

UL TEST REPORT AND PROCEDURE

Standard:	UL 60950-1, 2nd Edition, 2007-03-27 (Information Technology Equipment - Safety - Part 1: General Requirements) CSA C22.2 No. 60950-1-07, 2nd Edition, 2007-03 (Information Technology Equipment - Safety - Part 1: General Requirements)
Certification Type:	Listing
CCN:	QQGQ, QQGQ7 (Power Supplies for Information Technology Equipment Including Electrical Business Equipment)
Product:	Switching Adaptor
Model:	GT-81091-WWVV-X.X-T2 series: WW is the standard rated output wattage, with a maximum "60"; VV is the standard rated output voltage designation, with a maximum value of "24"; -X.X is optional or blank and denotes the output voltage differentiator, subtracting or adding X.X volts from standard output voltage VV in 0.1V increments, blank is to indicate the no voltage different; VV-X.X together denotes the voltage range from 1-12Vdc and 19 to 24Vdc.
Rating:	Input:100 - 240 Vac, 50 / 60 Hz, 1.5 A Output: 12 V maximum, 5 A maximum, 60 W maximum or 19-24 Vdc, 3.16 A maximum, 60 W maximum.
Applicant Name and Address:	GLOBTEK (SUZHOU) CO LTD BLDG 4, #76 JINLING EAST RD SUZHOU PARK SUZHOU JIANGSU 215021 CHINA

This is to certify that representative samples of the products covered by this Test Report have been investigated in accordance with the above referenced Standards. The products have been found to comply with the requirements covering the category and the products are judged to be eligible for Follow-Up Service under the indicated Test Procedure. The manufacturer is authorized to use the UL Mark on such products which comply with this Test Report and any other applicable requirements of Underwriters Laboratories Inc. ('UL') in accordance with the Follow-Up Service Agreement. Only those products which properly bear the UL Mark are considered as being covered by UL's Follow-Up Service under the indicated Test Procedure.

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Report Reference # E336418-A47-UL

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Michelle Xu

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Scholl Zhang

Supporting Documentation

The following documents located at the beginning of this Procedure supplement the requirements of this Test Report:

- A. Authorization - The Authorization page may include additional Factory Identification Code markings.
- B. Generic Inspection Instructions -
 - i. Part AC details important information which may be applicable to products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of this Test Report.
 - ii. Part AE details any requirements which may be applicable to all products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of each Test Report.
 - iii. Part AF details the requirements for the UL Certification Mark which is not controlled by the technical standard used to investigate these products. Products are permitted to bear only the Certification Mark(s) corresponding to the countries for which it is certified, as indicated in each Test Report.

Product Description

The product is an external switching mode power supply adapter for Information Technology Equipment (ITE). Electrical components mounted on PWB. Housed with plastic enclosure. Secured together by ultrasonic welding. All live parts are enclosed in a thermoplastic enclosure, provided with appliance inlet for connection to the AC mains supply and an output cord terminated in a polarized connector.

Model Differences

See enclosure 7-02 for Model difference.

Technical Considerations

- Equipment mobility : movable
- Connection to the mains : pluggable A
- Operating condition : continuous
- Access location : operator accessible
- Over voltage category (OVC) : OVC II
- Mains supply tolerance (%) or absolute mains supply values : +10%, -10% (declared by the manufacturer)
- Tested for IT power systems : No
- IT testing, phase-phase voltage (V) : N/A
- Class of equipment : Class II (double insulated)


- Considered current rating (A) : 20A
- Pollution degree (PD) : PD 2
- IP protection class : IP X0
- Altitude of operation (m) : up to 2000 m
- Altitude of test laboratory (m) : up to 2000 m
- Mass of equipment (kg) : Maximum 0.3 kg
- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of: 50 degree C
- The means of connection to the mains supply is: Detachable power cord , Pluggable A
- The product is intended for use on the following power systems: TN
- The equipment disconnect device is considered to be: Appliance inlet
- The following accessible locations (with circuit/schematic designation) are within a limited current circuit: output side of bridging capacitor CY1.
- The following circuit locations (with circuit/schematic designation) were investigated as a limited power source (LPS): Output of all Models
- The following are available from the Applicant upon request: Specific data sheets for LED indicators that are class I and operate at wavelength in the 400-710 nm range. , Installation (Safety) Instructions / Manual

Additional Information

N/A

Markings and instructions

Clause Title	Marking or Instruction Details
Power rating - Ratings	Ratings (voltage, frequency/dc, current)
Power rating - Company identification	Listee's or Recognized company's name, Trade Name, Trademark or File Number

Power rating - Model	Model Number
Power rating - Class II symbol	Symbol for Class II construction  (60417-2-IEC-5172)
Fuses - Non-operator access/soldered-in fuses	Unambiguous reference to service documentation for instructions for replacement of fuses replaceable only by service personnel
LPS marking	Optional Marking "Limited Power Source" or "LPS".
Special Instructions to UL Representative " Inspect the transformer(s) listed in BD1.1 per AA1.1- (C). When the tests are conducted at other location, inspect test record and specification sheet provided by the component manufacturer. Verify the specification sheet indicates 100% routine test specified in BD1.1 be conducted at the component manufacturer" should be update this "Inspect the transformer(s) listed in BD1.1 per AA1.1- (C). When the tests are conducted at other location, inspect test record and specification sheet provided by the component manufacturer. Verify the specification sheet indicates 100% routine test specified in BD1.1 is conducted at the component manufacturer. The test record noted above shall be submitted to the manufacturer from transformer manufacturer. The test record can be in the form of a actual test record. A stamp or sticker on the transformer or other method verifying the routine test is being completed on 100% production is also acceptable."	

Production-Line Testing Requirements

Electric Strength Test Special Constructions - Refer to Generic Inspection Instructions, Part AC for further information.

Model	Component	Removable Parts	Test probe location	V rms	V dc	Test Time, s
All models	Transformer (T1)	--	PRI-SEC	300 0	4242	1

Earthing Continuity Test Exemptions - This test is not required for the following models:

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Electric Strength Test Exemptions - This test is not required for the following models:

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Electric Strength Test Component Exemptions - The following solid-state components may be disconnected from the remainder of the circuitry during the performance of this test:

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Sample and Test Specifics for Follow-Up Tests at UL

Model	Component	Material	Test	Sample(s)	Test Specifics
N/A					

TABLE: List of Critical Components

Object/part or Description	Manufacturer/ trademark	type/model	technical data	CCN	Marks of Conformity
01. Enclosure	Various	Various	Two pieces construction secured together by ultrasonic welding. See Enclosure ID 4-01 for dimensions details.	--	--
01-1. Material of Enclosure	Sabic Innovative Plastics Us L L C	SE1X	Rated V-1, RTI 105 degree C, minimum 2.0 mm thick.	QMFZ2	UL
01-1a. Material of Enclosure (Alternate)	Asahi Kasei Chemicals Corp Xyron Polymer	540V	Rated V-1, RTI 105 degree C, 2.0 mm thick.	QMFZ2	UL (E82268)
01-1b. Material of Enclosure (Alternate)	Asahi Kasei Chemicals Corp Xyron Polymer	540Z	Rated V-0, RTI 105 degree C, 2.0 mm thick.	QMFZ2	UL (E82268)
02. Label	Various	Various	Rated minimum 75 degree C, suitable for surface applied to plastic Enclosure.	PGDQ2 or PGJ12	UL
03. Output Cable	Various	Various	Non-detachable, max. 3.05 m long, FEP, PTFE, PVC, TFE neoprene, polyimide or marked VW-1, minimum 20 AWG, minimum 80 degree C, minimum 30 V. One end mechanically secured then soldered to PWB, other end is terminated in molded on connector.	AVLV2	UL
04. Strain Relief	Various	Various	Minimum V-2. Integral molded to Output Cable. Strain Relief provided with a molded-on anti-kink bushing held in place by integral slots in top and bottom enclosure. For Strain Relief. See Enclosure ID. 4-02 for construction details.	QMFZ2	UL
05. Printed Wiring Board	Various	Various	Minimum V-1. Minimum 130 degree C.	ZPMV2	UL
06. Appliance Inlet (Alternate)	Tecx-Unions Technology Corp	SO-222	2.5A; 250VAC. Secured and soldered to PWB.	AXUT2	UL
06a. Appliance Inlet (Alternate)	Sun Fair Electric Wire & Cable (Hk) Co Ltd	S-01	2.5A; 250VAC. Secured and soldered to PWB.	AXUT2	UL
06b. Appliance Inlet (Alternate)	Zhe Jiang Bei Er Jia Electronic Co Ltd	ST-A03series	2.5A; 250VAC. Secured and soldered to PWB.	AXUT2	UL
06c. Appliance Inlet (Alternate)	Rong Feng Industrial Co Ltd	RF-180	2.5A; 250VAC. Secured and soldered to PWB.	AXUT2	UL
07. Fuse (F1)	Various	Various	Rated T3.15A, minimum 250 V.	JDYX	UL

Object/part or Description	Manufacturer/ trademark	type/model	technical data	CCN	Marks of Conformity
07a. Fuse (F1) (Alternate)	Littelfuse Wickmann Werke	392 series	Rated T3.15A, minimum 250 V.	JDYX2	UL
07b. Fuse (F1) (Alternate)	Ever Island Electric Co Ltd & Walter Electric	2010	Rated T3.15A, minimum 250 V.	JDYX2	UL
07c. Fuse (F1) (Alternate)	Shenzhen Lanson Electronics Co Ltd	SMT	Rated T3.15A, minimum 250 V.	JDYX2	UL
07d. Fuse (F1) (Alternate)	Conquer Electronics Co Ltd	MST	Rated T3.15A, minimum 250 V.	JDYX2	UL
07e. Fuse (F1) (Alternate)	Cooper Bussmann Inc	SS-5	Rated T3.15A, minimum 250 V.	JDYX2	UL
07f. Fuse (F1) (Alternate)	Bel Fuse Inc	RST	Rated T3.15A, minimum 250 V.	JDYX2	UL
08. Thermistor (NTC1) (Optional)	--	--	NTC. Rated minimum 3 A, minimum 1.5 ohm at 25 degree C.	--	--
09. Choke (LF1) (Optional)	--	--	Rated minimum 130 degree C. Toroidal type construction. Core: Ferrite. Copper magnet wire wound on core. See Enclosure ID 4-03 for details.	--	--
09-1. Triple Insulated Wire of Choke (LF1) (Secondary)	Furukawa Electric Co Ltd	TEX-E	Rated 130 degree C.	OBJT2	UL
09-1a. Triple Insulated Wire of Choke (LF1) (Secondary) (Alternate)	Totoku Electric Co Ltd	TIW-E	Rated 130 degree C.	OBJT2	UL
09-1a. Triple Insulated Wire of Choke (LF1) (Secondary) (Alternate)	Young Chang Silicone Co Ltd	STW-B	Rated 130 degree C.	OBJT2	UL
9-2. Coil of Choke (LF1)	Various	Various	Rated 130 degree C.	OBMW2	UL
10. Choke (LF2) (Optional)	--	--	Rated minimum 130 degree C. Toroidal type construction. Core: Ferrite. Copper magnet wire wound on core. See Enclosure ID 4-04 for details.	--	--
10-1. Insulating Tubing/Sleeving Choke (LF2)	Various	Various	FEP, PTFE, PVC, TFE, neoprene, polyimide or marked VW-1; minimum 105 degree C, minimum 300 V.	UZFT2, YDPU2, YDTU2	UL
10-2. Coil of Choke (LF2)	Various	Various	Rated 130 degree C.	OBMW2	UL

