NO APPROVAL PARTS

MODEL : PA-1900-02D

DATE : 2003/1/17

REV : 01

PAGE : 1

TABLE NAME	ITEM	PARTNO	OLDPARTNO	DESCRIPTION	Q T Y	REASON	RESP. DEPT.
1. MAIN SOURCE FOR EE PARTS							
PL	7002	134994	01-M1900021AD	PCB A1900-02D 123*54*1.2 2/0A	1		
2. SECOND SOURCE FOR EE PARTS							
PL	3003B	130326	31-FE334MB557	C.MEX 0.33UF 275V M 15 3382	1		
3. MAIN SOURCE FOR ME PARTS							
PL	8002	136538	53-M190002MN1	MANUAL 297*210 PA-1900-02D	.02858		

TOTAL 1 PAGES

簽=賴威利 1/20'03 Jimy Kuo 1/20'03 David Chu Deirdre 1/20'03 for

LITE-ON ELECTRONICS, INC. PA-1900-02D PROJECT MVT TECHNOLOGY TRANSFER LIST (YELLOW BOOK)

CUSTOMER: DELL NPPR NO. : N-030110 REV. : 01 SAFETY : Agnes Vlu Jan. 22 '03

ITEM	DESCRIPTION	REV	Q'TY	RECEIVE DATE FCST	RECEIVE DATE ACT	REMARK
1	OPEN ISSUE		1 PCS	/		OPTION
2	DESIGN CHANGE LIST	REV.: A	1 PCS	/	01/06/03	
3	SCHEMATIC	EPS310830 E	1 PCS	/	01/06/03	
4	PART LIST	REV.: 01	1 PCS	/	01/17/03	
5	CRITICAL COMPONENTS LIST/VENDOR LIST	REV.: 0G	2 PCS	/	01/02/03	
6	ENGINEERING SPEC.	REV.: A	1 PCS	/	12/30/02	
7	PCB ARTWORK A1900-02D	REV.: A	1 PCS	/	1/13/02	
		REV.:				
		REV.:				
		REV.:				
8	OUTLINE DRAWING	3OAA00571 A	1 PCS	/	01/06/03	
9	PACKING DRAWING	3PAA00549 A	1 PCS	/	01/06/03	
10	COMPONENTS DRAWING		6 PCS	/		
11	EMI REPORT	REV.: A	1 PCS	/	12/30/02	
12	PHASE / GAIN PLOT REPORT	REV.: A	1 PCS	/	12/30/02	
13	COMPONENT STRESS REPORT	0301806	1 PCS	/	01/08/03	
14	HALT REPORT	NA	1 PCS	/		

ITEM	DESCRIPTION		REV	Q'TY	RECEIVE DATE FCST	RECEIVE DATE ACT	REMARK
15	β-TEST REPORT		D-030032	1 PCS	/	01/15/03	
16	QUALITY INSPECTION CRITERIA		2003006	1 PCS	/	01/15/03	
17	MTR		REV.: A	1 PCS	/	12/30/02	
18	ASSEMBLY DRAWING		3AAA00541 A	1 PCS	/	01/06/03	
19	SPECIAL ASSEMBLING INSTRUCTION		REV.: B	1 PCS	/	01/17/03	
20	Cpk DATA FROM DVT TESTING		**DVT-0301001**	1 PCS	/	01/03/03	
21	FMEA REPORT		**DVT-0301001**	1 PCS	/	01/03/03	
22	SOLDERABILITY QUALITY REPORT		**DVT-0301001**	1 PCS	/	01/03/03	
23	PROCESS MANAGEMENT PLAN		**REV.:B**	1 PCS	/	12/09/2002	
24	SAFETY LICENSE	UL / NRTL			/	12/16/02	
		CSA / ~~CUL~~			/	12/18/02	
		TUV / ~~VDE~~			/	1/3/03	
		NEMKO			/	12/16/02	
		NORDIC			/		
		DENTORI			/		
		AUSTRALIA / CE MARK			/		
		CCIB			/		

PREPARED BY : 何月春 1/20/2003

NPS-MR-C002

CONTENTS OF TECHNICAL DOCUMENT

CUSTOMER : **DELL**
MODEL NO : **PA-1900-02D**

DOC. NO : A301509
ISSUE DATE : 01/06/03

CONTENTS OF TECHNICAL DOCUMENT

CUSTOMER : **DELL**
MODEL NO : **PA-1900-02D**

DOC. NO : A301509
ISSUE DATE : 01/06/03

DESCRIPTION	REF. NO.	REV. NO	PAGE	ISS. DATE.
3.7.3 L002	134992	A		12/30/2002
3.7.4 L003	126323	A		01/07/2003
3.7.5 L200	132093	B		8/14/2002
3.7.6 L010	134993	A		12/30/2002
3.7.7 B003(D003)B053(D052)	125639	B		2/21/2020
3.8 WIRE HARNESS				
3.8.1 J4,9,13,8	107939	F		6/20/2000
3.8.2 DC CORD	133972			未承認
3.8.3 INLET(L)	134869	X		12/19/2002
3.8.4 INLET(N)	134870	X		12/19/2002
3.8.5 FG	134995	Z		12/19/2002
4.0 DFQ REPORT				
4.1 EMI TEST REPORT	PA-1900-02D	A	11	12/30/2002
4.2 PHASE / GAIN PLOT	PA-1900-02D	A	5	12/30/2002
4.3 COMPONENT STRESS REPORT	0301806	-	34	01/08/2003
MTBF TEST REPORT	0301803	-	29	01/08/2003
4.4 BETA TEST QUALIFICATION	D-030032	-	19	01/15/2003
4.5 HALT REPORT	NA			
4.6 QUALITY INSPECTION CRITIRIA	QN-2003006	A/A	10	01/15/2003
5.0 DFM REPORT				
5.1 MTR	PA-1900-02D	A	8	12/30/2002
5.2 ASSEMBLING DRAWING	3AAA00541	A	1	01/06/2003
5.3 SPECIAL ASSEMBLING INSTRUCTION	-	B	3	01/17/2003
5.4 Cpk DATA REPORT / FMEA SHEET / PCB SOLDERING ABILITY REPORT	DVT2-0301001	-	26	01/03/2003
5.5 PROCESS MAINAGEMENT PROJECT	-	0B	7	12/9/2002

LITEON
POWER CONVERSION S&M

NPPR

TO : 工 程 部
CC : 王 副 總 / 企 劃 處
研 發 處 / 品 保 處 賴盛利; 劉嘉琦; 吳益年

FM : 業 務 處
SUBJ : New Projects Production Request

NPPR No.: N-030110
DATE : 1/14,03
Internal Order No.: 6000036
BUILD SITE: ______ Taiwan
______ Malaysia
✓ Lite #3

We have received customers final confirmation of purchasing order for our products. Relevant information are listed as below :

Part No : DA-1900-05D
Description : 90W Adaptor with ID chip DS2501

Customer : Dell Order No : ______
Date : ______ Total Order Quantity : ______

Request Delivery Schedule : Jan '03 17 k pcs
1. ______ 2. ______
3. ______ 4. ______
Average Capacity Per Month : 100 ~ 150 k
Approval Sheet & Sample : ______
YES Per Attached
______ NO (reason) : Project still in R&D

Should Customer Pay Following Charge Or Not ?
1. Tooling Charge ______ YES ______ (NO)
2. Sample Charge ______ (YES) ______ NO

PLEASE TAKE YOUR PROMPT ACTION TO MEET THEIR REQUESTED SCHEDULE. IF YOU FIND ANY DIFFICULTY, YOU MUST LET US KNOW IN ADVANCE BY A RETURN MENO.

==

REMARK :

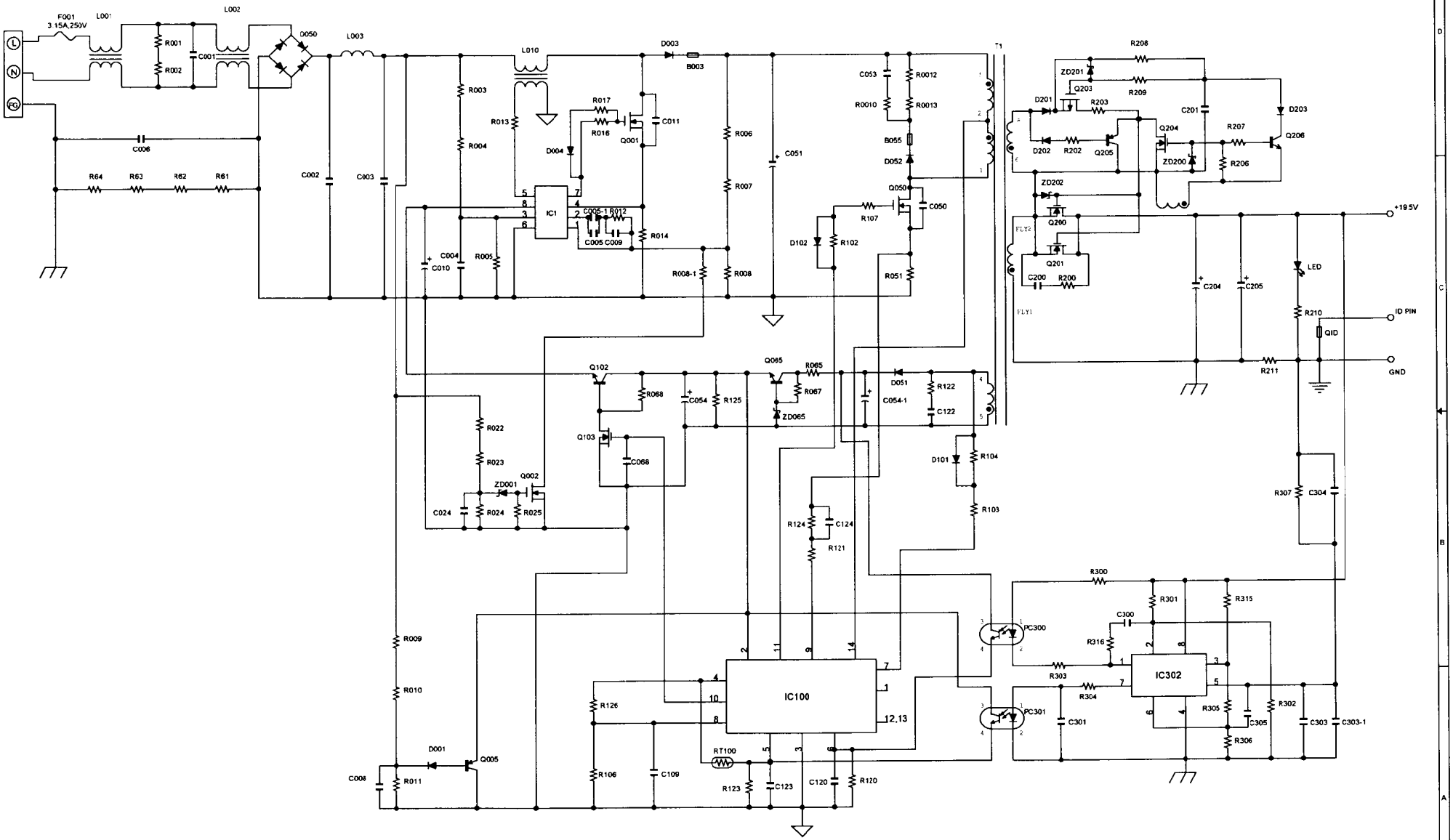
謝孫富 Jan 14 '03	謝孫富 for Jan 14 '03	(signature)	(signature) 1/14/03
SALES ENGINEER	SALES MANAGER	MKT'G & SALES DIR.	VICE PRESIDENT

MKS - MD - C015

SUBJECT : DESIGN CHANGE LIST
MODEL NAME : PA-1900-02D
CUSTOMER : Dell

REMARK : L = PCB LAYOUT ; P = PART LIST ;E = EMI ; S=SAFETY ; M =MECHANIC DRAWING ; C =COST ;SP=SPECIFICATION. REV. : A

OPEN DATE	OPEN ISSUE		PROPOSAL / SOLUTION	IMPACT	REV.	CLOSE DATE
	SPEC	DEVIATION (problem)				
			Initial issue			Dec.30.2002



EPS310830

LITE-ON ELECTRONIC,INC.				Rev.
Size	Model Name: PA-1900-02D			0E
Designer: Dearbear Lai	Draftsman:	Approver:	Checker:	
Date: Monday December 30, 2002		Sheet 1 of 1		

LITE-ON ELECTRONICS, INC.
POWER CONVERSION

DOC STATUS

By Specific Model

MODEL : PA-1900-02D
UPDATE : 01/17/2003

DATE : 01/17/2003
PAGE : 1

PLREV	DCN NO.	DCN DATE	CLASS OF CHANGE	SPEC REV	CKT REV	PCB REV	PACK REV	OUTSIDE REV	REASON FOR CHANGE	INITIATOR	DEPT
01	A301509	01/17/2003	RELEASE	REV.:A	EPS310830 E	REV.:A	3PAA00549 A	30AA00571 A		Dearbear Lai/Amy	SPS/ME

REASON FOR CHANGE :
(1) PAPER CORRECTION (2) PURCHASING REQUEST (3) PRODUCTION REQUEST (4) STANDARDIZATION (5) COST REDUCTION (6) RELIABILITY
(7) SAFETY REQUEST (8) CUSTOMER REQUEST (9) NEW IDEA (10) DESIGN CHANGE (11) STOCK SALVAGE (12) OTHER REASON

CLASS OF CHANGE :
A1 : Recall shiped products & Rework all Inventory and WIP.
A2 : Stop shipment & Rework all Inventory and WIP.
A3 : Rework Request as Sale's instruction.
B1 : Implement from next lot or within one week.
B2 : Implement within one month.
B3 : Implement from P/O #_____(Lot #_____).
B4 : Implement without obsolescence.
C1 : Implement from available.

TOTAL 1 PAGES

DESIGNER	APPROVAL
Dearbear 1/2003 Amy Kng 1/2003	David Chen for 1/2003 Dearbear 1/2003

LITE-ON ELECTRONICS, INC.
POWER CONVERSION

DFQ DOC S T A T U S

MODEL : PA-1900-02D
UPDATE : 01/17/2003

DATE : 01/17/2003
PAGE : 1

ISSUE NO.	ISSUE DATE	AFC	HALT	CSR	EMI	Phase/Gain	DQE	INITIATOR	DEPT
- YB-A301509	01/17/2003	NA	NA	0301806	REV.:A	REV.:A	D-030032	Dearbear Lai/Amy Kung	SPS/ME

Note: **(1) AFC:Application Feedback Collection** **(2) HALT:Highly Acceleration Life Test** **(3) CSR:Component Stress Report**
(4) DQE:Design Quality Evalution(including Alpha Test & Beta Test)

TOTAL 1 PAGE

DESIGNER	Dearbear 1/20/03 Amy Kung 1/20/03

APPROVAL	David Chen for 1/20/03 Dearbear 1/20/03 for

LITE-ON ELECTRONICS, INC.
POWER CONVERSION

DFM DOC S T A T U S

MODEL : PA-1900-02D
UPDATE : 01/17/2003

DATE : 01/17/2003
PAGE : 1

ISSUE NO.	ISSUE DATE	MTR	ASSY DRAW	S.A.I.	Cpk DOC	FMEA DOC	PMP	INITIATOR	DEPT
- YB-A301509	01/17/2003	REV.A	3AAA00541 A	REV.:B	0301001	0301001	REV.:B	Dearbear Lai/Amy Kung	SPS/ME

Note: (1) S.A.I.:Special Assembling Instruction (2) FMEA:Failure Mode Effect Analysis (3) PMP:Process Management Project

TOTAL 1 PAGE

DESIGNER	Dearbear 1/2003 Amy Kung 1/6/03	APPROVAL	David Chu for 1/6/03 , Dearbear 1/2003 for Y

LITE-ON ELECTRONICS, INC.
POWER CONVERSION

PARTS LIST

PILOT RUN (DESIGN FROZEN)

MODEL : PA-1900-02D
REV : 01
UPDATE : 01/17/2003

DATE : 01/22/2003
PAGE : 1

ITEM	U	F	R	C	PARTNO	OLD PART NO.	DESCRIPTION	MAKER	MAKER PART NO.	FILE NO.	LOCATION	QTY	L/T
1001			*		130824	33-B2KBP08M12	BRG 800V 2A 2KBP08M	GS	2KBP08M	RD-AP0106055F	D050	1.00000	0
1001A			*		130825	33-BKBP208G47	BRG 800V 2A KBP208G	DII	KBP208G	RD-AP0208059B		1.00000	0
1001B			*		130826	33-BKBP208G13	BRG 800V 2A KBP208G	LITON	KBP208G	RD-AP0106054B		1.00000	0
1002			*		132088	34-FIRFB471020	MFET N 100V 75A 0.014 IRFB4710	IR	IRFB4710	RD-AP0201127A	Q200,Q201	2.00000	0
1002A			*		132254	34-FSTP80NF10	MFET N 100V 80A 0.015STP80NF10	STM	STP80NF10	RD-AP0201057A		2.00000	0
1002B			*		132202	34-FPSMN01518	MFET N100V75A0.015PSMN015-100P	PHLIP	PSMN015-100P	RD-AP0201124A		2.00000	0
1002C			*		132638	34-FSTP40NF10L	MFET N 100V 40A0.028STP40NF10L	STM	STP40NF10L	RD-AP0201125A		2.00000	0
1002D			*		132639	34-FPHP45NQ10T	MFET N 100V 45A0.025PHP45NQ10T	PHLIP	PHP45NQ10T	RD-AP0201123A		2.00000	0
1002E			*		132637	34-FIRFB59N10D	MFET N 100V 59A0.025IRFB59N10D	IR	IRFB59N10D	RD-AP0201105A		2.00000	0
1003					126869	33-SLL414812	DIO 75V 0.2A LL4148 SOD80C	GS	LL4148	RD-AP9911132A	D001,D004,D102,D201,D202, D203	6.00000	60
1003A					900351	33-SRLS414814	DIO 75V 0.2A RLS4148 LL34	ROHM	RLS4148	RD-AP9804084B		6.00000	30
1004			*		123149	34-F2SK2842	MFET N 500V 12A 0.52 2SK2842	TOSHB	2SK2842	RD-AP9803100A	Q001	1.00000	75
1004A			*		132255	34-F2SK346942	MFET N 500V12A0.522SK3469-01MR	FUJI	2SK3469-01MR	RD-AP0301084A		1.00000	0
1005			*		135606	33-RLT2A07G13	DIO 1000V 2A LT2A07G D015	LITON	LT2A07G	RD-AP0211170A	D052	1.00000	0
1006					123782	33-SBAS2118	DIO 200V 0.2A BAS21 SOT23	PHLIP	BAS21	RD-AP9901111A	D051,D101	2.00000	60
1006A					126255	33-SBAS2112	DIO 200V 0.2A BAS21 SOT23	GS	BAS21	RD-AP9908099A		2.00000	60
1006B					123783	33-SBAS21LT111	DIO 200V 0.2A BAS21LT1SOT23	MOTOR	BAS21LT1	RD-AP9808109A		2.00000	60
1007			*		124445	32-SL6561D19	IC PWM 8P L6561D SMD STM	STM	L6561D	RD-AP0007046A	IC1	1.00000	60
1008					123358	34-SKST440326	TRX PNP 40V 0.6A KST4403 SOT23	SAMSU	KST4403	RD-AP9902063A	Q005,Q203,Q205	3.00000	60
1008A					123357	34-SMMST440314	TRX PNP 40V 0.6A MMST4403SOT23	ROHM	MMST4403	RD-AP9902010B		3.00000	60
1008B					128569	34-SKN4403S49	TRX PNP40V0.6A KN4403S SOT23	KEC	KN4403S	RD-AP0106086A		3.00000	0
1008C					127305	34-SMMBT440311	TRX PNP40V0.6AMMBT4403LT1SOT23	ON	MMBT4403LT1	RD-AP0201126A		3.00000	60
1009			*		130127	32-SLTA201P	IC PWM 14P LTA201P SMD	PHLIP	LTA201P	RD-AP0111032A	IC100	1.00000	0
1010			*		125223	32-STSM103AID	IC OPA 8P TSM103AID SMD	STM	TSM103AID	RD-AP9903097A	IC302	1.00000	60
1011					123354	34-SMMST440114	TRX NPN 40V 0.6A MMST4401SOT23	ROHM	MMST4401	RD-AP9901125A	Q065,Q102,Q206	3.00000	60
1011A					123355	34-SKST440126	TRX NPN 40V 0.6A KST4401 SOT23	SAMSU	KST4401	RD-AP9811120A		3.00000	60
1011B					128567	34-SKN4401S49	TRX NPN40V0.6A KN4401S SOT23	KEC	KN4401S	RD-AP0106085A		3.00000	0
1012					129842	33-SBZX84C15A	Z.D 0.35W 15V BZX84-C15 SOT23	GS	BZX84-C15	RD-AP0109043E	ZD200,ZD201,ZD202	3.00000	0
1012A					129843	33-SBZX84C1518	Z.D 0.25W 15V BZX84-C15 SOT23	PHLIP	BZX84-C15	RD-AP0212124N		3.00000	0
1013			*		122444	34-F2SK2843	MFET N 600V 10A 0.54 2SK2843	TOSHB	2SK2843	RD-AP9712072A	Q050	1.00000	75
1013A			*		132612	34-FSTP10NK619	MFET N 600V10A0.75STP10NK60ZFP	STM	STP10NK60ZFP	RD-AP0210147B		1.00000	0
1013B			*		132983	34-F2SK350242	MFET N 600V10A0.752SK3502-01MR	FUJI	2SK3502-01MR	RD-AP0301085A		1.00000	0
1013C			*		133685	34-FPHX10NQ618	MFET N 600V 10A0.75PHX10NQ60E	PHLIP	PHX10NQ60E	RD-AP0301086A		1.00000	0
1014					123363	34-S2N700218	MFET N 60V 0.115A 2N7002SOT23	PHLIP	2N7002	RD-AP9901038A	Q002,Q103,Q204	3.00000	60
1014A					123364	34-S2N700211	MFET N60V0.115A2N7002LT1SOT23	MOTOR	2N7002LT1	RD-AP9901039A		3.00000	60
1014B					129615	34-S2N700212	MFET N 60V 0.23A 2N7002 SOT23	GS	2N7002	RD-AP0104121A		3.00000	0
1015					134861	LTST-C150KGKT	LED SMD LTST-C150KGKT GRN	LITON	LTST-C150KGKT	RD-AP0209075A	LED	1.00000	0
1016					114634	33-SMMBZ5254BL	Z.D 0.225W27V MMBZ5254BL SOT23	ON	MMBZ5254BLT1	RD-AP0111025L	ZD001	1.00000	130

LITE-ON ELECTRONICS, INC.
POWER CONVERSION

PARTS LIST

PILOT RUN (DESIGN FROZEN)

