



Descriptive Report and Test Results

MASTER CONTRACT: 246807

REPORT: 2169503

PROJECT: 2319232

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Prepared by Tim Liu; Issued by Jupiter Huang; Reviewed by Sherman Bau, P. Eng.

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Prepared by Tim Liu; Reviewed by Jupiter Huang

Report pages reissued
Pages Replaced: 1, 2, 17 to 21 and 76 to 98
Figures Added: Fig. 27 to 33
Attachments Added: Att. 15

Contents: Certificate of Compliance - Page 1
Supplement to Certificate of Compliance – Page 1
Description and Tests – Pages 1 to **98**
Figures – 1 to **33**
Illustrations – 1 to 5
Attachments – 1 to **15**

PRODUCTS

CLASS 2224 52 - AUDIO AND VIDEO EQUIPMENT - Video Equipment
CLASS 2224 82 - AUDIO AND VIDEO EQUIPMENT - Video Equipment - CERTIFIED TO U.S.
STANDARDS

LCD TV Monitor, rated 110-240 Vac, 50/60 Hz, 5.0 A, cord connected, Class I grounded.

PART A: Model PAN420;

PART B: Models N42 and F42LCNH6000 , N42S, P42, P42S

PART C: Models N52 and F52LCNH6000 , N52S, P52, P52S

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APPLICABLE REQUIREMENTS

CAN/CSA 60065-03 incl. AM1 - Audio, Video and Similar Electronic Apparatus - Safety Requirements.
UL Std No. 60065-2007 - Audio, Video and Similar Electronic Apparatus - Safety Requirements.

MARKINGS

Markings as given below and/or described in the report appear on each unit:

- Submitter's name, or Master Contract No. 246807.
- Model designation;
- Electrical rating in volts, hertz, amperes or watts;
- Period of manufacture; date code / S/N (3 mo min period)
- "CAUTION - RISK OF ELECTRIC SHOCK - DO NOT OPEN. AVIS: RISQUE DE CHOC ELECTRIQUE - NE PAS OUVRIR" together with the two graphical symbols - a lightning flash with arrow-point within an equilateral triangle, and an exclamation point within an equilateral triangle, appears on the removable cover to gain access;
- Other covers: Lightning Flash in triangle symbol;
- For PART B & C only: (Leakage 0.75 - 3.5mA) Hang Tag on Cord: 'CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, GROUNDING OF THE CENTRE PIN OF THIS PLUG MUST BE MAINTAINED'.
- The products are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US or with adjacent indicator 'US' for US only or without either indicator for Canada only.

Method: A CSA Mark or a CSA Mark with the C-US (or NRTL/C) or US (or NRTL) indicator and other required information appears on a durable adhesive nameplate (CSA Accepted for commercial equipment) or moulded or silk-screened onto the enclosure.

Note: (Bilingual Markings)

Jurisdictions in Canada may require markings to be also in French. It is the responsibility of the Customer to provide bilingual marking, where applicable, in accordance with the requirements of the Provincial Regulatory Authorities.

Additional Markings:

1. Factory identification (more than 1 factory).
2. Rack mount system components to be individually identified and marked on tag permanently attached to rack.

Owner's Manual

(a) Mandatory

1. Heading: "IMPORTANT SAFETY INSTRUCTIONS", before operating instructions.
2. Explanation of graphical symbols (Lightning Flash and Exclamation Mark, Fig 15 DU) as follows, or equivalent,
 - (a) Lightning Flash Symbol, with "The Lightning Flash with arrowhead symbol within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product enclosure that may be of sufficient magnitude to constitute a risk of shock to persons".

Component	Manufacturer / Trademark	Type / Model	Value / rating ²⁾	Standard	Approval / Reference ¹⁾
Bridge-Capacitor (CY1) (Optional) (INT)	Walsin	AH	250VAC min, 2200pF max. Class Y1, 85°C min.	CSA C22.2 No. 1, UL 1414, IEC 60384-14/1993	C*, UR, VDE
	Success	SE, SF	250VAC min, 2200pF max. Class Y1, 85°C min.	CAN/CSA- E384-14, UL 1414, IEC 60384-14/1993	C*, VDE, UR
	TDK Corporation	CD	250VAC min, 2200pF max. Class Y1, 85°C min.	CSA C22.2 No. 1, UL 1414, IEC 60384-14/1993	C*, UR, VDE
Mylar Sheet (Between trace layout side and rear enclosure)	Teijin Chemicals Ltd.	PC-1151 or PC-2151	V-2 min at 0.38 mm thick. Overall measured 255 mm by 155 mm.	UL 94	UR
Internal Switching Power Supply for DC Fans on upper rear enclosure	Starmen Opto-Electronics Co., Ltd.	TOM202CAB B	I/p: 90-264Vac, 47-63Hz, 4.0A max O/p: 5Vsb, 1A; 5V, 3.5A; 12V, 3A; 24V, 6A. Provided with the following major components:	-	-/Similar to above PART A except location ,mylar sheet and capacitance of CY03.
Bridge-Capacitor (CY03) (Optional) (INT)	Walsin	AH	250VAC min, 2200pF max. Class Y1, 85°C min.	CSA C22.2 No. 1, UL 1414, IEC 60384-14/1993	C*, UR, VDE
	Success	SE, SF	250VAC min, 2200pF max. Class Y1, 85°C min.	CAN/CSA- E384-14, UL 1414, IEC 60384-14/1993	C*, UR, VDE
	TDK	CD	250VAC min, 2200pF max. Class Y1, 85°C min.	CSA C22.2 No. 1, UL 1414, IEC 60384-14/1993	C*, UR, VDE
Mylar Sheet (Between power trace layout side and rear enclosure)	Teijin Chemicals Ltd.	PC-1151 or PC-2151	V-2 min at 0.38 mm thick min. Overall measured 215 mm by 135 mm.	CSA 0.17/UL 94	CUR, UR

¹⁾ An asterisk indicates a mark which assures the agreed level of surveillance. Components marked with (INT) may have alternative sources per (INT) "DESCRIPTION Notes" above.
²⁾ Description to include adjacent markings for critical fuse/s.

PART C: Models N52 and F52LCNH6000 , N52S, P52, P52S

General: Model N52 and F52LCNH6000 are similar to above PART A, Model PAN420 except model designation and the following. Models N52 and F52LCNH6000 are similar to each other except model designation.

Weight of Equipment: 45.9 kg

Pollution Degree: 2

Insulation Material Group: IIIa

Maximum Rated Ambient Temperature: 40 °C.

Circuit:

AC Line Coupling: Inductive through two isolating switch-mode transformers.

Enclosure: Rack mount style, combustible. Secured together by screws and integral tabs.

Overall Dimensions: Approx. 1285 mm (L) by 780 mm (W) by 130 mm (H).

General Construction:

Part	Material	Thickness	Manufacturer	Type	Rating/ Thickness
Front Enclosure	Aluminium	2.5 mm	-	-	-
Screen	Glass	3.5 mm	-	-	-
Rear Enclosure	Aluminium	2.0 mm	-	-	-
Internal Chassis	Aluminium	0.6 mm	-	-	-

Note: The rear enclosure consists of top, bottom and sides.

Ventilation Openings: See attached photos. Openings in general are described below:

Location	Dimensions (mm)
Rear	3.4 diameter
Top	None
Sides	None
Bottom	14.8 by 4.8
Front	None

Grounding, Bonding and Double Isolation:

The green or green/yellow insulated grounding/bonding conductor of the power supply cord terminates singly in a crimp type, closed loop connector to rear metal enclosure by a min No 6 (M3.5), plated or nonferrous threaded machine screw, nut and lockwasher (to ensure surface coating penetration), a separate nut and lockwasher secure crimp/solder lug type, closed loop connectors of other bonding conductors.

The IEC 417 #5019 "⊕" symbol is marked adjacent to the screw of grounding conductor.

Internal Speaker: Not Provided.