Object/part or Description	Manufacturer/ trademark	type/model	technical data	CCN	Marks of Conformity
11. Varistor (MOV1) (Optional)	Centra Science Corp	CNR7D471K, CNR10D471K	Rated 300 V ac.	VZCA2	UL (E316325)
11a. Varistor (MOV1) (Optional) (Alternate)	Uppermost Electronic Industries Co Ltd	V07K300, V10K300	Rated 300 V ac.	VZCA2	UL (E330441)
11b. Varistor (MOV1) (Optional) (Alternate)	Jya-Nay Co Ltd	7D471K, 10D471K	Rated 300 V ac.	VZCA2	UL (E333951)
11c. Varistor (MOV1) (Optional) (Alternate)	Joyin Co Ltd	JVR7N471K, JVR10N471K	Rated 300 V ac.	VZCA2	UL (E325508)
11d. Varistor (MOV1) (Optional) (Alternate)	Walsin Technology Corp.	VZ07D471K, VZ10D471K	Rated 300 V ac.	VZCA2	UL (E309297)
11e. Varistor (MOV1) (Optional) (Alternate)	Thinking Electronic Industrial Co Ltd	TVR07471, TVR10471	Rated 300 V ac.	VZCA2	UL (E314979)
11f. Varistor (MOV1) (Optional) (Alternate)	Feng Hua Advance Technology (Holding) Co Ltd	FNR-07K471, FNR-10K471	Rated 300 V ac.	VZCA2	UL (E325462)
12. Bleeder Resistors (RA, RB)	Various	Various	SMD type, both in series, each rated 560 k to 1 M ohm, minimum 1/4W.	--	--
13. X-Capacitors (CX1, CX2) (Optional)	Chiefcon Electronics Co Ltd	CKX	CX1 rated maximum 0.33 uF, minimum 250 V; CX2 rated maximum 0.15 uF, minimum 250 V. 100 degree C. Marked with a 'X1' or 'X2' and certified by VDE, DEMKO or SEV. (Meets IEC 60384-14).	FOWX2	UL
13a. X-Capacitors (CX1, CX2) (Optional) (Alternate)	Ultra Tech Xiphi Enterprise Co Ltd	HQX	CX1 rated maximum 0.33 uF, minimum 250 V; CX2 rated maximum 0.15 uF, minimum 250 V. 100 degree C. Marked with a 'X1' or 'X2' and certified by VDE, DEMKO or SEV. (Meets IEC 60384-14).	FOWX2	UL
13b. X-Capacitors (CX1, CX2) (Optional) (Alternate)	Pilkor Electronics Co Ltd	PCX2 335M	CX1 rated maximum 0.33 uF, minimum 250 V; CX2 rated maximum 0.15 uF, minimum 250 V. 100 degree C. Marked with a 'X1' or 'X2' and certified by VDE, DEMKO or SEV. (Meets IEC 60384-14).	FOWX2	UL
13c. X-Capacitors (CX1, CX2) (Optional) (Alternate)	Pilkor Electronics Co Ltd	PCX2 337	CX1 rated maximum 0.33 uF, minimum 250 V; CX2 rated maximum 0.15 uF, minimum 250 V. 100 degree C. Marked with a 'X1' or 'X2' and certified by VDE, DEMKO or SEV. (Meets IEC 60384-14).	FOWX2	UL
13d. X-Capacitors (CX1, CX2) (Optional) (Alternate)	Iskra Kondenzatorji D D	KNB 1530, KNB 1532, KNB 1533	CX1 rated maximum 0.33 uF, minimum 250 V; CX2 rated maximum 0.15 uF, minimum 250 V. 100 degree C. Marked with a 'X1' or 'X2' and certified	FOWX2	UL

Object/part or Description	Manufacturer/ trademark	type/model	technical data	CCN	Marks of Conformity
			by VDE, DEMKO or SEV. (Meets IEC 60384-14).		
13e. X-Capacitors (CX1, CX2) (Optional) (Alternate)	Iskra Kondenzatorji D D	KNB1560	CX1 rated maximum 0.33 uF, minimum 250 V; CX2 rated maximum 0.15 uF, minimum 250 V. 100 degree C. Marked with a 'X1' or 'X2' and certified by VDE, DEMKO or SEV. (Meets IEC 60384-14).	FOWX2	UL
13f. X-Capacitors (CX1, CX2) (Optional) (Alternate)	Carli Electronics Co Ltd	MPX	CX1 rated maximum 0.33 uF, minimum 250 V; CX2 rated maximum 0.15 uF, minimum 250 V. 100 degree C. Marked with a 'X1' or 'X2' and certified by VDE, DEMKO or SEV. (Meets IEC 60384-14).	FOWX2	UL
13g. X-Capacitors (CX1, CX2) (Optional) (Alternate)	Okaya Electric Industries Co. Ltd.	RE, PA	CX1 rated maximum 0.33 uF, minimum 250 V; CX2 rated maximum 0.15 uF, minimum 250 V. 100 degree C. Marked with a 'X1' or 'X2' and certified by VDE, DEMKO or SEV. (Meets IEC 60384-14).	FOWX2	UL
13h. X-Capacitors (CX1, CX2) (Optional) (Alternate)	Shiny Space Enterprise Co Ltd	SX1	CX1 rated maximum 0.33 uF, minimum 250 V; CX2 rated maximum 0.15 uF, minimum 250 V. 100 degree C. Marked with a 'X1' or 'X2' and certified by VDE, DEMKO or SEV. (Meets IEC 60384-14).	FOWX2	UL
13i. X-Capacitors (CX1, CX2) (Optional) (Alternate)	Strong Capacitor Co Ltd	MPX	CX1 rated maximum 0.33 uF, minimum 250 V; CX2 rated maximum 0.15 uF, minimum 250 V. 100 degree C. Marked with a 'X1' or 'X2' and certified by VDE, DEMKO or SEV. (Meets IEC 60384-14).	FOWX2	UL
13j. X-Capacitors (CX1, CX2) (Optional) (Alternate)	Sinhua Electronics (Shanghai) Co Ltd	MPX	CX1 rated maximum 0.33 uF, minimum 250 V; CX2 rated maximum 0.15 uF, minimum 250 V. 100 degree C. Marked with a 'X1' or 'X2' and certified by VDE, DEMKO or SEV. (Meets IEC 60384-14).	FOWX2	UL
13k. X-Capacitors (CX1, CX2) (Optional) (Alternate)	Shenzhen Jinghao Capacitor Co Ltd	CBB62B	CX1 rated maximum 0.33 uF, minimum 250 V; CX2 rated maximum 0.15 uF, minimum 250 V. 110 degree C. Marked with a 'X1' or 'X2' and certified by VDE, DEMKO or SEV. (Meets IEC 60384-14).	FOWX2	UL
13l. X-Capacitors (CX1, CX2) (Optional) (Alternate)	Joey Electronics (Dong Guan) Co Ltd	MPX	CX1 rated maximum 0.33 uF, minimum 250 V; CX2 rated maximum 0.15 uF, minimum 250 V. 100 degree C. Marked with a 'X1' or 'X2' and certified by VDE, DEMKO or SEV. (Meets IEC 60384-14).	FOWX2	UL
13m. X-Capacitors (CX1, CX2) (Optional) (Alternate)	Yuon Yu Electronics Co Ltd	MPX	CX1 rated maximum 0.33 uF, minimum 250 V; CX2 rated maximum 0.15 uF, minimum 250 V. 100 degree C. Marked with a 'X1' or 'X2' and certified	FOWX2	UL

Object/part or Description	Manufacturer/trademark	type/model	technical data	CCN	Marks of Conformity
			by VDE, DEMKO or SEV. (Meets IEC 60384-14).		
14. Bridge Diodes (BD1)	--	--	Rated minimum 4 A, minimum 600 V.	--	--
15. Electrolytic Capacitor (E1)	--	--	Electrolytic Type. Rated 47-120 uF, minimum 400 V, minimum 105 degree C.	--	--
16. Transistor (Q1)	--	--	Rated 6-12 A, minimum 600 V.	--	--
17. Thermistor (NTC)	Various	Various	Rated min. 10 k ohm at 25 degree C.	XGPU2	UL
18. Primary Heat Sink	--	--	Aluminium. See Enclosure ID 4-05 for dimensions.	--	--
19. Upper Heat Sink	--	--	Aluminium. Mound on Primary Heat Sink. See Enclosure ID 4-05 for dimensions. (Upper Heat Sink is primary)	--	--
20. Secondary Heat Sink	--	--	Aluminium. Secured and soldered to PWB. See Enclosure ID 4-06 for dimensions.	--	--
20-1. Insulation Tape of Secondary Heat Sink	Symbio Inc	35660, 35661	Rated 130 degree C.	OANZ2	UL
20-1a. Insulation Tape of Secondary Heat Sink	3M Company Electrical Markets Div (EMD)	1350F-1, 1350-1	Rated 130 degree C.	OANZ2	UL
21. Rubber Pad (Optional)	Various	Various	Two provided on top and bottom of Upper Heat Sink. Rated minimum V-2.	QMFZ2	UL
22. Bridge Capacitor (CY1) (Optional)	TDK-EPC Corp	CD	Rated maximum 2200 pF, minimum 250 V. Marked with an 'Y1' Certified by VDE, DEMKO or SEV. (Meets IEC60384 - 14.)	FOWX2	UL
22a. Bridge Capacitor (CY1) (Optional) (Alternate)	Murata Mfg Co Ltd	KX	Rated maximum 2200 pF, minimum 250 V. Marked with an 'Y1' Certified by VDE, DEMKO or SEV. (Meets IEC60384 - 14.)	FOWX2	UL
22b. Bridge Capacitor (CY1) (Optional) (Alternate)	Success Electronics Co Ltd	SE	Rated maximum 2200 pF, minimum 250 V. Marked with an 'Y1' Certified by VDE, DEMKO or SEV. (Meets IEC60384 - 14.)	FOWX2	UL
22c. Bridge Capacitor (CY1) (Optional) (Alternate)	Success Electronics Co Ltd	SB	Rated maximum 2200 pF, minimum 250 V. Marked with an 'Y1' Certified by VDE, DEMKO or SEV. (Meets IEC60384 - 14.)	FOWX2	UL
22d. Bridge Capacitor (CY1) (Optional) (Alternate)	Jya-Nay Co. Ltd.	JN	Rated maximum 2200 pF, minimum 250 V. Marked with an 'Y1' Certified by VDE, DEMKO or SEV. (Meets IEC60384 - 14.)	FOWX2	UL
22e. Bridge Capacitor	Welson Industrial Co	WD	Rated maximum 2200 pF, minimum 250 V.	FOWX2	UL

