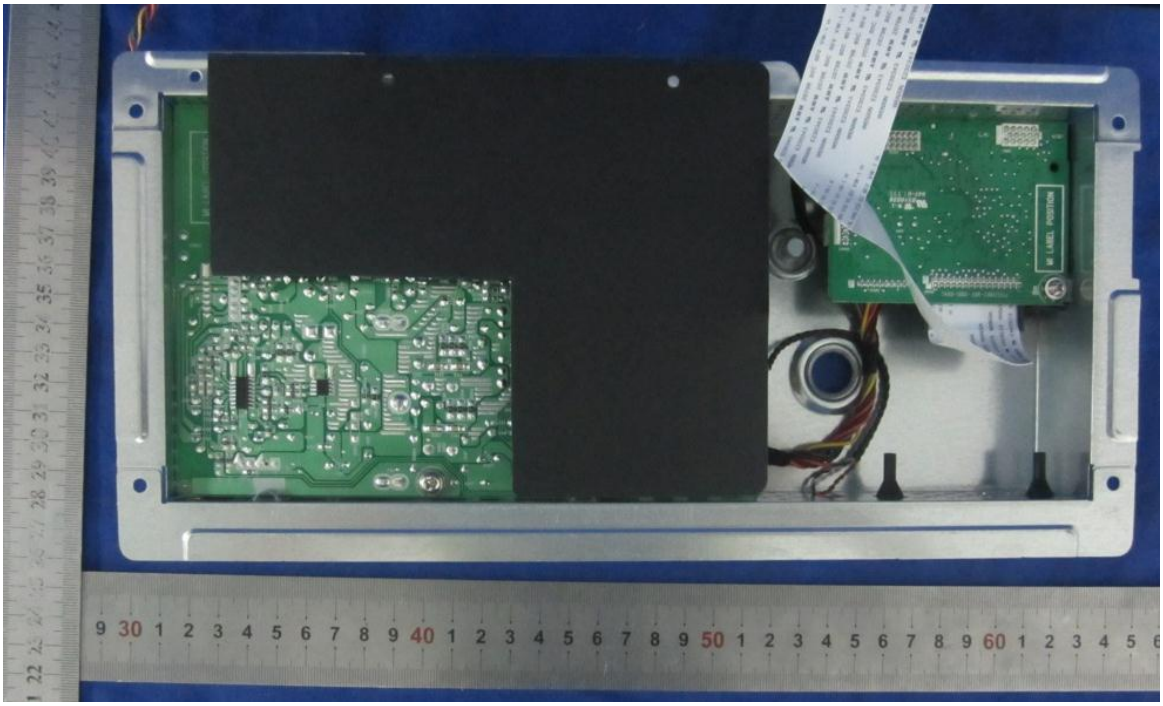


Fig.3 _ Internal view with mylar sheet (type: 715G4497)