MODEL : PA-1900-02D
REV : 01
UPDATE : 01/17/2003

DATE : 01/22/2003

ITEM	U	F	R	C	PARTNO	OLD PART NO.	DESCRIPTION	MAKER	MAKER PART NO.	FILE NO.	LOCATION	QTY	L/T
1016A					114757	33-SBZX84-C27	Z.D 0.25W 27V BZX84-C27 SOT23	PHLIP	BZX84-C27	RD-AP0212124N		1.00000	30
1017		*	*		124124	LTV-817MA	IC PHO 4P LTV-817M-PRA 100-160	LITON	LTV-817M-PRA	RD-AP9905007I	PC300,PC301	2.00000	45
1017A			*		122708	32-PS2561L11VH	IC PHO 4P PS2561L1-1VH 80-160	NEC	PS2561L1-1-VH	RD-AP9910031D		2.00000	75
1017B			*		126256	32-PC123Y62	IC PHO 4P PC123Y62 80-160	SHARP	PC123Y62	RD-AP9908111A		2.00000	60
1018					134823	32-DS250154	IC ID 3P DS2501 T092	DALS	DS2501	RD-AP0301003A	QID	1.00000	0
1019					116974	33-SMMBZ5246BL	Z.D 0.225W16V MMBZ5246BL SOT23	ON	MMBZ5246BLT1	RD-AP0111025L	ZD065	1.00000	60
1019A					132801	33-SBZX84C1647	Z.D 0.35W 16V BZX84C16 SOT23	DII	BZX84C16	RD-AP0202145A		1.00000	0
1029			*		126076	33-RMUR46012	DIO 600V 4A MUR460 GS	GS	MUR460	RD-AP0004010A	D003	1.00000	60
1029A			*		122830	33-RMUR460	DIO 600V 4A MUR460	MOTOR	MUR460	RD-AP9912103B		1.00000	75
2001					117831	30-S205J4SA	R.CF 2M 1/4W J 1206	YAGEO	30-S205J4SA	RD-AP0104140H	R001,R002	2.00000	40
2002					135719	30-SV494F4D079	R.HV 499K 1/4W F VRC02400V1206	YAGEO	VRC02	RD-AP0212173A	R006,R007	2.00000	0
2003					127736	30-S102F10SA	R.MF 1K 1/10W F 0603	YAGEO	30-S102F10SA	RD-AP0104140H	R120,R207,R209	3.00000	0
2004					127424	30-S103F10SA	R.MF 10K 1/10W F 0603	YAGEO	30-S103F10SA	RD-AP0104140H	R124,R208,R307,R316	4.00000	0
2005					114963	30-S393J4SA	R.CF 39K 1/4W J 1206	YAGEO	30-S393J4SA	RD-AP0104140H	R0012,R0013	2.00000	30
2006					113451	30-S220J4SA	R.CF 22 1/4W J 1206	YAGEO	30-S220J4SA	RD-AP0104140H	R200	1.00000	30
2007					112838	30-S470J8SA	R.CF 47 1/8W J 0805	YAGEO	30-S470J8SA	RD-AP0104140H	R016,R102,R122	3.00000	30
2008					130456	30-FG13BJASS	R.MO 0.13 1W(S) J	QUMAO	30-FG13BJASS	RD-AP0106023Q	R051	1.00000	0
2009					132095	30-FZ50DJ101	R.ZW 0.005 1.0D J 10 CN30W	TAI	MR10JCB0050P	RD-AP0110140A	R211	1.00000	0
2010					127643	30-S203J10SA	R.CF 20K 1/10W J 0603	YAGEO	30-S203J10SA	RD-AP0104140H	R005	1.00000	30
2011					127436	30-S000J10SA	R.CF 0 1/10W J 0603	YAGEO	30-S000J10SA	RD-AP0104140H	JP2,JP3,JP4,JP5,JP6	5.00000	0
2012					119896	30-S300J8SA	R.CF 30 1/8W J 0805	YAGEO	30-S300J8SA	RD-AP0104140H	R017	1.00000	30
2013					113310	30-S204J4SA	R.CF 200K 1/4W J 1206	YAGEO	30-S204J4SA	RD-AP0104140H	R126	1.00000	30
2014					107869	30-FA150J8SA	R.CF 15 1/8W J 3.3	QUMAO	30-FA150J8SA	RD-AP0102080M	R107	1.00000	30
2015					128156	30-S204F10SA	R.MF 200K 1/10W F 0603	YAGEO	30-S204F10SA	RD-AP0104140H	R305	1.00000	0
2016					128039	30-S471J10SA	R.CF 470 1/10W J 0603	YAGEO	30-S471J10SA	RD-AP0104140H	R121	1.00000	0
2017					121963	30-S594F8SA	R.MF 590.0K 1/8W F 0805	YAGEO	30-S594F8SA	RD-AP0104140H	R024	1.00000	30
2018					127668	30-S100J10SA	R.CF 10 1/10W J 0603	YAGEO	30-S100J10SA	RD-AP0104140H	R105	1.00000	0
2019					127618	30-S302F10SA1	R.MF 3.01K 1/10W F 0603	YAGEO	30-S302F10SA1	RD-AP0104140H	R123,R012	2.00000	30
2020					127969	30-S343F10SA8	R.MF 34.8K 1/10W F 0603	YAGEO	30-S343F10SA8	RD-AP0104140H	R301	1.00000	30
2021					127846	30-S512F10SA1	R.MF 5.11K 1/10W F 0603	YAGEO	30-S512F10SA1	RD-AP0104140H	R302	1.00000	30
2022					130283	30-S220J10SA	R.CF 22 1/10W J 0603	YAGEO	30-S220J10SA	RD-AP0104140H	R206	1.00000	0
2023					128126	30-S204F10SA5	R.MF 205K 1/10W F 0603	YAGEO	30-S204F10SA5	RD-AP0104140H	R025	1.00000	0
2024					114497	30-FJ104K01	R.TH TTC 100K K 5D 1.5MA	THINK	TTC-104K	RD-AP0205087B	RT100	1.00000	45
2025					127422	30-S111J10SA	R.CF 110 1/10W J 0603	YAGEO	30-S111J10SA	RD-AP0104140H	R300	1.00000	0
2026					113566	30-S201J4SA	R.CF 200 1/4W J 1206	YAGEO	30-S201J4SA	RD-AP0104140H	R303	1.00000	30
2027					114646	30-S514F8SA1	R.MF 511K 1/8W F 0805	YAGEO	30-S514F8SA1	RD-AP0104140H	R011	1.00000	30
2028					114238	30-S150J8SA	R.CF 15 1/8W J 0805	YAGEO	30-S150J8SA	RD-AP0104140H	R065	1.00000	30
2029					132580	30-S394J10SA	R.CF 390K 1/10W J 0603	YAGEO	30-S394J10SA	RD-AP0104140H	R103	1.00000	0
2030					121255	30-FG24BJASS	R.MO 0.24 1W(S) J	QUMAO	30-FG24BJASS	RD-AP0106023Q	R014	1.00000	30

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2031					116936	30-S106J4SA	R.CF 10M 1/4W J 1206	YAGEO	30-S106J4SA	RD-AP0104140H	R61,R62,R63,R64	4.00000	30
2032					128347	30-S153F10SA4	R.MF 15.4K 1/10W F 0603	YAGEO	30-S153F10SA4	RD-AP0104140H	R008-1	1.00000	0
2033					128512	30-S683J10SA	R.CF 68K 1/10W J 0603	YAGEO	30-S683J10SA	RD-AP0104140H	R013	1.00000	0
2034					131984	30-S113F10SA3	R.MF 11.30K 1/10W F 0603	YAGEO	30-S113F10SA3	RD-AP0104140H	R008	1.00000	0
2035					125236	30-S352F8SA7	R.MF 3.57K 1/8W F 0805	YAGEO	30-S352F8SA7	RD-AP0104140H	R067	1.00000	30
2036					125070	30-S10AJ4SA	R.CF 1 1/4W J 1206	YAGEO	30-S10AJ4SA	RD-AP0104140H	R01	1.00000	30
2037					131153	30-S232F10SA7	R.MF 2.37K 1/10W F 0603	YAGEO	30-S232F10SA7	RD-AP0104140H	R306	1.00000	0
2038					115869	30-S300J4SA	R.CF 30 1/4W J 1206	YAGEO	30-S300J4SA	RD-AP0104140H	R0010,R203	2.00000	30
2039					135717	30-SV105F4D07	R.HV 1M 1/4W F VRC02400V1206	YAGEO	VRC02	RD-AP0212173A	R003,R004,R009,R010,R022, R023	6.00000	0
2040					130149	30-S143F10SA3	R.MF 14.3K 1/10W F 0603	YAGEO	30-S143F10SA3	RD-AP0104140H	R106	1.00000	0
2041					107939	04-J21E01	JUMPER 0.5D BT RUCH	JUNK	04-J21E01	RD-AP0006099F	J4,J9(7.5MM*2)	0.00018	30
2042					107939	04-J21E01	JUMPER 0.5D BT RUCH	JUNK	04-J21E01	RD-AP0006099F	J13(5MM*1)	0.00009	30
2043					112818	30-S103J8SA	R.CF 10K 1/8W J 0805	YAGEO	30-S103J8SA	RD-AP0104140H	R210	1.00000	30
2044					128514	30-S225J10SA	R.CF 2.2M 1/10W J 0603	YAGEO	30-S225J10SA	RD-AP0104140H	R104	1.00000	0
2045					131156	30-S573F10SA6	R.MF 57.60K 1/10W 0603	YAGEO	30-S573F10SA6	RD-AP0104140H	R306-1	1.00000	0
2046					112818	30-S103J8SA	R.CF 10K 1/8W J 0805	YAGEO	30-S103J8SA	RD-AP0104140H	R202	1.00000	30
2047					119479	30-S301J4SA	R.CF 300 1/4W J 1206	YAGEO	30-S301J4SA	RD-AP0104140H	R304	1.00000	30
2048					113769	30-S000J4SA	R.CF 0 1/4W J 1206	YAGEO	30-S000J4SA	RD-AP0104140H	JP12,JP7	2.00000	30
2049					107939	04-J21E01	JUMPER 0.5D BT RUCH	JUNK	04-J21E01	RD-AP0006099F	J8(10MM*1)	0.00009	30
2050					127964	30-S163F10SA5	R.MF 16.5K 1/10W F 0603	YAGEO	30-S163F10SA5	RD-AP0104140H	R315	1.00000	30
2051					127976	30-S433J10SA	R.CF 43K 1/10W J 0603	YAGEO	30-S433J10SA	RD-AP0104140H	R068	1.00000	30
2052					130523	30-S353F10SA7	R.MF 35.7K 1/10W F 0603	YAGEO	30-S353F10SA7	RD-AP0104140H	R125	1.00000	0
3001					124509	31-FE474KD056	C.MEF 0.47UF 400V K 15 ECQE(F)	MATSU	ECQE4474KF	RD-AP9903067B	C002,C003	2.00000	45
3001A					126315	31-FE474KD0	C.MEF 0.47UF 400V K 15 DMPE	EUR	DMPE474K400V	RD-AP0209218R		2.00000	0
3002		*	*		121144	31-F1102MD0542	C.DIS 1000PF 400V M E 10 KX	MURTA	DE0910E102M-KX	RD-AP0211235D	C006	1.00000	60
3002A			*		128430	31-F1102MD071	C.DIS 1000PF 400V M E 10 AH	PNOVR	AH09E102ML0	RD-AP0207129C		1.00000	0
3002B			*		120528	31-F1102MD058	C.DIS 1000PF 400V M E 10 CD	TDK	CD85E2GA102MYGS	RD-AP0208183J		1.00000	30
3003			*		131532	31-FE334KB560	C.MEX 0.33UF 275V K 15 LE	OKAYA	LE334-L35	RD-AP0202057A	C001	1.00000	0
3003B			*		130326	31-FE334MB557	C.MEX 0.33UF 275V M 15 3382					1.00000	0
3003C			*		130324	31-FE334KB5502	C.MEX 0.33UF 275V K 15 KNB1560	ISKRA	KNB1560-0.33UF	RD-AP0208184C		1.00000	0
3004			*		132221	31-F7121MD0523	C.ELE 120UF 400V M 18*31.5 KMG	NCC	KMG400VB120M	RD-AP0211050U	C051	1.00000	0
3004A			*		132096	31-F7121MD064	C.ELE 120UF 400V M 18*31.5 PT	NICHI	UPT2G121MHTADT	RD-AP0206093A		1.00000	0
3004B			*		131088	31-F7121MD056	C.ELE 120UF 400V M 18*30 GH	MATSU	EEUGH2G121S	RD-AP0111091A		1.00000	0
3004C			*		132288	31-F7121MD0586	C.ELE 120UF 400V M 18*30 KXW	RUBCO	400KXW120M1830	RD-AP0211075C		1.00000	0
3005					119231	31-S1104KA02	C.MON 0.1UF 100V K X7R 1206	TDK	31-S1104KA02	RD-AP0204162A	C008	1.00000	45
3006					120832	31-F7220M50581	C.ELE 22UF 50V M 5*11 YXF 5T	RUBCO	50YXF22M	RD-AP0210148S	C054	1.00000	45
3006A		*			122348	31-F7220M50582	C.ELE 22UF 50V M 5*11 YXG	RUBCO	50YXG22	RD-AP0210182R		1.00000	60
3006B					112684	31-F7220M50522	C.ELE 22UF 50V M 5*11 5T 105C	NCC	KME50VB-22M	RD-AP02121116		1.00000	60

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3007					128042	31-S1224M166	C.MON 0.22UF 16V M Y5V 0603	WALSN	31-S1224M166	RD-AP0210119M	C123,C124	2.00000	0
3008					118178	31-S1332KE02	C.MON 3300PF 500V K X7R 1206	AVX	12067C332K	RD-AP0209074P	C053	1.00000	90
3008A					119113	31-S1332KF32	C.MON 3300PF 630V K X7R 1206	MURAT	GHM1530B332K630	RD-AP0209074P		1.00000	90
3009					127659	31-S1104K166	C.MON 0.1UF 16V K X7R 0603	WALSN	31-S1104K166	RD-AP0210119M	C009,C109,C125,C201,C300, C301,C304	6.00000	0
3010					133658	31-S1102KB01	C.MON 1000PF 200V K X7R 0805	MURAT	31-S1102KB01	RD-AP0204162A	C122,C200	2.00000	0
3011					128129	31-S1223K256	C.MON 0.022UF 25V K X7R 0603	WALSN	31-S1223K256	RD-AP0210119M	C120	1.00000	0
3012			*		135206	31-F7821M25581	C.ELE 820UF 25V M 12.5*16 ZL	MUBCO	25ZL820M	RD-AP0210116G	C204	1.00000	0
3012A			*		135392	31-F7821M25524	C.ELE 820UF 25V M 12.5*15 KZE	NCC	25VB821MK15	RD-AP0301052F		1.00000	0
3013					127922	31-S1102K506	C.MON 1000PF 50V K X7R 0603	WALSN	31-S1102K506	RD-AP0210119M	C305	1.00000	30
3014					112887	31-F7100M50522	C.ELE 10UF 50V M 5*11 5T 105C	NCC	KME50VB-10M	RD-AP02121116	C010,C054-1	2.00000	60
3014A					130352	31-F7100M50582	C.ELE 10UF 50V M 5*11 5T YXG	RUBCO	50YXG10	RD-AP0210182R		2.00000	0
3014B					117362	31-F7100M50524	C.ELE 10UF 50V M 5*11 KMF 5T	NCC	KMF50VB-10M	RD-AP02112080		2.00000	90
3015					130242	31-S1474M5021	C.MON 0.47UF 50V M Y5V 1206	WALSN	31-S1474M5021	RD-AP0210119M	C024	1.00000	0
3016					128133	31-S1105Z161	C.MON 1UF 16V Z Y5V 0805	WALSN	31-S1105Z161	RD-AP0210119M	C005,C005-1	2.00000	0
3017					129677	31-S1104K251	C.MON 0.1UF 25V K X7R 0805	WALSN	31-S1104K251	RD-AP0210119M	C208	1.00000	0
3018					128403	31-S1103Z506	C.MON 0.01UF 50V Z Y5V 0603	WALSN	31-S1103Z506	RD-AP0210119M	C004	1.00000	0
3019			*		125491	31-F7471M25583	C.ELE 470UF 25V M 10*16 ZL	RUBCO	25ZL470M	RD-AP0206159F	C205	1.00000	0
3019A			*		131410	31-F7471M2552C	C.ELE 470UF 25V M 10*16 KZE	NCC	KZE25VB471MJ16	RD-AP0301052F		1.00000	0
3020					116781	31-S1221KE02	C.MON 220PF 500V K NP0 1206	AVX	12067A221K	RD-AP0209074P	C011	1.00000	91
3021					128158	31-S1105M106	C.MON 1UF 10V M Y5V 0603	WALSN	31-S1105M106	RD-AP0210119M	C068,C303,C303-1	3.00000	0
3022					104923	31-F1221KAK	C.DIS 220PF 1KV K Y5P 5T	NICLA	N5Y5P1B221K	RD-AP0208118V	C050	1.00000	45
4002			*		133454	37-C19000505	CHOKE FR12*6*4 SM100-2	LITON	37-C19000505	RD-AP0204168B	L001	1.00000	0
4003			*		134992	37-C19000201	CHOKE DR16*9.6*8 SM100	LITON	37-C19000201	RD-AP0212273A	L002	1.00000	0
4004			*		126323	37-C17000501	CHOKE T60-26 300UH +-13%	LITON	37-C17000501	RD-AP0301037B	L003	1.00000	30
4006			*		132093	37-C19000501	CHOKE TR9*5*3 R7K 150T	LITON	37-C19000501	RD-AP0208095B	L200	1.00000	0
4007			*		134993	37-C19000202	CHOKE A1900-02D RM10N PL9	LITON	37-C19000202	RD-AP0212274A	L010	1.00000	0
4008			*		134991	42-M190002P01	XFMR A1900-02D DS3319 PL9	LITON	42-M190002P01	RD-AP0211070A	T1	1.00000	0
4013		*			125639	37-C15301902	BEAD CORE RH3.5*9*1.3 A6	LITON	37-C15301902	RD-AP0202108B	B003(D003-),B053(D052-)	2.00000	30
5001					133972	04-PM19000201	DC CORD 1800 PA-1900-02D	LITON	04-PM19000201	RD-AP0301030A	DC CORD	1.00000	0
5002					134869	04-L02BCD430J	WIRE 1430 #22 43 B 6:6	LITON	04-L02BCD430J	RD-AP0212162X	INLET(L)	1.00000	0
5003					134870	04-L02WCD430J	WIRE 1430 #22 43 W 6:6	LITON	04-L02WCD430J	RD-AP0212162X	INLET(N)	1.00000	0
5004					134995	04-AM19000201	WIRE+H 1430 #18 120 G/Y 10	LITON	04-AM19000201	RD-AP0212161Z	FG	1.00000	0
6001					134062	46-M190002CS1	CASE-TOP 156*60*16 PC	ALLEN	46-M190002CS1	RD-AP0301017A	CSA00(CASE-TOP)	1.00000	0
6002					134063	46-M190002CS2	CASE-BTM 156*60*16 PC	ALLEN	46-M190002CS2	RD-AP0301018A	CSA01(CASE-BTM)	1.00000	0
6003					134064	52-M190002HS1	HEAT SINK 137*19*2.5 AL	KGM	52-M190002HS1	RD-AP0301022A	Q050	1.00000	0
6004					134065	52-M190002HS2	HEAT SINK 46*20*2.5 AL	KGM	52-M190002HS2	RD-AP0301021A	Q200	1.00000	0
6005					135020	52-M190002HS9	HEAT SINK 19*15*0.5 BR	KGM	52-M190002HS9	RD-AP0301019A	HS-BRIDGE	1.00000	0
6006					135000	28-M190002PL1	ISL-PLT 114*55*0.54 FRPP+CU	L&D	28-M190002PL1	RD-AP0301023B	PCB	1.00000	0

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6007					135019	52-M190002HS8	HEAT SINK 102*43*1 AL	KGM	52-M190002HS8	RD-AP0301020A	HS1-Q050	1.00000	0
6008					135085	28-M190002PL3	ISL-PLT+T 115*50(3L) #1350F	L&D	28-M190002PL3	RD-AP0212302A	HS8	1.00000	0
6009					101131	50-S18300802	SCREW+M CH 3*0.5*8 NI	KOFEI	50-S18300802	RD-AP0206141G	SCA00(Q200,Q201)	2.00000	30
6010		*			117070	93-M42213SL1	LBL-SERL 50.8*12.7 PA-4221-3A	SKYBD	93-M42213SL1	RD-AP9406009A	CASE-BTM	1.00000	20
6011					108239	50-AM420112	NUT+W 3*0.5*3.4 NI	WIEN	50-AM420112	RD-AP9711077B	NTA00(HS1,HS2)	4.00000	30
6013					120065	50-S18300902	SCREW+M CH 3*0.5*9 NI	WIEN	50-S18300902	RD-AP0206141G	Q001,Q050	2.00000	30
6014					601118	93-M190002DL1	LBL-ID 73*45 HPA-1900-02D	CHMAY	93-M190002DL1	RD-AP0301016A	LBA00(CASE-BTM)	1.00000	0
6016					135723	43-M165005TR1	THER RUBBER+T 10*15 #9890 3M	HWADA	43-M165005TR1	RD-AP0211106A	HS9 & BRIDGE	1.00000	0
6018					135086	28-M190002PL4	ISL-PLT+T 60*23(3L) #1350F	L&D	28-M190002PL4	RD-AP0212288A	L002	1.00000	0
6019					126174	28-M153001PL1	ISL-PLT 17*9*14*0.4 FR	SPEED	28-M153001PL1	RD-AP0107027A	L003	1.00000	45
6020					135236	28-M190002PL5	ISL-PLT+T 40*34(3L) #1350F	L&D	28-M190002PL5	RD-AP0212288A	HS1(Q050)	1.00000	0
6021					135237	28-M190002PL6	ISL-PLT+T 20*35(3L) #1350F	L&D	28-M190002PL6	RD-AP0212288A	HS2	1.00000	0
6022					131880	28-M160007RB2	ISL-PAD 22*7*1.5 RB	LITON	28-M160007RB2	RD-AP0111124B	PCB	1.00000	0
6023					130144	28-M156001RB2	ISL-PAD 7*7*1.8 RB	LIDAR	28-M156001RB2	RD-AP0108166B	PCB(L003)	1.00000	0
6024					102098	50-S18300602	SCREW+M CH 3*0.5*6 NI	KOFEI	50-S18300602	RD-AP0206141G	HS1&HS8	1.00000	30
6025					135607	43-CT21B	CABLE TIE 245*20 SILIC B	PIN	43-CT21B	RD-AP0212238A	CASE	1.00000	0
6026					135771	28-M113001PL3	ISL-PLT+T 40*19(3L) #1350F	L&D	28-M113001PL3	RD-AP0212288A	HS1&HS9, HS8&C054	2.00000	0
6027					134337	28-M41411PL8	ISL-PLT+T 45*32(2L) W #1350	L&D	28-M41411PL8	RD-AP0206108A	HS8&HS2	1.00000	0
7001			*		132038	38-T32A0825	FUSE HSB 250V 3.15A TE5-T	WKMAN	392-SERIES	RD-AP0111116A	F001	1.00000	0
7002					134994	01-M1900021AD	PCB A1900-02D 123*54*1.2 2/0A				MAIN PCB	1.00000	0
7003					134945	43-M165005PG1	INLET 250V 2.5A DL16S	VOLEX	43-M165005PG1	RD-AP0301100A	INLET	1.00000	0
8001					127728	92-MUC7	OUT-CTN 543*365*167	ESY	92-MUC7	RD-AP0202117H	CTN	0.02858	30
8002					136538	53-M190002MN1	MANUAL 297*210 PA-1900-02D					0.02858	0
8003					135001	91-M190002PL1	PA PLT LAY 543*325*167	YUANC	91-M190002PL1	RD-AP0212292A		0.02858	0
8004					114367	90-M23402PG3	PE BAG 480*125*0.08	HWAJI	90-M23402PG3	RD-AP0209052C		1.00000	30
8005					129792	55-MPA1	PALLET 1170*1140*131	LITON	55-MPA1	RD-AP0203073B		0.00096	0
8006					129660	93-M13804BC1	LBL-BAR 152*102	ZHENF	93-M13804BC1	RD-AP0101049A	PALLET	0.00110	0
9002		*			116377	04-T14B20010	TUBE-HST 0.20*1.0 125C 600V B	SUMIT	04-T14B20010	RD-AP0112132N	RT100(10mm*1pc)(13mm*1pc)	0.02300	35
9004		*			120289	07-0184503A	POLY TAPE 18*45M(2L) #40/#44	3M	#44-2L	RD-AP0105056C	C051(0.018M*1)	0.01800	21
9009		*			107509	04-T14B20020	TUBE-HST 0.20*2.0 125C 600V B	SUMIT	04-T14B20020	RD-AP0112132N	INLET(0.02M*2)	0.04000	30
9010		*			103847	04-T14B25080	TUBE-HST 0.25*8.0 125C 600V B	SUMIT	04-T14B25080	RD-AP0112132N	D052(0.012M*1)	0.01200	30
9011		*			103847	04-T14B25080	TUBE-HST 0.25*8.0 125C 600V B	SUMIT	04-T14B25080	RD-AP0112132N	D003(0.016M*1)	0.01600	30

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9012		*			101965	04-T14B25030	TUBE-HST 0.25*3.0 125C 600V B	SUMIT	04-T14B25030	RD-AP0112132N	FG[0.115M*1]	0.11500	20

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REMARK : U (*)-If cUstom parts F (*)-If saFety parts R (*)-cRitical C (*)-If Consign parts ITEM (-numeric)-If subcontract parts ITEM (-character)-If substitution parts

Note : This part list is prepared by Design department for cost estimation.

All of indirect material as solder, flux, glue, thinner, cleaner etc. are not listed on this part list.