Object/part or Description	Manufacturer/ trademark	type/model	technical data	CCN	Marks of Conformity
(CY1) (Optional) (Alternate)	Ltd		Marked with an 'Y1' Certified by VDE, DEMKO or SEV. (Meets IEC60384 - 14.)		
22f. Bridge Capacitor (CY1) (Optional) (Alternate)	Samwha Capacitor Co Ltd	SD	Rated maximum 2200 pF, minimum 250 V. Marked with an 'Y1' Certified by VDE, DEMKO or SEV. (Meets IEC60384 - 14.)	FOWX2	UL
22g. Bridge Capacitor (CY1) (Optional) (Alternate)	Nan Jing Yuyue Electronics Co Ltd	2B, 2E, 2F	Rated maximum 2200 pF, minimum 250 V. Marked with an 'Y1' Certified by VDE, DEMKO or SEV. (Meets IEC60384 - 14.)	FOWX2	UL
23. Photo Coupler (U2)	Sharp Corp Electronic Components And Devices Group	PC817; PC123	Isolation minimum 5000Vac.	FPQU2	UL
23a. Photo Coupler (U2) (Alternate)	Lite-On Technology Corp	LTV-817	Isolation minimum 5000Vac.	FPQU2	UL
23b. Photo Coupler (U2) (Alternate)	Everlight Electronics Co., Ltd	EL817	Isolation minimum 5000Vac.	FPQU2	UL
23c. Photo Coupler (U2) (Alternate)	Cosmo Electronics Corp	K1010, KP1010	Isolation minimum 5000Vac.	FPQU2	UL
23d. Photo Coupler (U2) (Alternate)	Fairchild Semiconductor Corp	H11A817B	Isolation minimum 5000Vac.	FPQU2	UL
23e. Photo Coupler (U2) (Alternate)	Bright Led Electronics Corp	BPC817B, BPC817C	Isolation minimum 5000Vac.	FPQU2	UL
23f. Photo Coupler (U2) (Alternate)	NEC Electronics Corp Compound Semiconductor Device Div	PS2561	Isolation minimum 5000Vac.	FPQU2	UL
24. Glue	Various	Various	Minimum V-2, minimum 80 degree C. Provided with secondary component LF3 and L1.	QMFZ2	UL
25. Transformer (T1)		90E -xxx("xxx" to denote the part number, can be any alphanumeric character for marketing purposes only.)	Open type construction. Core: Ferrite. Coil: Copper magnet wire and triple insulated wire wound on bobbin. See enclosure ID 4-07 or ID 4-08 Insulation construction. The secondary used Triple Insulation Wires.	--	--
25a-1. Insulation system		YCI-130	Class B	OBJY2	UL

Object/part or Description	Manufacturer/ trademark	type/model	technical data	CCN	Marks of Conformity
of Transformer (T1)					
25a-2. Bobbin of Transformer (T1)	Sumitomo Bakelite Co Ltd	PM-9820	Phenolic, minimum 0.71 mm thick, rated minimum V-2, 150 degree C.	QFMZ2	UL
25a-2a. Bobbin of Transformer (T1) (Alternate)	Hitachi Chemical Co Ltd	CP-J-8800	Phenolic, minimum 0.71 mm thick, rated minimum V-2, 150 degree C.	QFMZ2	UL
25a-3. Insulating Tape of Transformer (T1)	3M Company Electrical Markets Div (EMD)	1350F-1, 1350F-2	Rated 130 degree C.	OANZ2	UL
25a-3a. Insulating Tape of Transformer (T1) (Alternate)	Symbio Inc	35660, 35661	Rated 130 degree C.	OANZ2	UL
25a-4. Insulating Tubing of Transformer (T1) (Optional)	Great Holding Industrial Co Ltd	TFT, TFS	Rated 200 degree C.	YDPU2	UL
25a-4a. Insulating Tubing of Transformer (T1) (Optional) (Alternate)	Zeus Industrial Products Inc	TFE-TW-300, TFE-SW-600	Rated 200 degree C.	YDPU2	UL
25a-5. Magnet Wire of Transformer (T1)	Various	Various	Rated 130 degree C. (Primary)	OBMW2	UL
25a-6. Triple Insulated Wire (T1)	Young Chang Silicone Co Ltd	STW-B	Rated 130 degree C. (Secondary)	OBJT2	UL
26. LED Indicator	--	--	(SELV) Fit to front chassis with LED plastic cover by snap-fit. The wavelength range of 400 nm to 710 mm.	--	--
27. LED Plastic Cover	Various	Various	Minimum V-1. Secured on top Enclosure by snap-fit.	QMFZ2	UL
28. Power supply cord (Optional)	--	--	Type SVT or SPT-2, min 125V, 2A, with NEMA 5-15P. Other end (connected to unit) (with cord-connected body, grounding type, suitable for cord size, rating not less than that of attachment plug)	ZJCZ, RTRT, AXUT	UL
28a. Power supply cord (Optional) (alternate)	--	--	Same as above, except for min 125V, 2A, with NEMA 1-15P. Other end (connected to unit) (with cord-connected body, suitable for cord size, rating not less than that of attachment plug)	ZJCZ, RTRT, AXUT	UL

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Enclosures

<u>Type</u>	<u>Supplement Id</u>	<u>Description</u>
Photographs	3-01	External view - front side
Photographs	3-02	External view - rear side
Photographs	3-03	Internal view - component side
Photographs	3-04	Internal view - component side without primary heat sink
Photographs	3-05	Internal view - trace side
Photographs	3-06	Spacing between core of T1 and LF3
Diagrams	4-01	Enclosure dimension
Diagrams	4-02	Strain Relief dimension
Diagrams	4-03	LF1 construction
Diagrams	4-04	LF2 construction
Diagrams	4-05	Primary Heat Sink and Upper Heat Sink
Diagrams	4-06	Secondary Heat Sink
Diagrams	4-07	Transformer (T1) construction for model 1-12V
Diagrams	4-08	Transformer (T1) construction for model 19 to 24V
Schematics + PWB	5-01	PWB layout
Manuals		
Miscellaneous	7-01	Addition Test Table
Miscellaneous	7-02	Model difference

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Enclosure

National Differences

USA / Canada

IEC 60950-1			
SubClause	Difference + Test	Result - Remark	Verdict

USA / Canada - Differences to IEC 60950-1:2005 (Second Edition)			
1.1	Equipment able to be installed in accordance with the National Electrical Code ANSI/NFPA 70 and the Canadian Electrical Code, Part1, and when applicable, the National Electrical Safety Code, IEEE C2.		Pass
1.1.1	Equipment able to be installed in accordance with ANSI/NFPA 75 and NEC Art. 645 unless intended for use outside of computer room and provided with such instructions.		Pass
1.1.2	Equipment in wire-line communication facilities serving high-voltage electric power stations operating at greater than 1kV are excluded.		N/A
1.1.2	Special requirements apply to equipment intended for use outdoors.		N/A
1.4.14	For Pluggable Equipment Type A, the protection in the installation is assumed to be 20 A.	Considered.	Pass
1.5.1	All IEC standards for components identified in Annex P.1 replaced by the relevant requirements of CSA and UL component standards in Annex P.1.		Pass
1.5.1	All IEC standards for components identified in Annex P.2 alternatively satisfied by the relevant requirements of CSA and UL component standards in Annex P.2.		Pass
1.5.5	Interconnecting cables acceptable for the application regarding voltage, current, temperature, flammability, mechanical serviceability and the like.	Interconnecting cables comply with the relevant requirements of this standard.	Pass
1.5.5	For other than limited power and TNV circuits, the type of output circuit identified for output connector.		N/A
1.5.5	External cable assemblies that exceed 3.05 m in length to be types specified in the NEC and CEC.		N/A
1.5.5	Detachable external interconnecting cables 3.05 m or less in length and provided with equipment marked to identify the responsible organization and the designation for the cable.		N/A
1.5.5	Building wiring and cable for use in ducts, plenums and other air handling space subject to special requirements and excluded from scope.		N/A
1.5.5	Telephone line and extension cords and the like comply with UL 1863 and CSA C22.2 No. 233.		N/A
1.6.1.2	Equipment intended for connection to a d.c. power (mains) distribution system is subject to special		N/A

IEC 60950-1			
SubClause	Difference + Test	Result - Remark	Verdict
	circuit classification requirements (e.g., TNV-2)		
1.6.1.2	Earthing of d.c. powered equipment provided.		N/A
1.7	Lamp replacement information indicated on lampholder in operator access area.		N/A
1.7.1	Special marking format for equipment intended for use on a supply system with an earthed neutral and more than one phase conductor.		N/A
1.7.1	Equipment voltage rating not higher than rating of the plug except under special conditions.		N/A
1.7.6	Special fuse replacement marking for operator accessible fuses.		N/A
1.7.7	Identification of terminal connection of the equipment earthing conductor.		N/A
1.7.7	Connectors and field wiring terminals for external Class 2 or Class 3 circuits provided with marking indicating minimum Class of wiring to be used.		N/A
1.7.7	Marking located adjacent to terminals and visible during wiring.		N/A
2.1.1.1	Bare TNV conductive parts in the interior of equipment normally protected against contact by a cover intended for occasional removal are exempt provided instructions include directions for disconnection of TNV prior to removal of the cover.		N/A
2.3.1.b	Other telecommunication signaling systems (e.g., message waiting) than described in 2.3.1(b) are subject to M.4.		N/A
2.3.1.b	For TNV-2 and TNV-3 circuits with other than ringing signals and with voltages exceeding 42.4 Vp or 60 V d.c., the maximum current limit through a 2000 Ohm or greater resistor with loads disconnected is 7.1 mA peak or 30 mA d.c. under normal conditions.		N/A
2.3.1.b	Limits for measurements across 5000 ohm resistor in the event of a single fault are replaced after 200 ms with the limits of M.3.1.4.		N/A
2.3.2.1	In the event of a single fault, the limits of 2.2.3 apply to SELV circuits and accessible conductive parts.		N/A
2.3.2.4	Enamel coating on signal transformer winding wire allowed as an alternative to Basic insulation in specific telecommunication applications when subjected to special construction requirements and		N/A