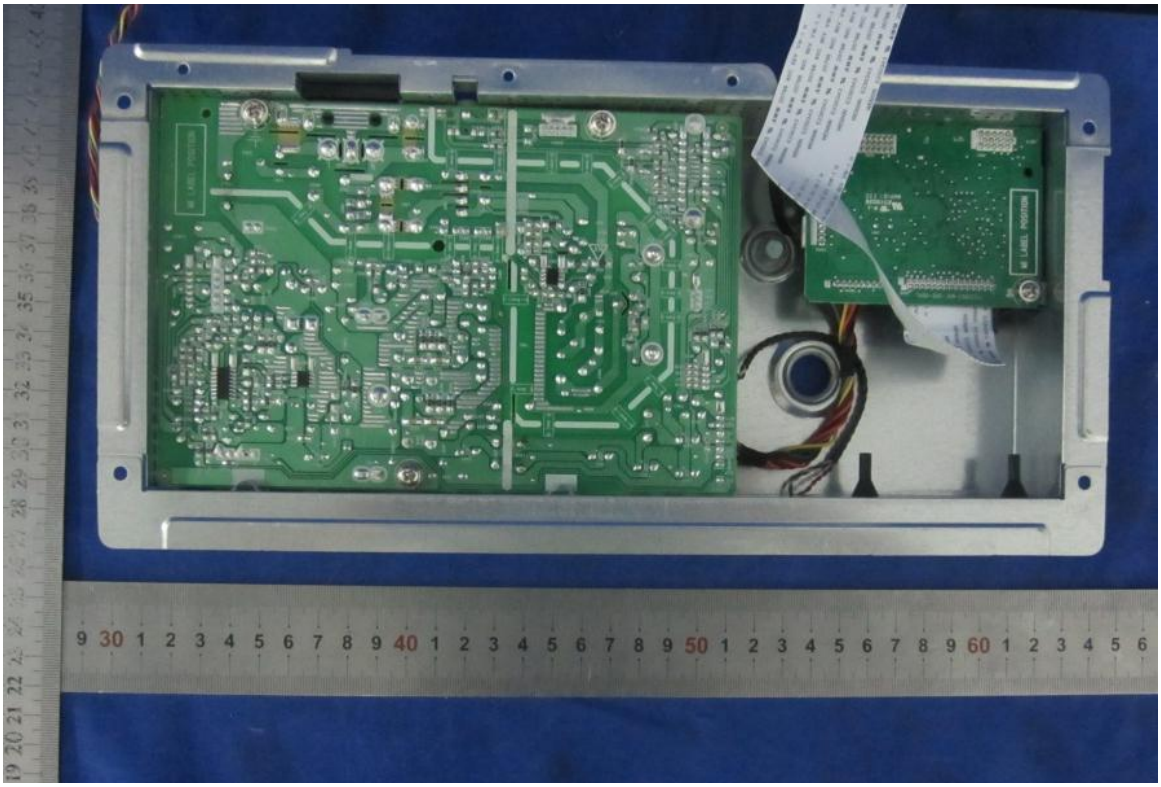


Fig.4 _ Internal view with power board without mylar sheet (type: 715G4497)