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DATE : 2003/1/2

ITEM	U	F	R	C	PARTNO	OLD PART NO.	DESCRIPTION	MAKER	MAKER PART NO.	FILE NO.	LOCATION	QTY
1001			*		130824	33-B2KBP08M12	BRG 800V 2A 2KBP08M	GS	2KBP08M	RD-AP0106055F	D050	1.00000
1001A			*		130825	33-BKBP208G47	BRG 800V 2A KBP208G	DII	KBP208G	RD-AP0208059B		1.00000
1001B			*		130826	33-BKBP208G13	BRG 800V 2A KBP208G	LITON	KBP208G	RD-AP0106054B		1.00000
1002			*		132088	34-FIRFB471020	MFET N 100V 75A 0.014 IRFB4710	IR	IRFB4710	RD-AP0201127A	Q200,Q201	2.00000
1002A			*		132254	34-FSTP80NF10	MFET N 100V 80A 0.015STP80NF10	STM	STP80NF10	RD-AP0201057A		2.00000
1002B			*		132202	34-FPSMN01518	MFET N100V75A0.015PSMN015-100P	PHLIP	PSMN015-100P	RD-AP0201124A		2.00000
1002C			*		132638	34-FSTP40NF10L	MFET N 100V 40A0.028STP40NF10L	STM	STP40NF10L	RD-AP0201125A		2.00000
1002D			*		132639	34-FPHP45NQ10T	MFET N 100V 45A0.025PHP45NQ10T	PHLIP	PHP45NQ10T	RD-AP0201123A		2.00000
1002E			*		132637	34-FIRFB59N10D	MFET N 100V 59A0.025IRFB59N10D	IR	IRFB59N10D	RD-AP0201105A		2.00000
1004			*		123149	34-F2SK2842	MFET N 500V 12A 0.52 2SK2842	TOSHB	2SK2842	RD-AP9803100A	Q001	1.00000
1004A			*		132255	34-F2SK346942	MFET N 500V 12A0.42SK3469-01MR					1.00000
1005			*		135606	33-RLT2A07G13	DIO 1000V 2A LT2A07G DO15	LITON	LT2A07G	RD-AP0211170A	D052	1.00000
1007			*		124445	32-SL6561D19	IC PWM 8P L6561D SMD STM	STM	L6561D	RD-AP0007046A	IC1	1.00000
1009			*		130127	32-SLTA201P	IC PWM 14P LTA201P SMD	PHLIP	LTA201P	RD-AP0111032A	IC100	1.00000
1010			*		125223	32-STSM103AID	IC OPA 8P TSM103AID SMD	STM	TSM103AID	RD-AP9903097A	IC302	1.00000
1013			*		122444	34-F2SK2843	MFET N 600V 10A 0.54 2SK2843	TOSHB	2SK2843	RD-AP9712072A	Q050	1.00000
1013A			*		132612	34-FSTP10NK619	MFET N 600V10A0.75STP10NK60ZFP	STM	STP10NK60ZFP	RD-AP0210147B		1.00000
1013B			*		132983	34-F2SK350242	MFET N 600V10A0.752SK3502-01MR					1.00000
1013C			*		133685	34-FPHX10NQ618	MFET N 600V 10A0.57PHX10NQ60E					1.00000
1017		*	*		124124	LTV-817MA	IC PHO 4P LTV-817M-PRA 100-160	LITON	LTV-817M-PRA	RD-AP9905007I	PC300,PC301	2.00000
1017A			*		122708	32-PS2561L11VH	IC PHO 4P PS2561L1-1VH 80-160	NEC	PS2561L1-1-VH	RD-AP9910031D		2.00000
1017B			*		126256	32-PC123Y62	IC PHO 4P PC123Y62 80-160	SHARP	PC123Y62	RD-AP9908111A		2.00000
1029			*		126076	33-RMUR46012	DIO 600V 4A MUR460 GS	GS	MUR460	RD-AP0004010A	D003	1.00000
1029A			*		122830	33-RMUR460	DIO 600V 4A MUR460	MOTOR	MUR460	RD-AP9912103B		1.00000
3002		*	*		121144	31-F1102MD0542	C.DIS 1000PF 400V M E 10 KX	MURTA	DE0910E102M-KX	RD-AP0211235D	C006	1.00000
3002A			*		128430	31-F1102MD071	C.DIS 1000PF 400V M E 10 AH	PNOVR	AH09E102ML0	RD-AP0207129C		1.00000
3002B			*		120528	31-F1102MD058	C.DIS 1000PF 400V M E 10 CD	TDK	CD85E2GA102MYGS	RD-AP0208183J		1.00000
3003			*		131532	31-FE334KB560	C.MEX 0.33UF 275V K 15 LE	OKAYA	LE334-L35	RD-AP0202057A	C001	1.00000
3003B			*		130326	31-FE334MB557	C.MEX 0.33UF 275V M 15 3382					1.00000
3003C			*		130324	31-FE334KB5502	C.MEX 0.33UF 275V K 15 KNB1560	ISKRA	KNB1560-0.33UF	RD-AP0208184C		1.00000
3004			*		132221	31-F7121MD0523	C.ELE 120UF 400V M 18*31.5 KMG	NCC	KMG400VB120M	RD-AP0211050U	C051	1.00000
3004A			*		132096	31-F7121MD064	C.ELE 120UF 400V M 18*31.5 PT	NICHI	UPT2G121MHTADT	RD-AP0206093A		1.00000
3004B			*		131088	31-F7121MD056	C.ELE 120UF 400V M 18*30 GH	MATSU	EEUGH2G121S	RD-AP0111091A		1.00000
3004C			*		132288	31-F7121MD0586	C.ELE 120UF 400V M 18*30 KXW	RUBCO	400KXW120M1830	RD-AP0211075C		1.00000
3012			*		135206	31-F7821M25581	C.ELE 820UF 25V M 12.5*16 ZL	MUBCO	25ZL820M	RD-AP0210116G	C204	1.00000
3012A			*		135392	31-F7821M25524	C.ELE 820UF 25V M 12.5*15 KZE	NCC	25VB821MK15	RD-AP0210114E		1.00000
3019			*		125491	31-F7471M25583	C.ELE 470UF 25V M 10*16 ZL	RUBCO	25ZL470M	RD-AP0206159F	C205	1.00000
3019A			*		131410	31-F7471M2552C	C.ELE 470UF 25V M 10*16 KZE	NCC	KZE25VB471MJ16	RD-AP0210114E		1.00000
4002			*		133454	37-C19000505	CHOKE FR12*6*4 SM100-2	LITON	37-C19000505	RD-AP0204168B	L001	1.00000

LITE-ON ELECTRONICS, INC.
POWER CONVERSION

Design Critical Parts List

PILOT RUN (DESIGN FROZEN)

MODEL : PA-1900-02D
UPDATE : 2002/12/29
REV : 0G

DATE : 2003/1/2

ITEM	U	F	R	C	PARTNO	OLD PART NO.	DESCRIPTION	MAKER	MAKER PART NO.	FILE NO.	LOCATION	QTY
4003			*		134992	37-C19000201	CHOKE DR16*9.6*8 SM100	LITON	37-C19000201	RD-AP0212273A	L002	1.00000
4004			*		126323	37-C17000501	CHOKE T60-26 300UH +-13%	LITON	37-C17000501	RD-AP9909069A	L003	1.00000
4006			*		132093	37-C19000501	CHOKE TR9*5*3 R7K 150T	LITON	37-C19000501	RD-AP0208095B	L200	1.00000
4007			*		134993	37-C19000202	CHOKE A1900-02D RM10N PL9	LITON	37-C19000202	RD-AP0212274A	L010	1.00000
4008			*		134991	42-M190002P01	XFMR A1900-02D DS3319 PL9	LITON	42-M190002P01	RD-AP0211070A	T1	1.00000
7001			*		132038	38-T32A0825	FUSE HSB 250V 3.15A TE5-T	WKMAN	392-SERIES	RD-AP0111116A	F001	1.00000
9001		*	*		117343	07-O206603Y	POLY TAPE 20*66M Y #1350 3M	LITON	#1350F	RD-AP0107129E	TOP-BTM SHEET(0.02M*3)	0.06000

TOTAL 2 PAGES

REMARK : U (*)-If cUstom parts F (*)-If saFety parts R (*)-cRitical C (*)-If Consign parts ITEM (-numeric)-If subcontract parts ITEM (-character)-If substitution parts

Note : This part list is prepared by Design department for cost estimation.
All of indirect material as solder, flux, glue, thinner, cleaner etc. are not listed on this part list.

Design : Denbeau 1/1/02

PUR : 1/8

LITE-ON ELECTRONICS, INC.
POWER CONVERSION

VENDOR LIST

Design Critical Parts List

MODEL : PA-1900-02D
UPDATE : 2002/12/29
REV : 0G

DATE : 2003/1/2

ITEM	PARTNO	OLDPARTNO	DESCRIPTION	LOCATION	MAKER1	MAKERPN1	MAKER2	MAKERPN2	MAKER3	MAKERPN3
1001	130824	33-B2KBP08M12	BRG 800V 2A 2KBP08M	D050	GS	2KBP08M	----	----	----	----
1001A	130825	33-BKBP208G47	BRG 800V 2A KBP208G		DII	KBP208G	----	----	----	----
1001B	130826	33-BKBP208G13	BRG 800V 2A KBP208G		LITON	KBP208G	----	----	----	----
1002	132088	34-FIRFB471020	MFET N 100V 75A 0.014 IRFB4710	Q200,Q201	IR	IRFB4710	----	----	----	----
1002A	132254	34-FSTP80NF10	MFET N 100V 80A 0.015STP80NF10		STM	STP80NF10	----	----	----	----
1002B	132202	34-FPSMN01518	MFET N100V75A0.015PSMN015-100P		PHLIP	PSMN015-100P	----	----	----	----
1002C	132638	34-FSTP40NF10L	MFET N 100V 40A0.028STP40NF10L		STM	STP40NF10L	----	----	----	----
1002D	132639	34-FPHP45NQ10T	MFET N 100V 45A0.025PHP45NQ10T		PHLIP	PHP45NQ10T	----	----	----	----
1002E	132637	34-FIRFB59N10D	MFET N 100V 59A0.025IRFB59N10D		IR	IRFB59N10D	----	----	----	----
1004	123149	34-F2SK2842	MFET N 500V 12A 0.52 2SK2842	Q001	TOSHB	2SK2842	----	----	----	----
1004A	132255	34-F2SK346942	MFET N 500V 12A0.42SK3469-01MR		----	----	----	----	----	----
*1005	135606	33-RLT2A07G13	DIO 1000V 2A LT2A07G DO15	D052	LITON	LT2A07G	----	----	----	----
*1007	124445	32-SL6561D19	IC PWM 8P L6561D SMD STM	IC1	STM	L6561D	----	----	----	----
*1009	130127	32-SLTA201P	IC PWM 14P LTA201P SMD	IC100	PHLIP	LTA201P	----	----	----	----
*1010	125223	32-STSM103AID	IC OPA 8P TSM103AID SMD	IC302	STM	TSM103AID	----	----	----	----
1013	122444	34-F2SK2843	MFET N 600V 10A 0.54 2SK2843	Q050	TOSHB	2SK2843	----	----	----	----
1013A	132612	34-FSTP10NK619	MFET N 600V10A0.75STP10NK60ZFP		STM	STP10NK60ZFP	----	----	----	----
1013B	132983	34-F2SK350242	MFET N 600V10A0.752SK3502-01MR		----	----	----	----	----	----
1013C	133685	34-FPHX10NQ618	MFET N 600V 10A0.57PHX10NQ60E		----	----	----	----	----	----
1017	124124	LTV-817MA	IC PHO 4P LTV-817M-PRA 100-160	PC300,PC301	LITON	LTV-817M-PRA	----	----	----	----
1017A	122708	32-PS2561L11VH	IC PHO 4P PS2561L1-1VH 80-160		NEC	PS2561L1-1-VH	----	----	----	----
1017B	126256	32-PC123Y62	IC PHO 4P PC123Y62 80-160		SHARP	PC123Y62	----	----	----	----
1029	126076	33-RMUR46012	DIO 600V 4A MUR460 GS	D003	GS	MUR460	----	----	----	----
1029A	122830	33-RMUR460	DIO 600V 4A MUR460		MOTOR	MUR460	----	----	----	----
3002	121144	31-F1102MD0542	C.DIS 1000PF 400V M E 10 KX	C006	MURTA	DE0910E102M-KX	----	----	----	----
3002A	128430	31-F1102MD071	C.DIS 1000PF 400V M E 10 AH		PNOVR	AH09E102ML0	----	----	----	----
3002B	120528	31-F1102MD058	C.DIS 1000PF 400V M E 10 CD		TDK	CD85E2GA102MYGS	----	----	----	----
3003	131532	31-FE334KB560	C.MEX 0.33UF 275V K 15 LE	C001	OKAYA	LE334-L35	----	----	----	----
3003B	130326	31-FE334MB557	C.MEX 0.33UF 275V M 15 3382		----	----	----	----	----	----
3003C	130324	31-FE334KB5502	C.MEX 0.33UF 275V K 15 KNB1560		ISKRA	KNB1560-0.33UF	----	----	----	----
3004	132221	31-F7121MD0523	C.ELE 120UF 400V M 18*31.5 KMG	C051	NCC	KMG400VB120M	----	----	----	----
3004A	132096	31-F7121MD064	C.ELE 120UF 400V M 18*31.5 PT		NICHI	UPT2G121MHTADT	----	----	----	----
3004B	131088	31-F7121MD056	C.ELE 120UF 400V M 18*30 GH		MATSU	EEUGH2G121S	----	----	----	----
3004C	132288	31-F7121MD0586	C.ELE 120UF 400V M 18*30 KXW		RUBCO	400KXW120M1830	----	----	----	----
3012	135206	31-F7821M25581	C.ELE 820UF 25V M 12.5*16 ZL	C204	MUBCO	25ZL820M	----	----	----	----
3012A	135392	31-F7821M25524	C.ELE 820UF 25V M 12.5*15 KZE		NCC	25VB821MK15	----	----	----	----
3019	125491	31-F7471M25583	C.ELE 470UF 25V M 10*16 ZL	C205	RUBCO	25ZL470M	----	----	----	----
3019A	131410	31-F7471M2552C	C.ELE 470UF 25V M 10*16 KZE		NCC	KZE25VB471MJ16	----	----	----	----
4002	133454	37-C19000505	CHOKE FR12*6*4 SM100-2	L001	LITON	37-C19000505	TAIVO	37-C19000505	JETRO	37-C19000505

LITE-ON ELECTRONICS, INC.
POWER CONVERSION

VENDOR LIST

Design Critical Parts List

MODEL : PA-1900-02D
UPDATE : 2002/12/29
REV : 0G

DATE : 2003/1/2

ITEM	PARTNO	OLDPARTNO	DESCRIPTION	LOCATION	MAKER1	MAKERPN1	MAKER2	MAKERPN2	MAKER3	MAKERPN3
					LISGI	37-C19000505	XEPEX	37-C19000505	----	----
4003	134992	37-C19000201	CHOKE DR16*9.6*8 SM100	L002	LITON	37-C19000201	JETRO	37-C19000201	TAIVO	37-C19000201
					LISGI	37-C19000201	----	----	----	----
4004	126323	37-C17000501	CHOKE T60-26 300UH +-13%	L003	LITON	37-C17000501	JETRO	37-C17000501	TAIVO	37-C17000501
4006	132093	37-C19000501	CHOKE TR9*5*3 R7K 150T	L200	LITON	37-C19000501	TAIVO	37-C19000501	JETRO	37-C19000501
					LISGI	37-C19000501	XEPEX	37-C19000501	----	----
4007	134993	37-C19000202	CHOKE A1900-02D RM10N PL9	L010	LITON	37-C19000202	JETRO	37-C19000202	TAIVO	37-C19000202
					LISGI	37-C19000202	HJC	37-C19000202	----	----
4008	134991	42-M190002P01	XFMR A1900-02D DS3319 PL9	T1	LITON	42-M190002P01	JETRO	42-M190002P01	TAIVO	42-M190002P01
					LISGI	42-M190002P01	HJC	42-M190002P01	----	----
*7001	132038	38-T32A0825	FUSE HSB 250V 3.15A TE5-T	F001	WKMAN	392-SERIES	----	----	----	----
*9001	117343	07-O206603Y	POLY TAPE 20*66M Y #1350 3M	TOP-BTM SHEET(0.02M*3)	LITON	#1350F	----	----	----	----

TOTAL 2 PAGES

Note : This part is prepared by Design department for cost estimation.
All of indirect material as solder, flux, glue, thinner, cleaner etc. are not listed on this part list.

Design : Dearbear 1/3/02

PUR. :

LITEON

ENGINEERING SPECIFICATION

90 WATT POWER SUPPLY

PART NUMBER : PA-1900-02D

EFFECTIVE DATE : Dec 30, 2002

LITEON

REV. NO.	ITEM	DESCRIPTIONS OF CHANGE		CHANGED DATE :	REF. DOC. NO.
		BEFORE	AFTER		
X1			INITIAL	07/25/02	DN-
A	7.1	23.5(Max)	20.5~23.5	12/30/02	
	10		Updated format	12/30/02	

CONTENTS

1. SCOPE

This specification defines the performance characteristics of a grounded, single phase, 90 watt, 1 outputs power supply. This specification also defines worldwide safety and electromagnetic compatibility requirements for the power supply which is intended for use in note book products.

2. INPUT REQUIREMENTS

2.1. INPUT VOLTAGE

	MINIMUM		MAXIMUM		NOMINAL	
LOW RANGE	90	VAC	137	VAC	100-127	VAC
HIGH RANGE	180	VAC	265	VAC	200-240	VAC

2.2. FREQUENCY

	MINIMUM		MAXIMUM		NOMINAL	
SINGLE PHASE	47	Hz	63	Hz	50/60	Hz

2.3. VOLTAGE SELECTION

A full range will be provided to select the appropriate range.

2.4. NO LOAD Operation

The internal power loss at no load operation shall be less than 1.0W@0.5W output load at 115VAC.

2.5. INPUT CURRENT

1.5 amps maximum at input voltage within the low range as specified in paragraph 2.1 and at any combination of loading conditions.

0.7 amps maximum at input voltage within the high range as specified in paragraph 2.1 and at any combination of loading conditions.

2.6. INRUSH CURRENT

The adapter inrush current shall be less than the ratings of its critical components for all conditions of line voltage.

2.7. POWER SUPPLY EFFICIENCY

The power supply efficiency shall not be less than 85% measure at the maximum load as specified in paragraph 3.1 with the AC input set at the nominal voltage.

3. OUTPUT REQUIREMENTS

3.1. STATIC DC LOAD (CV domain)

NOMINAL VOLTAGE (V)	LOAD CURRENT(A) MIN.	LOAD CURRENT(A) MAX.	REGULATION
19.5	0	4.62	19.5V+/-5%

3.2. RIPPLE AND NOISE

The ripple and noise of the outputs shall be measured at the load end if the output cables when terminated to a load impedance as specified in paragraph 3.3.

OUTPUT VOLTAGE		RIPPLE & NOISE (P-P)	
19.5	V	500	mV

* Use 20MHz Bandwidth frequency scope.

3.3. LOAD IMPEDANCE

Filter capacitors are connected to each pins of the mating output connector. Capacitance values and material type are listed below.

VOLTAGE NOM.(V)	CAPACITANCE NOM. (uF)	MATERIAL TYPE
19.5	1nF	CERAMIC.

3.4. RISE TIME

The output rise time (measured from the 10% point to the 90% point on the waveform) shall be within 2ms ~ 20ms.

3.5. HOLD UP TIME

The power supply shall maintain voltage regulation within the specified limits in paragraph 3.1 for at least 10 milliseconds after lost of input voltage measure at 115 VAC and at maximum output load.

4. NO LOAD OPERATION

The power supply shall be able to operate under no load condition. No damage to the power supply is allowed and internal component can not be stressed beyond its rating.

5. FREQUENCY OF OPERATION

To keep audible noise to a minimum, power supply shall be switched at frequencies higher than 20 kHz.

6. TEMPERATURE COEFFICIENT

The temperature coefficient of all outputs are 0.05% per degree centigrade maximum.

7. PROTECTION

7.1. OVER VOLTAGE PROTECTION

The power supply should shutdown for any cause of over voltage conditions before any output exceeds its limits below.

NOMINAL OUTPUT VOLTAGE (V)	OVER VOLTAGE MAX.
19.5	20.5~23.5

The power supply is latched and power on reset is required.

7.2. SHORT CIRCUIT PROTECTION

A short circuit placed on DC output shall cause no damage to or shutting down the power supply. The power supply will be latch-off

7.3. OVER CURRENT PROTECTION

The power supply shall provide over current protection on output. Maximum current inception point of output shall be limited to the following values:

OUTPUT VOLTAGE (V)	CURRENT LIMIT (A)
19.5	6.12 Max

The power supply will be latch-off.

8. TURN ON TIME

The turn on time shall be less than 4 sec. for all line and load conditions. (measured from AC on point to the 90% point of the output voltage)

9. SAFETY REQUIREMENTS

The power supply must comply with the following national standards:

UL 60950 3rd Edition	USA
CAN/CSA-C22.2 No. 60950-00	Canada
EN60950 2000 Edition	Europe Union
IEC60950 (1999-04)	ROW

Regulatory Body	Country	Standard	Submission Responsibility
CSA Certified	Canada	CSA-60950	OEM
UL Listed	United States	UL-60950	OEM
CE	Europe	EN 60950 EN 55022 EN 55024	OEM
TUV/VDE GS Licensed	Germany	EN 60950	OEM
NEMKO Licensed	Norway	EN 60950 EN 55022 EN 55024	OEM
MITI	Japan	IEC-950	OEM
GOST Licensed	Russia	IEC-60950 EN 55022 EN 55024 MPRII +	OEM (NEMCO)@
* NOM/NYSE	Mexico	UL-1950	OEM
N-MARK	Australia	IEC-60950	OEM
KTL	Korea	IEC-60950 EN 55022	OEM

SABS	South Africa	IEC-60950 EN 55022	OEM
EZU	Czech Republic	IEC-60950 EN 55022 EN 55024	OEM (NEMCO)@
PCBC	Poland	IEC-60950 EN 55022 EN 55024	OEM (NEMCO)@
PSB	Singapore	IEC-60950	OEM
CCC	China, Hong Kong	IEC-60950 EN 55022	OEM
EVPU	Slovakia	IEC-60950 EN 55022 EN 55024	OEM (NEMCO)@
SIQ	Slovenia	IEC60950 EN 55022	OEM (NEMCO)@
MEEI	Hungry	IEC-60950 EN 55022	OEM (NEMCO)@
Uksertcomputer	Ukraine	IEC-60950 EN 55022 EN 55024	OEM (NEMCO)@
IRAM	Argentina	UL-1950	OEM (NEMCO)@
SII	Israel	IEC-60950 EN 55022 +	OEM (NEMCO)@

9.1. DIELECTRIC STRENGTH

Primary to Secondary : 4242 VDC for 1 sec.

9.2. INSULATION RESISTANCE

Primary to secondary : 30 Meg. ohms Min., 500VDC

9.3. GROUND LEAKAGE CURRENT

The power supply ground leakage current shall be less than 0.12 mA.

10. ELECTROMAGNETIC COMPATIBILITY

Power supply for use with the host system will be tested to conform with the following emission standards.

Country	Regulatory Body	Applicable Standards
US	FCC *	Part 15 (CISPR 22)
Europe	CE **	EN 55022 (Emissions) EN 55024 (Immunity)
Japan	VCCI *	CISPR 22 EN 55022
Czech Republic	EZU *	CISPR 22 EN 55022
South Africa	SAABS *	CISPR 22 EN 55022
Korea	RRL *	CISPR 22 EN 55022
Australia	SMA * (C-TICK)	CISPR 22 EN 55022
Nordics	NEMKO *	CISPR 22 EN 55022
Taiwan	BSMI	CISPR 22 EN 55022
Russia	GOST *	CISPR 22 EN 55022

Test Standard	Description
FCC Part 15 Subpart B Class "B"	Class B, radiated and conducted emissions. 4dB margin to both radiated and conducted limits are required.
EN 55022:1998	Class B, radiated and conducted emissions. 4dB margin to both radiated and conducted limits are required.

EN 55024:1998	Electromagnetic compatibility/ITE immunity standard.
EN 61000-3-2	Harmonic Emissions
EN 61000-3-3	Voltage Fluctuations
EN 61000-4-2:1991	Electrostatic Discharge:

Severity Level	Test Level Air	Pass/Fail Acceptance	Test Level Contact	Pass/Fail Acceptance
1	+/- 2kV	A	+/- 2kV	A
2	+/- 4kV	A	+/- 4kV	B
3	+/- 8kV	B	+/- 6kV	B
	+/- 10kV	B		
4	+/- 15kV	C	+/- 8kV	C

Acceptable Definitions:
A Normal operation. No degradation, No failures.
B Some performance degradation allowed. No data lost. Self recoverable. No hardware failures.
C Temporary performance degradation. Recovery by operator is acceptable. No hardware failure.

EN 61000-4-3: 1991 — Radiated Susceptibility

Severity level	Test Level	Pass/Fail Acceptance
2	3 v/m	A

Acceptable Definitions:
A Normal operation. No degradation, No failures.
B Some performance degradation allowed. No data lost. Self recoverable. No hardware failures.
C Temporary performance degradation. Recovery by operator is acceptable. No hardware failure.

EN 61000-4-4: 1998 — Electrical Fast Transient/Burst

Severity Level	Test Level I/O & PS	Pass/Fail Acceptance
2	0.5 / 1.0 kV	B
3	1.0 / 2.0 kV	B

Acceptable Definitions:
A Normal operation. No degradation, No failures.
B Some performance degradation allowed. No data lost. Self recoverable. No hardware failures.
C Temporary performance degradation. Recovery by operator is acceptable. No hardware failure.

EN 61000-4-5: 1998 — Surge Immunity.

Surge Immunity

Severity Level	Test Level L-L / L-G	Pass/Fail Acceptance (System level test 0 installation class 3)
1	No Test 0.5 kV	A
2	0.5kV 1.0kV	A
3	1.0kV 2.5kV	B

Acceptable Definitions:
A Normal operation. No degradation, No failures.
B Some performance degradation allowed. No data lost. Self recoverable. No hardware failures.
C Temporary performance degradation. Recovery by operator is acceptable. No hardware failure.

EN 61000-4-6	Conducted Immunity 0.15 – 80 Mhz

EN 61000-4-8	Power Frequency H-Field
EN 61000-4-11	Dips/Interrupts/Variations
MPR-2	Near Field Testing of VLF/ELF Electric and Magnetic Field Emissions.

