

Issued date : 2000/10/23

New date : 2003/04/16

TEST REPORT**IEC60 950****Safety of information technology equipment**

Report Reference No..... : LD87052002-4

Compiled by (+ signature)..... : *Lily Huang*
Engineer

Reviewed by (+ signature)..... : *Charles. Chang*
Assistant Manager

Date of issue..... : December 30, 2002

Modify describe..... : The report modify LD87052002 to add some components inverter and power.

Testing laboratory name..... : Advantech QA _ Lab

Testing laboratory address..... : No.1, Alley 20, Lane 26, Rueiguang Road Neihu District, Taipei ,Taiwan 14, R.O.C.

Client name..... : Advantech Co., Ltd

Address..... : 4th Fl, No. 108-3, Ming-Chuan Rd, Shing-Tien City, Taipei Hsien, Taiwan

Standard..... : IEC 60 950:1991 + A1:1992 + A2:1993 + A3:1995 + A4:1996
EN 60 950:1992 + A1:1993 + A2:1993 + A3:1995 + A4:1997 + A11:1997

Test procedure..... : Personal Computer

Procedure deviation..... : N/A

Non-standard test method..... : N/A

Test Report Form/blank test report

Test Report Form No. : I950__D/97-06

TRF originator..... : FIMKO

Master TRF..... : reference No. I950 D, dated 97-02

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Test item description..... : Informative test report

Trademark..... :

ADVANTECH®

Model and/or type reference .. : PPC-xyT (x=12 or 15 ; y=0~9)

Manufacturer..... : Advantech Co., Ltd

Rating(s)..... : 115-240 Vac, 50-60 Hz, 3A

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The construction of the model PPC-xyT (X-12, 15; y=0-9) was modified as follows

1. Adds alternative source inverter and power .

For the above described modification the following testing was considered to be necessary :

Modification	Testing	Comments	Result
1	N/A	IEC 60950 complied inverter and power is greater than before. No tests were considered necessary. See appended table 1.5.1 for alternative source.	P

Remark :

History of amendments and modifications:

Ref No. LD87052002-1, dated August 16, 2002 (add 15" panel)

Ref No. LD87052002 -2, dated October 25, 2003 (add 12" panel)

Ref No. LD87052002 -3, dated 02 January 2003 (add FANS)

Ref No. LD87052002 -4, dated 15 April 2003 (add inverter and power)

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1.5.1	TABLE: list of critical components				Pass
object/part No.	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity ¹⁾
Inverter (for PPC-15xT)	Leaerf Thce	LV-1201-DA	Rated : I/P 13V,1.4A,55Hz	--	--
Inverter (for PPC-12xT)	Leaerf Thce	LV-1201DA-1	Rated : I/P 13V,1.4A,55Hz	--	--
Power	SKYNET Electronic Co., Ltd.	SNP-8086-M	Rated : I/P 100-250Vac, 50/60 Hz, 3A O/P 5Vdc/12A,12Vdc/1A	IEC 60950 EN60601-1 UL2601-1 UL-60950	TÜV,UL
Remark : ¹⁾ an asterisk indicates a mark which assures the agreed level of surveillance.					

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1.6	TABLE: electrical data (in normal conditions)					N/A
fuse #	I rated (A)	U (V)	P (W)	I (mA)	I fuse (mA)	condition/status
						See enclosed No.1 UL test report
supplementary information:						

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ENCLOSURE No.1

UL test report

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SUPERIOR PRODUCT CONSULTING, INC.
FACTORY DATA PACKAGE INFORMATION SHEET

Dept: 3013

Applicant: Advantech Inc.

File No.: E 180881

Proj. Handler/Ext.: Robert Warren 32237

Proj. No.: 03SC16211

Resp. Engr./Ext.:

Product: Panel PC

Test Technician/Ext.: Judy Jeng / Judy Jeng

Model(s): PPC-123T, 153T

Standard(s) No.: UL60950

SPC Reviewed by: Terry Wang / Terry Wang

Data Sheets Reviewed by:

Testing Facility: Superior Product Consulting, INC.