External Speaker Terminals:

Manufacturer	Precision Inc. Co., Ltd.
Material	ABS
Type	DSP-0212V, spring loaded insulated clips.
Markings	(c) 8 ohm

Critical Components

Component	Manufacturer / Trademark	Type / Model	Value / rating ²⁾	Standard	Approval / Reference ¹⁾
Power supply cord (INT) consists of the followings:					
Mains Plug :	Ching Cheng Wire Material Co., Ltd.	EL-302	125Vac, 10A	CSA No 21, UL817	CSA, UL
Cord :	Lu Chiang Electric Wire & Cable Industrial Co., Ltd.	SJT or SJTW	18AWG, X3C	CSA No 49, UL 817	CSA, UL
Alt. Cord:	Ching Cheng Wire Material Co., Ltd.	SJT or SJTW	18AWG, X3C	CSA No 49, UL 817	CSA, UL
Alt. Cord:	I Sheng Electric Wire & Cable Co., Ltd.	SJT or SJTW	18AWG, X3C	CSA No 49, UL 817	CSA, UL
Bushing	Pingood Enterprise Co., Ltd.	6R-4	-	UL 635	UR
TFT-LCD module with DC/AC inverter	Samsung Electronics Co., Ltd.	LTI520HB0 2 (for Panel)	12 V dc, 3.24 A	CSA 60065-03+AM1/ UL 60065-2007	CUR, UR /E252633
	Samsung Electronics Co., Ltd.	SSI520-18A01 REV0.3 (for DC/AC inverter)	Input 24 V dc, 13.0 A; output lamp rated 1390 Vrms max, 11.5 mArms max.	CSA 60065-03+AM1/ UL 60065-2007	CUR, UR /E252633
Remote Control	Various	-	Provided with coin type battery, 3 Vdc. No hazardous voltage circuit and laser function in it.	-	-
Coin Battery	Various	CR2032 or equivalent	Li-Manganese Dioxide non-rechargeable type, rated 3 Vdc.	UL 1642	UR
DC Fan (on upper side of rear enclosure)	Chiefly Choice Co., Ltd.	CCB1232B24 H	Four provided. Rated 24Vdc, 0.4A, 38.9CFM	CSA 113, UL507	CUR, UR/ Same as above PART A

Component	Manufacturer / Trademark	Type / Model	Value / rating ²⁾	Standard	Approval / Reference ¹⁾
DC Fan (on lower side of rear enclosure)	Jin Yih Shyang Ent. Co., Ltd.	JED-02529A12-3B	Two provided. Rated 12Vdc, 0.21A, 0.85m ³ /min (30.02CFM), propeller type.	CSA 113, UL507	CUR, UR/ Similar to above PART A except two DC Fan.
DC Fan (on middle side of rear enclosure)	Tranyoung Technology Corp.	6015L12F ND1	Two provided. Rated 12Vdc, 0.15A, 14.5CFM.	CSA 113, UL507	CUR, UR
System Main PCB	Top Tech	MSD119V1.0-D	V-1 min., 105°C. Provided with the following major components:	UL 796	UR/ Same as above PART A
AC Connectors (CON1, CON2, CON3, CON5)	Orich Electric Co., Ltd.	3961VH02ST	5A/ 250Vac	CSA 182.3/UL 1977	CSA, UR
Internal Main Switching Power Supplies	Starmen Opto-Electronics Co., Ltd.	TOM371CA BB	Two sets provided. I/P: 90-264Vac, 47-63Hz, 5.0A max O/P: 5Vsb, 2A; 5V, 5A; 12V, 6A; 24V, 11A. Provided with the following major components:	-	-/ Similar to above PART A except two sets provided, location ,mylar sheet and capacitance of CY1.
Bridge-Capacitor (CY1) (Optional) (INT)	Walsin	AH	250VAC min, 1000pF max. Class Y1, 85°C min.	CSA C22.2 No. 1, UL 1414, IEC 60384-14/1993	C*, UR, VDE
	Success	SE, SF	250VAC min, 1000pF max. Class Y1, 85°C min.	CAN/CSA- E384-14, UL 1414, IEC 60384-14/1993	C*, UR, VDE
	TDK Corporation	CD	250VAC min, 1000pF max. Class Y1, 85°C min.	CSA C22.2 No. 1, UL 1414, IEC 60384-14/1993	C*, UR, VDE
Mylar Sheets (Between trace layout side and rear enclosure)	Teijin Chemicals Ltd.	PC-1151 or PC-2151	Two pieces provided. V-2 min at 0.38 mm thick. Overall measured 255 mm by 155 mm.	UL 94	UR
Internal Switching Power Supply for DC Fans on upper rear enclosure	Starmen Opto-Electronics Co., Ltd.	TOM202CA BB	I/p: 90-264Vac, 47-63Hz, 4.0A max O/p: 5Vsb, 1A; 5V, 3.5A; 12V, 3A; 24V, 6A. Provided with the following major components:	-	-/Similar to above PART A except location ,mylar sheet and capacitance of CY03.

Component	Manufacturer / Trademark	Type / Model	Value / rating ²⁾	Standard	Approval / Reference ¹⁾
Bridge-Capacitor (CY03) (Optional) (INT)	Walsin	AH	250VAC min, 1000pF max. Class Y1, 85°C min.	CSA C22.2 No. 1, UL 1414, IEC 60384-14/1993	C*, UR, VDE
	Success	SE, SF	250VAC min, 1000pF max. Class Y1, 85°C min.	CAN/CSA- E384-14, UL 1414, IEC 60384-14/1993	C*, VDE, UR
	TDK	CD	250VAC min, 1000pF max. Class Y1, 85°C min.	CSA C22.2 No. 1, UL 1414, IEC 60384-14/1993	C*, UR, VDE
Mylar Sheet (Between power trace layout side and rear enclosure)	Teijin Chemicals Ltd.	PC-1151 or PC-2151	V-2 min at 0.38 mm thick min. Overall measured 215 mm by 135 mm.	CSA 0.17/UL 94	CUR, UR

¹⁾ An asterisk indicates a mark which assures the agreed level of surveillance. Components marked with (INT) may have alternative sources per (INT) "DESCRIPTION Notes" above.
²⁾ Description to include adjacent markings for critical fuse/s.

<u>Test Equipment ID/Inventory No:</u> F01, X01, W09/ 1

9. Wall, Ceiling or Rack Mount: Cl. 12.7 DU, Cl. 19.6 DU

Product attached to: Per manufacturer's user manual, see Att. 12.

Type of fasteners used: 8 provided

Metal screws, 4.9 mm diameter, 14.1 mm length.
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Force = (3 x mass) 3 x 26.5 kg, 1 min, added	Results: Satisfactory
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<u>Test Equipment ID/Inventory No:</u> F01, W09, X01/ 1

16. Mass of Set/Supply Cord: Cl. 16.1 DC DR , Cl. 16.1 and Table 4 (CSA No. 1)

26.5 kg.

Sample supply cord type: SVT.

<u>Test Equipment ID/Inventory No:</u> W16/ 1

19. Glass Test: Cl. 19.5 DU

Glass surface (except picture tubes and laminated glass) exceeding 0.1 m², or having a major dimension exceeding 450 mm subjected to a single impact with a 50 mm dia., 500g mass steel ball as follows:

Apparatus Type	Impact Energy	Results
Portable, tabletop or under cabinet	2 J	Satisfactory
<u>Test Equipment ID/Inventory No:</u>		F01, W09, TB-1, WA2/ 1

Note: Fragmentation test of Cl. 19.5.1 required on a separate sample if glass breaks or cracks.

20. Dielectric Strength: Table 5 DU

Marking	Dielectric Strength	Results
105-130V:	1.0 kV Basic	N/A
	2.0 kV Double	N/A
220-250V:	1.5 kV Basic	Satisfactory
	3.0 kV Double	Satisfactory
<u>Test Equipment ID/Inventory No:</u> J06, X01/ 1		

Edition: 3 (Project No. 2319232)

The following tests were conducted to include Models N52 and F52LCNH6000., N52S, P52, P52S

Test Conducted at	Name: Audix Technology Corporation
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Address: 7 th Fl., No. 8, Lane 120, Sec. 1, Nei-Hu Road, Taipei, Taiwan, R.O.C.
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[Tests: The following tests were conducted on a sample Model N52 with satisfactory results:]

LABORATORY ENVIRONMENTAL CONDITIONS

Unless otherwise specified, all tests are conducted at:

	<u>Verified</u>	<u>Start Date</u>	<u>Verified</u>	<u>End Date</u>
Ambient temperature between 15°C and 35°C	☒	2010-06-22	☒	2010-07-15
Relative humidity of 75% maximum	☒	2010-06-22	☒	2010-07-15

Part A: IEC 60065:2001 + Amd 1

7.1	TABLE: temperature rise measurements	
	Power consumption in the OFF/Stand-by	11.2 W/ 0.18 A
	Position of the functional switch (W) :	--