11. ENVIRONMENT

11.1. OPERATING

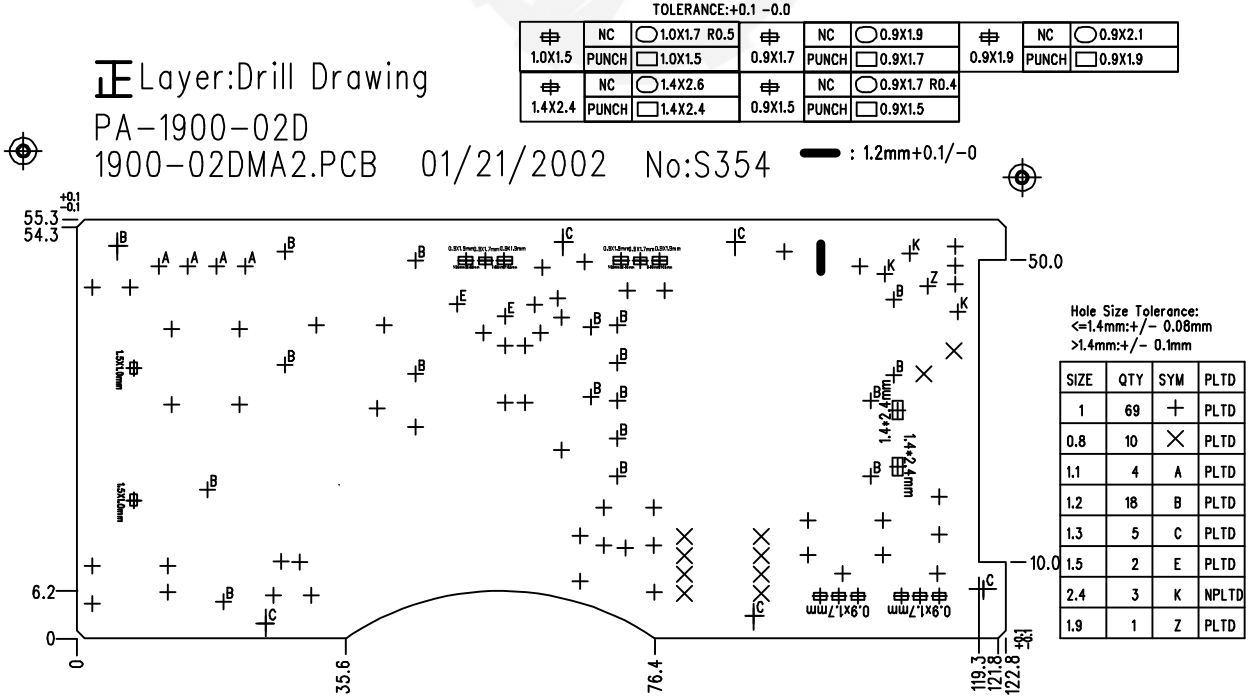
Temperature : 0 to 40 degrees centigrade.

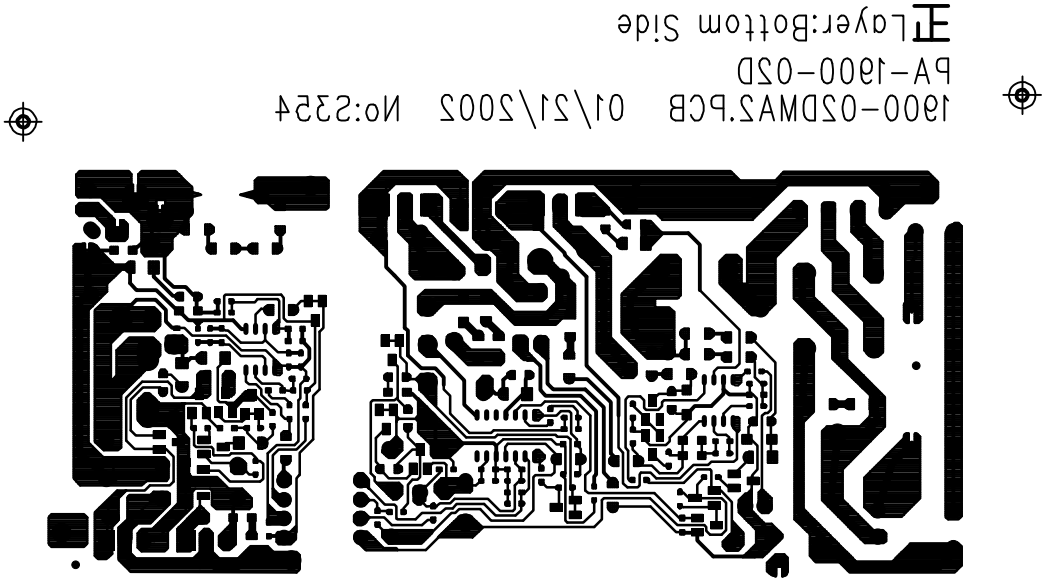
Relative Humidity : 8 to 80 percent, non-condensing.

11.2. SHIPPING AND STORAGE

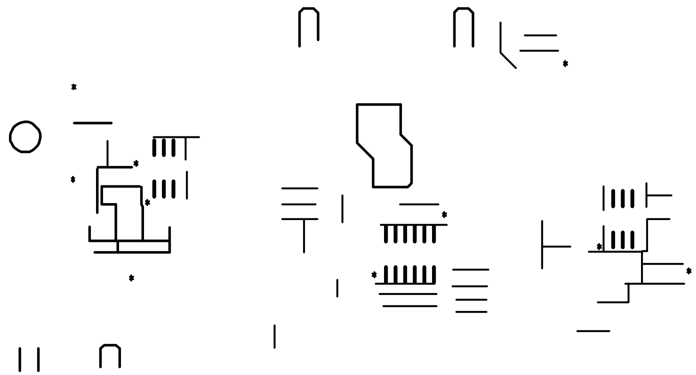
Temperature : -31 to +60 degrees centigrade.

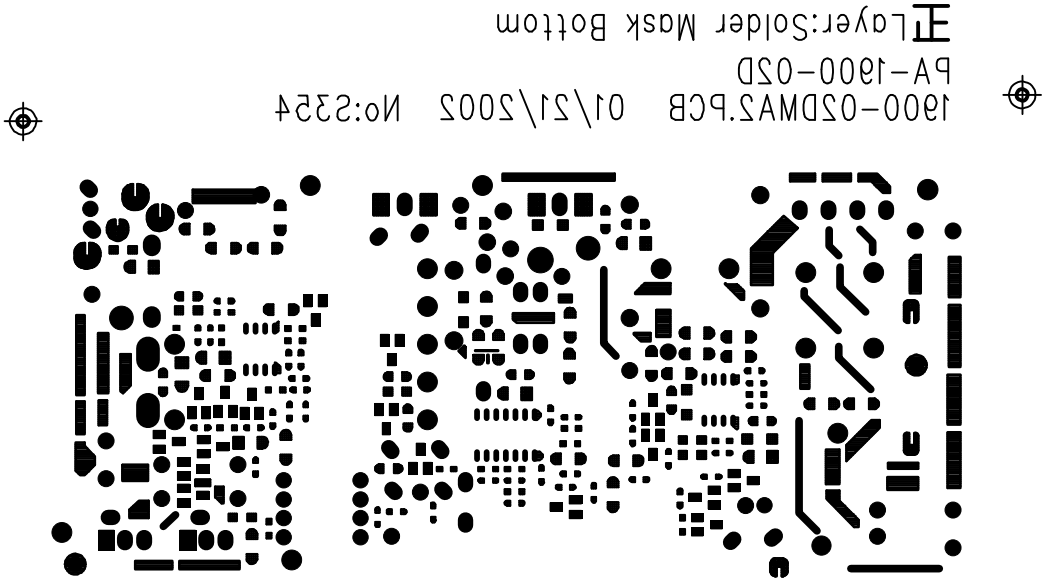
Relative Humidity : 8 to 80 percent, non-condensing.


TOLERANCE:+0.1 -0.0
1.0X1.5 NC 1.0X1.7 R0.5 PUNCH 1.0X1.5
0.9X1.7 NC 0.9X1.9 PUNCH 0.9X1.7
0.9X1.9 NC 0.9X2.1 PUNCH 0.9X1.9
1.4X2.4 NC 1.4X2.6 PUNCH 1.4X2.4
0.9X1.5 NC 0.9X1.7 R0.4 PUNCH 0.9X1.5
Layer:Drill Drawing
PA-1900-02D
1900-02DMA2.PCB 01/21/2002 No:S354
: 1.2mm+0.1/-0
55.3 54.3
50.0
10.0
6.2
0
0
35.6
76.4
119.3 121.8 122.8
Hole Size Tolerance:
<=1.4mm:+/- 0.08mm
>1.4mm:+/- 0.1mm
SIZE QTY SYM PLTD
1 69 + PLTD
0.8 10 X PLTD
1.1 4 A PLTD
1.2 18 B PLTD
1.3 5 C PLTD
1.5 2 E PLTD
2.4 3 K NPLTD
1.9 1 Z PLTD


1900-02DMA2.PCB 01/21/2002 No:5354
PA-1900-02D
TLayer:Bottom Side

Layer:Silkscreen Bottom
PA-1900-02D
1900-02DMA2.PCB 01/21/2002 No:S354

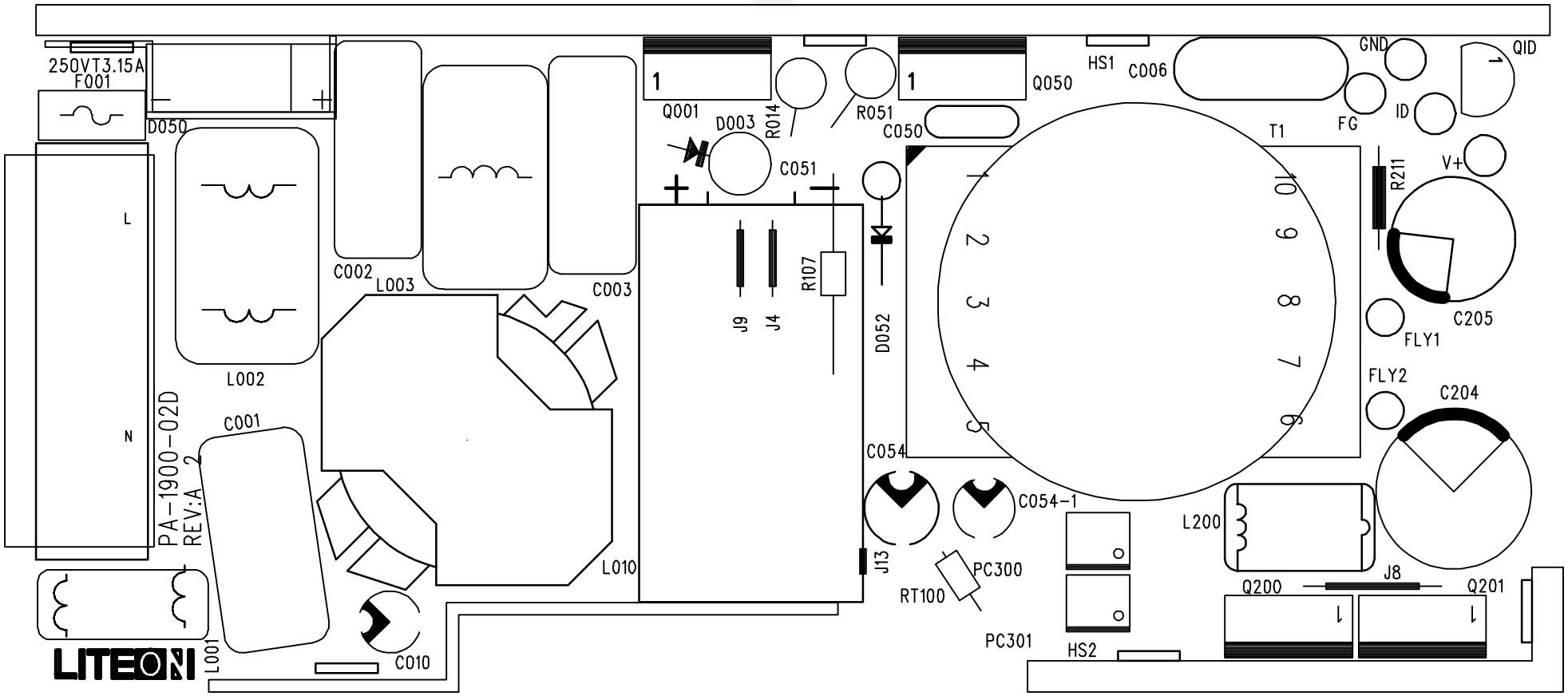


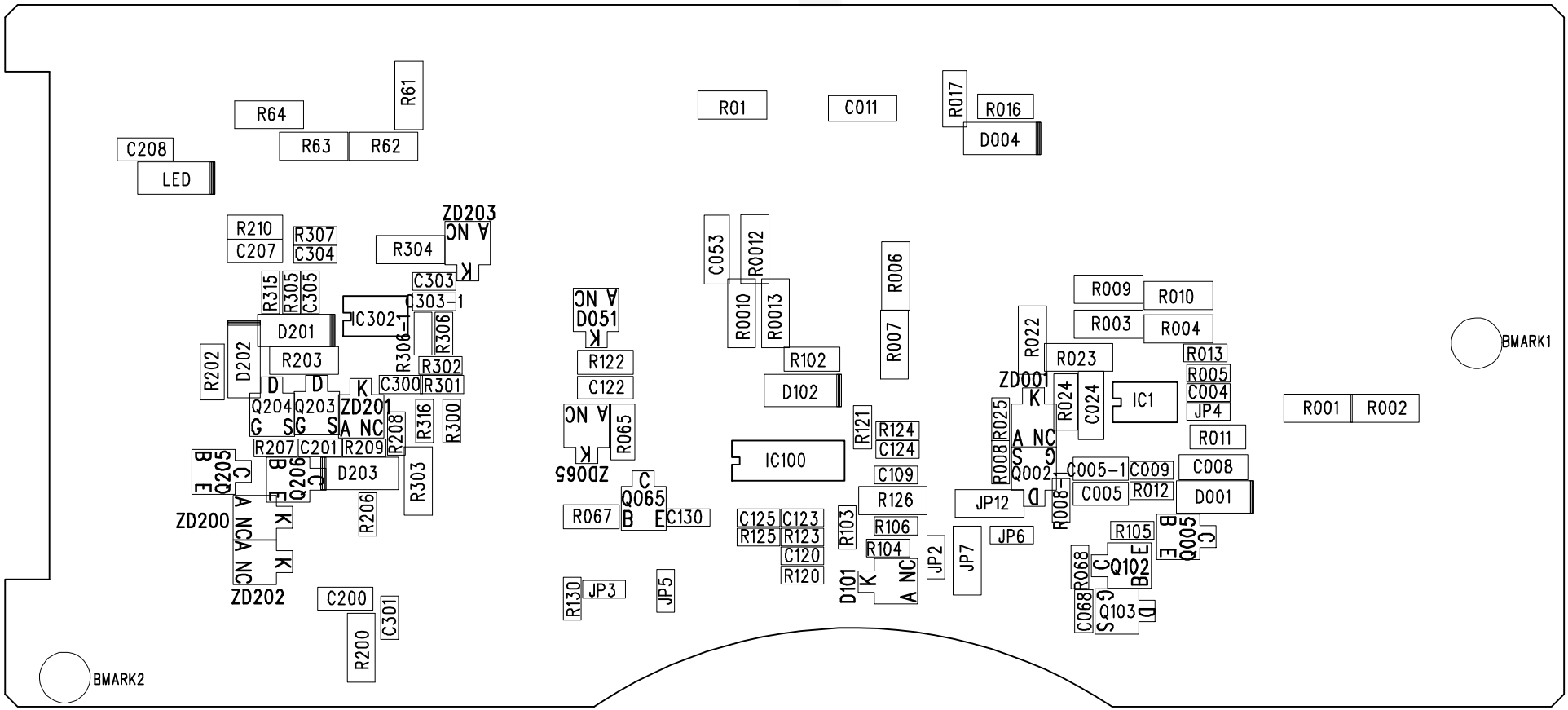

Layer:Solder Mask Bottom
PA-1900-02D
1900-02DMA2.PCB 01/21/2002 No:3354

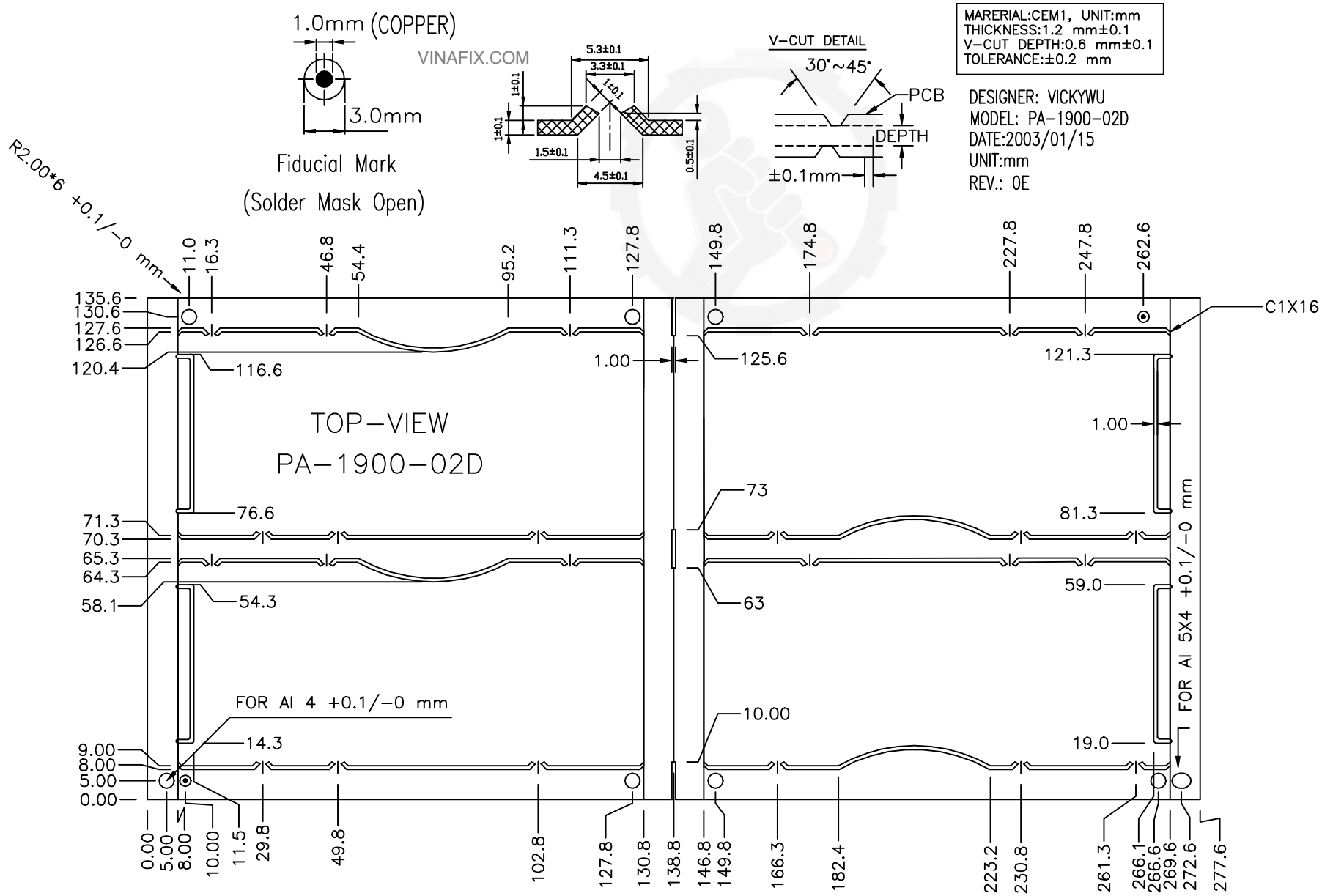
Layer:Silkscreen Top

PA-1900-02D

1900-02DMA2.PCB 01/21/2002 No:S354




R64
R61
R63
R62
C208
LED
R01
C011
R017
R016
D004
R210
C207
R307
C304
R304
ZD203
A NC
K
C303
C303-1
R315
R305
C305
IC302-1
R306-1
R306
D201
D202
R202
R203
R302
C300
R301
D
D
K
Q204
Q203
ZD201
G S G S A NC
R208
R316
R300
R207
C201
R209
B
E
C
Q205
Q206
C
B
E
D203
R303
ZD200
A NC
K
R206
A NC
K
ZD202
C200
C301
R200
BMARK2
C053
R0012
R0010
R0013
R102
D102
R007
R006
A NC
K
D051
R122
C122
A NC
K
ZD065
R065
C
Q065
B
E
R067
C130
IC100
R121
R124
C124
C109
R126
R106
R104
R103
C125
C123
R125
R123
C120
R120
D101
K
A NC
R130
JP3
JP5
JP2
JP7
JP6
JP12
R009
R010
R003
R004
R022
R023
R024
C024
IC1
R025
R008
ZD001
K
A NC
S
G
Q002
D
R008-1
R013
R005
C004
JP4
R011
C005-1
C009
C008
C005
R012
D001
R105
B
E
C
Q005
R068
C
Q102
B
E
C068
G
S
Q103
D
R001
R002
BMARK1


1.0mm (COPPER)
3.0mm
Fiducial Mark
(Solder Mask Open)
VINAFIX.COM
5.3±0.1
3.3±0.1
1±0.1
1±0.1
1±0.1
1.5±0.1
4.5±0.1
0.5±0.1
V-CUT DETAIL
30°~45°
PCB
DEPTH
±0.1mm
MARERIAL:CEM1, UNIT:mm
THICKNESS:1.2 mm±0.1
V-CUT DEPTH:0.6 mm±0.1
TOLERANCE:±0.2 mm
DESIGNER: VICKYWU
MODEL: PA-1900-02D
DATE:2003/01/15
UNIT:mm
REV.: 0E
R2.00*6 +0.1/-0 mm
TOP-VIEW
PA-1900-02D
C1X16
FOR AI 4 +0.1/-0 mm
FOR AI 5X4 +0.1/-0 mm
11.0
16.3
46.8
54.4
95.2
111.3
127.8
149.8
174.8
227.8
247.8
262.6
135.6
130.6
127.6
126.6
120.4
116.6
1.00
125.6
121.3
1.00
73
76.6
71.3
70.3
65.3
64.3
58.1
54.3
63
81.3
59.0
14.3
10.00
19.0
9.00
8.00
5.00
0.00
0.00
5.00
8.00
10.00
11.5
29.8
49.8
102.8
127.8
130.8
138.8
146.8
149.8
166.3
182.4
223.2
230.8
261.3
266.1
266.6
269.6
272.6
277.6

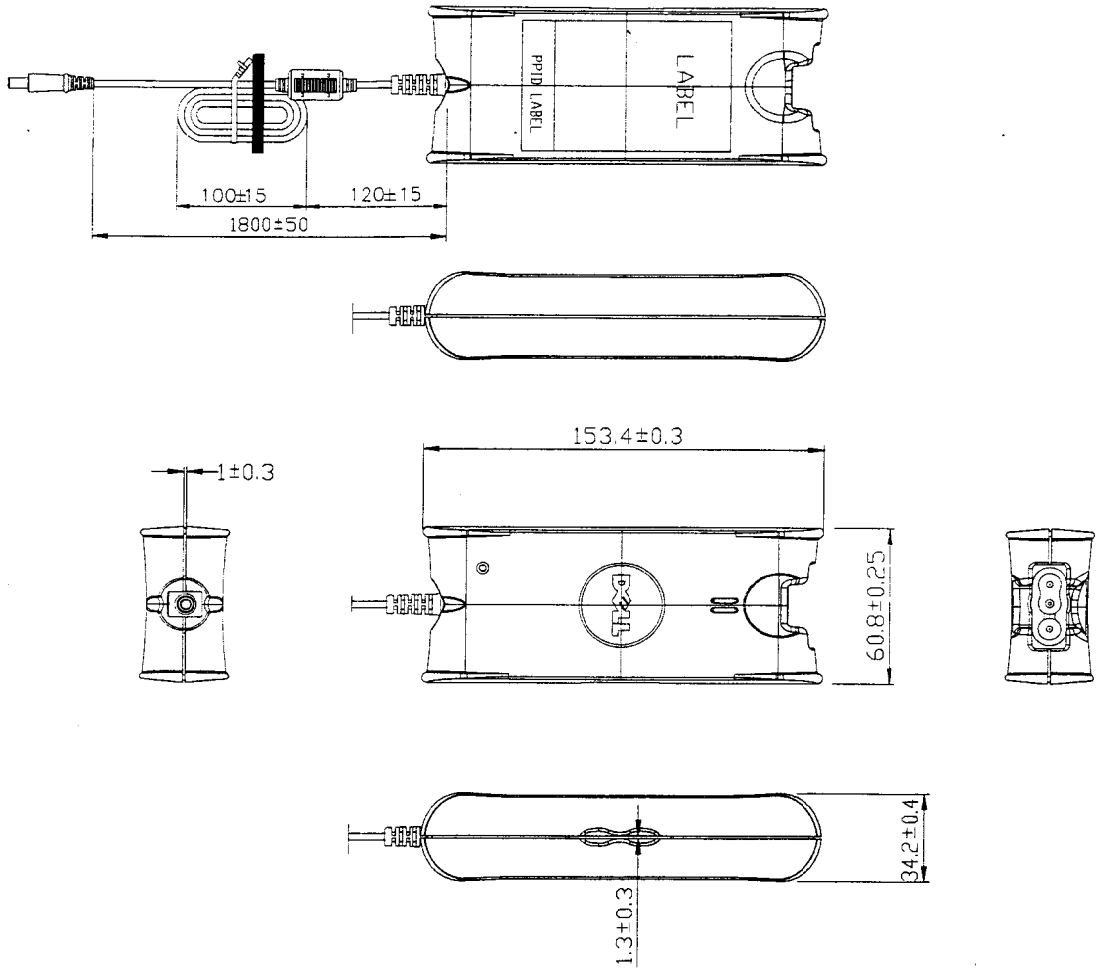
1. MATERIAL:

NOTES: UNLESS OTHERWISE SPECIFIED.