Testing Location: Taipei, Taiwan, R.O.C.

_____ on 1 /
Prior to Factory Trip

Completed Test Results Reviewed by: Robert E. Wasson, Jr. on 3/21/03

[illegible][illegible]

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Tabld - CL 60050, 3rd Data Sheets

Document : 002.8ng

Form Issued: 10-92-04

Revised: 00-00 00

Form No. 6

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Measuring and Test Instruments

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Applied For Safety Inspection

Company/Test Institute: Superior Product Consulting, Inc.

Address of Test Site: 3FL, No. 10, Alley 6, Lane 235, Bao Chiao Road, Hsin Tien City, Taipei, Taiwan, R.O.C.

Person responsible for:

Maintenance & Calibration : Terry wang/ Team Leader

Division/Department : Test Lab

Date and Signature :

Terry Wang 3/13/03

E 180881

03SC16211

REV: A

DATE: Mar.13, 2003

Item	Kind of Instrument Precision Class SPC Property No.	Manufacturer	Model Serial No.	Range Used & Function	Calibrated until
1	AC Power Meter SPC029	YOKOGAWA	2433 68LD0039	20A 600V	24, JUN. 2003 25, JUN. 2002
2	AC Power Meter SPC009	YOKOGAWA	2433 61LD0248	20A 600V	24, JUN. 2003 25, JUN. 2002
4	LEAKAGE CURRENT METER SPC103	SIMPSON	228 20433	0-100mA	14, APR. 2003 15, APR. 2002
5	PUSH/PULL SCALE SPC004	IMADA	FB-30 207330	30KG	24, JUN. 2003 25, JUN. 2002
7	X-RAY METER SPC026	VICTOREEN	440RF/D 597	0-100mR/h	07, FEB. 2002 08, FEB. 2001
8	DC ELECTRONIC LOAD SPC069	PRODIGIT	3301A 80201A011	60V/60A	04, MAR. 2004 05, MAR. 2003
9	CALIPER SPC019	MITUTOYO	500-321 7217225	150mm	10, FEB. 2004 11, FEB. 2003
10	TEMP. RECORDER SPC014	YOKOGAWA	UR180 48YP0718	-200°C TO 400°C	17, OCT. 2003 18, OCT. 2002
11	TEMP. RECORDER SPC012	YOKOGAWA	UR180 48YP0719	-200°C TO 400°C	19, NOV. 2003 20, NOV. 2002
12	TEMP. RECORDER SPC033	YOKOGAWA	UR180 42YS0028	-200°C TO 400°C	14, AUG. 2003 15, AUG. 2002
13	TEMP. RECORDER SPC099	FLUKE	52 4795005	-200°C TO 760°C	25, JUL. 2003 26, JUL. 2002
14	DIGITIZING OSCILLOSCOPE SPC047	TEKTRONIX	TDS410 B010359	150MHz 100MS/s	08, JAN. 2004 09, JAN. 2003
15	DUAL DISPLAY MULTIMETER SPC018	FLUKE	45 5120082	750Vac 10A	10, FEB. 2004 11, FEB. 2003
16	HIGH VOLTAGE PROBE SPC104	FLUKE	80K-40 72940016	40KVpk	28, MAY. 2002 29, MAY. 2001
17	THERMO-HYGROMETER SPC067	ISUZU	3-3122 80660571	-15°C - +40°C 0-100% RH	25, JUN. 2003 26, JUN. 2002
18	DC ELECTRONIC LOAD SPC028	PRODIGHT	3301 205010035	60V/60A 250V/10A	03, MAY. 2003 04, MAY. 2002
19	DC ELECTRONIC LOAD SPC035	PRODIGHT	3301 210010074	60V/60A 250V/10A	03, MAY. 2003 04, MAY. 2002
20	AC/DC CURRENT PROBE SPC047	TEKTRONIX	A622 06-14-94	70Arms 100Apk	05, MAY. 2003 06, MAY. 2002
21	DC ELECTRONIC LOAD SPC057	PRODIGHT	3321 607020098	60V/60A	25, JUL. 2003 26, JUL. 2002
22	DC ELECTRONIC LOAD SPC089	PRODIGHT	3321 607020097	60V/60A	25, JUL. 2003 26, JUL. 2002
23	DIGITIZING POWER METER SPC059	PRODIGHT	4011 964011133	600V/20A	25, JUL. 2003 26, JUL. 2002
24	STOP WATCH SPC068	CASIO	HS-20 -----	0 S-10 HOURS	11, APR. 2003 12, APR. 2002
25	DIGITIZING MULTIMETER SPC060	GOOD WILL	GDM-8055 6040254	750Vac 2A 20MΩ	24, JUN. 2003 25, JUN. 2002
27	POWER ANALYSER SPC063	AVPOWER	PA2100 621-0597	650Vrms 20A	11, APR. 2003 12, APR. 2002
28	DC ELECTRONIC LOAD SPC066	PRODIGHT	3301A 70601A022	60V/60A 250V/10A	16, OCT. 2003 17, OCT. 2002