Operating conditions			
Signal I/P: VGA mode, Screen full raster with maximum brightness, contrast and 1KHz maximum non-clipped output power, all DC Fans operated continuously.			
Un (V)	In (A)	Pn (W)	Pout (W)
99 V ac/ 50 Hz	3.84	378.8	6.5
99 V ac/ 60 Hz	3.84	378.8	6.5
108 V ac/ 50 Hz	3.65	378.6	6.5
108 V ac/ 60 Hz	3.65	378.6	6.5
110 V ac/ 50 Hz	3.44	378.3	6.5
110 V ac/ 60 Hz	3.44	378.3	6.5
120 V ac/ 50 Hz	3.18	378.2	6.5
120 V ac/ 60 Hz	3.18	378.2	6.5
132 V ac / 50 Hz	2.88	378.0	6.5
132 V ac/ 60 Hz	2.88	378.0	6.5
240 V ac/ 50 Hz	1.79	376.5	6.5
240 Vac / 60 Hz	1.79	376.5	6.5
264 V ac/ 50 Hz	1.68	374.3	6.5
264 V ac/ 60 Hz	1.68	374.3	6.5

Signal I/P: S-Video mode, Screen full raster with maximum brightness, contrast and 1KHz maximum non-clipped output power, all DC Fans operated continuously.			
Un (V)	In (A)	Pn (W)	Pout (W)
99 V ac/ 50 Hz	3.80	367.8	6.5

Operating conditions			
99 V ac/ 60 Hz	3.80	367.8	6.5
110 V ac/ 50 Hz	3.39	366.9	6.5
110 V ac/ 60 Hz	3.39	366.9	6.5
240 V ac/ 50 Hz	1.74	363.5	6.5
240 Vac / 60 Hz	1.74	363.5	6.5
264 V ac/ 50 Hz	1.63	362.8	6.5
264 V ac/ 60 Hz	1.63	362.8	6.5
Signal I/P: AV mode, Screen full raster with maximum brightness, contrast and 1KHz maximum non-clipped output power, all DC Fans operated continuously.			
Un (V)	In (A)	Pn (W)	Pout (W)
99 V ac/ 50 Hz	3.80	365.6	6.5
99 V ac/ 60 Hz	3.80	365.6	6.5
110 V ac/ 50 Hz	3.39	364.7	6.5
110 V ac/ 60 Hz	3.39	364.7	6.5
240 V ac/ 50 Hz	1.73	362.0	6.5
240 Vac / 60 Hz	1.73	362.0	6.5
264 V ac/ 50 Hz	1.63	361.7	6.5
264 V ac/ 60 Hz	1.63	361.7	6.5
Signal I/P: HDMI mode, Screen full raster with maximum brightness, contrast and 1KHz maximum non-clipped output power, all DC Fans operated continuously.			
Un (V)	In (A)	Pn (W)	Pout (W)
99 V ac/ 50 Hz	3.81	365.8	6.5
99 V ac/ 60 Hz	3.81	365.8	6.5
110 V ac/ 50 Hz	3.38	364.9	6.5
110 V ac/ 60 Hz	3.38	364.9	6.5
240 V ac/ 50 Hz	1.73	362.1	6.5
240 Vac / 60 Hz	1.73	362.1	6.5
264 V ac/ 50 Hz	1.64	361.9	6.5
264 V ac/ 60 Hz	1.64	361.9	6.5
Signal I/P: Ypbpr mode, Screen full raster with maximum brightness, contrast and 1KHz maximum non-clipped output power, all DC Fans operated continuously.			
Un (V)	In (A)	Pn (W)	Pout (W)
99 V ac/ 50 Hz	3.77	365.9	6.5
99 V ac/ 60 Hz	3.77	365.9	6.5
110 V ac/ 50 Hz	3.40	364.7	6.5

Operating conditions			
110 V ac/ 60 Hz	3.40	364.7	6.5
240 V ac/ 50 Hz	1.76	362.8	6.5
240 V ac / 60 Hz	1.76	362.8	6.5
264 V ac/ 50 Hz	1.65	362.0	6.5
264 V ac/ 60 Hz	1.65	362.0	6.5
Signal I/P: TV mode, Screen full raster with maximum brightness, contrast and 1KHz maximum non-clipped output power, all DC Fans operated continuously.			
Un (V)	In (A)	Pn (W)	Pout (W)
99 V ac/ 50 Hz	3.68	364.7	6.5
99 V ac/ 60 Hz	3.68	364.7	6.5
110 V ac/ 50 Hz	3.28	363.4	6.5
110 V ac/ 60 Hz	3.28	363.4	6.5
240 V ac/ 50 Hz	1.69	352.7	6.5
240 V ac / 60 Hz	1.69	352.7	6.5
264 V ac/ 50 Hz	1.58	352.0	6.5
264 V ac/ 60 Hz	1.58	352.0	6.5
	Loudspeaker impedance (Ω)	-	—
	Several loudspeaker systems	-	-
	Marking of loudspeaker terminals	-	-

Test Equipment ID/Inventory No: F01, A09, D01, P02/ 1

Monitored point:	dT (K)			Limit dT (K)	
	* Condition 1	* Condition 2	* Condition 3	Normal operation	Abnormal operation
Operating Condition No.					
1-01.CN1 body	26.0	19.2	23.3	55	145
1-02.LF1 coil (power board P/N: TOM202CABB)	23.4	20.6	23.2	65	145
1-03.CX2 body (power board P/N: TOM202CABB)	23.0	20.6	22.8	45	145
1-04.LF2 coil (power board P/N: TOM202CABB)	22.2	19.8	21.9	65	145
1-05.L1 coil (power board P/N: TOM202CABB)	22.6	20.6	22.3	65	145
1-06.L2 coil (power board P/N: TOM202CABB)	22.9	20.7	22.6	65	145
1-07.C09 body (power board P/N: TOM202CABB)	22.3	22.1	22.0	65	145
1-08.PWB near Q5, HS1 (power board P/N: TOM202CABB)	20.1	17.7	19.6	65	145
1-09.PH2 body (power board P/N: TOM202CABB)	20.3	20.4	19.9	60	145
1-10.T02 coil (power board P/N: TOM202CABB)	22.3	22.6	21.9	80	115

Monitored point:	dT (K)			Limit dT (K)	
1-11.PH3 body (power board P/N: TOM202CABB)	21.5	20.8	21.1	60	145
1-12.CY3 body (power board P/N: TOM202CABB)	22.1	21.0	21.8	45	145
1-13.T01 coil (power board P/N: TOM202CABB)	22.1	21.0	21.7	80	115
1-14.PH1 body (power board P/N: TOM202CABB)	21.5	20.2	21.1	60	145
1-15.CX2 body (power board P/N: TOM371CABB_left)	30.5	23.4	26.4	45	145
1-16.LF2 coil (power board P/N: TOM371CABB_left)	40.2	23.6	27.4	65	145
1-17.L3 coil (power board P/N: TOM371CABB_left)	35.2	22.9	26.2	65	145
1-18.T4 coil (power board P/N: TOM371CABB_left)	48.2	29.8	33.5	65	145
1-19.C1 body (power board P/N: TOM371CABB_left)	32.3	26.7	29.2	65	145
2-01.PWB near TH1 (power board P/N: TOM371CABB_left)	33.6	21.7	24.5	65	145
2-02.PWB near Q3, Q2 (power board P/N: TOM371CABB_left)	27.1	23.5	25.3	65	145
2-03.T1 coil (power board P/N: TOM371CABB_left)	35.1	30.2	34.6	80	115
2-04.PH1 body (power board P/N: TOM371CABB_left)	29.5	26.8	28.8	60	145
2-05.PH2 body (power board P/N: TOM371CABB_left)	30.2	28.8	29.5	60	145
2-06.T5 coil (power board P/N: TOM371CABB_left)	30.4	28.0	29.3	80	115
2-07.PH3 body (power board P/N: TOM371CABB_left)	29.1	27.5	28.6	60	145
2-08.PWB near D12 (power board P/N: TOM371CABB_left)	36.0	27.9	35.4	65	145
2-09.CX2 body (power board P/N: TOM371CABB_right)	25.9	22.5	23.4	45	145
2-10.LF2 coil (power board P/N: TOM371CABB_right)	29.7	22.0	24.0	65	145
2-11.L3 coil (power board P/N: TOM371CABB_right)	32.5	23.3	25.7	65	145
2-12.T4 coil (power board P/N: TOM371CABB_right)	34.3	25.8	26.0	65	145
2-13.PWB near TH1 (power board P/N: TOM371CABB_right)	26.7	20.7	22.5	65	145
2-14.PWB near Q3, Q2 (power board P/N: TOM371CABB_right)	29.5	25.2	26.8	65	145
2-15.T1 coil (power board P/N: TOM371CABB_right)	38.6	36.1	38.1	80	115
2-16.PH1 body (power board P/N: TOM371CABB_right)	27.0	23.9	26.3	60	145
2-17.PH2 body (power board P/N: TOM371CABB_right)	24.9	22.1	24.2	60	145