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SubClause	Difference + Test	Result - Remark	Verdict
	routine testing.		
2.5	Overcurrent protection device required for Class 2 and Class 3 limiting in accordance with the NEC, or for a Limited Power Source, not interchangeable with devices of higher ratings if operator replaceable.		N/A
2.6	Equipment having receptacles for output a.c. power connectors generated from an internal separately derived source have the earthed (grounded) circuit conductor suitably bonded to earth.		N/A
2.6.3.3	For Pluggable Equipment Type A, if a) b) or c) are not applicable, the current rating of the circuit is taken as 20 A		N/A
2.6.3.4	Capacity of connection between earthing terminal and parts required to be earthed subject to special conditions based on the current rating of the circuit.		N/A
2.6.3.4	Protective bonding conductors and their terminals of non-standard constructions (e.g. PWB traces) evaluated to limited short-circuit test of CSA C22.2 No.0.4.		N/A
2.6.4.1	Field wiring terminals for earthing conductors suitable for wire sizes (gauge) used in US and Canada.		N/A
2.7.1	Data for selection of special external branch circuit overcurrent devices marked on the equipment.		N/A
2.7.1	Standard supply outlets protected by overcurrent device in accordance with the NEC, and CEC, Part 1.		N/A
2.7.1	Overcurrent protection for individual transformers that distribute power to other units over branch circuit wiring.		N/A
2.7.1	Additional requirements for overcurrent protection apply to equipment provided with panelboards.		N/A
2.7.1	Non-motor-operated equipment requiring special overcurrent protective device marked with device rating.		N/A
2.10.5.12	Multi-layer winding wire subject to UL component wire requirements in addition to 2.10.5.12 and Annex U.		Pass
3.1.1	Permissible combinations of internal wiring/external cable sizes for overcurrent and short circuit protection.		Pass

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SubClause	Difference + Test	Result - Remark	Verdict
3.1.1	All interconnecting cables protected against overcurrent and short circuit.		N/A
3.2	Wiring methods permit connection of equipment to primary power supply in accordance with the NEC and CEC, Part 1.		N/A
3.2.1	Permitted use for flexible cords and plugs.		N/A
3.2.1	Flexible cords provided with attachment plug rated 125% of equipment current rating.		N/A
3.2.1	Any Class II equipment provided with 15 or 20 A standard supply outlets, Edison-base lampholders or single pole disconnect device provided with a polarized type attachment plug.		N/A
3.2.1.2	Equipment intended for connection to DC mains supply power systems complies with special wiring requirements (e.g., no permanent connection to supply by flexible cord).		N/A
3.2.1.2	Equipment with one pole of the DC mains supply connected to both the equipment mains input terminal and the main protective earthing terminal provided with special instructions and construction provisions for earthing		N/A
3.2.1.2	Equipment with means for connecting supply to earthing electrode conductor has no switches or protective devices between supply connection and earthing electrode connection.		N/A
3.2.1.2	Special markings and instructions for equipment with provisions to connect earthed conductor of a DC supply circuit to earthing conductor at the equipment.		N/A
3.2.1.2	Special markings and instructions for equipment with earthed conductor of a DC supply circuit connected to the earthing conductor at the equipment.		N/A
3.2.1.2	Terminals and leads provided for permanent connection of DC powered equipment to supply marked to indicate polarity if reverse polarity may result in a hazard.		N/A
3.2.3	Permanently connected equipment has provision for connecting and securing a field wiring system (i.e. conduit, or leads etc.) per the NEC and CEC, Part 1.		N/A
3.2.3	Permanently connected equipment may have terminals or leads not smaller than No. 18 AWG		N/A

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SubClause	Difference + Test	Result - Remark	Verdict
	(0.82 mm ²) and not less than 150 mm in length for connection of field installed wiring.		
3.2.3	If supply wires exceed 60 °C, marking indicates use of 75 °C or 90 °C wiring for supply connection as appropriate.		N/A
3.2.3	Equipment compatible with suitable trade sizes of conduits and cables.		N/A
3.2.5	Length of power supply cord limited to between 1.5 and 4.5 m unless shorter length used when intended for a special installation.		N/A
3.2.5	Conductors in power supply cords sized according to NEC and CEC, Part I.		N/A
3.2.5	Power supply cords and cord sets incorporate flexible cords suitable for the particular application.		N/A
3.2.6	Strain relief provided for non-detachable interconnecting cables not supplied by a limited power source.		N/A
3.2.9	Adequate wire bending space and volume of field wiring compartment required to properly make the field connections.		N/A
3.2.9	Equipment intended solely for installation in Restricted Access Locations using low voltage d.c. systems may not need provision for connecting and securing a field wiring system. A method of securing wiring or instructions provided to ensure the wiring is protected from abuse.		N/A
3.3	Field wiring terminals provided for interconnection of units for other than LPS or Class 2 circuits also comply with 3.3.		N/A
3.3	Interconnection of units by LPS or Class 2 conductors may have field wiring connectors other than those specified in 3.3 if wiring is reliably separated.		N/A
3.3.1	Terminals for the connection of neutral conductor identified by a distinctive white marking or other equally effective means.		N/A
3.3.3	Wire binding screw terminal permitted for connection of No. 10 AWG (5.3 mm ²) or smaller conductor if provided with upturned lugs, cupped washer or equivalent retention.		N/A
3.3.4	Terminals accept wire sizes (gauge) used in the U.S. and Canada.		N/A

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SubClause	Difference + Test	Result - Remark	Verdict
3.3.4	Terminals accept current-carrying conductors rated 125% of the equipment current rating.		N/A
3.3.6	Field wiring terminals marked to indicate the material(s) of the conductor appropriate for the terminals used.		N/A
3.3.6	Connection of an aluminum conductor not permitted to terminal for equipment earthing conductor.		N/A
3.3.6	Field wiring connections made through the use of suitable pressure connectors (including set screw type), solder lugs or splices to flexible leads.		N/A
3.4.2	Separate motor control device(s) required for cord-connected equipment rated more than 12 A, or with motor rated more than 1/3 hp or more than 120 V.		N/A
3.4.8	Vertically mounted disconnect devices oriented so up position of handle is "on".		N/A
3.4.11	For computer-room applications, equipment with battery systems capable of supplying 750 VA for 5 min require battery disconnect means.		N/A
4.2.8.1	Special opening restrictions for enclosures around CRTs with face dimension of 160 mm or more.		N/A
4.2.9	Compartment housing high-pressure lamp marked to indicate risk of explosion.		N/A
4.2.11	For equipment intended for mounting on racks and provided with slide/rails allowing the equipment to slide away from the rack for installation, service and maintenance, additional construction, performance and marking requirements are applicable to determine the adequacy of the slide/rails.		N/A
4.3.2	Loading test for equipment with handle(s) used to support more than 9 kg tested at four times the weight of the unit.		N/A
4.3.6	In addition to the IEC requirements, Direct Plug-in Equipment complies with UL 1310 or CSA 223 mechanical assembly requirements.		N/A
4.3.12	The maximum quantity of flammable liquid stored in equipment complies with ANSI/NFPA 30(Table NAE.6).		N/A
4.3.12	Equipment using replenishable liquids marked to indicate type of liquid to be used.		N/A
4.3.13.2	Equipment that produces x-radiation and does not		N/A

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SubClause	Difference + Test	Result - Remark	Verdict
	comply with 4.3.12 under all conditions of servicing marked to indicate the presence of radiation where readily visible.		
4.3.13.5	Requirements contained in the applicable national codes and regulations apply to lasers (21 CFR 1040 and REDR C1370).		N/A
4.7	Automated information storage equipment intended to contain more than 0.76 m ³ of combustible media requires provision for automatic sprinklers or a gaseous agent extinguishing system.		N/A
4.7.3.1	Equipment for use in environmental air space other than ducts or plenums provided with metal enclosure or with non-metallic enclosure having adequate fire-resistance and low smoke producing characteristics. Low smoke-producing characteristics evaluated according to UL 2043. Equipment for installation in space used for environmental air as described in Sec. 300-22(c) of the NEC provided with instructions indicating suitability for installation in such locations.		N/A
4.7.3.1	Flame spread rating for external surface of combustible material with exposed area greater than 0.93 m ² or a single dimension greater than 1.8 m; 50 or less for computer room applications or 200 or less for other applications.		N/A
4.7.3.4	Wire marked "VW-1" or "FT-1" considered equivalent.		Pass
5.1.8.2	Special earthing provisions and instructions for equipment with high touch current due to telecommunication network connections.		N/A
5.1.8.3	Touch current due to ringing voltage for equipment containing telecommunication network leads.		N/A
5.3.7	Overloading of SELV connectors and printed wiring board receptacles accessible to the operator.		N/A
5.3.7	Tests interrupted by opening of a component repeated two additional times.		N/A
5.3.9.1	Test interrupted by opening of wire or trace subject to certain conditions.		N/A
6	Specialized instructions provided for telephones that may be connected to a telecommunications network.		N/A
6	Marking identifying function of telecommunication type connectors not used for connection to a		N/A

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SubClause	Difference + Test	Result - Remark	Verdict
	telecommunication network.		
6.3	Equipment remotely powered over telecommunication wiring systems provided with specialized markings adjacent to the connection.		N/A
6.3	Overcurrent protection incorporated into equipment to provide power over telecommunication wiring system not interchangeable with devices of higher ratings if operator replaceable.		N/A
6.4	Additional requirements for equipment intended for connection to a telecommunication network using cable subject to overvoltage from power line failures (Fig. 6C).		N/A
6.4	Where 26 AWG line cord required by Fig. 6C, either the cord is provided with the equipment or described in the safety instructions.		N/A
7	Equipment associated with the cable distribution system may need to be subjected to applicable parts of Chapter 8 of the NEC.		N/A
H	Ionizing radiation measurements made under single fault conditions in accordance with the requirements of the Code of Federal Regulations 21 CFR 1020 and the Canadian Radiation Emitting Devices Act, REDR C1370.		N/A
M.2	Continuous ringing signals evaluated to Method A subjected to special accessibility considerations.		N/A
M.4	Special requirements for message waiting and similar telecommunications signals.		N/A
NAC	Equipment intended for use with a generic secondary protector marked with suitable instructions.		N/A
NAC	Equipment intended for use with a specific primary or secondary protector marked with suitable instructions.		N/A
NAD	Acoustic pressure from an ear piece less than 136 dBA for short duration disturbances, and less than 125 dBA for handsets, 118 dBA for headsets, and 121 dBA for insert earphones, for long duration disturbances.		N/A
NAD	Equipment connected to a telecommunication and cable distribution networks and supplied with an earphone intended to be held against, or in the ear is required to comply with special acoustic pressure requirements.		N/A

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SubClause	Difference + Test	Result - Remark	Verdict