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29	TEST FINGER SPC039	UL	SM471	UL1950	21 MAR 2004
30	BALL PRESSURE SPC041	UL	S502	FIG. 19	22 MAR 2002
31	IMPACT BALL	UL	S1598	UL1950	21 MAR 2004
32	TEST PIN SPC040	UL	S004	FIG. 21	22 MAR 2002
33	DC ELECTRONIC LOAD SPC077	PRODIGIT	S003	50mm	21 MAR 2004
34	DC ELECTRONIC LOAD SPC079	PRODIGIT	S2962	500g	22 MAR 2002
35	DC ELECTRONIC LOAD SPC080	PRODIGIT	S001	UL1950	21 MAR 2004
36	DC ELECTRONIC LOAD SPC081	PRODIGIT	3301A	FIG. 20	22 MAR 2002
37	DC ELECTRONIC LOAD SPC078	ZENTECH	80701A043	60V/60A	16 AUG 2003
38	TEMP. RECORDER SPC082	YOKOGAWA	3301A	60V/60A	17 AUG 2002
39	TEMP. RECORDER SPC083	YOKOGAWA	80701A042	60V/30A	28 AUG 2003
40	TEMP. RECORDER SPC090	YOKOGAWA	3302A	60V/30A	29 AUG 2002
41	DC ELECTRONIC LOAD SPC091	PRODIGIT	808020375	60V/30A	16 AUG 2003
42	DC ELECTRONIC LOAD SPC088	PRODIGIT	3302	60V/30A	17 AUG 2002
43	DC ELECTRONIC LOAD SPC098	PRODIGIT	808020378	60V/60A	16 OCT 2003
44	TEST FINGER SPC070	UL	2600R	60V/60A	17 OCT 2002
45	DC ELECTRONIC LOAD SPC092	PRODIGIT	809055	300V/10A	16 AUG 2003
46	DIGITIZING OSCILLOSCOPE SPC093	TEKTRONIX	UR1800	-200°C TO	17 AUG 2002
47	DUAL DISPLAY MULTIMETER SPC094	FLUKE	4370GE038	400	11 FEB 2004
48	HI-POT TESTER SPC095	ZENTECH	UR1800	-200°C TO	12 FEB 2003
49	GROUNDING TESTER SPC096	ZENTECH	4370GE037	400	07 JAN 2004
50	LEAKAGE CURRENT METER SPC097	SIMPSON	UR1800	-200°C TO	08 JAN 2003
51	DIGITIZING POWER METER SPC094	PRODIGIT	4370GE046	400	07 JAN 2004
52	CALIPER SPC084	MITUTOYO	3302A	60V/30A	08 JAN 2003
53	TEMP. RECORDER SPC072	YOKOGAWA	811020578	60V/30A	16 OCT 2002
54	AC POWER METER SPC101	YOKOGAWA	3301A	60V/60A	16 OCT 2002
55	TEMP. RECORDER SPC104	YOKOGAWA	811020580	60V/60A	17 OCT 2002
56	TEMP. RECORDER SPC106	FLUKE	3301A	60V/60A	13 NOV 2003
57	DIGITIZING POWER METER SPC107	CHYNG HONG	80901A045	FIG. 19	14 NOV 2002
58	DIGITIZING POWER METER SPC105	CHYNG HONG	FIGURE 19	UL1950	21 MAR 2004
59	Temperature/Humidity Test Chamber SPC005	KAO TIEH	2346	FIG. 19	22 MAR 2002
60			3301A	60V/60A	16 OCT 2003
			80901A046	60V/60A	17 OCT 2002
			TDS360	200MHz	26 AUG 2003
			B019983	1GS/s	27 AUG 2002
			45	750Vac	07 JAN 2004
			7079032	10A	08 JAN 2003
			ZT9072A	10mA	28 AUG 2003
			809549	5KV	29 AUG 2002
			ZT9570	12V	26 NOV 2003
			807786	40A	27 NOV 2002
			228	0-100mA	17 OCT 2003
			20988		18 OCT 2002
			4011	600V/20A	11 FEB 2004
			984011034		12 FEB 2003
			CD-6°CS	150mm	19 NOV 2003
			0305366		20 NOV 2002
			UR1800	-200°C TO	19 NOV 2003
			4370GC179	400	20 NOV 2002
			2433	20A	07 JAN 2004
			68LD0040	600V	08 JAN 2003
			UR1800	-200°C TO	11 FEB 2004
			12W732059	400	12 FEB 2003
			52	-200°C TO	06 MAR 2004
			73990047	760°C	07 MAR 2003
			CP-350	500V/50A	09 MAR 2004
			355952		10 MAR 2003
			CP-350	500V/50A	09 MAR 2004
			355953		10 MAR 2003
			KT-7005-A	25°C to 40°C	07 OCT 2003
			72867	93%RH to 95%RH	08 OCT 2002