Monitored point:	dT (K)			Limit dT (K)	
2-18.T5 coil (power board P/N: TOM371CABB_right)	21.1	15.7	20.5	80	115
2-19.PH3 body (power board P/N: TOM371CABB_right)	21.5	18.6	20.9	60	145
2-20.PWB near D12 (power board P/N: TOM371CABB_left)	24.9	22.2	24.4	65	145
2-21.PWB near U68 (man board)	35.3	34.3	34.7	65	145
2.22.T2 coil (Inverter_M board)	48.1	52.3	47.6	65	145
2.23.T3 coil (Inverter_M board)	48.6	47.7	47.6	65	145
2.24.T2 coil (Inverter_S board)	61.5	60.8	61.5	65	145
2.25.T3 coil (Inverter_S board)	31.1	31.1	30.5	65	145
2.26.Metal enclosure outside near T1	10.0	9.1	10.0	35	60
2-27.C1 body (power board P/N: TOM371CABB_right)	25.7	22.2	25.2	65	145
2.28.Ambient	40	40	40	--	--
Operating Condition No.	* Condition 4	* Condition 5	--	Normal operation	Abnormal operation
1-01.CN1 body	17.5	23.3	--	55	145
1-02.LF1 coil (power board P/N: TOM202CABB)	22.3	23.5	--	65	145
1-03.CX2 body (power board P/N: TOM202CABB)	23.3	23.1	--	45	145
1-04.LF2 coil (power board P/N: TOM202CABB)	20.6	22.3	--	65	145
1-05.L1 coil (power board P/N: TOM202CABB)	21.6	22.5	--	65	145
1-06.L2 coil (power board P/N: TOM202CABB)	21.6	22.9	--	65	145
1-07.C09 body (power board P/N: TOM202CABB)	21.3	22.3	--	65	145
1-08.PWB near Q5, HS1 (power board P/N: TOM202CABB)	19.3	20.0	--	65	145
1-09.PH2 body (power board P/N: TOM202CABB)	19.3	20.4	--	60	145
1-10.T02 coil (power board P/N: TOM202CABB)	21.6	22.3	--	80	115
1-11.PH3 body (power board P/N: TOM202CABB)	19.9	21.5	--	60	145
1-12.CY3 body (power board P/N: TOM202CABB)	20.6	22.2	--	45	145
1-13.T01 coil (power board P/N: TOM202CABB)	21.0	22.2	--	80	115
1-14.PH1 body (power board P/N: TOM202CABB)	20.1	21.5	--	60	145
1-15.CX2 body (power board P/N: TOM371CABB_left)	29.3	26.1	--	45	145
1-16.LF2 coil (power board P/N: TOM371CABB_left)	30.3	27.2	--	65	145
1-17.L3 coil (power board P/N: TOM371CABB_left)	34.2	25.9	--	65	145
1-18.T4 coil (power board P/N: TOM371CABB_left)	40.1	33.2	--	65	145

Monitored point:	dT (K)			Limit dT (K)	
1-19.C1 body (power board P/N: TOM371CABB_left)	37.0	29.1	--	65	145
2-01.PWB near TH1 (power board P/N: TOM371CABB_left)	28.3	23.8	--	65	145
2-02.PWB near Q3, Q2 (power board P/N: TOM371CABB_left)	37.0	24.5	--	65	145
2-03.T1 coil (power board P/N: TOM371CABB_left)	44.3	33.9	--	80	115
2-04.PH1 body (power board P/N: TOM371CABB_left)	34.7	28.3	--	60	145
2-05.PH2 body (power board P/N: TOM371CABB_left)	36.8	28.8	--	60	145
2-06.T5 coil (power board P/N: TOM371CABB_left)	40.7	28.9	--	80	115
2-07.PH3 body (power board P/N: TOM371CABB_left)	38.9	28.0	--	60	145
2-08.PWB near D12 (power board P/N: TOM371CABB_left)	45.1	34.8	--	65	145
2-09.CX2 body (power board P/N: TOM371CABB_right)	32.7	22.9	--	45	145
2-10.LF2 coil (power board P/N: TOM371CABB_right)	30.8	22.7	--	65	145
2-11.L3 coil (power board P/N: TOM371CABB_right)	34.0	24.3	--	65	145
2-12.T4 coil (power board P/N: TOM371CABB_right)	37.5	27.1	--	65	145
2-13.PWB near TH1 (power board P/N: TOM371CABB_right)	25.8	21.5	--	65	145
2-14.PWB near Q3, Q2 (power board P/N: TOM371CABB_right)	37.9	26.4	--	65	145
2-15.T1 coil (power board P/N: TOM371CABB_right)	50.1	37.2	--	80	115
2-16.PH1 body (power board P/N: TOM371CABB_right)	35.8	25.8	--	60	145
2-17.PH2 body (power board P/N: TOM371CABB_right)	34.1	23.8	--	60	145
2-18.T5 coil (power board P/N: TOM371CABB_right)	10.1	20.1	--	80	115
2-19.PH3 body (power board P/N: TOM371CABB_right)	30.6	20.5	--	60	145
2-20.PWB near D12 (power board P/N: TOM371CABB_left)	39.9	24.0	--	65	145
2-21.PWB near U68 (man board)	38.5	34.5	--	65	145
2.22.T2 coil (Inverter_M board)	64.0	47.1	--	65	145
2.23.T3 coil (Inverter_M board)	45.1	46.8	--	65	145
2.24.T2 coil (Inverter_S board)	69.2	61.1	--	65	145

Monitored point:	dT (K)			Limit dT (K)	
2.25.T3 coil (Inverter_S board)	33.5	30.4	--	65	145
2.26.Metal enclosure outside near T1	7.0	9.6	--	35	60
2-27.C1 body (power board P/N: TOM371CABB_right)	34.1	23.9	--	65	145
2.28.Ambient	40	40	--	--	--

Condition 1: 99 V ac, 60 Hz;
 Two DC Fans (on lower of front enclosure) and two DC Fans (on middle of rear enclosure) operated continuously; four DC Fans (on upper of rear enclosure) not operated.

Condition 2: 264 V ac, 60 Hz;
 Two DC Fans (on lower of front enclosure) and two DC Fans (on middle of rear enclosure) operated continuously; four DC Fans (on upper of rear enclosure) not operated.

Condition 3: 264 V ac, 60 Hz, all ventilation openings blocked;
 Two DC Fans (on lower of front enclosure) and two DC Fans (on middle of rear enclosure) operated continuously; four DC Fans (on upper of rear enclosure) not operated.

Condition 4: 264 V ac, 60 Hz, two DC Fans (on lower of front enclosure) and two DC Fans (on middle of rear enclosure) locked; four DC Fans (on upper of rear enclosure) operated continuously.

Condition 5: 264 V ac, 60 Hz, four DC Fans locked (on upper of rear enclosure); two DC Fans (on lower of front enclosure) and two DC Fans (on middle of rear enclosure) operated continuously.

Notes:

1. The above tests with “*” were conducted with VGA mode with 1kHz max non-clipped output power
2. The above tests were conducted with test box as per Clause 4.1.4.
3. Above tests were conducted with thermostat bypassed.

Test Equipment ID/Inventory No: F01, P03, E19, E08, A09, X02/ 1

{Note: Disconnect mains fuse for I.R. and Dielectric Strength tests only if fuse is rated less than 6A}

10.3	TABLE: Insulation Resistance Measurements	P
Insulation resistance R between:	R (MΩ)	Required R (MΩ)
Between mains poles (primary fuse disconnected)	1900	2
Between parts separated by basic or supplementary insulation	1900	2
Between parts separated by double or reinforced insulation	1900	4

Test Equipment ID/Inventory No: F01, L01/ 1

10.3	TABLE: Electric Strength Measurements	P
Test voltage applied between:	Test voltage (V)	Breakdown
Mains poles (primary fuse disconnected)	2120 V dc	No
Between parts separated by basic or supplementary insulation	2550 V dc	No
Between parts separated by double or reinforced insulation	4242 V dc	No

Test Equipment ID/Inventory No: F01, J06/ 1

11.2	TABLE: summary of fault condition tests		P
	Voltage (V) 0,9 or 1,1 times rated voltage	264	—
	Frequency (Hz).....	60	—
	Ambient temperature (°C)	40	—

No	Component	Fault	Test Voltage (V)	Results (include description for fuse measured fault current, and test duration)
1	Blocked openings	-	264	No hazard, refer to heating test.
2	Four DC Fans locked (on upper side)	-	264	No hazard, refer to heating test.
3	Two DC Fans (on lower side) and two DC Fans (on middle side) locked	-	264	No hazard, refer to heating test.