Type Designation: **Refer to test report**
Report Number: **17027138 002**

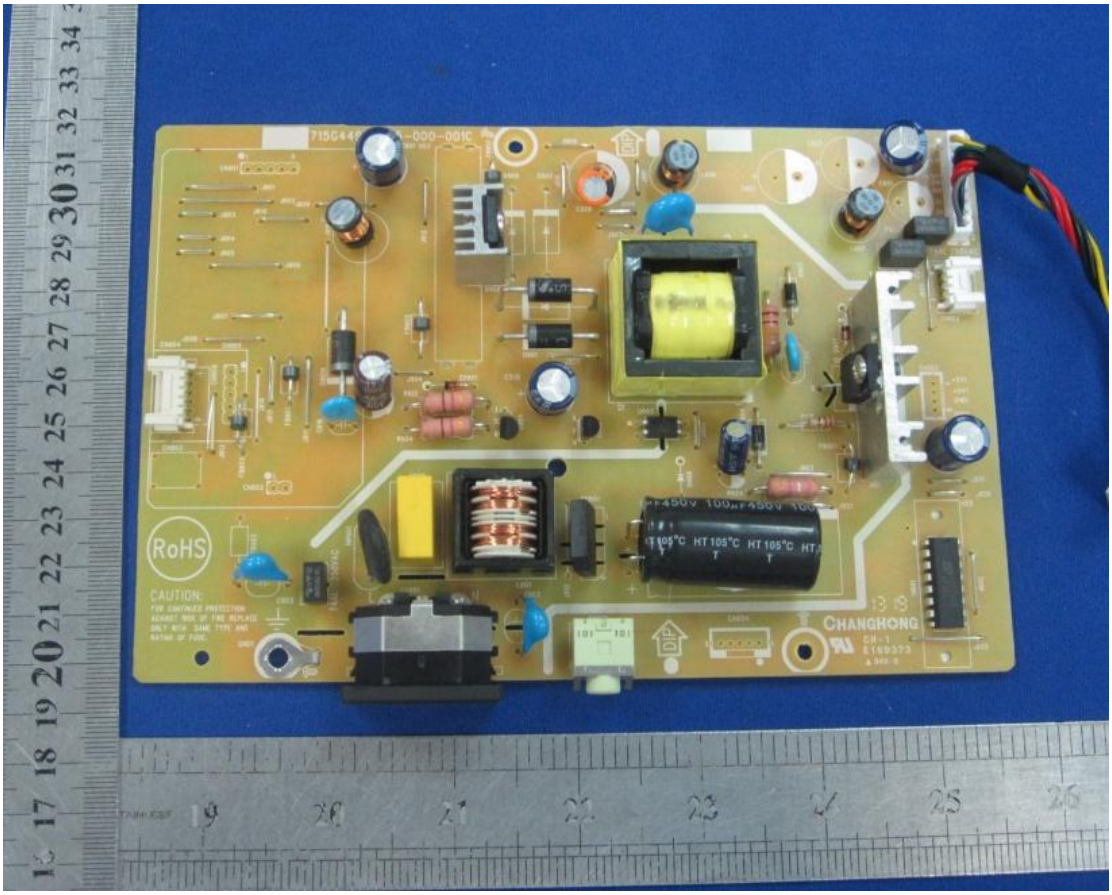


Fig.5 _ Power board component side (type: 715G4497)

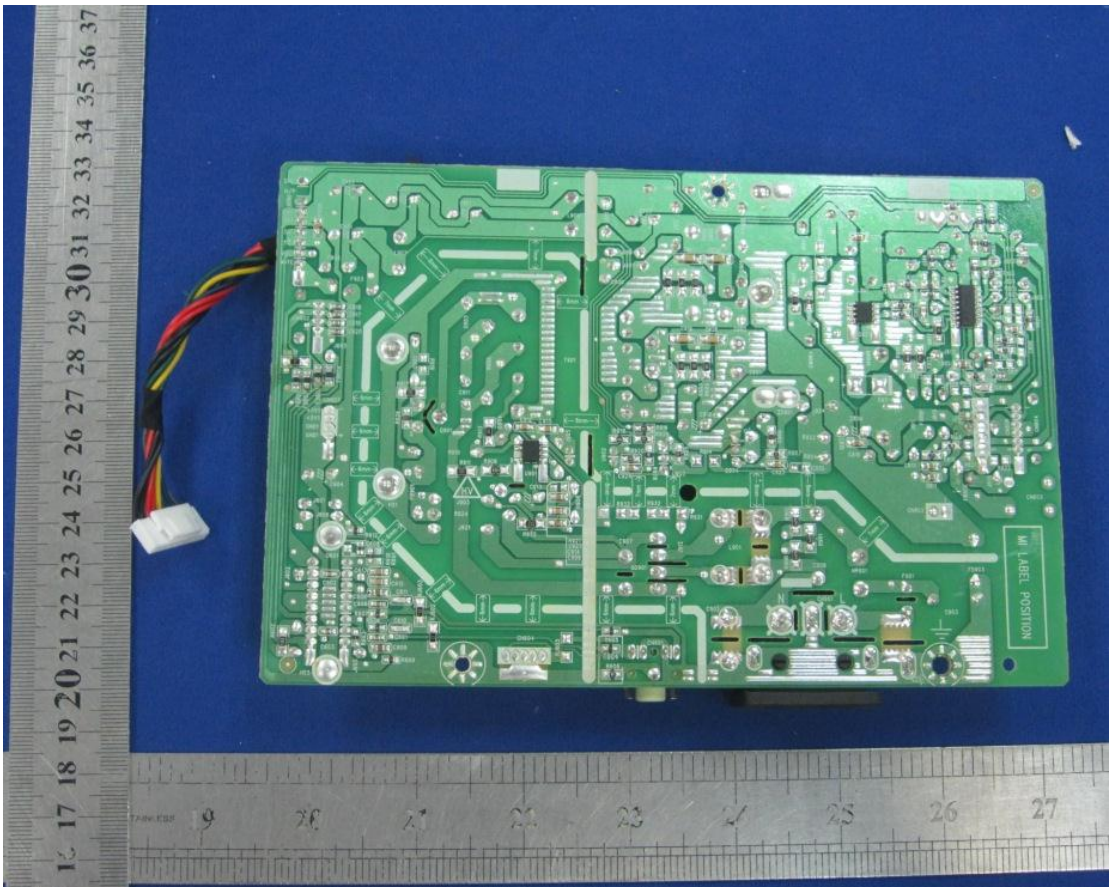


Fig.6 _ Power board trace side (type: 715G4497)