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SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

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Advantech Inc.
 TEST RECORD NO. _____ Vol. 2 Sec. 4 Issued: 02-09-99

TEST PROGRAM DETAILS:

The manufacturer submitted:

() a sample representing production of _____

☒ representative production samples of Panel PCModel(s) PPC-123T, 153T☒ employing the alternate power supply and Inverter

☒ The following tests were conducted in accordance with
☒ the Standard for Safety of Information Technology Equipment.
☒ CSA C22.2, No. 60950/UL60950, Third Edition.
☒ IEC 60950, Third Edition () Including Amendments _____
 () Including National Deviations from _____

() VDE 0805/05.90
 () AS 3260
 () EN 41 003
 () TS 001-1990

☒ Only the following tests were deemed necessary.

☒ Tests were conducted by (co. name & location) Superior Product Consulting, Inc.,
Taipei, Taiwan, R.O.C.
☒ and witnessed by a member of the UL staff.

☒ Tests were conducted under WTDP/CTDP/COMPASS Program/TCP/CAP.
☒ Tests noted by the initials "UL" were conducted at UL/witnessed by UL staff member.

() The following tests were conducted by _____ under
 the Memorandum of Understanding (MOU)/CB Scheme _____;
 (CB Certificate No. _____; Tracking No. _____)

TB:bd - UL 60950, 3rd Data Sheets
 Document: 005.Eng

Form Issued: 10-02-97
 Revised: 00-00-97

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SUPERIOR PRODUCT CONSULTING, INC.
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The test methods and results of the following tests have been reviewed and found to be in accordance with the requirements in the Standards noted above. Test results are valid only for the tested equipment.

() The following D3 Deviations from UL 1950, Second Edition, were used for testing:

() The card cage contained _____ boards and had _____ empty slots.