Test Equipment ID/Inventory No: F01, P03, E19, E08, A09, X02/ 1

13. **CLEARANCES AND CREEPAGE DISTANCES - Part 1**

13	TABLES: clearances and creepage distances					P	
Rated supply voltage:		240 V	Pollution degree:		2	Material Group:	IIIa
2 N force on internal parts applied:						Satisfactory	
30 N force on outside of conductive enclosure applied:						Satisfactory	
*Location	Operating Voltage		Clearance (mm)		Creepage (mm)		
	V rms	V peak	Min	Actual	Min	Actual	
Circuits conductively connected to the mains (use Tables 8, 9 and 11): see note below.							
Switch Power Supply board for Starmen Opto-Electronics Co., Ltd. P/N: TOM202CABB							
Primary (ac) to Earth (B) (from L or N trace of AC connector to GND pin of AC connector)		240	340	2.0	4.7	2.5	4.7
Primary Heatsink to metal enclosure (B)		240	340	2.0	24	2.5	>24
Switch Power Supply board for Starmen Opto-Electronics Co., Ltd. P/N: TOM371CABB							
Primary (ac) to Earth (B) (from L or N trace of AC connector to GND pin of AC connector)		240	340	2.0	4.2	2.5	4.2
Primary Heatsink to metal enclosure (B)		240	340	2.0	15	2.5	>15

Notes:

- Secondary circuits of Class II apparatus which have connector terminals that could be earthed (e.g. antenna signal input), are subjected to the requirements for circuits conductively connected to the mains in Tables 8 and 9.
- Floating secondary circuits of Class I apparatus which have connector terminals that could be earthed (e.g. antenna signal input), are subjected to the requirements for circuits conductively connected to the mains in Tables 8 and 9 unless the floating secondary circuit is separated from the primary circuits by an earthed metal screen (e.g. in the power transformer), or the floating secondary circuit is attenuated by connecting it to earth via a component

Rated supply voltage:	240 V	Pollution degree:	2	Material Group:	IIIa
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such as a capacitor.

3. For insufficient clearances and creepage distances from secondary to secondary circuits and from secondary circuits to earth, see Cl. 4.3.1, 4.3.2 and 11.2.

4. If the minimum creepage distance in Table 11 is less than the minimum required clearance in Tables 8, 9 or 10 as required, then the value for clearance is used as the minimum creepage distance.

* **Caution:** Locations for measurements and insulation indicated here are guidelines only. Examine sample and evaluate additional locations as required.

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

{Additional Test Data}

CL.	REQUIREMENTS	TEST/EVALUATION	VERDICT
4.2.4 (a)	Speaker terminal voltage	120V rms , Professional; 71V rms, not Professional 8.5 V rms measured, at max power output, no load. <u>Test Equipment ID/Inventory No:</u> F01, P02, D02, A09/ 1	P
4.3.5	Audio amplifier overloads	Loading Max output 6.5 W 1/3 max output ___ W (N/A) 1/8 max, 1/2 load (N/A) 1/8 max, s/c output (N/A)	<i>See fault tests</i>
4.3.10	Ventilation openings covered	Area Covered: Front, Bottom and Rear only.	<i>See fault tests</i>
5	Marking durability	Rubbing by hand for 15s with a piece of cloth soaked with water and 15s with petroleum spirit. After test: - marking legible? Yes - label easily removed? No - curling of label? No	P
8.15	Internal wiring securement	2 N force applied to wiring and surrounding parts: Satisfactory <u>Test Equipment ID/Inventory No:</u> F01, W04/ 1	P

CL.	REQUIREMENTS	TEST/EVALUATION	VERDICT
9.1.1.1	Shock Hazard (Normal Conditions)	Under normal operating conditions: > 35Vpk ac / 60V dc Mains: 264 Vac, 60 Hz NOTES: (a) References: Fig 6 of IEC 60990 and Figs 1 and 2 of ANSI C101 (UL 101) (b) S _e is earth fault switch; S _s is sample mains switch; S _p is mains polarity switch; S _n is neutral fault switch	P

	(c) Leakage current from Accessible Parts to Earthed Supply Source	
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TABLE A: CLASS I: (single phase) For "IEC and Canada only" - S _e disconnected;	REMARKS: Tested between Line/Neutral pin and user accessible conductive parts.
--	--

BURN HAZARD					
Polarity	S_s ON			S_s OFF (N/A)	
S _p Normal	U1: 0.65 Vpk	0.92 mA rms	U1: Vpk	mA rms	
S _p Reversed	U1: 0.65 Vpk	0.92 mA rms	U1: Vpk	mA rms	

PERCEPTION/REACTION					
Polarity	S_s ON			S_s OFF (N/A)	
S _p Normal	U2: 0.45 Vpk	0.63 mA rms	U2: Vpk	mA rms	
S _p Reversed	U2: 0.45 Vpk	0.63 mA rms	U2: Vpk	mA rms	

TABLE B: CLASS II: (single phase) For "IEC, Canada and US" or CLASS I: (single phase) For "US" - S _e disconnected; <input type="checkbox"/> 0 - 132Vac Mains, or <input checked="" type="checkbox"/> 264Vac split-phase Mains	REMARKS: Tested between Line/Neutral pin and user accessible conductive parts.
--	--

BURN HAZARD								
	S_s ON				S_s OFF (N/A)			
Polarity	S_n Open		S_n Closed		S_n Open		S_n Closed	
S _p Normal	U1: 1.16 Vpk	1.64 mA rms	U1: 0.65 Vpk	0.92 mA rms	U1: Vpk	mA rms	U1: Vpk	mA rms
S _p Reversed	U1: 1.16 Vpk	1.64 mA rms	U1: 0.65 Vpk	0.92 mA rms	U1: Vpk	mA rms	U1: Vpk	mA rms

PERCEPTION/REACTION								
	S_s ON				S_s OFF (N/A)			
Polarity	S_n Open		S_n Closed		S_n Open		S_n Closed	
S _p Normal	U2: 0.81 Vpk	1.14 mA rms	U2: 0.45 Vpk	0.63 mA rms	U2: Vpk	mA rms	U2: Vpk	mA rms
S _p Reversed	U2: 0.81 Vpk	1.14 mA rms	U2: 0.45 Vpk	0.63 mA rms	U2: Vpk	mA rms	U2: Vpk	mA rms

TABLE A: CLASS I: (single phase) For "IEC and Canada only" - S _e disconnected;	REMARKS: Tested between Line/Neutral pin and output connector terminal.
---	---

BURN HAZARD					
Polarity	S_s ON			S_s OFF (N/A)	
S _p Normal	U1: 0.65 Vpk	0.91 mA rms	U1: Vpk	mA rms	

Sp Reversed	U1: 0.65 Vpk	0.91 mA rms	U1: Vpk	mA rms
PERCEPTION/REACTION				
Polarity	Ss ON		Ss OFF (N/A)	
Sp Normal	U2: 0.45 Vpk	0.63 mA rms	U2: Vpk	mA rms
Sp Reversed	U2: 0.45 Vpk	0.63 mA rms	U2: Vpk	mA rms

TABLE B:
 CLASS II: (single phase) For "IEC, Canada and US"
 or
 CLASS I: (single phase) For "US"
 - S_e disconnected;
 0 - 132Vac Mains, or 264Vac split-phase Mains

REMARKS:
 Tested between Line/Neutral pin and output connector terminal.

BURN HAZARD								
	S _s ON				S _s OFF (N/A)			
Polarity	S _n Open		S _n Closed		S _n Open		S _n Closed	
S _p Normal	U1: 1.16 Vpk	1.64 mA rms	U1: 0.65 Vpk	0.91 mA rms	U1: Vpk	mA rms	U1: Vpk	mA rms
S _p Reversed	U1: 1.16 Vpk	1.64 mA rms	U1: 0.65 Vpk	0.91 mA rms	U1: Vpk	mA rms	U1: Vpk	mA rms

PERCEPTION/REACTION								
	S _s ON				S _s OFF (N/A)			
Polarity	S _n Open		S _n Closed		S _n Open		S _n Closed	
S _p Normal	U2: 0.81 Vpk	1.14 mA rms	U2: 0.45 Vpk	0.63 mA rms	U2: Vpk	mA rms	U2: Vpk	mA rms
S _p Reversed	U2: 0.81 Vpk	1.14 mA rms	U2: 0.45 Vpk	0.63 mA rms	U2: Vpk	mA rms	U2: Vpk	mA rms

TABLE A:
 CLASS I: (single phase) For "IEC and Canada only" - S_e disconnected;

REMARKS:
 Tested between Line/Neutral pin and glass enclosure with foil.