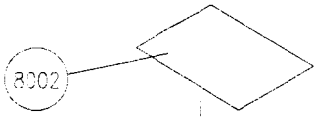
1. ALL DIMENSIONS ARE IN mm.
   TOLERANCES TO BE ±0.25 mm.
2. PARTS SPECIFIED AS FOLLOWS:

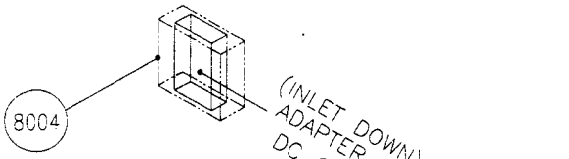
2-1. ENCLOSURE:

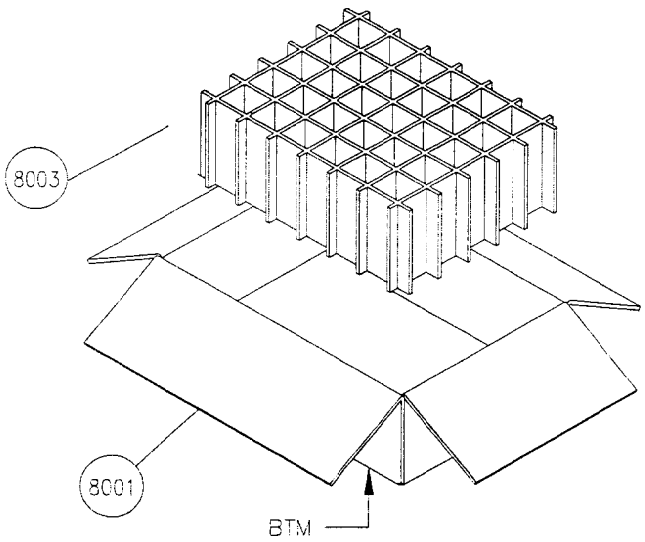
UL RECOGNIZED PLASTIC (QMFZ2)
RATED 94V-0, UL RT1 (WTH IMPACT)
MAKROLON 6485 (BAYER).
COLOR: DELL MIDNIGHT GRAY
TEXTURE: MOLD TECH MT-11030 (MAT)

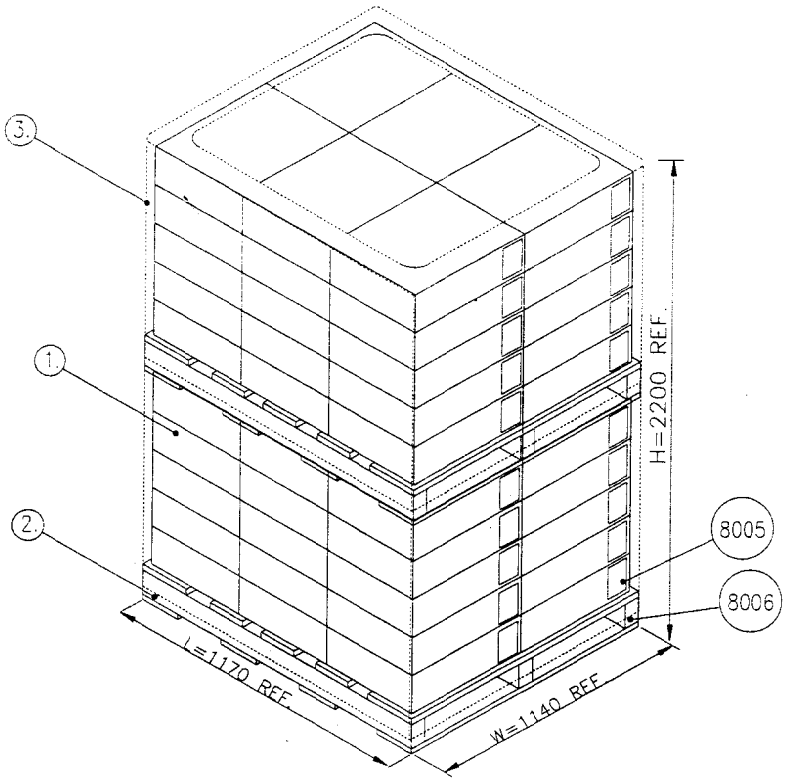


				PRINTING DATE	24-Dec-2002	2D FILE	0720-OUTLINE_PA-1900-02D	DESIGNER	AmyKung		LITEON	TITLE: OUTLINE	PART NO.:	
A	RELEASED	24-Dec-2002		FINAL DATE	24-Dec-2002	3D FILE	ASSY	CHECKER		APPROVED		PROJECT: PA-1900-02D	DRAWING NO: 30AA00571	REV: A
REVISION	DESCRIPTION	DATE	ZONE	UNIT: mm	SCALE: 0.500									









* PALLET ASS'Y DRAWING:

1. ALL DIMENSIONS ARE IN mm.
2. PARTS SPECIFIED AS FOLLOWS:

ITEM	PART NAME	QUANTITY
1.	CARTON	1 CARTON=30 UNITS
2.	PALLET	1 PALLET=5 LAYERS =30 CARTONS =900UNITS
3.	POLYESTER FILM	2 LAYERS MIN. =900 UNITS
	FULL CONTAINER	40 FEET= 36000 UNITS 20 FEET= 18000 UNITS

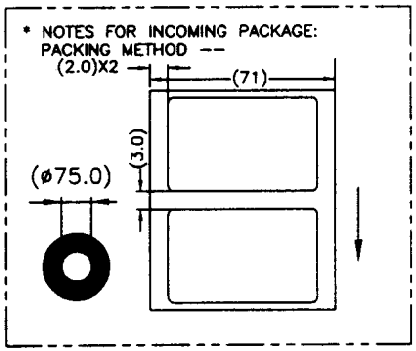
REVISION	DESCRIPTION	DATE	ZONE										
A	RELEASED	24-Dec-2002		PRINTING DATE	24-Dec-2002	2D FILE	PACKING_PA-1900-02D	DESIGNER	AmyKung	APPROVED	LITEON LITE-ON ELECTRONICS, INC.	TITLE: PACKING DRAW.	PART NO.: ———
				FINAL DATE	24-Dec-2002	3D FILE	-----	CHECKER				PROJECT:PA-1900-02D	DRAWING NO: 3PAA00549 REV.: A
				UNIT: mm	SCALE: ---								

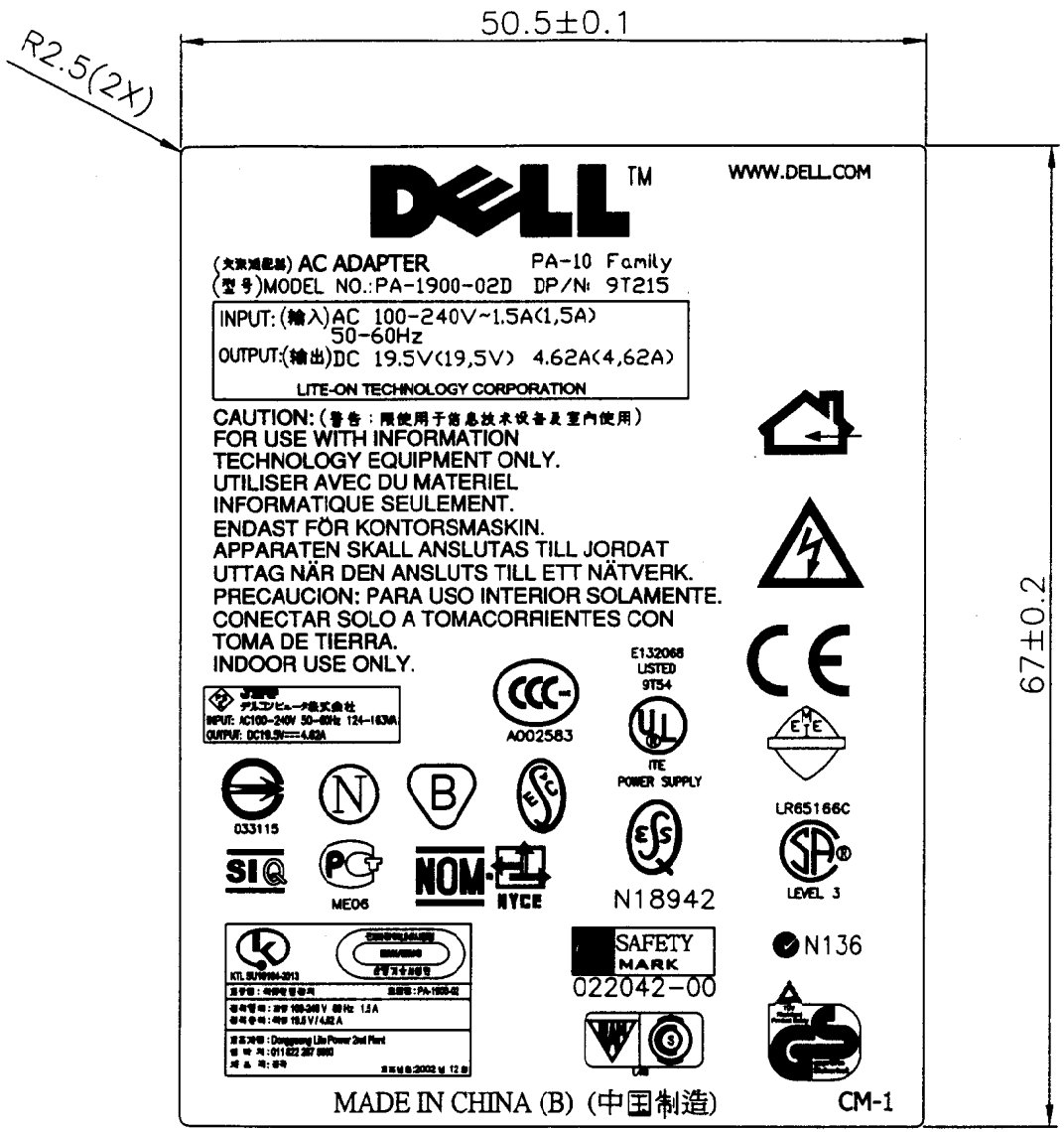
NOTES: UNLESS OTHERWISE SPECIFIED.

1. TOLERANCES TO BE ±0.2 mm.
2. THE ARRANGEMENT OF LAMINATE WITH MATERIAL THICKNESS AS FOLLOWS:

①	MYLAR FILM(MAT)	0.05±10%
②	ACRYLIC ADHESIVE	0.018±10%
③	SYNTHESIS(#75)	0.075±10%
④	ACRYLIC ADHESIVE	0.028±10%
	GRAND TOTAL THK.	0.171±10%

3. THE LINES ARE 0.5 mm WIDE.
4. COLOR: CHARACTERS, LOGOS AND LINES SHALL BE WHITE, BASE TO BE BLACK.
5. APPROVED VENDOR MUST BE UL RECOGNIZED & CSA CERTIFIED.
6. THIS LABEL SHALL BE MARKED WITH THE CSA VENDOR IDENTIFICATION MARK AS SPECIFIED IN THE CSA LIST. LOCATE APPROX. AS SHOWN.
7. SAFETY STANDARD ORGANIZATION SYMBOLS ARE 7.62 TO 5.0 HIGH.
8. LETTERING SHOULD BE CLEAR-CUT. SURFACE TO BE FREE OF DEFECT.





REVISION	DESCRIPTION	DATE	ZONE
A	RELEASED	23-Dec-2002	

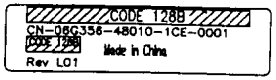
PRINTING DATE	23-Dec-2002	2D FILE	LBL_PA1900-02D	DESIGNER	AMY KUNG		LITEON LITE-ON ELECTRONICS, INC.	TITLE: LABEL	PART NO.: (601118) 93-M190002DL1
FINAL DATE	23-Dec-2002	3D FILE	———	CHECKER		APPROVED		PROJECT: PA-1900-02D	DRAWING NO.: 493-601118 REV.: A
UNIT: mm	SCALE: 1/1								

謝琇富 Dec 27/02

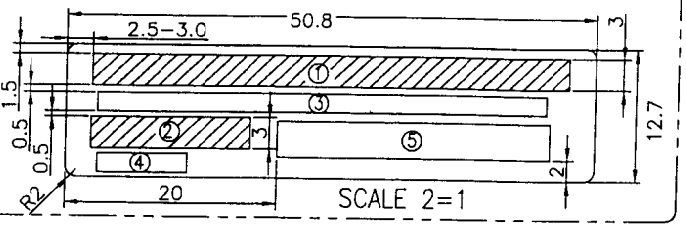
Dec 27/02

PART NUMBER: (117070)93-M42213SL1

EXAMPLE:



SCALE 1=1



SCALE 2=1

NOTES:

1. Please print three characters for revision number at the stage of polit run and mass production Ex."Rev L01".
   Please print three characters for revision number at the stage of pilot run Ex."Rev A01".

THE CONTENT OF PRINTING:

ITEM	DESCRIPTION	BAR CODE	HRI
A	CN-09228C-48010-07K-0001 DELL PART NUMBER (6 CHARACTERS) *Please refer to the Dell P/N. COUNTRY OF ORIGIN (2 CHARACTERS) MANUFACTURE ID (5 CHARACTERS) *Please refer to the supplier ID. YEAR,MONTH,DAY (1 CHARACTER INDIVIDUALLY) *Please refer to the month codes and day codes. THE SEQUENCE NUMBER: 0001 --- FFFF (HEXADECIMAL)	CN09228C4801007K0001 THE HEIGHT OF BAR CODE ARE 3.0 mm. ①	DS/N CN-09228C-48010-07K-0001 THE SIZE OF TEXT IS 6 POINTS OF TIMES VERDANA FONT, BOLD ③
B	Rev X01 REVISION LEVEL THE THREE CHARACTERS ARE ACCORDING TO THE REVISION NUMBER OF PART LIST (CUSTOMER) note 2	X01 or L01 THE HEIGHT OF BAR CODE ARE 3.0 mm. CODE 128B ②	Rev X01 OR L01 THE SIZE OF TEXT IS 6 POINTS OF TIMES VERDANA FONT, BOLD ④
		Made in China THE SIZE OF TEXT IS 6 POINTS OF TIMES VERDANA FONT, BOLD ⑤	

MONTH CODES:

January	1
February	2
March	3
April	4
May	5
June	6
July	7
August	8
September	9
October	A
November	B
December	C

DAY CODES:

1st	1	13th	D	25th	P
2nd	2	14th	E	26th	Q
3rd	3	15th	F	27th	R
4th	4	16th	G	28th	S
5th	5	17th	H	29th	T
6th	6	18th	I	30th	U
7th	7	19th	J	31th	V
8th	8	20th	K		
9th	9	21th	L		
10th	A	22th	M		
11th	B	23th	N		
12th	C	24th	O		

THE LIST IS SHOWN THE PART NUMBER OF DELL FOR EVERY MODEL.

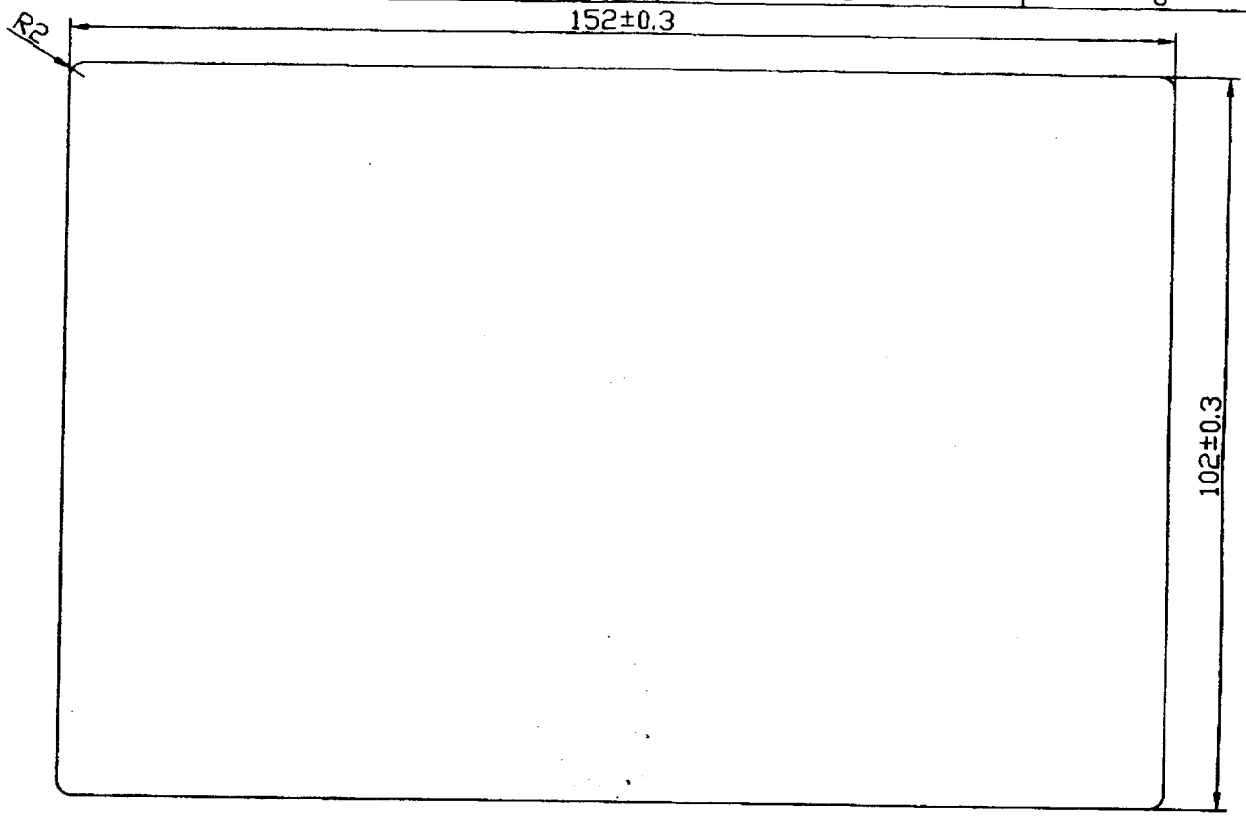
MODEL NAME	DELL P/N
PS-5161-1D	7E220
PA-1900-02D	9T215
PA-1650-05D	5U092

EACH MANUFACTURING LOCATION WILL USE A DIFFERENT SUPPLIER ID NUMBER.

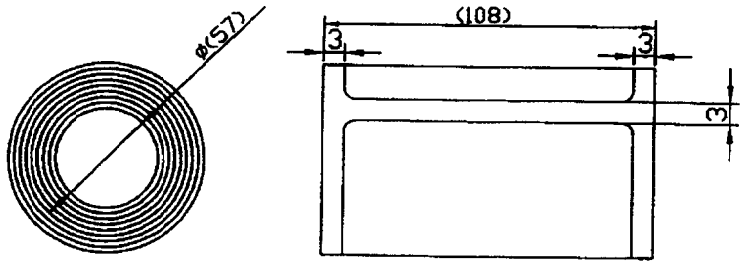
LOCATION	SUPPLIER ID
Penang (MALAYSIA)	12771
Hong Kong (WELLEX)	12772
China (LITE)	48010
Fortron	12774
Watt	12775
Taiwan	12776

REVISION	DESCRIPTION	DATE	ZONE										
	RELEASED	02-Jan-2003		PRINTING DATE	02-Jan-2003	2D FILE	BAR-CODE_PS-5251-2D	DESIGNER	Amber			TITLE: BAR-CODE(FOR PSU)	PART NO.: (117070)93-M42213SL1
				FINAL DATE	02-Jan-2003	3D FILE		CHECKER	ALEX	APPROVED		PROJECT: PS-5251-2D	DRAWING NO.: 493-117070A-26 REV.: A
				UNIT: mm	SCALE: F							LITE-ON ELECTRONICS, INC.	

NOTES:
(-).LABEL:
1.MATERIAL: ART PAPER
2.COLOR: WHITE
3.THICKNESS: 0.08 MM
4.THE MATERIAL MUST BE ADHESIVED.
5.NO OIL,DAMAGE.



NOTES FOR INCOME PACKUGE:
A.PACKAGE METHOD:



B.PACKAGE SURFACE:UNPRINTED STYLE(BLANK LABEL)

REVISION	DESCRIPTION	DATE	ZONE

DATE	1/8'01	2D FILE	LABEL_DD1380-4L-3	DESIGNER	STEPHEN		LITEON	TITLE: LBL-BAR 152×102	PART NO: (129660)93-M13804BC1
FINAL DATE	1/8'01	3D FILE		CHECKER	S Yang	APPROVED		PROJECT: DD-1380-4L	DRAWING NO: 493-129660A-20 REV: A
UNIT: mm	SCALE:								

NOTES:
UNLESS OTHERWISE SPECIFIED.
1.MATERIAL: PAPER,A4,
WHITE, 0.1mm THK.
2.COLOR:ALL CHARACTERS ARE
BLACK.
3.THE PRINT SHOULE BE KEPT
CLEAR-CUT

210.00

297.00

INSTALLATION INSTRUCTION MANUAL FOR GENERAL-USE ADAPTER

MODEL: **PA-1900-02D**

CAUTION: This product is for indoor use only.
Please read this safety information carefully and keep this User's Manual for later reference.
Please disconnect this equipment from AC inlet before cleaning. Don't use liquid or sprayed detergent for cleaning. Drop or fall could cause injury.
For pluggable equipment, the socket-outlet shall be installed near the equipment and shall be easily accessible.
Please keep this equipment from humidity and Lay this equipment on a reliable surface when install
Make sure the voltage of the power source when connect the equipment to the power outlet and place the power cord such a way that people cannot step on it. Do not place anything over the power cord. Never pour any liquid, this could fire or electrical shock.
If one of the following situations arises, get the equipment checked by service personnel:

- The power cord or plug is damaged.
- Liquid has penetrated into the equipment.
- The equipment has been exposed to moisture.
- The equipment has not work well or you cannot get it work according to user's manual.
- The equipment has dropped and damaged.

DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT UNCONDITIONED, STORAGE TEMPERATURE ABOVE 40 °C, IT MAY DAMAGE THE EQUIPMENT.

When using product at 120 V: Use a UL Listed/CSA Certified cord set consisting of a minimum 18 AWG (1.219 mm^2), type SVT or SJT or SPT-2 two conductor cord a maximum of 15-feet in length and having a parallel blade polarized attachment plug cap, rated 6 A, 125 V.
When using product at 240 V (domestic use): Use a UL Listed/CSA Certified cord set consisting of a minimum 18 AWG (1.219 mm^2), type SVT or SJT two conductor cord a maximum of 15-feet in length and a tandem blade, rated 6 A, 250 V.
When using product outside of North America: Use a cord set consisting of a minimum 18 AWG (1.219 mm^2) cord, rated 6A, 250V and a moulded or rewirable 3-pin mains plug compatible with the destination country. The cord set should have the appropriate safety approvals for the country in which the equipment will be installed and marked HAR.
When using product at 230 V (in Singapore use): Use a rewirable 3-pin mains plug approved by Public Utilities Board (PUB) or a moulded 3-pin mains plug tested by PSB to show that it has complied with SS145, a double insulated flexible cord certified to relevant IEC standard and an appliance connector certified to IEC 60320.

Bedienungsanleitung
für das Schaltnetzteil PA-1900-02D
Eingang: 100-240 V, 1.5 A, 50-60 Hz
Ausgang:+19 V/+4.62A
Max. zulässige Umgebungstemperatur 40 °C

Achtung:
Das Schaltnetzteil nur innerhalb von Gebäuden benutzen.
Dieses Schaltnetzteil nur für Anwendungen nach EN 60 950 verwenden.
Bei sämtlichen Arbeiten am Schaltnetzteil das Gerät vom Versorgungsstromkreis trennen.
Schmelzsicherungen nur gegen gleichen Typ und gleiche Nennwerte austauschen.