() The CPU was Model _____.

☒ The unit was configured as follows: Hard Disk, CD-ROM and Floppy
Disk were Seeking, Each USB = +5V 0.5A

"Maximum normal load" was defined as follows:

Hard Disk, CD-ROM and Floppy Disk were Seeking, USB port
load 0.5A.

() Horizontal scanning frequency: _____ KHz

Vertical scanning frequency: _____ Hz

The unit weighs approximately _____ kg and was considered Portable
Building-in/Direct plug-in/Handheld/movable/fixed/stationary with exposed/unexposed
SELV/secondary low voltage/TNW circuits.

() The unit was considered rack-mountable.

☒ Temp 45 °C.

☒ Unless otherwise indicated, all tests were conducted on

Model PPC-153T

☒ Tests performed on Model PPC-153T were considered to be representative
of Model PPC-123T

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☒ Only limited tests/~~No tests~~ were performed on Model PPC-153T, PPC-123T
~~because of similarity in construction to () Model~~
 see Report dated 02 - 09 - 99 () previously evaluated
 unit.

☒ Only limited tests/~~No tests~~ were performed on Model PPC-153T, PPC-123T
 employing the alternate power supply and inverter
 due to testing previously performed on the subject unit.

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SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

File E180881 Project P35C16211 Page 7-13
 Tested by: Terry Wang Date 3/19/03
 (Printed Name) (Signature)

Sample # 1/2 Instr. Code/Range: 58.221.6.2 - INPUT TEST:
SINGLE-PHASE

METHOD

The unit was connected to a variable voltage as indicated and then operated normally under the conditions noted below until well warmed. The input current and average power were measured.

(X) RESULTS

Operating Condition	Input Condition		Input Current, A		Average Power Watts
	Volts	Hz	Rated	Measured	
Max. Normal Load	90	47	—	1.29	69
1	90	63	—	1.31	69
2	100	47	3	1.18	68
3	100	63	3	1.19	67
4	240	47	1.5	0.57	67
5	240	63	1.5	0.56	67
6	264	47	—	0.54	68
7	264	63	—	0.53	67

The steady-state input current ~~did~~/did not exceed the rated current at the rated voltage by more than 10% under the maximum normal load.

Comments: () Test on model:

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SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

File E 180881 Project 03SC16211 Page 8/13
 Tested by: Judy Jeng Date 3/19/03
 (Printed Name) (Signature)

Sample # _____ Instr Code/Range: _____

4.5.1, 1.4.12, 1.4.13 - HEATING TEST:

METHOD

The sample was connected to a source of supply, as noted below, and operated until temperatures became stable. Temperatures were measured using the thermocouple method. () Rise in temperature of windings of motors and transformers were additionally determined by the change-of-resistance method.

() Before starting the Heating Test, each special non-detachable power supply cord connection was pulled with a force of 5 N (1.12 lbs) for one minute. During the Heating Test, the temperature of its connections were recorded. (Maximum 60°C rise per 3.3.2.)

The sample operated under normal load as follows:

- ☒ Continuous operation, until steady conditions were established.
 () Rated intermittent operation of _____ on _____ off, until steady conditions were established.
 () Rated short-time operation of _____.

☒ The test conditions were as follows:

Max. Normal load

Tmra was 45 °C.

() #Note: Cooling fan CFM (min): _____

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SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

File E 18 0881 Project 03SC16211 Page 7/13
 Tested by: Judy Jeng Judy Jeng Date 3/9/03
 (Printed Name) (Signature)

Sample # 1/2 Instr. Code/Range: 58, 22-24, 10.