BURN HAZARD				
Polarity	Ss ON		Ss OFF (N/A)	
Sp Normal	U1: 0.08 Vpk	0.11 mA rms	U1: Vpk	mA rms
Sp Reversed	U1: 0.08 Vpk	0.11 mA rms	U1: Vpk	mA rms

PERCEPTION/REACTION				
Polarity	Ss ON		Ss OFF (N/A)	
Sp Normal	U2: 0.04 Vpk	0.06 mA rms	U2: Vpk	mA rms
Sp Reversed	U2: 0.04 Vpk	0.06 mA rms	U2: Vpk	mA rms

TABLE B:
 CLASS II: (single phase) For "IEC, Canada and US"
 or
 CLASS I: (single phase) For "US"
 - S_e disconnected;
 0 - 132Vac Mains, or 264Vac split-phase Mains

REMARKS:
 Tested between Line/Neutral pin and glass enclosure with foil.

BURN HAZARD				
	S _s ON		S _s OFF (N/A)	

Polarity	S _n Open		S _n Closed		S _n Open		S _n Closed	
S _p Normal	U1: 0.08 Vpk	0.11 mA rms	U1: 0.08 Vpk	0.11 mA rms	U1: Vpk	mA rms	U1: Vpk	mA rms
S _p Reversed	U1: 0.08 Vpk	0.11 mA rms	U1: 0.08 Vpk	0.11 mA rms	U1: Vpk	mA rms	U1: Vpk	mA rms
PERCEPTION/REACTION								
	S _s ON				S _s OFF (N/A)			
Polarity	S _n Open		S _n Closed		S _n Open		S _n Closed	
S _p Normal	U1: 0.08 Vpk	0.11 mA rms	U2: 0.04 Vpk	0.06 mA rms	U2: Vpk	mA rms	U2: Vpk	mA rms
S _p Reversed	U1: 0.08 Vpk	0.11 mA rms	U2: 0.04 Vpk	0.06 mA rms	U2: Vpk	mA rms	U2: Vpk	mA rms

TABLE A: CLASS I: (single phase) For "IEC and Canada only" - S _e disconnected;	REMARKS: Tested between Line/Neutral pin and DC/AC inverter output.
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BURN HAZARD

Polarity	S _s ON		S _s OFF (N/A)	
S _p Normal	U1: 0.78 Vpk	1.10 mA rms	U1: Vpk	mA rms
S _p Reversed	U1: 0.78 Vpk	1.10 mA rms	U1: Vpk	mA rms

PERCEPTION/REACTION

Polarity	S _s ON		S _s OFF (N/A)	
S _p Normal	U2: 0.56 Vpk	0.79 mA rms	U2: Vpk	mA rms
S _p Reversed	U2: 0.56 Vpk	0.79 mA rms	U2: Vpk	mA rms

TABLE B: CLASS II: (single phase) For "IEC, Canada and US" or CLASS I: (single phase) For "US" - S _e disconnected; <input type="checkbox"/> 0 - 132Vac Mains, or <input checked="" type="checkbox"/> 264Vac split-phase Mains	REMARKS: Tested between Line/Neutral pin and DC/AC inverter output.
--	---

BURN HAZARD

	S _s ON				S _s OFF (N/A)			
Polarity	S _n Open		S _n Closed		S _n Open		S _n Closed	
S _p Normal	U1: 1.23 Vpk	1.73 mA rms	U1: 0.78 Vpk	1.10 mA rms	U1: Vpk	mA rms	U1: Vpk	mA rms
S _p Reversed	U1: 1.23 Vpk	1.73 mA rms	U1: 0.78 Vpk	1.10 mA rms	U1: Vpk	mA rms	U1: Vpk	mA rms

PERCEPTION/REACTION

	S _s ON				S _s OFF (N/A)			
Polarity	S _n Open		S _n Closed		S _n Open		S _n Closed	
S _p Normal	U2: 0.95 Vpk	1.34 mA rms	U2: 0.56 Vpk	0.79 mA rms	U2: Vpk	mA rms	U2: Vpk	mA rms
S _p Reversed	U2: 0.95 Vpk	1.34 mA rms	U2: 0.56 Vpk	0.79 mA rms	U2: Vpk	mA rms	U2: Vpk	mA rms

Note: The above tests were measured with internal power supply, TOM202CABB (Y capacitor: CY01=CY02=CY03=1000uF) and TOM371CABB (Y capacitor: CY1=CY2=CY3= 1000uF)

Test Equipment ID/Inventory No: F01, D01, P02, TP60065-14/ 1

CL.	REQUIREMENTS	TEST/EVALUATION					VERDICT
9.1.1.1 (cont'd)	Output Terminals - Electric Shock	No test if: - terminal voltage < 60V d.c. Stored charge 45 µC max. - audio signals < 120V rms (professional) or < 71V rms (other than professional)					P
		Output Terminal	Input Signal Freq (audio out only) (Hz)	Open Circuit Voltage (V)	Measured Capacitance (µF)	Stored Charge (µC)	
		CON22 (L)	1K	8.5	-	-	
		CON22 (R)	1K	8.5	-	-	
		-	-	-	-	-	
		-	-	-	-	-	
		<u>Test Equipment ID/Inventory No:</u> F01, A09, D02, P02/ 1					
9.1.1.2	Accessible Parts	Clearance from probe to parts with 1000V ac or 1500V dc: <u>All apparatus:</u> - Jointed Test Finger (Test probe B of IEC 61032) applied, (20N force): >10 mm <u>Household apparatus:</u> - Small Finger Probe (Test probe 18 of IEC 61032) applied, (20N force): >10 mm - Small Finger Probe (Test probe 19 of IEC 61032) applied, (20N force): >10 mm <u>Class II construction: (N/A)</u> Test probe 13 of IEC 61032 applied (3N force): _____ mm <u>Note:</u> No contact with hazardous live parts using any of the above probes.					P
		<u>Test Equipment ID/Inventory No:</u> F01, W04, TP60065-1, TP60065-2, TP60065-3/ 1					
9.1.3	Enclosure openings	Test pin (4 mm dia., 100 mm length) suspended freely from one end. No contact with hazardous live parts: Satisfactory					P
		<u>Test Equipment ID/Inventory No:</u> F01, P60065-5/ 1					

9.1.4	Terminals	<p>- Within 25 mm of each terminal contact, 1 mm dia., 20 mm length probe applied with 10 N force: Satisfactory</p> <p>- Each terminal contact tested with 1 mm dia., 100 mm length (Test probe D of IEC 61032) with 1 N force: Satisfactory</p> <p><u>Note:</u> No contact with hazardous live parts using any of the above probes.</p> <p><u>Test Equipment ID/Inventory No:</u> F01, W4, TP60065-6/ 1</p>	P
9.1.6	Withdrawal of mains plug	<p>- Mains switch OFF, or ON, whichever is more unfavourable.</p> <p>- Measured 2 s after plug withdrawal, repeated 10 times.</p> <p>- No test if capacitance does not exceed 0.1 µF.</p> <p>- < 60 V dc, or ≤ 45 µC if > 60 V dc.</p> <p>Line 1 to Line 2: 0 Vpk</p> <p>Line 1 to Earth: -- Vpk</p> <p>Line 2 to Earth: -- Vpk</p> <p>Above for Power Supply: TOM202CABB (X capacitor: CX2= 0.68µF; Bleeder resistor: R1=R2= 750 K ohm) and TOM371CABB (X capacitor: CX2= 0.47µF; Bleeder resistor: R1=R2=R108=R109= 150 K ohm)</p> <p><u>Test Equipment ID/Inventory No:</u> F01, P02, D04, M06/ 1</p>	P

CL.	REQUIREMENTS	TEST/EVALUATION	VERDICT		
9.1.7	Resistance to External Forces	<p>(a) Rigid test finger (Test Probe 11 of IEC 61032) applied with 50 N force, directed inwards, for 10 s on enclosure and textile coverings.</p> <p>- Enclosure does not become hazardous live: Yes</p> <p>- Hazardous live parts do not become accessible: Yes</p>	P		
		<p>(b) Test hook (Fig. 4 of IEC 60065), outwards force of 20 N for 10 s.</p> <p><u>Note:</u> Hazardous live parts do not become accessible.</p>	P		
		<p>(c) External conductive enclosures and conductive parts of the external enclosure subjected for 5 s to the following forces using a circular plane surface, 30 mm dia.:</p> <p>- 250 N, for floor standing apparatus: N/A</p> <p>- 100 N, for all other apparatus: Satisfactory</p>	P		
		Force	Enclosure deformed / damaged?	Spacings reduced to:	
		250N (Floor standing)	Y / N	_____ mm	
100N (all other apparatus)	N	> 10 mm			