一般型电源供应器之使用手册
机种: **PA-1900-02D**

1. 请仔细阅读这个安全说明书且保留这个使用手册作为以后参考用.
2. 在清理本产品时请先将交流插座拔除. 不能使用液态或喷雾式的清洁剂来清理. 急速落下或掉下将会伤害到这个仪器.
3. 必须确定放置电源线的地方人不会踏在上面. 不能放置任何东西在电源线上. 千万不可倒入任何的液体, 这将引起火花或触电.
4. 如果有以下的情况发生, 请将这仪器交给服务人员来检查
   - 电源线或插座损害
   - 有液体渗透到本产品
   - 仪器曝露在潮湿的地方
   - 这个仪器不再动作或你根据使用手册也无法使它动作时
   - 仪器被摔下来且损害时.
5. 这是一种安装固定式的零件, 在安装在仪器时相关的要求如: 必须符合 EN 60 950. 单体的安装也须参考厂商的使用手册.
6. 这个电源供应器必须在常温低于 40 °C 以下来操作. 超过温度将使仪器受损.
7. 可允许的漏电流为 3.5 mA. 且适用于可携带式的装置.
8. 每一组直流负载和总直流输出电源都不能超过以下的值:
   最大输出值: 19.5 V/4.62 A (max.)
9. 这个电源供应器并不会附上交流电源线. 必须使用已承认过的电源线来搭配它. 电源线的电流值最大 15 A, 且最少要求 H03VV-F, 3G, 0.75 mm^2 (型号: SVT, AWG20, 对 CSA/UL 最小温度值 60 °C/75 °C).

REVISION	DESCRIPTION	DATE	ZONE
A	INITIAL	DEC-28-02	

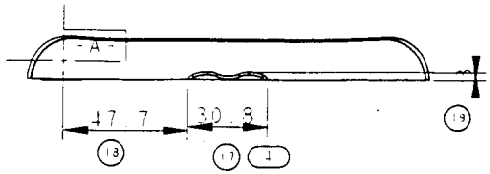
UNIT: mm	SCALE: 1.000	PRINTING DATE: 28-Dec-2002
		FINAL DATE: -

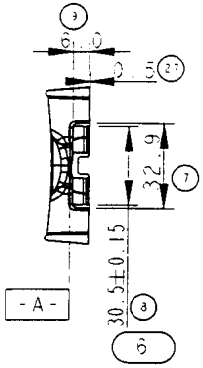
2D FILE	MANUAL_PA-1900-02D
3D FILE	----------

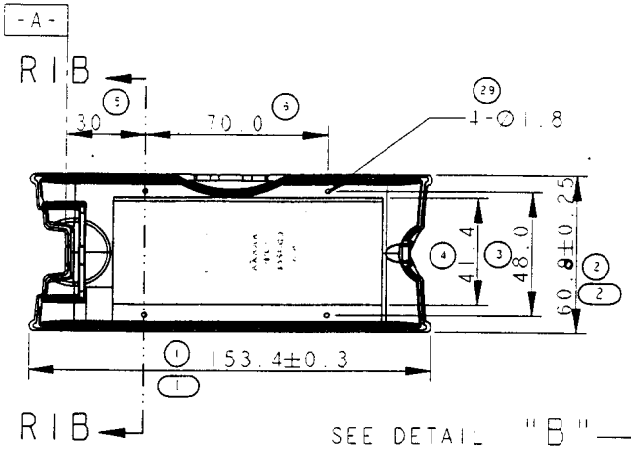
CHECKER	DESIGNER: AMY KUNG
APPROVER:	

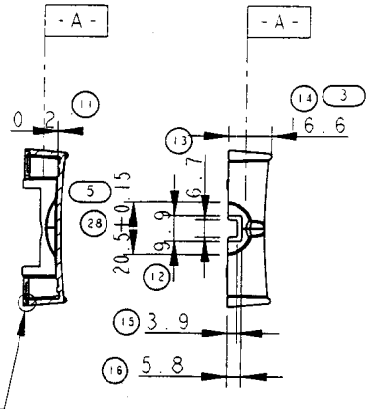
LITEON LITE-ON TECHNOLOGY CORP.

TITLE: MANUAL
PROJECT: PA-1900-02D
PART NO: 03538D 53-H19002CNN
DRAWING NO: 353-13538
REV: A



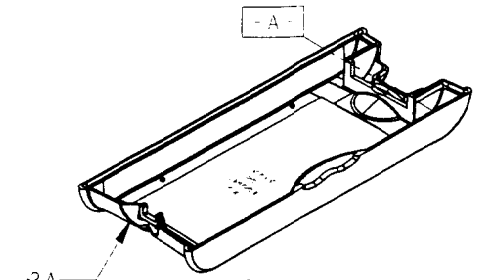


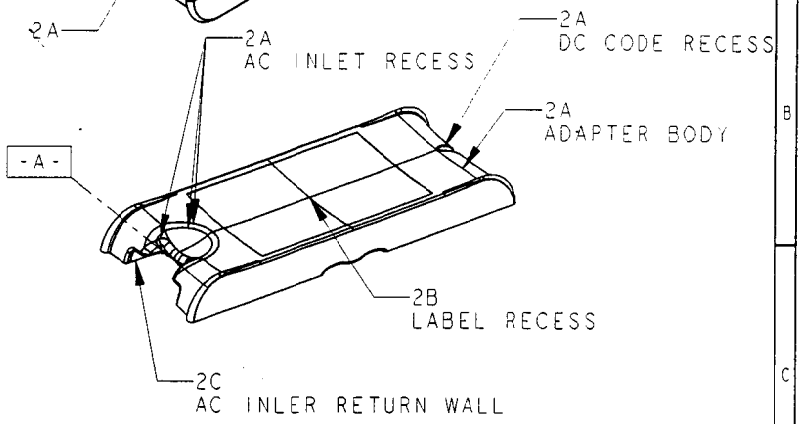


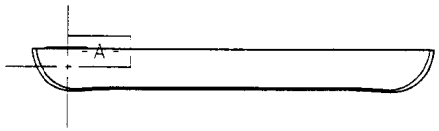


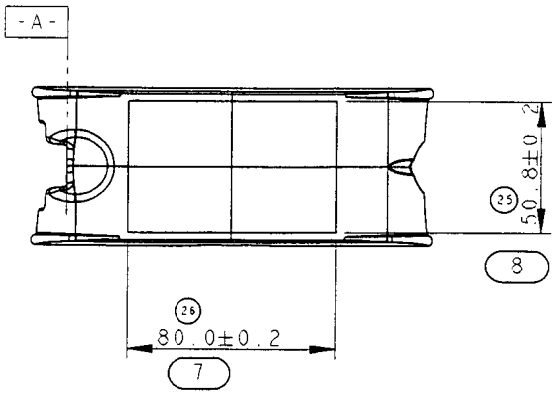
SEE DETAIL "B"

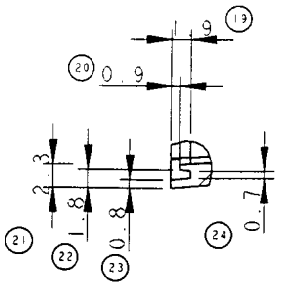
SECTION RIB-RIB











DETAIL "B"
SCALE 2.000

Plastic Tolerance Table	
below 10	±0.15
10~25	±0.20
25~50	±0.25
50~100	±0.30
100~250	±0.50
250~500	±1.00

NOTES: UNLESS OTHERWISE SPECIFIED.
1. TOLERANCES SPECIFIED AS BELOW.
2. MATERIAL:
   UL RECOGNIZED PLASTIC (QMFZ2),
   RATED 94V-0, UL RTI (WITH IMPACT)
   MAKROLON 6485 2D09 (BAYER)
   GE LEXAN 945
   COLOR: DELL MIDNIGHT GRY #89121
   (BAYER # 701773)
   (A) TEXTURE: MOLD TECH
   MT-11030 (MAT).
   (B) NO TEXTURE ON THIS SURFACE.
   (EDM FINISH, POLISH TO SPI-B1.)
   (C) MATTE FINISH, POLISH TO SPI-D2.
3. GATE MUST BE CUT SMOOTHLY.
4. SURFACES TO BE FREE OF SINK
   MARK AND IMPERFECTION.
5. XXXXX : MAKER ----- RECESS 0.15 mm
   >PC<: MATERIAL ----- THE TEXT'S HEIGHT IS 3 mm
   134063 : PART NO. -----
   X-X : MODL NO. - CAVE NO. (EXAMPLE 1-1
   : WEEK CODE --- RECESS 0.3mm.
   : YEAR CODE --- RECESS 0.3mm.
7. ○: FAI
   ⬭: CPK

① ~ ㉙
① ~ ⑧

1/2

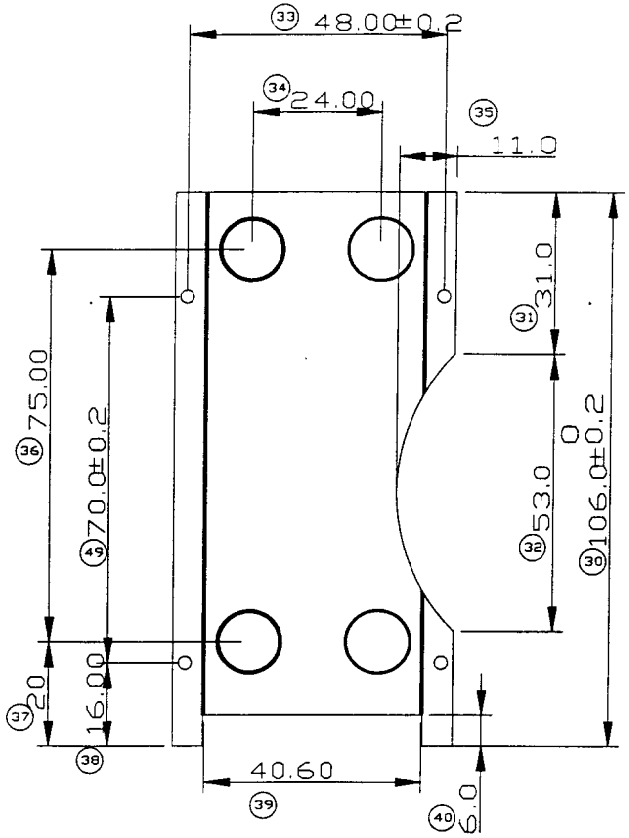
REVISION	DESCRIPTION	DATE	ZONE
A	RELEASED	31-Dec-2002	

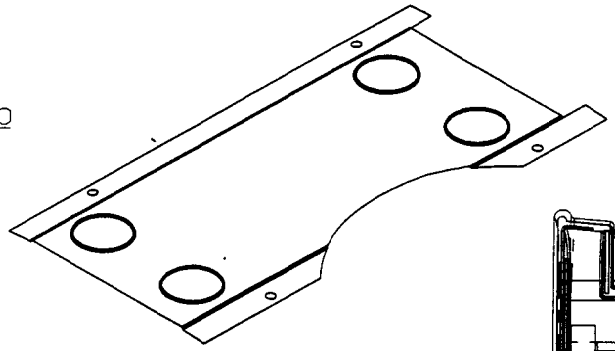
PRINTING DATE: 31-Dec-2002
FINAL DATE: 31-Dec-2002
UNIT: mm SCALE: 0.500

2D FILE: CASE-BTM_PA-1900-02D
3D FILE: CASE-BTM_PA-1900-02D
DESIGNER: AmyKung
CHECKER:
APPROVED: Y.S. Lin for 3.03

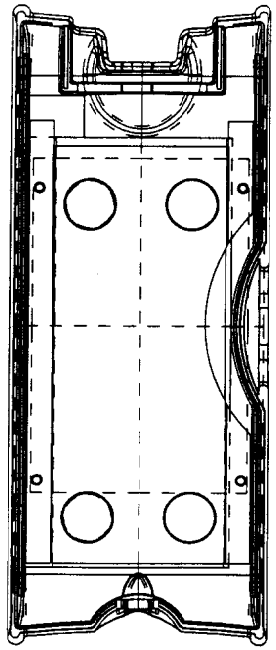
LITEON

TITLE: CASE-BTM
PROJECT: PA-1900-02D
PART NO.: (134063)346-M190002CS2
DRAWING NO.: 346-134063
REV.: A



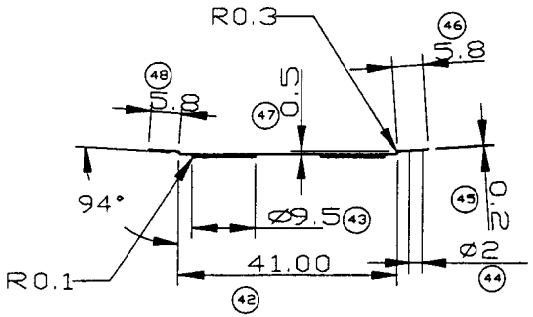


Press/Extrussion Tolerance Table	
below 5	±0.10
5~10	±0.15
10~25	±0.20
25~50	±0.25
50~100	±0.30
100~250	±0.35
250~500	±0.40
Angular Tolerance±1.0°	



Assembly-- Case & Heat sink

SCALE 0.800



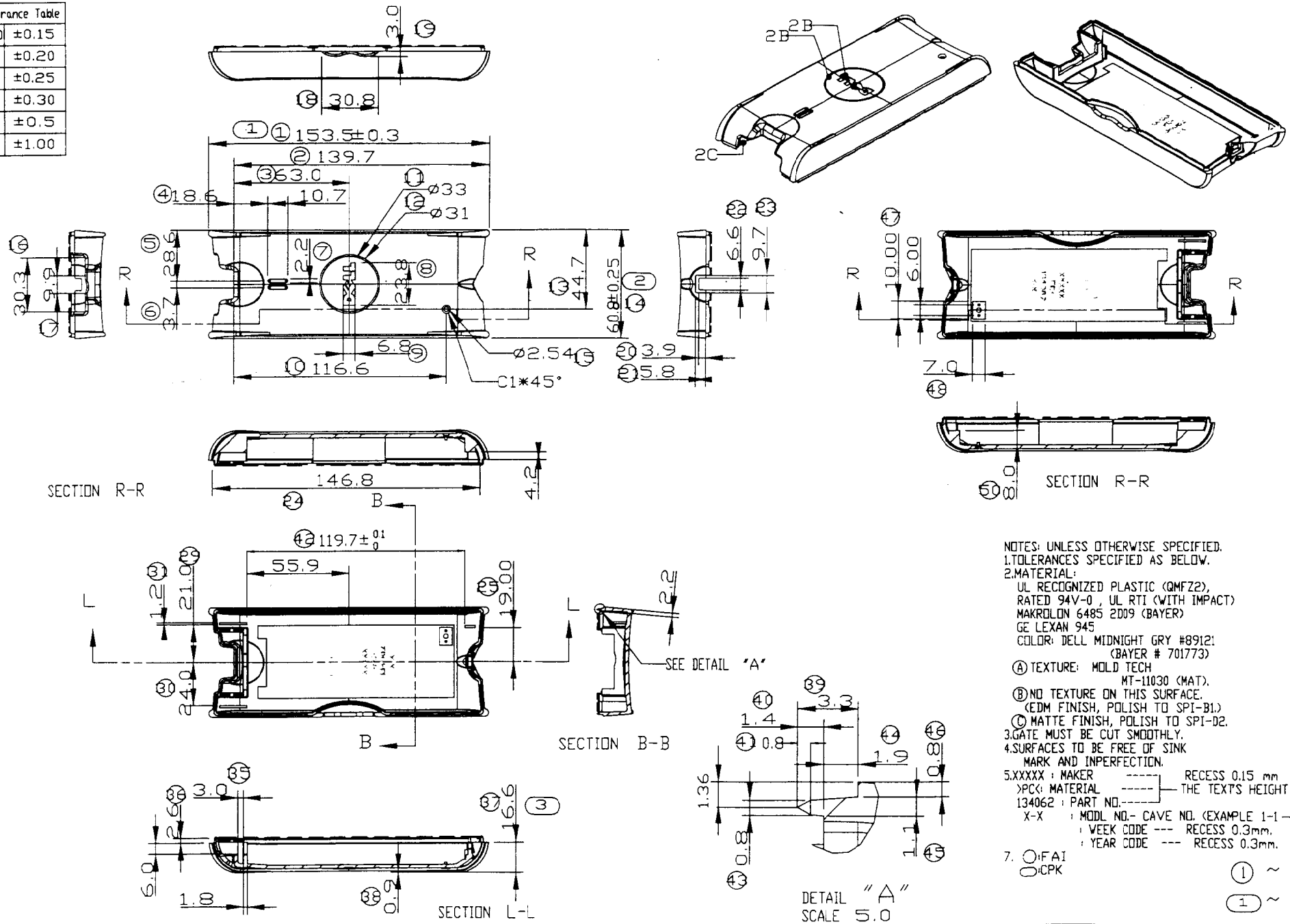
NOTES:
1.MATERIAL: RED COPPER. T=0.2±0.05mm.
2.BURRS DO NOT EXCEED 6% OF MATERIAL THICKNESS.
3.ALL INSIDE BEND RADII SHALL BE 0.5mm UNLESS.
4.ANGLE TURNING KEEP 90°±1°
DO NOT EXCEED 0.02mm PER 10mm*10mm SQUARE FLATNESS.
SURFACES TO BE FREE OF OIL,WARP, OXIDATION.
6. ○ :FAI

(30) ~ (49)

2/2

REVISION	DESCRIPTION	DATE	ZONE										
A	RELEASED	31-Dec-2002		PRINTING DATE	31-Dec-2002	2D FILE	CASE-BTM_PA-1900-02D	DESIGNER	Amy Kung		LITEON LITE-ON ELECTRONICS, INC.	TITLE: CASE-BTM	PART NO.: (13406)346-M190002CS2
				FINAL DATE	31-Dec-2002	3D FILE	CASE-BTM_PA-1900-02D	CHECKER		APPROVED		PROJECT: PA-1900-02D	DRAWING NO.: 346-13406 3 REV.:A
				UNIT: mm	SCALE: 0.500								

Plastic Tolerance Table	
below 10	±0.15
10~25	±0.20
25~50	±0.25
50~100	±0.30
100~250	±0.5
250~500	±1.00



NOTES: UNLESS OTHERWISE SPECIFIED.
1.TOLERANCES SPECIFIED AS BELOW.
2.MATERIAL:
UL RECOGNIZED PLASTIC (QMFZ2),
RATED 94V-0 , UL RTI (WITH IMPACT)
MAKROLON 6485 2D09 (BAYER)
GE LEXAN 945
COLOR: DELL MIDNIGHT GRY #89121
(BAYER # 701773)
Ⓐ TEXTURE: MOLD TECH
MT-11030 (MAT).
Ⓑ NO TEXTURE ON THIS SURFACE.
(EDM FINISH, POLISH TO SPI-B1.)
Ⓒ MATTE FINISH, POLISH TO SPI-D2.
3.GATE MUST BE CUT SMOOTHLY.
4.SURFACES TO BE FREE OF SINK
MARK AND INPERFECTION.
5.XXXXX : MAKER ----- RECESS 0.15 mm
>PC< : MATERIAL ----- THE TEXT'S HEIGHT IS 3 mm
134062 : PART NO.-----
X-X : MODL NO.- CAVE NO. (EXAMPLE 1-1
: WEEK CODE --- RECESS 0.3mm.
: YEAR CODE --- RECESS 0.3mm.
7. ○:FAI
○:CPK

① ~ ⑤⓪

① ~ ③

				PRINTING DATE	02-Jan-2003		2D FILE	CASE-TOP_PA-1900-02D	DESIGNER	AMYKUNG		LITEON	TITLE: CASE-TOP	PART NO.: (134062)46-M190002CS1	
A	RELEASED	02-Jan-2003		FINAL DATE	02-Jan-2003		3D FILE	ASSEMBLY_PA-1900-02D	CHECKER		APPROVED		PROJECT: PA-1900-02D	DRAWING NO.: 346-134062	REV.:A
REVISION	DESCRIPTION	DATE	ZONE	UNIT: mm	SCALE: 0.5										

LITE-ON

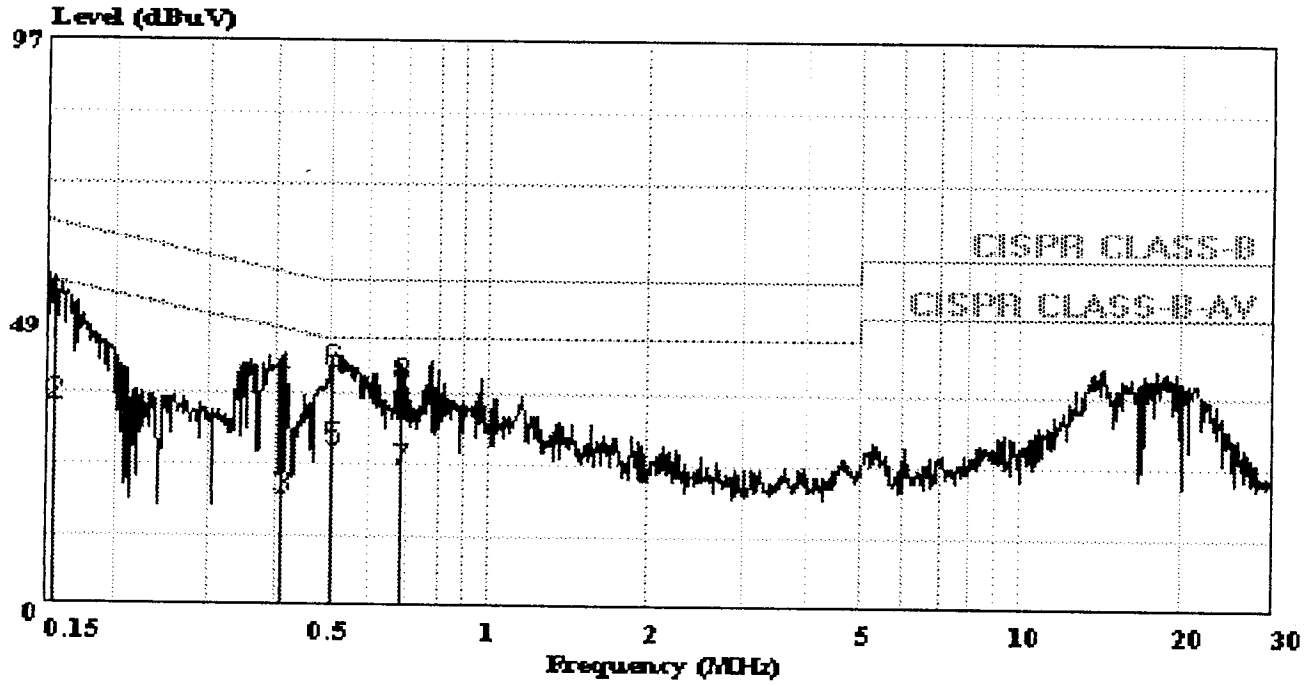
EMI Test Report

APPROVED BY: Dembear Lai for

MODEL	REV	Written By	LITE-ON Technology Corp.
PA-1900-02D	A Dec/30/02	*Dearbear Lai*	SHEET 1 of 1

SOPRTON EMC LAB.
6F, NO.106, Hsin Tai Wu Rd.,Sec.1
Hsi Chih City, Taipai Hsien,
Taiwan, R.O.C
Tel:+866-2-26962468
Fax:+866-2-26962255

Data#: 117 File#: D:\e3\test2(list1024-).EMI Date: 2002-10-29 Time: 12:22:12

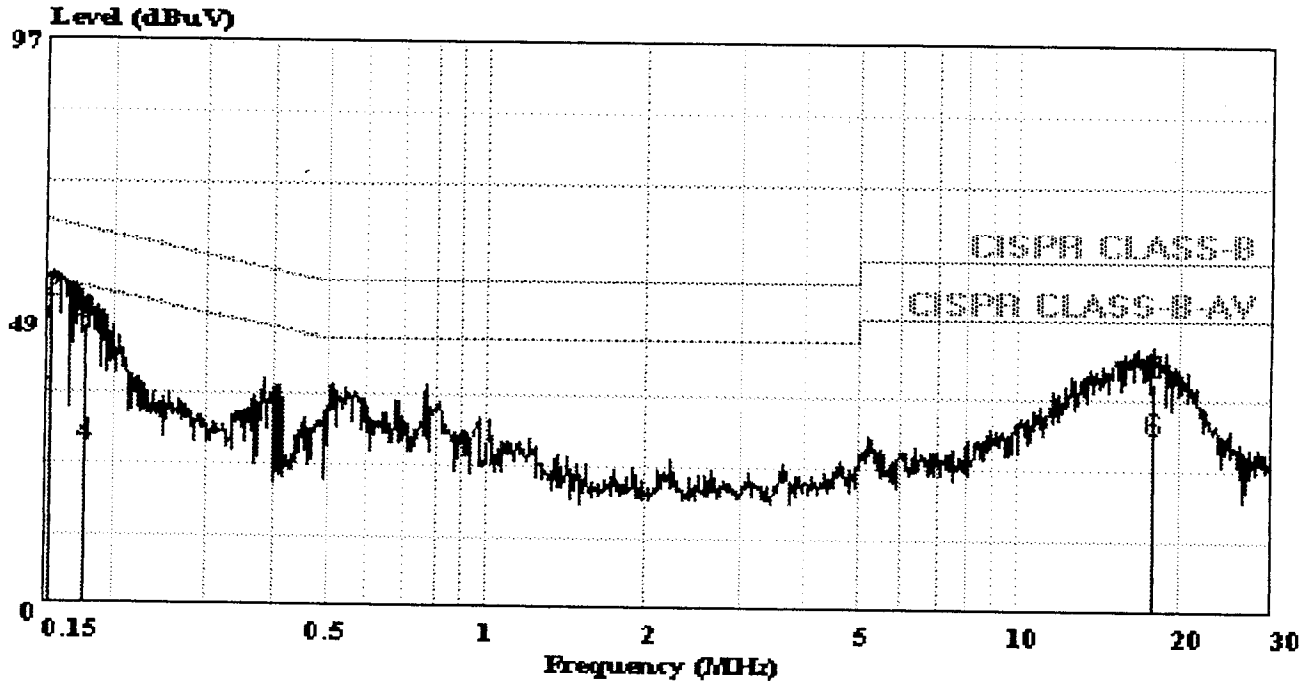


Site : CS01
Condition: CISPR CLASS-B LISN NEUTRAL
EUT : 1900-02D
Power : AC 230V 50Hz
Memo : Peak Value
: Adaptor