RESULTS

Test	Operating Condition	Input Conditions		Duration
		Volts	H _z	
A	Max. Normal load	90	③ 60-63	1.5 hrs
B	"	③ 95-264	50 49	2 hrs
C				
D				
E				
F				

[illegible]

Note: (X) Test on model: CH1 to CH2 For = PPC-153T
CH3, CH4 For = skynet Type SNP-8086-M

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Model: PPC-153T
HEATING (TEMPERATURE) TEST (FOR ENGINEER REFERENCES ONLY) Page 10/13

Thermocouple Locations	90 V/60 Hz	244 V/50 Hz	47 dT (K)	Required dT (K)
Geo Heating Test 1.	35	34		60
2.	47	41		60
3.	37	26		60
4.	36	35		45
Room ambient	22 °C	23 °C		
Max. ambient temperature.....: 45 °C (Manufacturer's specification)				
Insulating winding component s(Transformer):				
<input checked="" type="checkbox"/> Class A (T): 75K - 10K - (45 - 25)K = 45 K				
<input type="checkbox"/> Class B (T): 95K - 10K - (____ - 25)K = ____ K				
*變壓器使用Triple wire 且用UL R/C (OBJY2) Insulation System時, 須確認是否只有Class 120 °(E)?				
<input type="checkbox"/> Class E (T): 90K - 10K - (____ - 25)K = ____ K				
Components:				
<input type="checkbox"/> PCB (°C): (____ - ____)K = ____ K				
<input checked="" type="checkbox"/> Choke (125 °C): (125 - 45)K = 60 K				
* 如Choke之溫度等級(Class)於120°C以上, 必須量測PCB之溫度。				
<input type="checkbox"/> Electrolyte cap. (°C): (____ - ____)K = ____ K				
<input type="checkbox"/> FBT (120°C): (120°C - ____)K = ____ K				
<input type="checkbox"/> Yoke coil (105°C): (105°C - ____)K = ____ K				
User Touchable Surface:				
<input type="checkbox"/> Plastic.....: 70K - (____ - 25)K = ____ K				
<input type="checkbox"/> Metal.....: 45K - (____ - 25)K = ____ K				
Notes:				
1. For plastic Enclosure (Stress Relief Test)				
<input type="checkbox"/> The oven temperature is ____ °C (ΔT ____ + 10°C + max ambient ____ °C) or				
<input type="checkbox"/> 70°C				
2. 如果Heat Sink量測得之溫度超過PCB之限制值, 則必須量測PCB之溫度。				