		Test Equipment ID/Inventory No: F01, TP60065-8, TP60065-9, X01, W03/ 1	
10.2	Humidity Treatment	The following humidity treatment was performed, followed by the tests of Cl. 10.3: - Apparatus used in tropical climates: 40°C, 95% R.H., 120 h - Other apparatus: 30°C, 95% R.H., 48 h - Transformer P/N: As per critical component list	P
		Test Equipment ID/Inventory No: F01, G1, X2/ 1	

CL.	REQUIREMENTS	TEST/EVALUATION	VERDICT
11.1 (cont'd)	Shock Hazard (Fault Conditions)	Under fault conditions: > 70Vpk ac / 120V dc Mains: 264 Vac, 60 Hz <u>NOTES:</u> (a) References: Fig 6 of IEC 60990 and Figs 1 and 2 of ANSI C101 (UL 101) (b) S _e is earth fault switch; S _s is sample mains switch; S _p is mains polarity switch; S _n is neutral fault switch (c) Leakage current from Accessible Parts to Earthed Supply Source	P

TABLE A:
 CLASS I: (single phase) For "IEC and Canada only"
 - S_e disconnected;

REMARKS:
 All Fault Tests: Tested between Line/Neutral pin and user accessible conductive parts.

BURN HAZARD

Polarity	S _s ON		S _s OFF (N/A)	
S _p Normal	U1: 0.65 Vpk	0.91 mA rms	U1: Vpk	mA rms
S _p Reversed	U1: 0.65 Vpk	0.91 mA rms	U1: Vpk	mA rms

PERCEPTION/REACTION

Polarity	S _s ON		S _s OFF (N/A)	
S _p Normal	U2: 0.45 Vpk	0.63 mA rms	U2: Vpk	mA rms
S _p Reversed	U2: 0.45 Vpk	0.63 mA rms	U2: Vpk	mA rms

TABLE B:
 CLASS II: (single phase) For "IEC, Canada and US"
 or
 CLASS I: (single phase) For "US"
 - S_e disconnected;
 0 - 132Vac Mains, or 264Vac split-phase Mains

REMARKS:
 All Fault Tests: Tested between Line/Neutral pin and user accessible conductive parts.

BURN HAZARD

Polarity	S _s ON				S _s OFF (N/A)			
	S _n Open		S _n Closed		S _n Open		S _n Closed	
S _p Normal	U1: 1.16 Vpk	1.64 mA rms	U1: 0.65 Vpk	0.91 mA rms	U1: Vpk	mA rms	U1: Vpk	mA rms

S _p Reversed	U1: 1.16 Vpk	1.64 mA rms	U1: 0.65 Vpk	0.91 mA rms	U1: Vpk	mA rms	U1: Vpk	mA rms
PERCEPTION/REACTION								
	S _s ON				S _s OFF (N/A)			
Polarity	S _n Open		S _n Closed		S _n Open		S _n Closed	
S _p Normal	U2: 0.81 Vpk	1.14 mA rms	U2: 0.45 Vpk	0.63 mA rms	U2: Vpk	mA rms	U2: Vpk	mA rms
S _p Reversed	U2: 0.81 Vpk	1.14 mA rms	U2: 0.45 Vpk	0.63 mA rms	U2: Vpk	mA rms	U2: Vpk	mA rms

Note: The above tests were measured with internal power supplies, TOM202CABB (Y capacitor: CY01=CY02=CY03= 1000uF) and TOM371CABB (Y capacitor: CY1=CY2=CY3= 1000uF)

TABLE A: CLASS I: (single phase) For "IEC and Canada only" - S _e disconnected;					REMARKS: All Fault Tests: Tested between Line/Neutral pin and user accessible conductive parts.			
BURN HAZARD								
Polarity	S _s ON				S _s OFF (N/A)			
S _p Normal	U1: 0.84 Vpk		1.19 mA rms		U1: Vpk		mA rms	
S _p Reversed	U1: 0.84 Vpk		1.19 mA rms		U1: Vpk		mA rms	
PERCEPTION/REACTION								
Polarity	S _s ON				S _s OFF (N/A)			
S _p Normal	U2: 0.64 Vpk		0.91 mA rms		U2: Vpk		mA rms	
S _p Reversed	U2: 0.64 Vpk		0.91 mA rms		U2: Vpk		mA rms	
TABLE B: CLASS II: (single phase) For "IEC, Canada and US" or CLASS I: (single phase) For "US" - S _e disconnected; <input type="checkbox"/> 0 - 132Vac Mains, or <input checked="" type="checkbox"/> 264Vac split-phase Mains					REMARKS: All Fault Tests: Tested between Line/Neutral pin and user accessible conductive parts.			
BURN HAZARD								
	S _s ON				S _s OFF (N/A)			
Polarity	S _n Open		S _n Closed		S _n Open		S _n Closed	
S _p Normal	U1: 1.26 Vpk	1.79 mA rms	U1: 0.84 Vpk	1.19 mA rms	U1: Vpk	mA rms	U1: Vpk	mA rms
S _p Reversed	U1: 1.26 Vpk	1.79 mA rms	U1: 0.84 Vpk	1.19 mA rms	U1: Vpk	mA rms	U1: Vpk	mA rms
PERCEPTION/REACTION								
	S _s ON				S _s OFF (N/A)			
Polarity	S _n Open		S _n Closed		S _n Open		S _n Closed	

S _p Normal	U2: 0.96 Vpk	1.36 mA rms	U2: 0.64 Vpk	0.91 mA rms	U2: Vpk	mA rms	U2: Vpk	mA rms
S _p Reversed	U2: 0.96 Vpk	1.36 mA rms	U2: 0.64 Vpk	0.91 mA rms	U2: Vpk	mA rms	U2: Vpk	mA rms

Note: The above tests were measured with internal power supplies, TOM202CABB and TOM371CABB, installed and under fault condition tests, with inverter HV to metal chassis (GND) short/ inverter HV to output connectors. (TOM202CABB, Y capacitor: CY01=CY02=CY03= 1000uF and TOM371CABB, Y capacitor: CY1=CY2=CY3= 1000uF)

TABLE A: CLASS I: (single phase) For "IEC and Canada only" - S _c disconnected;					REMARKS: All Fault Tests: Tested between Line/Neutral pin and user accessible conductive parts.			
BURN HAZARD								
Polarity		S _s ON				S _s OFF (N/A)		
S _p Normal	U1: 0.84 Vpk		1.19 mA rms		U1: Vpk		mA rms	
S _p Reversed	U1: 0.84 Vpk		1.19 mA rms		U1: Vpk		mA rms	
PERCEPTION/REACTION								
Polarity		S _s ON				S _s OFF (N/A)		
S _p Normal	U2: 0.64 Vpk		0.91 mA rms		U2: Vpk		mA rms	
S _p Reversed	U2: 0.64 Vpk		0.91 mA rms		U2: Vpk		mA rms	
TABLE B: CLASS II: (single phase) For "IEC, Canada and US" or CLASS I: (single phase) For "US" - S _c disconnected; <input type="checkbox"/> 0 - 132Vac Mains, or <input checked="" type="checkbox"/> 264Vac split-phase Mains					REMARKS: All Fault Tests: Tested between Line/Neutral pin and user accessible conductive parts.			
BURN HAZARD								
		S _s ON				S _s OFF (N/A)		
Polarity	S _n Open		S _n Closed		S _n Open		S _n Closed	
S _p Normal	U1: 1.26 Vpk	1.79 mA rms	U1: 0.84 Vpk	1.19 mA rms	U1: Vpk	mA rms	U1: Vpk	mA rms
S _p Reversed	U1: 1.26 Vpk	1.79 mA rms	U1: 0.84 Vpk	1.19 mA rms	U1: Vpk	mA rms	U1: Vpk	mA rms
PERCEPTION/REACTION								
		S _s ON				S _s OFF (N/A)		
Polarity	S _n Open		S _n Closed		S _n Open		S _n Closed	
S _p Normal	U2: 0.96 Vpk	1.36 mA rms	U2: 0.64 Vpk	0.91 mA rms	U2: Vpk	mA rms	U2: Vpk	mA rms