NAF	Household/Home Office Document Shredders		N/A
NAF.1.7	Markings and instructions alert the user to key safety considerations related to use of shredders, including not intended to be used by children, avoid touching document feed opening, avoid clothes and hair entanglement, and avoid aerosol products.		N/A
NAF.2.8.3	Safety interlock cannot be inadvertently activated by the articulated accessibility probe (figure NAF.1).		N/A
NAF.3.4	Provided with an isolating switch complying with 3.4.2, including 3 mm contact gap, with appropriate markings associated with the switch.		N/A
NAF.4.4	Hazardous moving parts are not accessible, as determined using the articulated accessibility probe (figure NAF.1) and the accessibility probe/wedge (figures NAF.2/NAF.3).		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
1	GENERAL		Pass
1.5	Components		Pass
1.5.1	General		Pass
	Comply with IEC 60950-1 or relevant component standard	Components, which were found to affect safety aspects, comply with the requirements of this standard or within the safety aspects of the relevant IEC component standards. See Table 1.5.1 for details.	Pass
1.5.2	Evaluation and testing of components	<p>Components certified to IEC harmonized standard and checked for correct application.</p> <p>Components, for which no relevant IEC-Standard exist, have been tested under the conditions occurring in the equipment, using applicable parts of IEC 60950-1.</p> <p>Components not certified are used in accordance with their ratings and they comply with applicable parts of IEC 60950-1 and the relevant component Standard.</p>	Pass
1.5.3	Thermal controls		N/A
1.5.4	Transformers	Transformer used is suitable for the intended application and complies with the relevant requirements of the standard and particularly with those of Annex C.	Pass
1.5.5	Interconnecting cables	<p>Interconnecting cables comply with the relevant requirements of this standard.</p> <p>Interconnection cables for providing power to other equipment are considered as SELV/LPS and non-hazardous energy.</p>	Pass
1.5.6	Capacitors bridging insulation	Line-to-line capacitors are subclass X1 or X2.	Pass

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Clause	Requirement + Test	Result - Remark	Verdict
		<p>Double Insulation bridged by a single capacitor complying with IEC 60384-14, subclass Y1.</p> <p>Accessible conductive parts separated from other parts by DOUBLE or REINFORCED INSULATION bridged by CY1 comply with the requirements for LIMITED CURRENT CIRCUITS.</p>	
1.5.7	Resistors bridging insulation		N/A
1.5.7.1	Resistors bridging functional, basic or supplementary insulation		N/A
1.5.7.2	Resistors bridging double or reinforced insulation between a.c. mains and other circuits		N/A
1.5.7.3	Resistors bridging double or reinforced insulation between a.c. mains and antenna or coaxial cable	No bridging resistors.	N/A
1.5.8	Components in equipment for IT power systems		N/A
1.5.9	Surge suppressors		Pass
1.5.9.1	General		Pass
1.5.9.2	Protection of VDRs	A fuse connected in the line phase and in series with the VDR.	Pass
1.5.9.3	Bridging of functional insulation by a VDR	A VDR connected in line-neutral.	Pass
1.5.9.4	Bridging of basic insulation by a VDR		N/A
1.5.9.5	Bridging of supplementary, double or reinforced insulation by a VDR		N/A
1.6	Power interface		Pass
1.6.1	AC power distribution systems	TN power system .	Pass
1.6.2	Input current	Steady state input current of the unit did not exceed the rated current by more than 10% under maximum normal load. See Table 1.6.2 for details.	Pass
1.6.3	Voltage limit of hand-held equipment	Unit is not a hand-held equipment.	N/A
1.6.4	Neutral conductor		Pass
1.7	Marking and instructions		Pass

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Clause	Requirement + Test	Result - Remark	Verdict
1.7.1	Power rating	All relevant markings are provided on a label that is glued on the bottom enclosure.	Pass
	Rated voltage(s) or voltage range(s) (V)	100-240 Vac	Pass
	Symbol for nature of supply, for d.c. only	AC mains supply.	N/A
	Rated frequency or rated frequency range (Hz).....	50/60 Hz	Pass
	Rated current (mA or A)	1.5A	Pass
	Manufacturer's name or trademark or identification mark.....	GLOBTEK (SUZHOU) CO LTD or E336418.	Pass
	Model identification or type reference	Refer to the Model information at the beginning of this Test Report.	Pass
	Symbol for Class II equipment only	60417-1-IEC-5172 symbol marked.	Pass
	Other markings and symbols.....	Additional symbols may be provided when submitted for National Approval.	Pass
1.7.2	Safety instructions and marking	Operating/safety instructions made available to the user.	Pass
1.7.2.1	General		Pass
1.7.2.2	Disconnect devices	The Disconnect device is incorporated in the equipment.	Pass
1.7.2.3	Overcurrent protective device	The equipment is Pluggable Type A	Pass
1.7.2.4	IT Power distribution systems		N/A
1.7.2.5	Operator access with a tool		N/A
1.7.2.6	Ozone		N/A
1.7.3	Short duty cycles	Unit designed for continuous operation.	N/A
1.7.4	Supply voltage adjustment	Full range circuit design.	N/A
	Method and means of adjustment; reference to installation instructions		N/A
1.7.5	Power outlets on the equipment.....	No standard power outlets provided.	N/A
1.7.6	Fuse identification (marking, special fusing characteristics, cross-reference)	Fuse(s) provided with an unambiguous cross-reference to service documentation.	Pass
1.7.7	Wiring terminals	See below for details.	N/A
1.7.7.1	Protective earthing and bonding terminals.....	Appliance inlet provided.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
1.7.7.2	Terminals for a.c. mains supply conductors		N/A
1.7.7.3	Terminals for d.c. mains supply conductors	AC mains supply.	N/A
1.7.8	Controls and indicators		N/A
1.7.8.1	Identification, location and marking :		N/A
1.7.8.2	Colours :		N/A
1.7.8.3	Symbols according to IEC 60417 :		N/A
1.7.8.4	Markings using figures..... :		N/A
1.7.9	Isolation of multiple power sources :	Single AC mains supply.	N/A
1.7.10	Thermostats and other regulating devices :	No thermostats or other regulating devices provided.	N/A
1.7.11	Durability	All markings provided on UL Recognized Component labels suitable for surface they are applied upon and meet the durability test.	Pass
1.7.12	Removable parts	No removable parts.	N/A
1.7.13	Replaceable batteries..... :	No batteries provided.	N/A
	Language(s) :		-
1.7.14	Equipment for restricted access locations..... :	Not limited for use in restricted access locations.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict

2	PROTECTION FROM HAZARDS		Pass
2.1	Protection from electric shock and energy hazards		Pass
2.1.1	Protection in operator access areas	The accessibility of hazardous or ELV voltages are prevented with the final system. The inspection with test pin and test finger should therefore be conducted with the approval of the end system.	Pass
2.1.1.1	Access to energized parts	Operator can gain access only to parts at SELV.	Pass
	Test by inspection..... :	Unit provided with plastic enclosure without any openings. Operator can not contact with any parts with only basic insulation to ELV or hazardous voltage. Refer to E135856-A97-UL-1.	Pass
	Test with test finger (Figure 2A) :	The test finger was unable to contact bare hazardous parts, basic insulation, or ELV circuits. Refer to E135856-A97-UL-1.	Pass
	Test with test pin (Figure 2B) :	The test pin was unable to contact bare hazardous parts. Refer to E135856-A97-UL-1.	Pass
	Test with test probe (Figure 2C)..... :	No connection to TNV circuits.	N/A
2.1.1.2	Battery compartments	No battery compartments provided.	N/A
2.1.1.3	Access to ELV wiring	No ELV wiring in operator access area.	N/A
	Working voltage (V _{peak} or V _{rms}); minimum distance through insulation (mm) :		-
2.1.1.4	Access to hazardous voltage circuit wiring	No hazardous voltage circuit in operator access area.	N/A
2.1.1.5	Energy hazards :	Evaluated in E135856-A97-UL-1.	Pass
2.1.1.6	Manual controls	No conductive shafts of operating knobs or handles provided.	N/A
2.1.1.7	Discharge of capacitors in equipment		Pass
	Measured voltage (V); time-constant (s) :	Evaluated in E135856-A97-	-

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Clause	Requirement + Test	Result - Remark	Verdict
		UL-1.	
2.1.1.8	Energy hazards - d.c. mains supply		N/A
	a) Capacitor connected to the d.c. mains supply .. :		N/A
	b) Internal battery connected to the mains supply :		N/A
2.1.1.9	Audio amplifiers :		N/A
2.1.2	Protection in service access areas	No maintenance work in operation mode necessary.	N/A
2.1.3	Protection in restricted access locations	Not limited for use in restricted access locations.	N/A
2.2	SELV circuits		Pass
2.2.1	General requirements	See below for details.	Pass
2.2.2	Voltages under normal conditions (V) :	Between any conductors of the SELV circuit 42.4 Vpk or 60 Vdc are not exceeded. See Report Reference No. E135856-A97-UL-1 for detail.	Pass
2.2.3	Voltages under fault conditions (V) :	Single fault did not cause excessive voltage in accessible SELV circuit. Limits of 71 Vpk and 120 Vdc were not exceed. See Report Reference No. E135856-A97-UL-1 for detail.	Pass
2.2.4	Connection of SELV circuits to other circuits :	SELV circuits are only connected to other secondary circuits. SELV circuit and all interconnected circuits separated from primary by reinforced insulation. SELV circuit does not exceed the SELV limits under normal and fault conditions.	Pass
2.3	TNV circuits		N/A
2.3.1	Limits		N/A
	Type of TNV circuits :		-
2.3.2	Separation from other circuits and from accessible parts		N/A
2.3.2.1	General requirements		N/A
2.3.2.2	Protection by basic insulation		N/A
2.3.2.3	Protection by earthing		N/A
2.3.2.4	Protection by other constructions :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
2.3.3	Separation from hazardous voltages		N/A
	Insulation employed..... :		-
2.3.4	Connection of TNV circuits to other circuits		N/A
	Insulation employed..... :		-
2.3.5	Test for operating voltages generated externally		N/A
2.4	Limited current circuits		Pass
2.4.1	General requirements	Considered for bridging capacitor.	Pass
2.4.2	Limit values	0.7 mA peak	Pass
	Frequency (Hz)..... :	See Report Reference No. E135856-A97-UL-1 for detail.	-
	Measured current (mA)..... :	See Report Reference No. E135856-A97-UL-1 for detail.	-
	Measured voltage (V)..... :	See Report Reference No. E135856-A97-UL-1 for detail.	-
	Measured circuit capacitance (nF or uF)..... :	See Report Reference No. E135856-A97-UL-1 for detail.	-
2.4.3	Connection of limited current circuits to other circuits	The LIMITED CURRENT CIRCUIT connected to other circuits complies with the requirements of Sub-clause 2.4.1.	Pass
2.5	Limited power sources		Pass
	a) Inherently limited output		N/A
	b) Impedance limited output		N/A
	c) Regulating network limited output under normal operating and single fault condition		Pass
	d) Overcurrent protective device limited output		N/A
	Max. output voltage (V), max. output current (A), max. apparent power (VA)..... :	See Report Reference No. E135856-A97-UL-1 for detail.	-
	Current rating of overcurrent protective device (A) :		-
2.6	Provisions for earthing and bonding		N/A
2.6.1	Protective earthing		N/A
2.6.2	Functional earthing		N/A
2.6.3	Protective earthing and protective bonding conductors		N/A
2.6.3.1	General		N/A
2.6.3.2	Size of protective earthing conductors		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Rated current (A), cross-sectional area (mm ²), AWG		-
2.6.3.3	Size of protective bonding conductors		N/A
	Rated current (A), cross-sectional area (mm ²), AWG		-
	Protective current rating (A), cross-sectional area (mm ²), AWG		-
2.6.3.4	Resistance of earthing conductors and their terminations; resistance (ohm), voltage drop (V), test current (A), duration (min).....		N/A
2.6.3.5	Colour of insulation.....		N/A
2.6.4	Terminals		N/A
2.6.4.1	General		N/A
2.6.4.2	Protective earthing and bonding terminals		N/A
	Rated current (A), type, nominal thread diameter (mm)		-
2.6.4.3	Separation of the protective earthing conductor from protective bonding conductors		N/A
2.6.5	Integrity of protective earthing		N/A
2.6.5.1	Interconnection of equipment		N/A
2.6.5.2	Components in protective earthing conductors and protective bonding conductors		N/A
2.6.5.3	Disconnection of protective earth		N/A
2.6.5.4	Parts that can be removed by an operator		N/A
2.6.5.5	Parts removed during servicing		N/A
2.6.5.6	Corrosion resistance		N/A
2.6.5.7	Screws for protective bonding		N/A
2.6.5.8	Reliance on telecommunication network or cable distribution system		N/A
2.7	Overcurrent and earth fault protection in primary circuits		Pass
2.7.1	Basic requirements	Protective device, Fuse (F1), is integrated in the unit.	Pass
	Instructions when protection relies on building installation	Pluggable unit, type A.	N/A
2.7.2	Faults not covered in 5.3.7	The protective device is properly sized and mounted.	Pass
2.7.3	Short-circuit backup protection	Protective devices have adequate breaking (rupturing) capacity to interrupt the	Pass