E/80881, 035C/6211

SPC project no. 30347

Judy Jeng

Prepared by: \\SERVER\實驗室\Lab 常用表格\Temp dt (06-06-2001).doc

Reviewed by: Terry Wang

K2
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New date : 2003/04/16

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No. LD87052002-4

IEC60 950

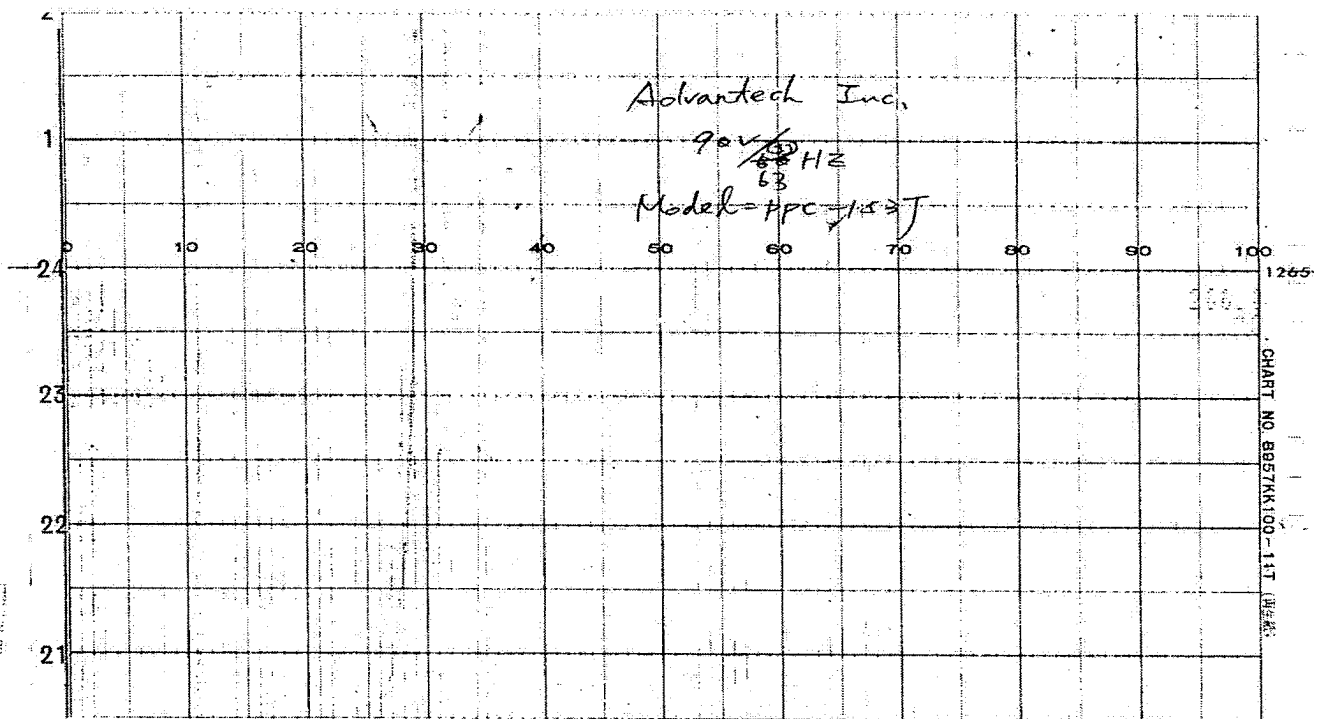
Clause	Requirement + Test	Result - Remark	Verdict
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SPC PROJECT NO. : 30347

SUPERIOR ELECTRONIC CONSULTING, INC.
Data Sheet

File: E 180881 Project: 03SC16211 Page: 11/13
 tested by: Judy Jeng (Printed Name) Judy Jeng (Signature) Date: 3/9/03