S _p Reversed	U2: 0.96 Vpk	1.36 mA rms	U2: 0.64 Vpk	0.91 mA rms	U2: Vpk	mA rms	U2: Vpk	mA rms
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Note: The above tests were measured with internal power supplies, TOM202CABB and TOM371CABB, installed and under fault condition tests, with inverter HV to metal chassis (GND) short/ inverter HV to output connectors. (TOM202CABB, Y capacitor: CY01=CY02=CY03= 1000uF and TOM371CABB, Y capacitor: CY1=CY2=CY3= 1000uF)

Test Equipment ID/Inventory No: F01, TP60065-14, P02, D03/ 1

CL.	REQUIREMENTS	TEST/EVALUATION	VERDICT	
12.1.1	Bump Test	Mass of product (> 7 kg): 45.9 kg measured. Apparatus placed on horizontal wooden support, which is allowed to fall 50 times from a height of 5 cm onto a wooden table: No damage	P	
12.1.3	Impact Test	(a) Impact hammer, 0.5 J, 3 blows:	P	
		Area		Results (any visible cracks?)
		Top		Satisfactory
		Sides		Satisfactory
		Rear		Satisfactory
		Front	Satisfactory	
		(b) Non-ventilated solid areas subjected to a single impact with a 50 mm dia., 500g mass steel ball as follows: Portable and tabletop apparatus: 2 J Top: Sat., Sides: Sat., Rear: Sat., Front: Sat. Exposed surfaces of fixed mounted apparatus: 2 J(N/A) Top: _____, Sides: _____, Back: _____, Front: _____ Floor standing apparatus: 3.5 J(N/A) Top: _____, Sides: _____, Back: _____, Front: _____	P	
		(c) After all impact tests: - Accessible hazardous live parts? No - Insulating barrier damaged? No - Complies with dielectric strength test of Cl. 10.3? Yes	P	
		Test Equipment ID/Inventory No: F01, J06, TB-1, W11, WA2, X01/ 1		

CL.	REQUIREMENT	TEST/EVALUATION	VERDICT
15.2	Provisions for Protective Earthing	Bonding Test: 40 A, 2 min 0.72 V measured from input earth pin to user accessible metal parts (18 m ohm) Other points measured: N/A Test Equipment ID/Inventory No: Q03, F01/ 1	P
17.1	Electrical Connections and	- Screw terminals providing electrical contact, location:	-

	Mechanical Fixings		<ul style="list-style-type: none"> - Enclosure fixing screws - Handle screws - Terminal fixing screws - Knob screws - Feet screws - Leg screws - Stand screws 				
Location	Screw Material	Material Threaded Into	Screw Dia. (mm)	Thread Length (mm)	5 x (metal) 10 x (others)	Torque (Nm) (per Table 20)	-
Enclosure	metal	metal	4.79	8.03	5 X	2.0	Pass
Enclosure	metal	metal	4.77	9.80	5 X	2.0	Pass
Power Board	metal	metal	3.84	8.79	5 X	1.2	Pass
Inverter Board	metal	metal	2.88	5.87	5 X	0.5	Pass
Test Equipment ID/Inventory No: F01, W01, W08/ 1							

CL.	REQUIREMENT	TEST/EVALUATION	VERDICT
19.5.1	Fragmentation Test	<p>Glass surface exceeding 0.1 m², or having a major dimension exceeding 450 mm was tested according to Cl. 12.1.3 Impact Hammer Test, and resulted in the glass breaking/cracking.</p> <p>Sample shattered with center punch placed approximately 15 mm in from midpoint of one of the longer edges of sample. Within 5 min of fracture, count particles within a 50 mm square (located approx at the center of the area of the coarsest fracture).</p> <p>Part: Screen, thickness 3.5 mm</p> <p>After the test, the number of particles counted is (≥ 45): No breaking or cracking</p> <p>Test Equipment ID/Inventory No: F01, WA2, TB-1/ 1</p>	P

Part B: CSA 60065-03 + Am 1, UL 60065-07

Clauses refer to UL 60065-07 unless otherwise indicated

1. **Rating Test: Cl 4.2.1 DU At marked voltage (see above)**

Marked rating	110-24 V	50/60Hz	5.0 A	- VA	- W	- V dc
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Test Voltage 90% - 110% of RATED SUPPLY VOLTAGE
 (US: 132V for 120V rated, 264V for 240V rated)
 (Canada: 108-125V, 216-250V)

10% tolerance, Convenience receptacle loaded for temp., amplifier 0.5W min

4. Accessibility of Live/Moving/Sharp Parts: CI 9.1.1.2 DU

Probe	Results
Jointed test finger (Fig 14 DU)	Satisfactory
Test Equipment ID/Inventory No: TP60065-1, TP60065-1B, W04/ 1	

5. Audio Output Electric Shock Test: CI 9.1.1.1 DR (a) includes:
 120 Vrms - Commercial apparatus
 71 Vrms - other than Commercial apparatus

Test Equipment ID/Inventory No: F01, P02, D02, A09/ 1

(a) Output voltage measurement:

Input Signal Frequency (Hz)	Open Circuit Voltage (V)	Results
1K	8.5	Satisfactory

(b) Audio Output under Fault Conditions:

Unreliable Component	Fault Condition	Output Voltage	Results	
			Voltage Limited	Protector Opens
R331	S/C	8.54	71	-
C167	S/C	8.52	71	-
L3	S/C	8.54	71	-

6. Impact: CI 12.1.3 DU

Test Equipment ID/Inventory No: F01, J06, TB-1, WA2, W11/ 1

(a) T.V.: (N/A)

Impact in Joules						
CRT Size (mm)	Safety Screen		CRT Enclosure (except bottom)			
	Impl.	Result	Shock*	Result	Impl.	Result
< 160	1		2		2	
> 160	7		2		7	

Note *: For commercial, use 7 Joules

(d) Floor: (3.5J) (N/A)

Top -	Sides -	Rear -	Front -
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(e) **Household Table Top: (2J)**

Top – Sat.	Sides – Sat.	Rear – Sat.	Front – Sat.
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(d) **Household, Buttons and Controls: (N/A)**

Unprotect ed Button, Control	Result	Protected Button, Control			
		No Cover	Result	Non-det. Cover	Result
2 J		1 J		0.7 J	

Tested Control		Impact _____ J	
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(e) **Commercial: (7J) (N/A)**

Top -	Sides -	Rear -	Front -
Dielectric strength: _____ kV			

8. **Handle Test: CI 12.1.6 DU**

Appliance handle force 183.6 kg (4 x mass)
 Results: Satisfactory

Note: If handle and/or its mounting means are constructed with polymeric materials, the Handle Test to be performed before and after Stress Relief Test of Clause 12.1.5.

	Results
	Two handles force 183.6 kg (4 x mass)
Before stress relief test	N/A (due to the metal enclosure is provided)
After stress relief test	N/A (due to the metal enclosure is provided)
Test Equipment ID/Inventory No: F01, X01, W09/ 1	

9. **Wall, Ceiling or Rack Mount: CI 12.7 DU, CI. 19.6 DU**

Product attached to: Per manufacturer’s user manual, see Att. 12.	
Type of fasteners used: 8 provided	
Metal screws, 4.9 mm diameter, 14.1 mm length.	
Force = (3 x mass) 3 x 45.9 kg, 1 min, added	Results: Satisfactory
Test Equipment ID/Inventory No: F01, W09, X01/ 1	

16. **Mass of Set/Supply Cord: Cl. 16.1 DC DR , Cl. 16.1 and Table 4 (CSA No. 1)**

45.9 kg.

Sample supply cord type: SVT.

Test Equipment ID/Inventory No: W16/ 1

19. **Glass Test:** CI 19.5 DU
 Glass surface (except picture tubes and laminated glass) exceeding 0.1 m², or having a major dimension exceeding 450 mm subjected to a single impact with a 50 mm dia., 500g mass steel ball as follows:

Apparatus Type	Impact Energy	Results
Portable, tabletop or under cabinet	2 J	Satisfactory
<u>Test Equipment ID/Inventory No:</u>		F01, W09, TB-1, WA2/ 1

Note: Fragmentation test of CI 19.5.1 required on a separate sample if glass breaks or cracks.

20. **Dielectric Strength:** Table 5 DU

Marking	Dielectric Strength	Results
105-130V:	1.0 kV Basic	N/A
	2.0 kV Double	N/A
220-250V:	1.5 kV Basic	Satisfactory
	3.0 kV Double	Satisfactory
<u>Test Equipment ID/Inventory No:</u> J06, X01/ 1		