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Clause	Requirement + Test	Result - Remark	Verdict

		maximum fault current (including short-circuit current).	
2.7.4	Number and location of protective devices	One protective device in the live phase.	Pass
2.7.5	Protection by several devices	Only one fuse provided.	N/A
2.7.6	Warning to service personnel	No service work necessary.	N/A
2.8	Safety interlocks		N/A
2.8.1	General principles		N/A
2.8.2	Protection requirements		N/A
2.8.3	Inadvertent reactivation		N/A
2.8.4	Fail-safe operation		N/A
2.8.5	Moving parts		N/A
2.8.6	Overriding		N/A
2.8.7	Switches and relays		N/A
2.8.7.1	Contact gaps (mm)		N/A
2.8.7.2	Overload test		N/A
2.8.7.3	Endurance test		N/A
2.8.7.4	Electric strength test		N/A
2.8.8	Mechanical actuators		N/A
2.9	Electrical insulation		Pass
2.9.1	Properties of insulating materials		Pass
2.9.2	Humidity conditioning	48 hours. See Report Reference No. E135856-A97-UL-1 for detail.	Pass
	Relative humidity (%), temperature (°C).....	93%, 30 degree C. See Report Reference No. E135856-A97-UL-1 for detail.	-
2.9.3	Grade of insulation	Electric strength test was conducted after the humidity treatment. See Report Reference No. E135856-A97-UL-1 for detail.	Pass
2.9.4	Separation from hazardous voltages		Pass
	Method(s) used.....	Method 1	-
2.10	Clearances, creepage distances and distances through insulation		Pass
2.10.1	General		Pass
2.10.1.1	Frequency.....	Less than 30 Khz	Pass

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Clause	Requirement + Test	Result - Remark	Verdict
2.10.1.2	Pollution degrees..... :	Pollution degree 2 applicable.	Pass
2.10.1.3	Reduced values for functional insulation	See Sub clause 5.3.4 for details.	Pass
2.10.1.4	Intervening unconnected conductive parts		N/A
2.10.1.5	Insulation with varying dimensions		N/A
2.10.1.6	Special separation requirements		N/A
2.10.1.7	Insulation in circuits generating starting pulses		N/A
2.10.2	Determination of working voltage		Pass
2.10.2.1	General		Pass
2.10.2.2	RMS working voltage		Pass
2.10.2.3	Peak working voltage		Pass
2.10.3	Clearances	See Table 2.10.3 and 2.10.4 for details.	Pass
2.10.3.1	General	Annex F and minimum clearances considered.	Pass
2.10.3.2	Mains transient voltages	Overvoltage category II; Mains transient voltage is 2500V peak.	Pass
	a) AC mains supply :	Less than 300 Vrms.	Pass
	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 Table 2.10.3 and 2.10.4 for details.	Pass
2.10.3.4	Clearances in secondary circuits	Compliances with 5.3.4(c).	Pass
2.10.3.5	Clearances in circuits having starting pulses		N/A
2.10.3.6	Transients from a.c. mains supply..... :		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	Normal transient voltage considered (overlarge category II for primary circuit).	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

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Clause	Requirement + Test	Result - Remark	Verdict
2.10.4	Creepage distances	See Table 2.10.3 and 2.10.4 for details. For secondary circuits, see sub-clause 5.3.4.	Pass
2.10.4.1	General		Pass
2.10.4.2	Material group and comparative tracking index		Pass
	CTI tests	Material group IIIb; $100 \leq CTI < 175$.	-
2.10.4.3	Minimum creepage distances	(see appended table 2.10.3 and 2.10.4)	Pass
2.10.5	Solid insulation	(see appended table 2.10.5)	Pass
2.10.5.1	General		Pass
2.10.5.2	Distances through insulation	Certified optical insulators used. See Table 1.5.1 for details.	Pass
2.10.5.3	Insulating compound as solid insulation	Certified optical insulators used. See Table 1.5.1 for details.	Pass
2.10.5.4	Semiconductor devices		Pass
2.10.5.5	Cemented joints		N/A
2.10.5.6	Thin sheet material - General	Thin sheet material in form of polyester tape used for transformers, heatsink. See Table 1.5.1 for details.	Pass
2.10.5.7	Separable thin sheet material		Pass
	Number of layers (pcs)	Min. 2 layers of Insulation tape used as Reinforced Insulation.	-
2.10.5.8	Non-separable thin sheet material		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		Pass
	Electric strength test.....	(see appended table 5.2)	-
2.10.5.11	Insulation in wound components	See Sub clause 2.10.5.14.	Pass
2.10.5.12	Wire in wound components	Triple insulated wiring were used for supplementary or reinforced insulation.	Pass
	Working voltage.....	(see appended table 2.10.3 and 2.10.4)	Pass
	a) Basic insulation not under stress		N/A
	b) Basic, supplementary, reinforced insulation.....		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

	c) Compliance with Annex U	Three layers for REINFORCED INSULATION.	Pass
	Two wires in contact inside wound component; angle between 45° and 90°	Physical separation in the form of insulating sleeving provided to relieve mechanical stress at the crossover point.	Pass
2.10.5.13	Wire with solvent-based enamel in wound components		N/A
	Electric strength test		-
	Routine test		N/A
2.10.5.14	Additional insulation in wound components	Thin sheet insulation provided for reinforced insulation. See Sub clause 2.10.5.6.	Pass
	Working voltage	(see appended table 2.10.3 and 2.10.4)	Pass
	- Basic insulation not under stress		N/A
	- Supplementary, reinforced insulation	See Sub clause 2.10.5.6.	Pass
2.10.6	Construction of printed boards		Pass
2.10.6.1	Uncoated printed boards		Pass
2.10.6.2	Coated printed boards		N/A
2.10.6.3	Insulation between conductors on the same inner surface of a printed board		N/A
2.10.6.4	Insulation between conductors on different layers of a printed board		N/A
	Distance through insulation		N/A
	Number of insulation layers (pcs)		N/A
2.10.7	Component external terminations		N/A
2.10.8	Tests on coated printed boards and coated components		N/A
2.10.8.1	Sample preparation and preliminary inspection		N/A
2.10.8.2	Thermal conditioning		N/A
2.10.8.3	Electric strength test		N/A
2.10.8.4	Abrasion resistance test		N/A
2.10.9	Thermal cycling		N/A
2.10.10	Test for Pollution Degree 1 environment and insulating compound		N/A
2.10.11	Tests for semiconductor devices and cemented joints		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
2.10.12	Enclosed and sealed parts		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
3	WIRING, CONNECTIONS AND SUPPLY		Pass
3.1	General		Pass
3.1.1	Current rating and overcurrent protection	All internal wiring used in the distribution of primary power protected against overcurrent and short circuit by suitably rated protective devices.	Pass
3.1.2	Protection against mechanical damage	The wires are routed away from sharp edges and parts which could damage insulation.	Pass
3.1.3	Securing of internal wiring	The wires are positioned in such a manner that prevents excessive strain, loosening of terminal connections and damage of conductor insulation.	Pass
3.1.4	Insulation of conductors	Uninsulated conductors have been adequately fixed to prevent, in normal use, any reduction of creepage or clearance distances below those prescribed by in 2.9.	Pass
3.1.5	Beads and ceramic insulators		N/A
3.1.6	Screws for electrical contact pressure		N/A
3.1.7	Insulating materials in electrical connections		Pass
3.1.8	Self-tapping and spaced thread screws		N/A
3.1.9	Termination of conductors	All conductors are reliably secured by use of solder-pin.	Pass
	10 N pull test	Base on inspection.	Pass
3.1.10	Sleeving on wiring	No sleeving used as supplementary insulation.	N/A
3.2	Connection to mains supply		Pass
3.2.1	Means of connection	Appliance inlet used.	Pass
3.2.1.1	Connection to an a.c. mains supply	Appliance inlet used.	Pass
3.2.1.2	Connection to a d.c. mains supply	AC mains supply.	N/A
3.2.2	Multiple supply connections	Unit with single mains supply.	N/A
3.2.3	Permanently connected equipment	Unit is not permanently connected equipment.	N/A
	Number of conductors, diameter of cable and conduits (mm)..... :		-