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Factor	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	dB	
1	0.154	48.90	-16.89	65.79	48.80	0.10	0.00	0.10	QP
2	0.154	34.13	-31.66	65.79	34.03	0.10	0.00	0.10	Average
3	0.406	18.38	-39.35	57.73	18.28	0.10	0.00	0.10	Average
4	0.407	38.78	-18.92	57.70	38.68	0.10	0.00	0.10	QP
5	0.508	26.62	-29.38	56.00	26.52	0.10	0.00	0.10	Average
6	0.511	39.85	-16.15	56.00	39.75	0.10	0.00	0.10	QP
7	0.680	23.19	-32.81	56.00	23.09	0.10	0.00	0.10	Average
8	0.680	38.01	-17.99	56.00	37.91	0.10	0.00	0.10	QP

SOPRTON EMC LAB.
6F, NO.106, Hsin Tai Wu Rd.,Sec.1
Hsi Chih City, Taipai Hsien,
Taiwan, R.O.C
Tel:+866-2-26962468
Fax:+866-2-26962255

Data#: 118 File#: D:\e3\test2(list1024-).EMI Date: 2002-10-29 Time: 12:36:35

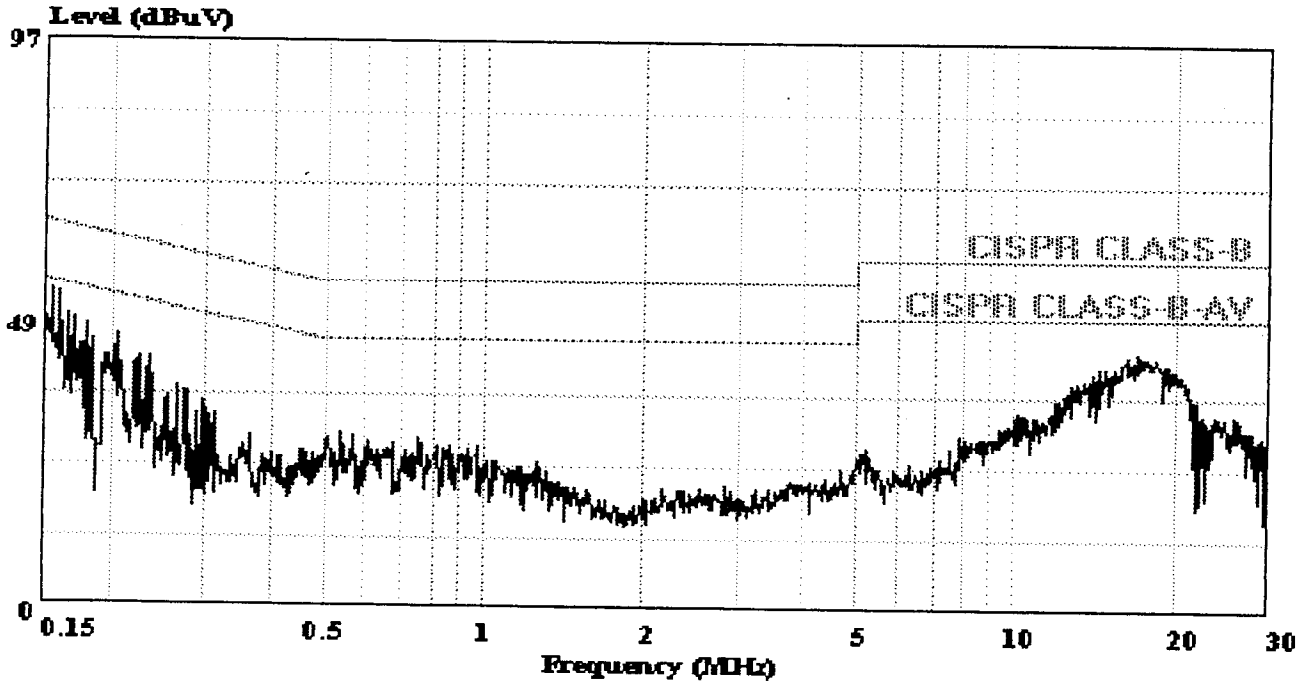


Site : CS01
Condition: CISPR CLASS-B LISN LINE
EUT : 1900-02D
Power : AC 230V 50Hz
Memo : Peak Value
: Adaptor

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Factor	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	dB	
1	0.152	34.32	-31.57	65.89	34.22	0.10	0.00	0.10	Average
2	0.153	51.87	-13.99	65.86	51.77	0.10	0.00	0.10	QP
3	0.176	47.93	-16.73	64.66	47.83	0.10	0.00	0.10	QP
4	0.176	27.18	-37.48	64.66	27.08	0.10	0.00	0.10	Average
5	17.851	39.57	-20.43	60.00	39.27	0.30	0.00	0.30	QP
6	17.851	29.72	-30.28	60.00	29.42	0.30	0.00	0.30	Average

SOPRTON EMC LAB.
6F, NO.106, Hsin Tai Wu Rd.,Sec.1
Hsi Chih City, Taipai Hsien,
Taiwan, R.O.C
Tel:+866-2-26962468
Fax:+866-2-26962255

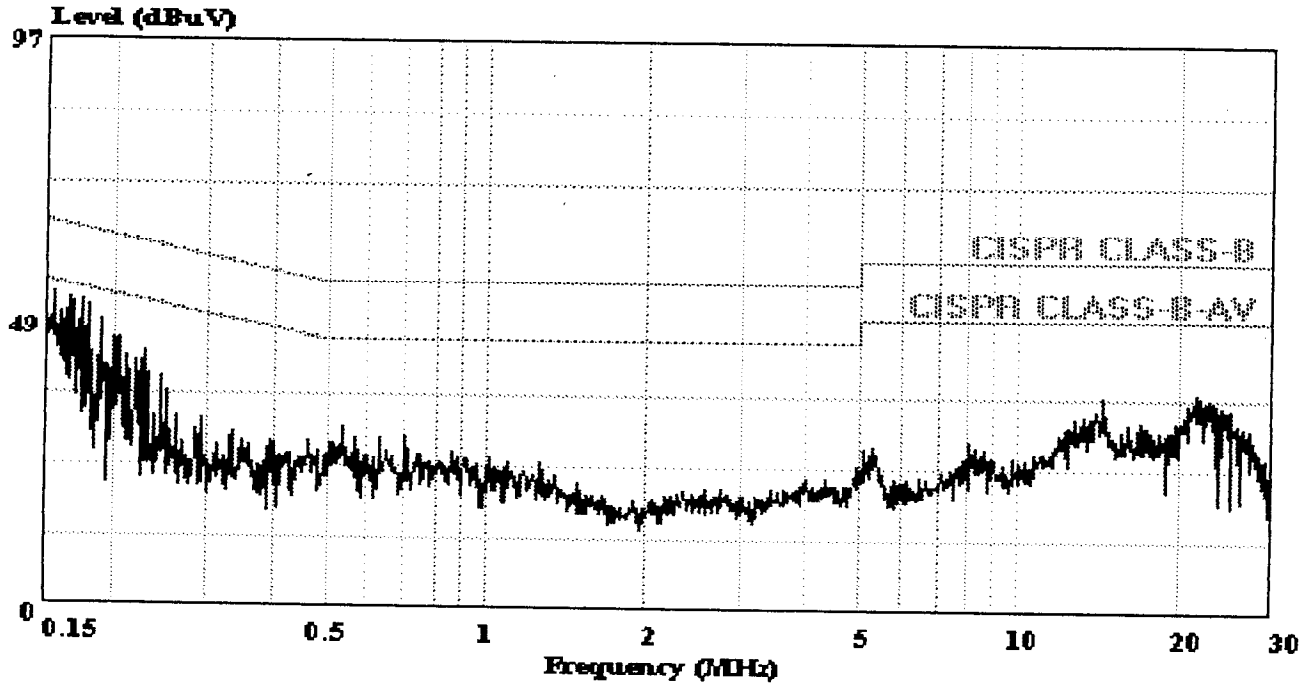
Data#: 119 File#: D:\e3\test2(list1024-).EMI Date: 2002-10-29 Time: 12:47:25



Site : CS01
Condition: CISPR CLASS-B LISN LINE
EUT : 1900-02D
Power : AC 100V 60Hz
Memo : Peak Value
: Adaptor

SOPRTON EMC LAB.
6F, NO.106, Hsin Tai Wu Rd.,Sec.1
Hsi Chih City, Taipai Hsien,
Taiwan, R.O.C
Tel:+866-2-26962468
Fax:+866-2-26962255

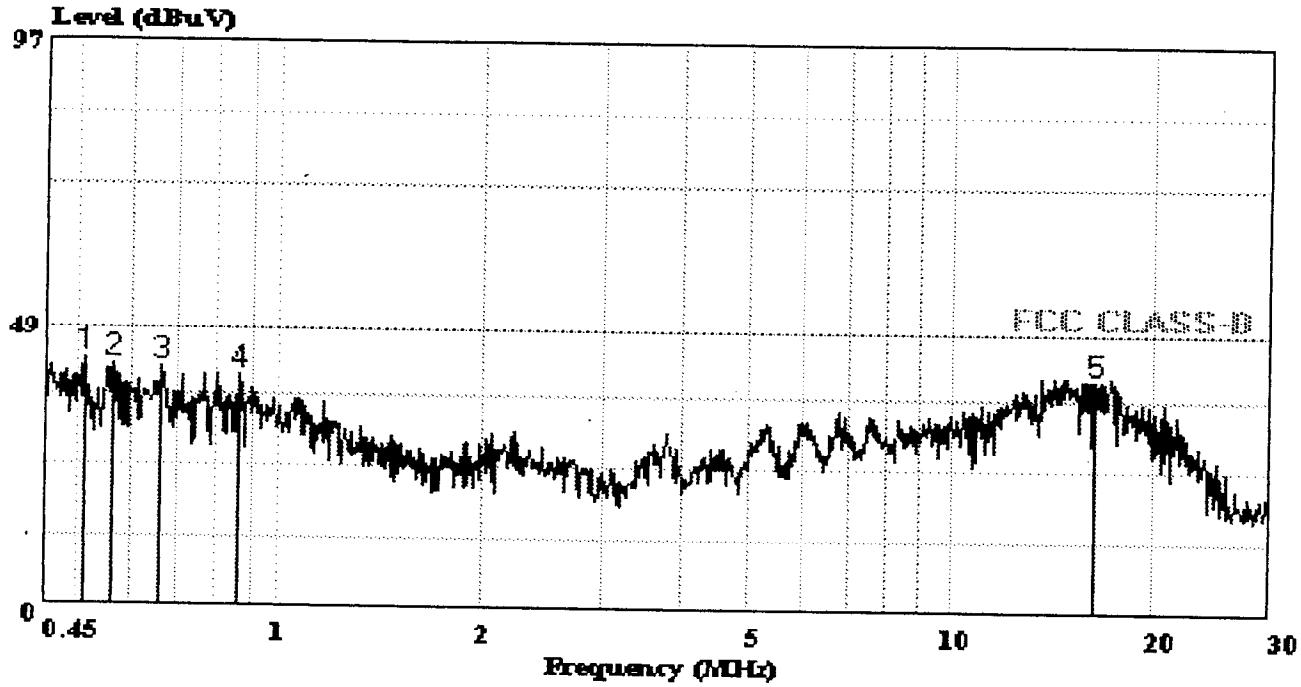
Data#: 120 File#: D:\e3\test2(list1024-).EMI Date: 2002-10-29 Time: 12:48:37



Site : CS01
Condition: CISPR CLASS-B LISN NEUTRAL
EUT : 1900-02D
Power : AC 100V 60Hz
Memo : Peak Value
: Adaptor

SOPRTON EMC LAB.
6F, NO.106, Hsin Tai Wu Rd.,Sec.1
Hsi Chih City, Taipai Hsien,
Taiwan, R.O.C
Tel:+866-2-26962468
Fax:+866-2-26962255

Data#: 121 File#: D:\e3\test2(list1024-).EMI Date: 2002-10-29 Time: 12:50:31

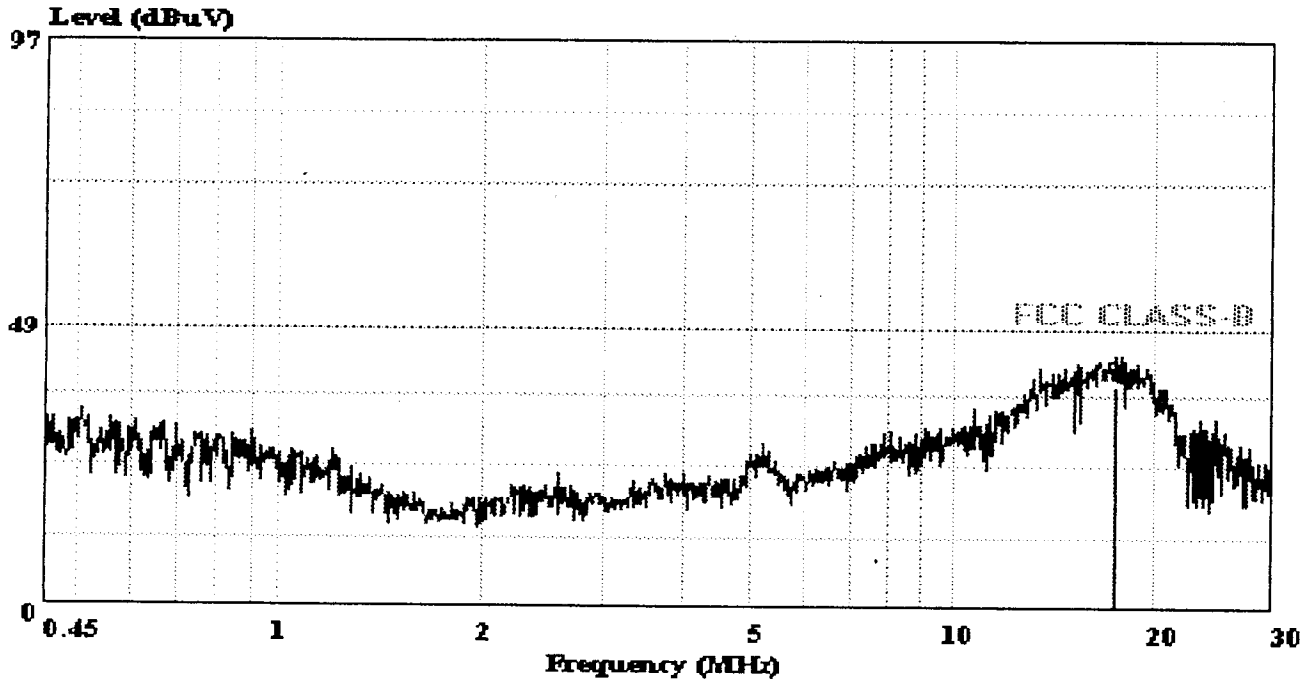


Site : CS01
Condition: FCC CLASS-B LISN NEUTRAL
EUT : 1900-02D
Power : AC 115V 60Hz
Memo : Peak Value
: Adaptor

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Factor	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	dB	
1	0.510	42.74	-5.26	48.00	42.64	0.10	0.00	0.10	
2	0.562	41.59	-6.41	48.00	41.49	0.10	0.00	0.10	
3	0.662	41.46	-6.54	48.00	41.36	0.10	0.00	0.10	
4	0.870	40.02	-7.98	48.00	39.92	0.10	0.00	0.10	
5	16.455	39.93	-8.07	48.00	39.70	0.23	0.00	0.23	

SOPRTON EMC LAB.
6F, NO.106, Hsin Tai Wu Rd.,Sec.1
Hsi Chih City, Taipai Hsien,
Taiwan, R.O.C
Tel:+866-2-26962468
Fax:+866-2-26962255

Data#: 122 File#: D:\e3\test2(list1024-).EMI Date: 2002-10-29 Time: 12:51:39



Site : CS01
Condition: FCC CLASS-B LISN LINE
EUT : 1900-02D
Power : AC 115V 60Hz
Memo : Peak Value
: Adaptor

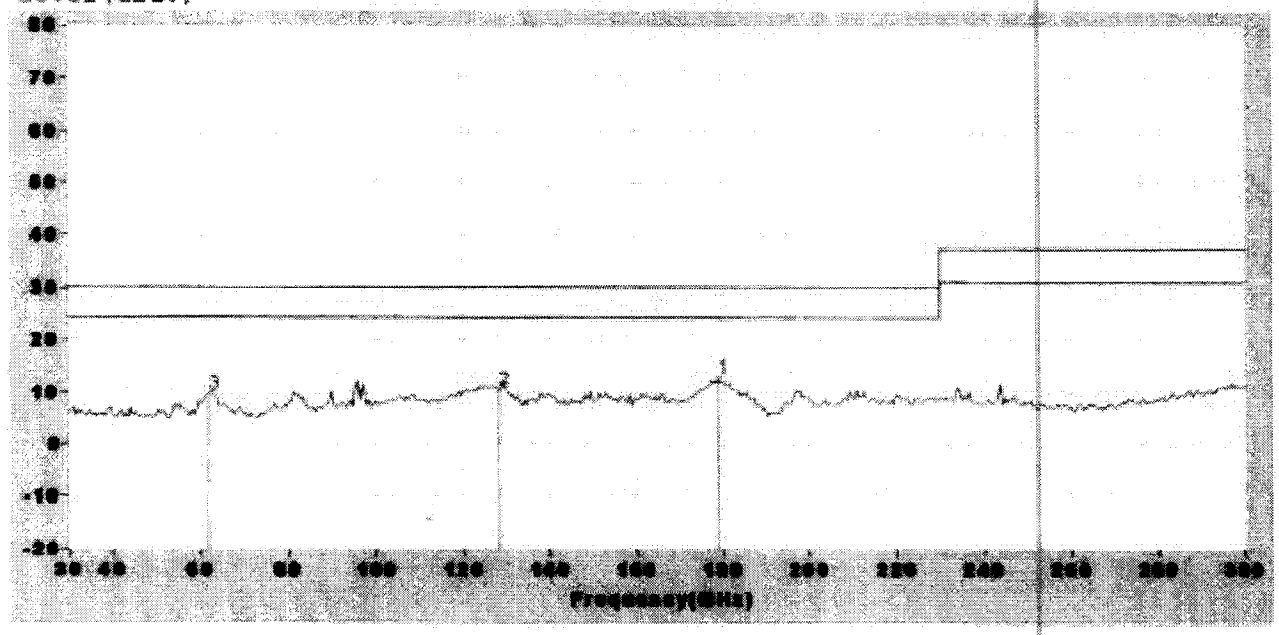
	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Factor	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	dB	
1	17.600	38.26	-9.74	48.00	37.96	0.30	0.00	0.30	QP

SPORTON International Corp.

EMI TESTING REPORT

Maker :Chaintek
Model :PA-1900-02D
Spec. :115V 60Hz
Ser. #:002202
Limit Line:CISPR22 B
Trace#:1

Polar.:Vertical Tmp.(C):30.0
Distance: 3 Numid.(%):60
Report #:1
File #:c:\Emi-FSP\ADAPTOR.dat
Tester:TONY
Date:2002-09-30 Time:17:00



MEMO:

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Factor	Other Factor
	MHz	dB	dB	dB	dB	dB	dB	dB
1	179.04	12.49	-17.51	30.00	4.23	8.26	0.00	0.00
2	128.28	10.38	-19.62	30.00	3.43	6.95	0.00	0.00
3	61.86	9.45	-20.55	30.00	8.70	0.75	0.00	0.00

Adaptor only

SPORTON International Corp.

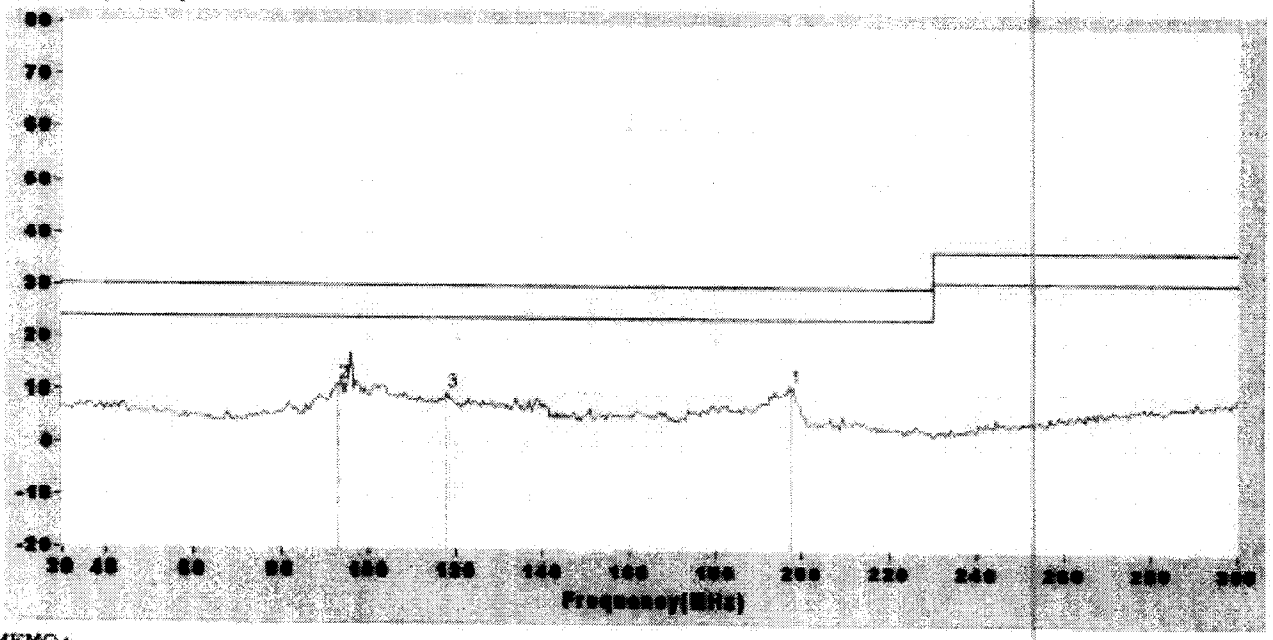
EMI TESTING REPORT

Maker :Chaintek
Model :PA-1900-02D
Spec. :115V 60Hz
Ser. #:002202
Limit Line:CISPR22 B
Trace#:1

Polar.:Horizontal
Distance: 3
Report #:1
File #:c:\Emi-FSP\ADAPTOR.dat
Tester:TONY
Date:2002-09-30

Tmp.(C):30.0
Humid.(%):60
Time:16:59

Level(dBuV)



MEMO:

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Factor	Other Factor
	MHz	dB	dB	dB	dB	dB	dB	dB
1	197.40	10.92	-19.08	30.00	4.43	6.19	0.00	0.00
2	93.18	11.02	-18.98	30.00	8.76	2.26	0.00	0.00
3	118.02	9.43	-20.57	30.00	5.72	3.71	0.00	0.00

SPORTON International Corp.