Sample # 1/2 Instr Code/Range: 58, 22, 24, 10



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No. LD87052002-4

IEC60 950

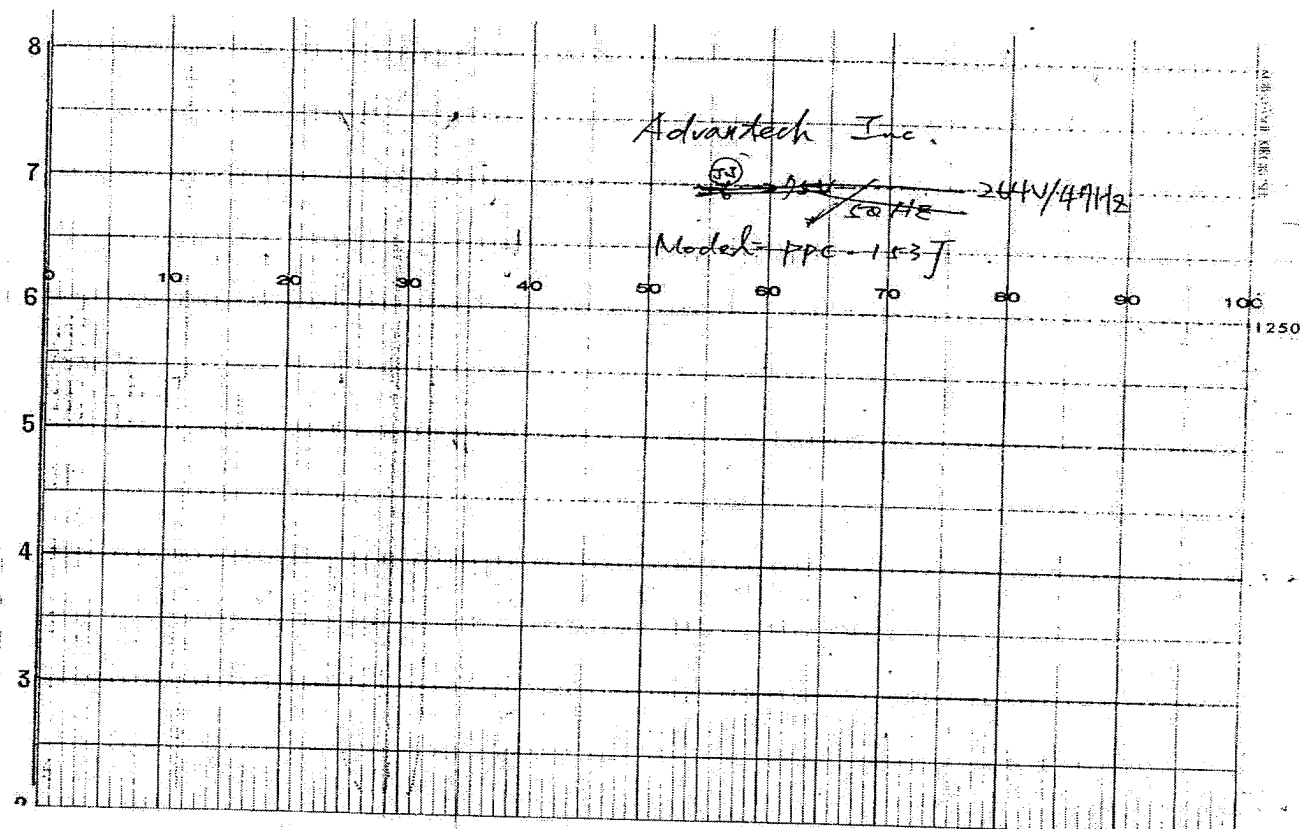
Clause	Requirement + Test	Result - Remark	Verdict
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SPC PROJECT NO. : 30347

SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

File E 180881 Project 03SC16211 Page 12/13
 tested by: Judy Jeng Date 3/9/03
 (Printed Name) (Signature)

Sample # 1/2 Instr. Code/Range: 50, 22, 24, 10



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Clause	Requirement + Test	Result - Remark	Verdict
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SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

File E 180881 Project 03SC16211 Page 13 / 13
 Tested by: Judy Jeng (Printed Name) Judy Jeng (Signature) Date 7/9/03

Sample # 1/5 Instr Code/Range: 48

5.2.2 - ELECTRIC STRENGTH TEST:

METHOD

While the unit was in a well heated condition, an ac or dc potential was gradually increased from zero to the test potential given below. The voltage was applied and maintained for a period of one minute between the points indicated. All switches, relays, contactors, triacs or equivalent in the test circuit were closed or shunted.

Product/ Component	Unit	Unit			
From	Primary	Primary			
To	Secondary	Earth			
Insl. Type (O, B, S, R)	R	B			
() Working Voltage					
Test Voltage	4242	2121			
ac/dc	dc	dc			

RESULTS

Breakdown?	No	No			
If yes,					
Voltage					
Location					
Time					

(X) There was no indication of breakdown.

Comments: Model: PPC-153T

Form - UL 60950, 3rd Data Sheets
 Document: 010.Eng

Form Issued: 10-02-00
 Revised: 00-00-00

Form Page 76

Form Copyright © 2000 Underwriters Laboratories Inc.

Only those products bearing the UL Mark should be considered as being covered by UL.

SPC PROJECT NO.: 30347

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IEC60 950

Clause	Requirement + Test	Result – Remark	Verdict
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Test Record Summary:

The results of this investigation indicate that the samples evaluated comply with the applicable requirements, and therefore, such products are judged eligible to bear UL's Mark as described on the Conclusion Page of this Report.

Test Record by:

~~Engineering Team Leader~~
~~Engineering Services~~

R. Warren
 SPE
 CAS

Reviewed by:

~~Associate Managing Engineer~~
~~Engineering Services~~

R. Hilbrecht
 SE
 CAS

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