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Clause	Requirement + Test	Result - Remark	Verdict
3.2.4	Appliance inlets	Appliance inlet can be inserted without difficulty and so placed that, after insertion of the connector, the equipment is not supported by the connector for any position of normal use on a flat surface.	Pass
3.2.5	Power supply cords		Pass
3.2.5.1	AC power supply cords	Optional.	Pass
	Type..... :	See Tabel 1.5.1 for details.	-
	Rated current (A), cross-sectional area (mm ²), AWG :	See Table 1.5.1 for details.	-
3.2.5.2	DC power supply cords		N/A
3.2.6	Cord anchorages and strain relief		N/A
	Mass of equipment (kg), pull (N) :		-
	Longitudinal displacement (mm) :		-
3.2.7	Protection against mechanical damage		N/A
3.2.8	Cord guards		N/A
	Diameter of minor dimension D (mm); test mass (g) :		-
	Radius of curvature of cord (mm) :	The equipment is not permanently connected or provided with a non-detachable power supply cord.	-
3.2.9	Supply wiring space		N/A
3.3	Wiring terminals for connection of external conductors		N/A
3.3.1	Wiring terminals		N/A
3.3.2	Connection of non-detachable power supply cords		N/A
3.3.3	Screw terminals		N/A
3.3.4	Conductor sizes to be connected		N/A
	Rated current (A), cord/cable type, cross-sectional area (mm ²) :		-
3.3.5	Wiring terminal sizes		N/A
	Rated current (A), type and nominal thread diameter (mm) :		-
3.3.6	Wiring terminals design		N/A
3.3.7	Grouping of wiring terminals		N/A
3.3.8	Stranded wire		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
3.4	Disconnection from the mains supply		Pass
3.4.1	General requirement	Disconnect device provided.	Pass
3.4.2	Disconnect devices	Appliance inlet.	Pass
3.4.3	Permanently connected equipment	Not a permanently connected equipment.	N/A
3.4.4	Parts which remain energized	No accessible parts on the supply side of the disconnect device.	Pass
3.4.5	Switches in flexible cords		N/A
3.4.6	Number of poles - single-phase and d.c. equipment	Disconnect device disconnects all poles simultaneously.	Pass
3.4.7	Number of poles - three-phase equipment	Single-phase equipment.	N/A
3.4.8	Switches as disconnect devices		N/A
3.4.9	Plugs as disconnect devices	Appliance inlet used as disconnect device.	N/A
3.4.10	Interconnected equipment	Interconnection to other devices by secondary output cable only.	N/A
3.4.11	Multiple power sources	Only one supply connection provided.	N/A
3.5	Interconnection of equipment		Pass
3.5.1	General requirements		Pass
3.5.2	Types of interconnection circuits :	Interconnection circuits are SELV CIRCUITS.	Pass
3.5.3	ELV circuits as interconnection circuits	No ELV interconnection.	N/A
3.5.4	Data ports for additional equipment		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
4	PHYSICAL REQUIREMENTS		Pass
4.1	Stability		Pass
	Angle of 10°	Based on construction, the test was deemed not necessary.	Pass
	Test force (N)..... :		N/A
4.2	Mechanical strength		Pass
4.2.1	General		Pass
	See below for details.		
4.2.2	Steady force test, 10 N	Components which continue to comply with the requirements of Sub clause 2.10 are well insulated.	N/A
4.2.3	Steady force test, 30 N		N/A
4.2.4	Steady force test, 250 N	No hazards as a result of the Steady Force Test (250 N) applied to enclosure. See Report Reference No. E135856-A97-UL-1 for detail.	Pass
4.2.5	Impact test	500g steel sphere ball fall or swing from 1.3m height onto outer plastic enclosure. The test was done with all enclosure materials.	Pass
	Fall test		Pass
	Swing test		N/A
4.2.6	Drop test; height (mm)..... :		N/A
4.2.7	Stress relief test	No indication of shrinkage or distortion on enclosures due to the Stress Relief Test (97 deg. C/7 hours). See Report Reference No. E135856-A97-UL-1 for detail.	Pass
4.2.8	Cathode ray tubes		N/A
	Picture tube separately certified		N/A
4.2.9	High pressure lamps		N/A
4.2.10	Wall or ceiling mounted equipment; force (N)		N/A
4.3	Design and construction		Pass
4.3.1	Edges and corners	Edges and corners of the enclosure are rounded.	Pass
4.3.2	Handles and manual controls; force (N)..... :	No handles or controls provided.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
4.3.3	Adjustable controls	No adjustable controls provided.	N/A
4.3.4	Securing of parts	No loosening of parts impairing creepage distances or clearances over supplementary or reinforced insulation is likely to occur.	Pass
4.3.5	Connection by plugs and sockets		N/A
4.3.6	Direct plug-in equipment	No direct plug-in type.	N/A
	Torque		N/A
	Compliance with the relevant mains plug standard:		N/A
4.3.7	Heating elements in earthed equipment	No heating elements provided.	N/A
4.3.8	Batteries	No batteries provided.	N/A
	- Overcharging of a rechargeable battery		N/A
	- Unintentional charging of a non-rechargeable battery		N/A
	- Reverse charging of a rechargeable battery		N/A
	- Excessive discharging rate for any battery		N/A
4.3.9	Oil and grease	Insulation used not considered to be exposed to oil or grease.	N/A
4.3.10	Dust, powders, liquids and gases	Unit used not considered to be exposed to dust, powders, liquids and gases.	N/A
4.3.11	Containers for liquids or gases	No container for liquid or gas provided.	N/A
4.3.12	Flammable liquids.....	No flammable liquids provided.	N/A
	Quantity of liquid (l).....		N/A
	Flash point (°C).....		N/A
4.3.13	Radiation		Pass
4.3.13.1	General	LED indicator.	Pass
4.3.13.2	Ionizing radiation		N/A
	Measured radiation (pA/kg)		-
	Measured high-voltage (kV)		-
	Measured focus voltage (kV).....		-
	CRT markings.....		-
4.3.13.3	Effect of ultraviolet (UV) radiation on materials		N/A
	Part, property, retention after test, flammability classification		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
4.3.13.4	Human exposure to ultraviolet (UV) radiation		N/A
4.3.13.5	Laser (including LEDs)	This product contains only visible indicator LED (Class 1) operating in the range of 400 - 710 nm wavelength. No IEC 60825-1 evaluation was deemed necessary. Additional review may be required at the discretion of the accepting NCB. Non-lasing provided for indicating only.	Pass
	Laser class	(For indicator LEDs, see above statement.)	-
4.3.13.6	Other types		N/A
4.4	Protection against hazardous moving parts		N/A
4.4.1	General	Equipment does not have any hazardous moving parts.	N/A
4.4.2	Protection in operator access areas.....		N/A
4.4.3	Protection in restricted access locations		N/A
4.4.4	Protection in service access areas		N/A
4.5	Thermal requirements		Pass
4.5.1	General		Pass
4.5.2	Temperature tests	See Table 4.5 for details. See Report Reference No. E135856-A97-UL-1 for detail.	Pass
	Normal load condition per Annex L	Operated in the most unfavorable way of operation given in the operating instructions until steady conditions established.	-
4.5.3	Temperature limits for materials	See Table 4.5 for details.	Pass
4.5.4	Touch temperature limits	See Table 4.5 for details.	Pass
4.5.5	Resistance to abnormal heat.....		N/A
4.6	Openings in enclosures		N/A
4.6.1	Top and side openings		N/A
	Dimensions (mm)	No openings provided.	-
4.6.2	Bottoms of fire enclosures		N/A
	Construction of the bottom, dimensions (mm).....	No openings provided.	-
4.6.3	Doors or covers in fire enclosures		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
4.6.4	Openings in transportable equipment	No openings provided.	N/A
4.6.4.1	Constructional design measures		N/A
	Dimensions (mm) :		-
4.6.4.2	Evaluation measures for larger openings		N/A
4.6.4.3	Use of metallized parts		N/A
4.6.5	Adhesives for constructional purposes		N/A
	Conditioning temperature (°C), time (weeks) :		-
4.7	Resistance to fire		Pass
4.7.1	Reducing the risk of ignition and spread of flame	Method 1: Selection and application of components and materials which minimize the possibility of ignition and spread of flame.	Pass
	Method 1, selection and application of components wiring and materials	See below	Pass
	Method 2, application of all of simulated fault condition tests		N/A
4.7.2	Conditions for a fire enclosure		Pass
4.7.2.1	Parts requiring a fire enclosure	Fire enclosure covers all parts.	Pass
4.7.2.2	Parts not requiring a fire enclosure		N/A
4.7.3	Materials		Pass
4.7.3.1	General		Pass
4.7.3.2	Materials for fire enclosures	Equipment is moveable with mass less than 18 kg. Fire enclosure material is V-1 minimum. See Table 1.5.1 for details.	Pass
4.7.3.3	Materials for components and other parts outside fire enclosures		Pass
4.7.3.4	Materials for components and other parts inside fire enclosures	All internal materials are rated V-2 or better or are mounted on a PWB rated V-1 or better	Pass
4.7.3.5	Materials for air filter assemblies		N/A
4.7.3.6	Materials used in high-voltage components		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

5	ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS		Pass
5.1	Touch current and protective conductor current		Pass
5.1.1	General		Pass
5.1.2	Configuration of equipment under test (EUT)	Unit has only one mains connection.	Pass
5.1.2.1	Single connection to an a.c. mains supply		Pass
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	Single phase unit intended only for connection to star TN system.	Pass
5.1.4	Application of measuring instrument	Test made to 10 by 20 cm metal foil in contact with accessible non-conductive part. Tested using D.1 measuring instrument.	Pass
5.1.5	Test procedure		Pass
5.1.6	Test measurements	See below for details.	Pass
	Supply voltage (V)	See Enclosure miscellaneous ID 7-01 for details.	-
	Measured touch current (mA).....	See Enclosure miscellaneous ID 7-01 for details.	-
	Max. allowed touch current (mA).....	See Enclosure miscellaneous ID 7-01 for details.	-
	Measured protective conductor current (mA).....	See Enclosure miscellaneous ID 7-01 for details.	-
	Max. allowed protective conductor current (mA) ...	See Enclosure miscellaneous ID 7-01 for details.	-
5.1.7	Equipment with touch current exceeding 3,5 mA		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		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)		-

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Clause	Requirement + Test	Result - Remark	Verdict

	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		Pass
5.2.1	General		Pass
5.2.2	Test procedure	See Table 5.2 for details.	Pass
5.3	Abnormal operating and fault conditions		Pass
5.3.1	Protection against overload and abnormal operation	See Table 5.3 for details.	Pass
5.3.2	Motors		N/A
5.3.3	Transformers	Transformers are constructed in accordance with the applicable Sub clauses and Annex C. See Table 5.3 for details.	Pass
5.3.4	Functional insulation..... :	Method (c). Functional insulation between the phases before the fuse complies with method a).	Pass
5.3.5	Electromechanical components		N/A
5.3.6	Audio amplifiers in ITE..... :		N/A
5.3.7	Simulation of faults	See Table 5.3 for details.	Pass
5.3.8	Unattended equipment		N/A
5.3.9	Compliance criteria for abnormal operating and fault conditions	See Table 5.3 for details.	Pass
5.3.9.1	During the tests	No fire, emission of molten metal or deformation was noted during the tests. The maximum temperature of 300 deg. C was not exceeded.	Pass
5.3.9.2	After the tests	Electric Strength tests performed after abnormal and fault tests.	Pass

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Clause	Requirement + Test	Result - Remark	Verdict
6	CONNECTION TO TELECOMMUNICATION NETWORKS		N/A
7	CONNECTION TO CABLE DISTRIBUTION SYSTEMS		N/A
A	ANNEX A, TESTS FOR RESISTANCE TO HEAT AND FIRE		N/A
B	ANNEX B, MOTOR TESTS UNDER ABNORMAL CONDITIONS (see 4.7.2.2 and 5.3.2)		N/A
C	ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3)		Pass
	Position	Transformer (T1)	-
	Manufacturer	See Table 1.5.1 for details.	-
	Type	See Table 1.5.1 for details.	-
	Rated values	See Table 1.5.1 for details.	-
	Method of protection	Inherent circuit protection.	-
C.1	Overload test	See Table 5.3 for details. See Report Reference No. E135856-A97-UL-1 for detail.	Pass
C.2	Insulation	(see appended table 5.2)	Pass
	Protection from displacement of windings	Triple insulated wire used.	Pass
D	ANNEX D, MEASURING INSTRUMENTS FOR TOUCH-CURRENT TESTS (see 5.1.4)		Pass
D.1	Measuring instrument		Pass
D.2	Alternative measuring instrument		N/A
E	ANNEX E, TEMPERATURE RISE OF A WINDING (see 1.4.13)		N/A
F	ANNEX F, MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES (see 2.10 and Annex G)		Pass

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Clause	Requirement + Test	Result - Remark	Verdict
G	ANNEX G, ALTERNATIVE METHOD FOR DETERMINING MINIMUM CLEARANCES		N/A
H	ANNEX H, IONIZING RADIATION (see 4.3.13)		N/A
J	ANNEX J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)		N/A
K	ANNEX K, THERMAL CONTROLS (see 1.5.3 and 5.3.8)		N/A
L	ANNEX L, NORMAL LOAD CONDITIONS FOR SOME TYPES OF ELECTRICAL BUSINESS EQUIPMENT (see 1.2.2.1 and 4.5.2)		Pass
L.1	Typewriters		N/A
L.2	Adding machines and cash registers		N/A
L.3	Erasers		N/A
L.4	Pencil sharpeners		N/A
L.5	Duplicators and copy machines		N/A
L.6	Motor-operated files		N/A
L.7	Other business equipment		Pass
M	ANNEX M, CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1)		N/A
N	ANNEX N, IMPULSE TEST GENERATORS (see 1.5.7.2, 1.5.7.3, 2.10.3.9, 6.2.2.1, 7.3.2, 7.4.3 and Clause G.5)		N/A
P	ANNEX P, NORMATIVE REFERENCES		Pass
Q	ANNEX Q, Voltage dependent resistors (VDRs) (see 1.5.9.1)		N/A
R	ANNEX R, EXAMPLES OF REQUIREMENTS FOR QUALITY CONTROL PROGRAMMES		N/A

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S	ANNEX S, PROCEDURE FOR IMPULSE TESTING (see 6.2.2.3)		N/A
T	ANNEX T, GUIDANCE ON PROTECTION AGAINST INGRESS OF WATER (see 1.1.2)		N/A
U	ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4)		Pass
 :	Certified triple insulated wire used, see Table 1.5.1 for details.	-
V	ANNEX V, AC POWER DISTRIBUTION SYSTEMS (see 1.6.1)		Pass
V.1	Introduction		Pass
V.2	TN power distribution systems		Pass
W	ANNEX W, SUMMATION OF TOUCH CURRENTS		N/A
X	ANNEX X, MAXIMUM HEATING EFFECT IN TRANSFORMER TESTS (see clause C.1)		N/A
Y	ANNEX Y, ULTRAVIOLET LIGHT CONDITIONING TEST (see 4.3.13.3)		N/A
Z	ANNEX Z, OVERVOLTAGE CATEGORIES (see 2.10.3.2 and Clause G.2)		Pass
AA	ANNEX AA, MANDREL TEST (see 2.10.5.8)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

1.6.2	TABLE: electrical data (in normal conditions)						Pass
U (V)	I (A)	I rated (A)	P (W)	Fuse #	I fuse (A)	condition/status	
--	--	--	--	--	--	--	
supplementary information:							
See Report Reference No. E135856-A97-UL-1 for detail.							

2.10.3 and 2.10.4	TABLE: clearance and creepage distance measurements						Pass
Clearance (cl) and creepage distance (cr) at/of/between:	U peak (V)	U r.m.s. (V)	Required cl (mm)	cl (mm)	Required cr (mm)	cr (mm)	
Following measured on trace side of PWB.	--	--	--	--	--	--	
Primary trace, under F1.	340	240	1.5	2.9	2.5	2.9	
Primary F1 trace to secondary heat sink trace.	340	240	4.0	7.1	5.0	7.1	
Primary F1, line trace to CY2, CY3 secondary trace.	340	240	4.0	5.6	5.0	5.6	
Primary line trace to BD1 trace. (Before fuse)	340	240	1.5	4.0	2.5	4.0	
Primary line to neutral trace. (Before fuse)	340	240	1.5	2.6	2.5	2.6	
Primary trace to earth trace, under CY2, CY3.	340	240	2.0	7.7	2.5	7.7	
Primary trace to secondary trace, under CY1. Note: Provided with slot minimum 1.0 mm wide by 4.4 mm in length.	352	222	4.0	5.6	5.0	7.7	
Primary trace to secondary trace, under U2.	368	229	4.0	7.0	5.0	7.0	
Primary R17 trace to secondary R12C trace, under T1.	368	229	4.0	6.3	5.0	6.3	
Following measured on component side of PWB.	--	--	--	--	--	--	
T1 primary winding, core to secondary component LF3, L1, E5, E4, C9.	504	288	4.4	6.8	5.8	6.8	
T1 core to secondary component Q2 screw.	504	288	4.4	6.0	5.8	v6.0	
T1 core to U2 secondary pin.	504	288	4.4	9.5	5.8	9.5	
Primary F1 body to secondary heat sink.	340	240	4.0	5.0	5.0	5.0	
T1: Transformer, the core considered as primary, triple	--	--	--	--	--	--	

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Clause	Requirement + Test			Result - Remark		Verdict

insulated wire used for secondary windings.						
Primary winding to secondary pin.	504	288	4.4	8.8	5.8	8.8
Core to secondary pin.	504	288	4.4	6.0	5.8	6.0
(10CA34371) measured on model DSA-60PFB-24 b cd	--	--	--	--	--	--
Following measured on trace side of PWB.	--	--	--	--	--	--
Primary trace, under F1.	340	240	1.5	2.9	2.5	2.9
Primary F1 trace to secondary heat sink trace.	340	240	4.0	7.1	5.0	7.1
Primary F1, line trace to functional earth trace.	340	240	4.0	5.6	5.0	5.6
Primary line trace to BD1 trace. (Before fuse)	340	240	1.5	4.0	2.5	4.0
Primary line to neutral trace. (Before fuse)	340	240	1.5	2.6	2.5	2.6
Primary trace to earth trace, under CY2, CY3.	340	240	2.0	7.7	2.5	7.7
Primary trace to secondary trace, under CY1. Note: Provided with slot minimum 1.0 mm wide by 4.4 mm in length.	352	225	4.0	5.6	5.0	7.7
Primary trace to secondary trace, under U2.	368	241	4.0	7.0	5.0	7.0
Primary R17 trace to secondary R12C trace, under T1.	368	241	4.0	6.3	5.0	6.3
Following measured on component side of PWB.	--	--	--	--	--	--
T1 primary winding, core to secondary component LF3, L1, E5, E4, C9.	536	300	4.4	6.8	6.0	6.8
T1 core to secondary component Q2 screw.	536	300	4.4	6.0	6.0	6.0
T1 core to U2 secondary pin.	536	300	4.4	9.5	6.0	9.5
Primary F1 body to secondary heat sink.	340	240	4.0	5.0	5.0	5.0
T1: Transformer, the core considered as primary, triple insulated wire used for secondary windings.	--	--	--	--	--	--
Primary winding to secondary pin.	536	300	4.4	8.8	6.0	8.8
Core to secondary pin.	536	300	4.4	6.0	6.0	6.0

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Functional:						
Clearance (cl) and creepage distance (cr) at/of/between:	U peak (V)	U r.m.s. (V)	Required cl (mm)	cl (mm)	Required cr (mm)	cr (mm)
Basic/supplementary:						
Clearance (cl) and creepage distance (cr) at/of/between:	U peak (V)	U r.m.s. (V)	Required cl (mm)	cl (mm)	Required cr (mm)	cr (mm)
Reinforced:						
Clearance (cl) and creepage distance (cr) at/of/between:	U peak (V)	U r.m.s. (V)	Required cl (mm)	cl (mm)	Required cr (mm)	cr (mm)
supplementary information:						
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2.10.5	TABLE: distance through insulation measurements					Pass
Distance through insulation (DTI) at/of:	U peak (V)	Urms (V)	Test voltage (V)	Required DTI (mm)	DTI (mm)	
Certified optical isolators used.	340	250	AC 3000	0.4	Minimum 0.4	
supplementary information:						
Certified optical isolators used, see Table 1.5.1 for details.						

4.3.8	TABLE: Batteries								N/A
The tests of 4.3.8 are applicable only when appropriate battery data is not available.									
Is it possible to install the battery in a reverse polarity position?									
Non-rechargeable batteries			Rechargeable batteries						
Discharging		Un-intentional charging	Charging		Discharging		Reversed charging		
Meas. current	Manuf. specs.		Meas. current	Manuf. specs.	Meas. current	Manuf. specs.	Meas. current	Manuf. specs.	

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Clause	Requirement + Test	Result - Remark	Verdict

Max. current during normal operation									
Max. current during fault operation									
Test results:									Verdict
- Chemical leaks									
- Explosion of the battery									
- Emission of flame or expulsion of molten metal									
- Electric strength tests of equipment after completion of tests									
supplementary information:									

4.5	TABLE: Thermal requirements							Pass
	Supply voltage (V)..... :	See Below	See Below	See Below	See Below	--	--	—
	Ambient Tmin (°C)	--	--	--	--	--	--	—
	Ambient Tmax (°C)	See Below	See Below	See Below	See Below	--	--	—
Maximum measured temperature T of part/at:		T (°C)					allowed Tmax (°C)	
--		--	--	--	--	--	--	--
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:								
See Report Reference No. E135856-A97-UL-1 for detail.								

4.5.5	TABLE: Ball pressure test of thermoplastic parts		N/A
	allowed impression diameter (mm)	less than or equal to 2.0	—

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Clause	Requirement + Test	Result - Remark	Verdict

part	test temperature (°C)	impression diameter (mm)
supplementary information:		

4.7	TABLE: resistance to fire					Pass
part	manufacturer of material	type of material	thickness (mm)	flammability class	Evidence	
--	--	--	--	--	--	
supplementary information:						
All internal materials are rated minimum V-2 or are mounted on a PWB rated minimum V-1. See Table 1.5.1 for details.						

5.2	TABLE: electric strength tests, impulse tests and voltage surge tests			Pass
Test voltage applied between:	Voltage shape (AC, DC, impulse, surge)	Test voltage (V)	Breakdown Yes / No	
--	--	--	--	
Functional:				
Test voltage applied between:	Voltage shape (AC, DC, impulse, surge)	Test voltage (V)	Breakdown Yes / No	
Basic/supplementary:				
Test voltage applied between:	Voltage shape (AC, DC, impulse, surge)	Test voltage (V)	Breakdown Yes / No	
Reinforced:				
Test voltage applied between:	Voltage shape (AC, DC, impulse, surge)	Test voltage (V)	Breakdown Yes / No	
supplementary information:				
See Report Reference No. E135856-A97-UL-1 for detail.				

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Clause	Requirement + Test	Result - Remark	Verdict

5.3	TABLE: fault condition tests					Pass
	ambient temperature (°C)			See Below		—
	Power source for EUT: Manufacturer, model/type, output rating			see below		—
Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
--	--	--	--	--	--	--
supplementary information:						
See Report Reference No. E135856-A97-UL-1 for detail.						