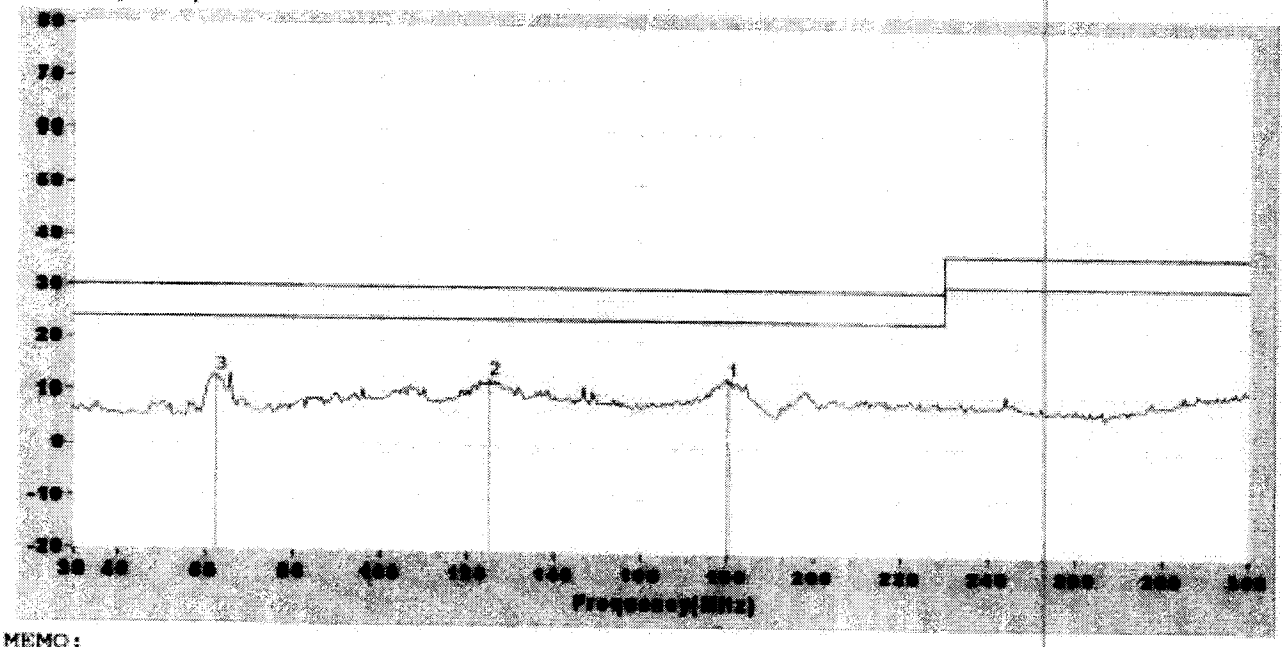
EMI TESTING REPORT

Maker :Chaintek
Model :PA-1900-02D
Spec. :230V 50Hz
Ser. #:002202
Limit Line:CISPR22 B
Trace#:1

Polar.:Vertical
Distance: 3
Report #:1
File #:c:\Emi-FSP\ADAPTOR.dat
Tester:TONY
Date:2002-09-30

Tmp.(C):30.0
Humid.(%):60
Time:16:50

Level(dBuV)



MEMO:

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Factor	Other Factor
	MHz	dB	dB	dB	dB	dB	dB	dB
1	180.12	12.45	-17.55	30.00	4.77	7.68	0.00	0.00
2	125.04	12.30	-17.70	30.00	5.96	6.34	0.00	0.00
3	62.40	12.49	-17.51	30.00	11.78	0.71	0.00	0.00

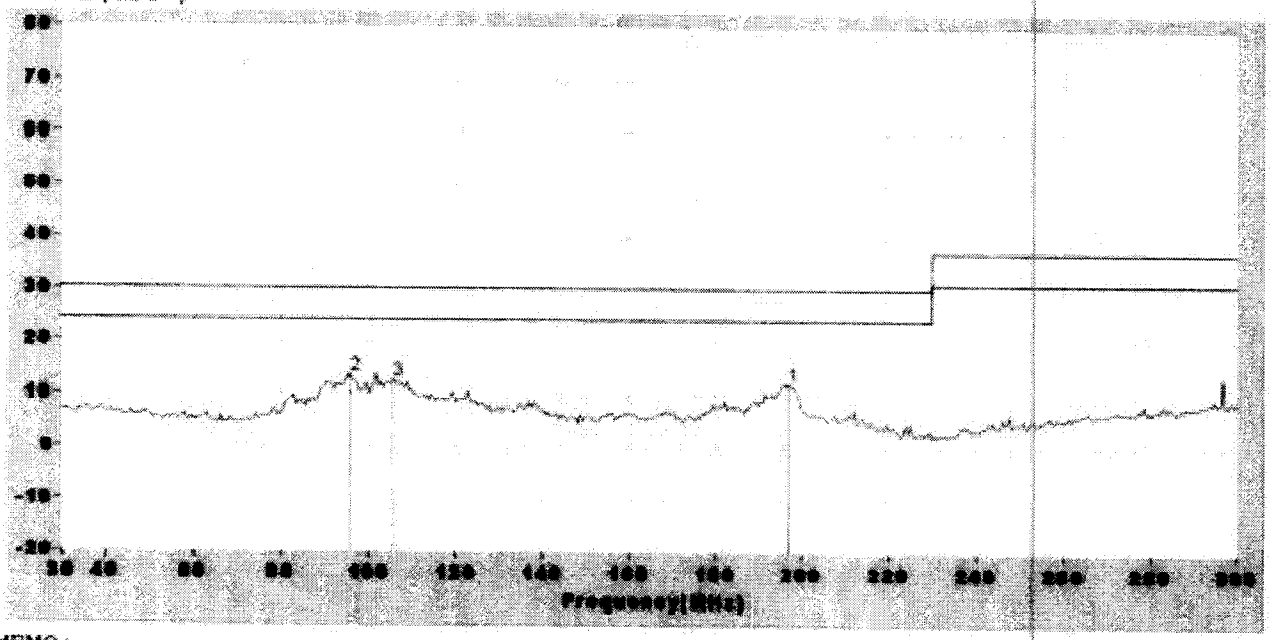
SPORTON International Corp.

EMI TESTING REPORT

Maker :Chaintek
Model :PA-1900-02D
Spec. :230V 50Hz
Ser. #:002202
Limit Line:CISPR22 B
Trace#:1

Polar.:Horizontal Tmp.(C):30.0
Distance: 3 Humid.(%):60
Report #:1
File #:c:\Emi-FSP\ADAPTOR.dat
Tester:TONY
Date:2002-09-30 Time:16:51

Level(dBuV)



MEMO:

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Factor	Other Factor
	MHz	dB	dB	dB	dB	dB	dB	dB
1	196.86	11.86	-19.14	30.00	5.73	6.13	0.00	0.00
2	95.88	13.20	-16.80	30.00	10.75	2.45	0.00	0.00
3	105.60	12.30	-17.70	30.00	9.13	3.17	0.00	0.00

LITEON

Phase-Gain Test Report

APPROVED BY: Dearbear 1/30/03 for

MODEL	REV	Written By	LITE-ON Technology Corp.
PA-1900-02D	A Dec/30/02	*Dearbear Lai*	SHEET 1 of 1

LITEON

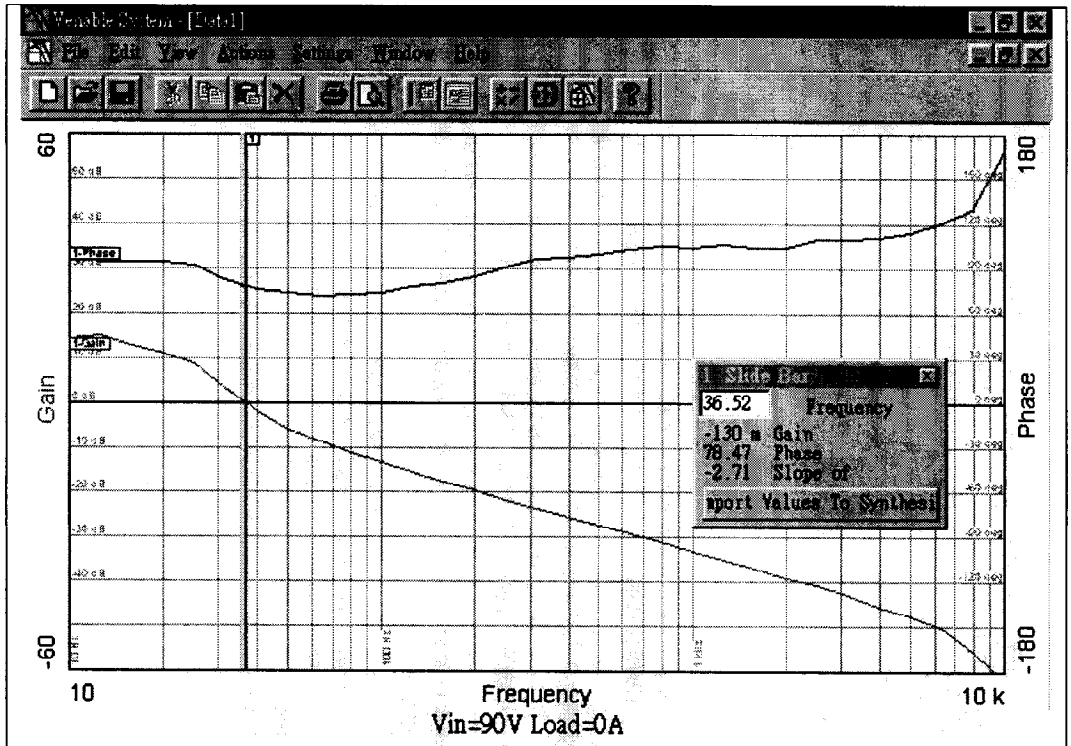
MODEL NAME : PA-1900-02D **Temperature : 25 degree C**

SAMPLE NUMBER: NO1

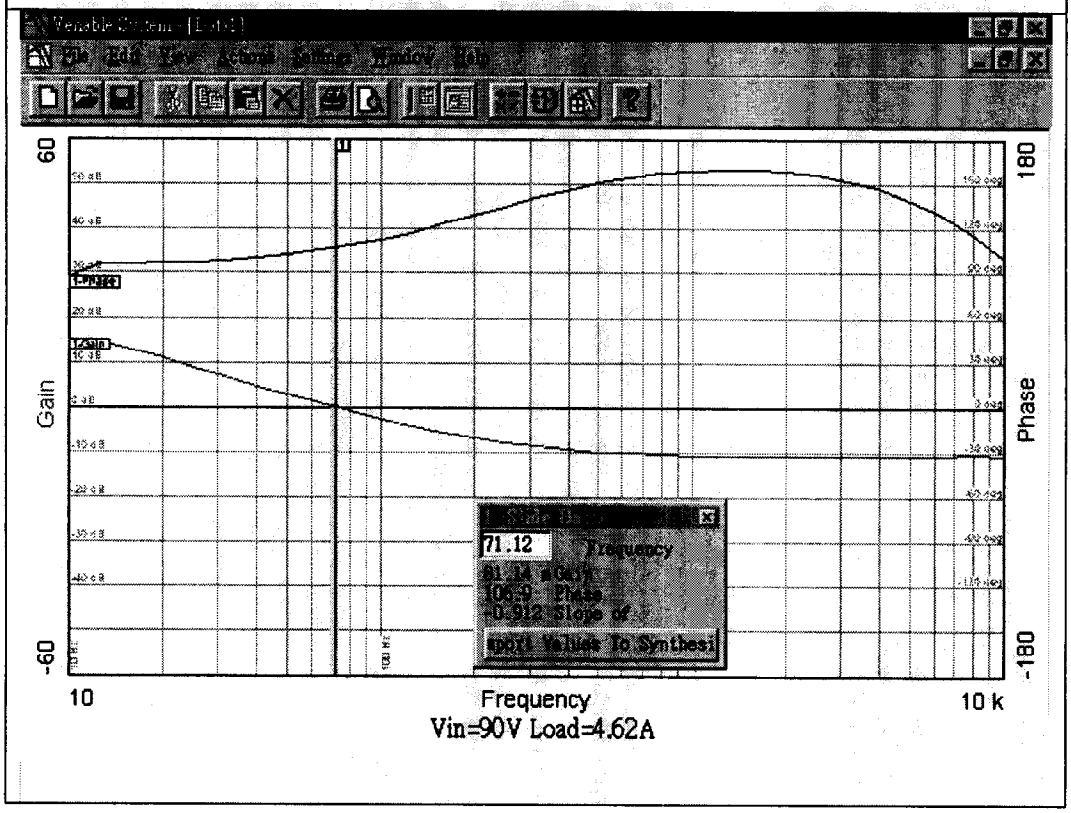
TEST ITEM : LOOP GAIN

TEST EQUIPMENT:

FREQUENCY RESPONSE ANALYZER NF 5060A NF ELECTRONIC INSTRUMENTS



Vin=90V Load=0A



Vin=90V Load=4.62A

LITEON

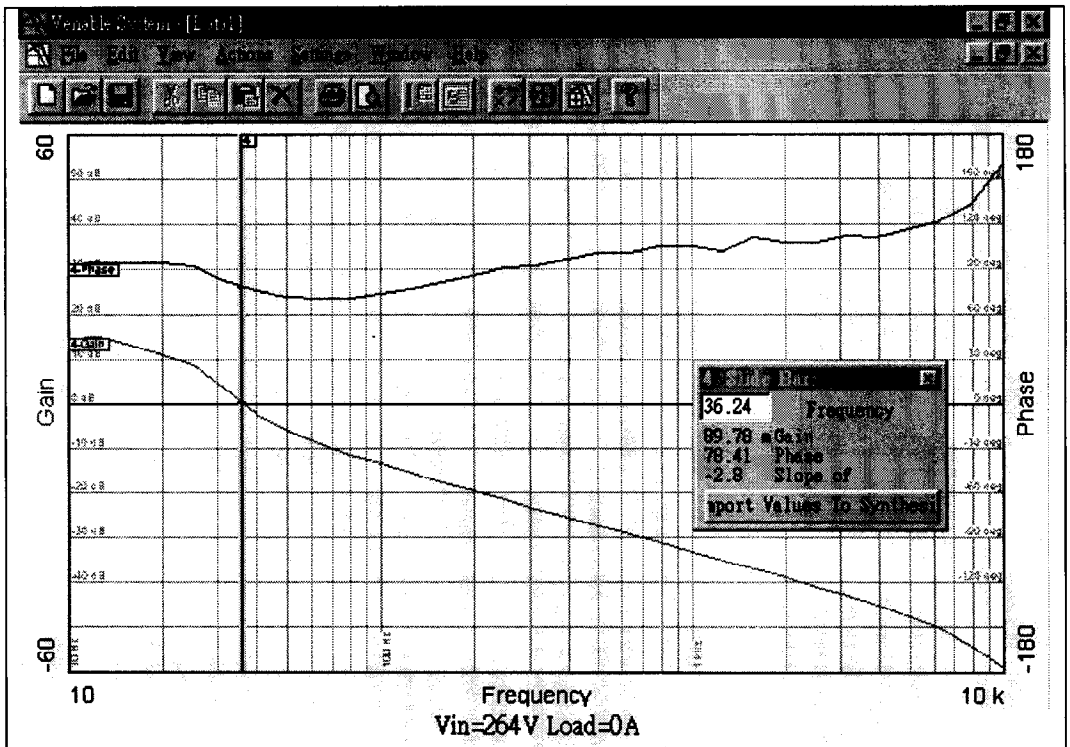
ODEL NAME : PA-1900-02D **Temperature : 25 degree C**

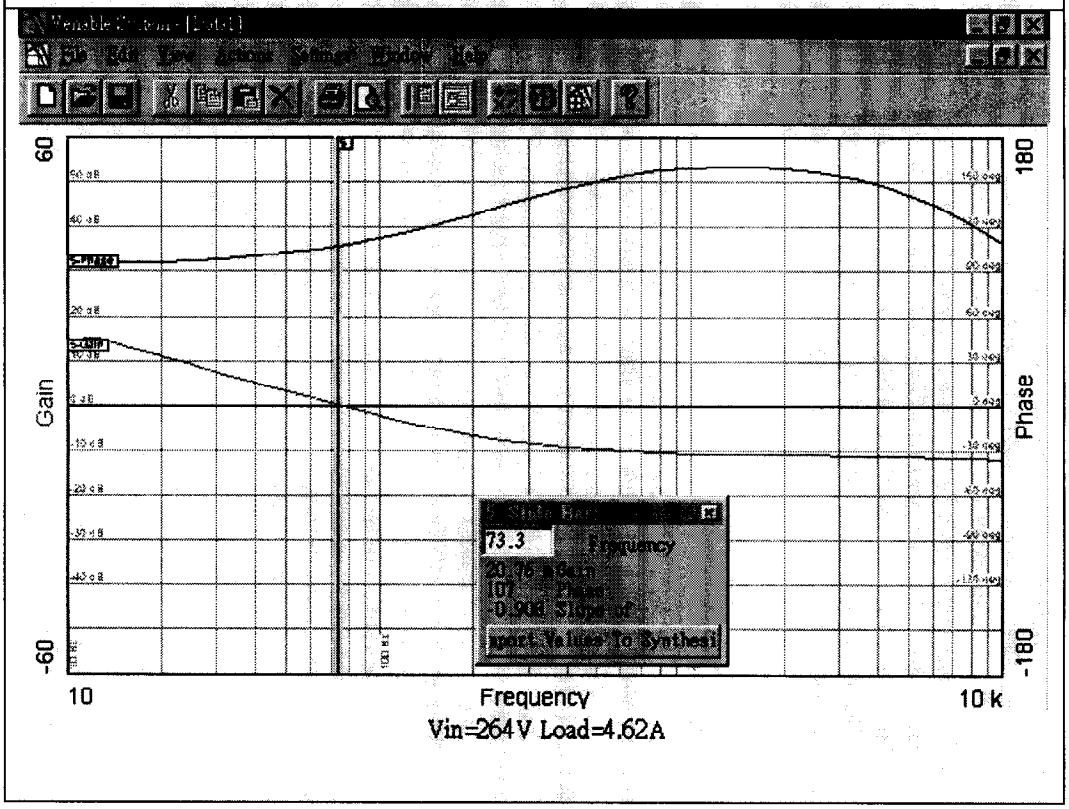
SAMPLE NUMBER: NO1

TEST ITEM : LOOP GAIN

TEST EQUIPMENT:

FREQUENCY RESPONSE ANALYZER NF 5060A NF ELECTRONIC INSTRUMENTS





LITEON

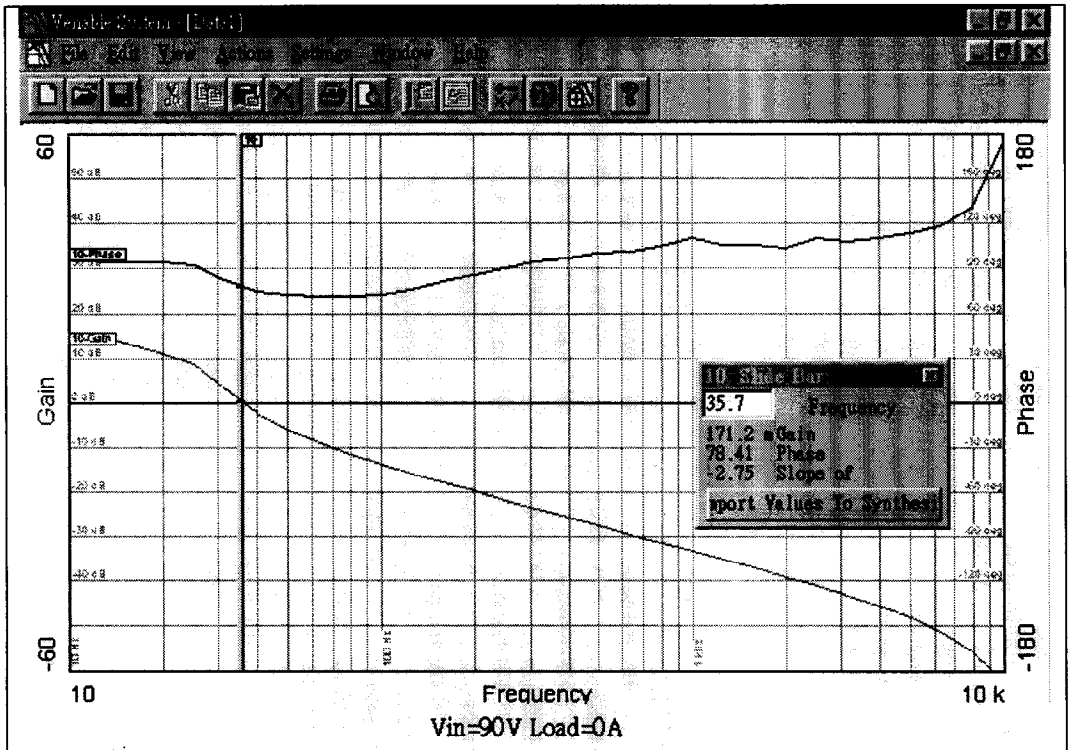
MODEL NAME : PA-1900-02D **Temperature : 25 degree C**

SAMPLE NUMBER: NO2

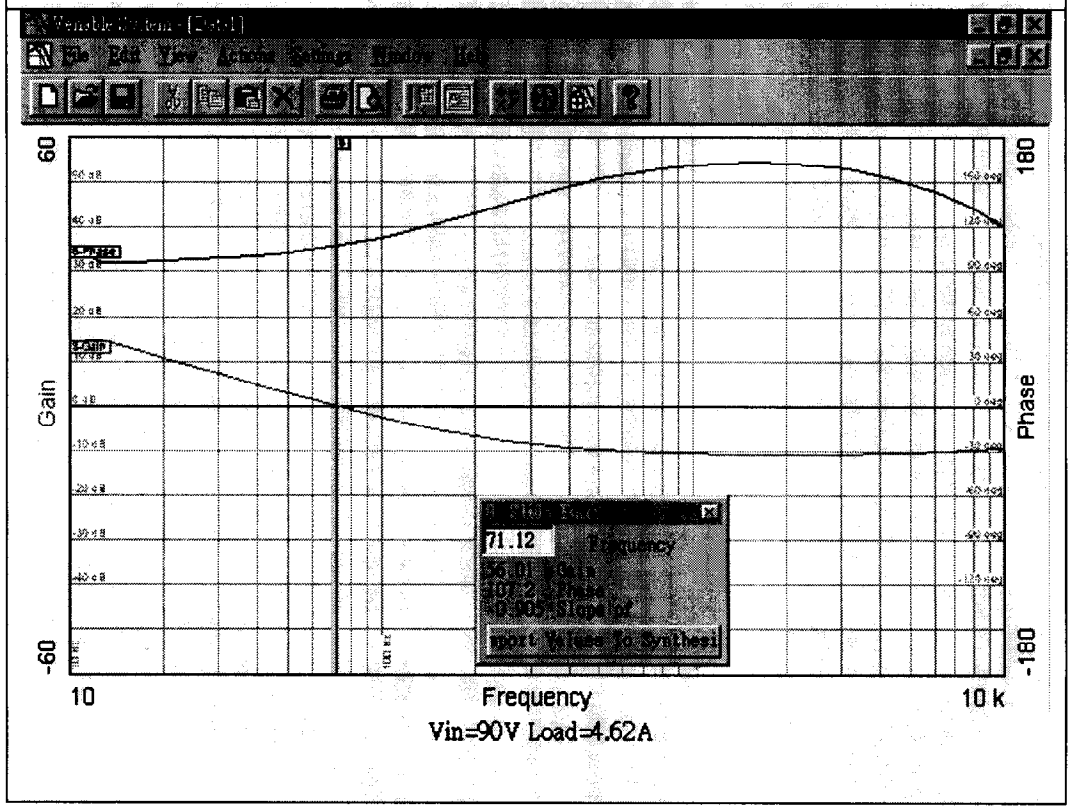
TEST ITEM : LOOP GAIN

TEST EQUIPMENT:

FREQUENCY RESPONSE ANALYZER NF 5060A NF ELECTRONIC INSTRUMENTS



Vin=90V Load=0A



Vin=90V Load=4.62A

LITEON

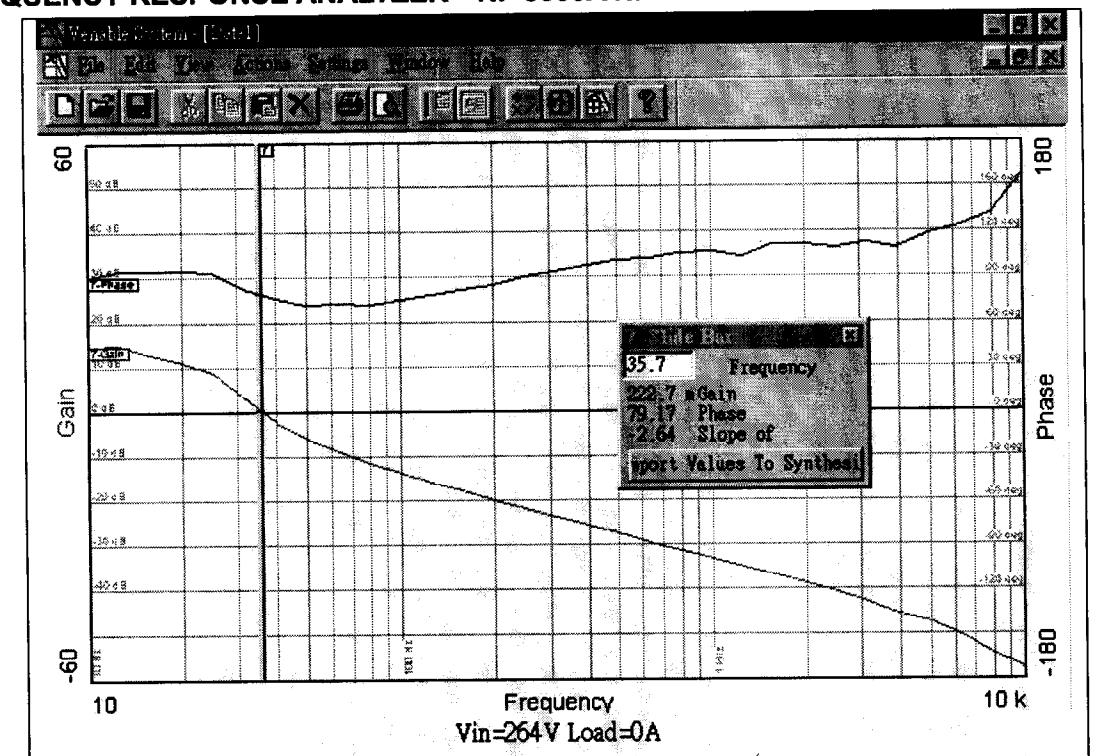
ODEL NAME : PA-1900-02D **Temperature : 25 degree C**

SAMPLE NUMBER: NO2

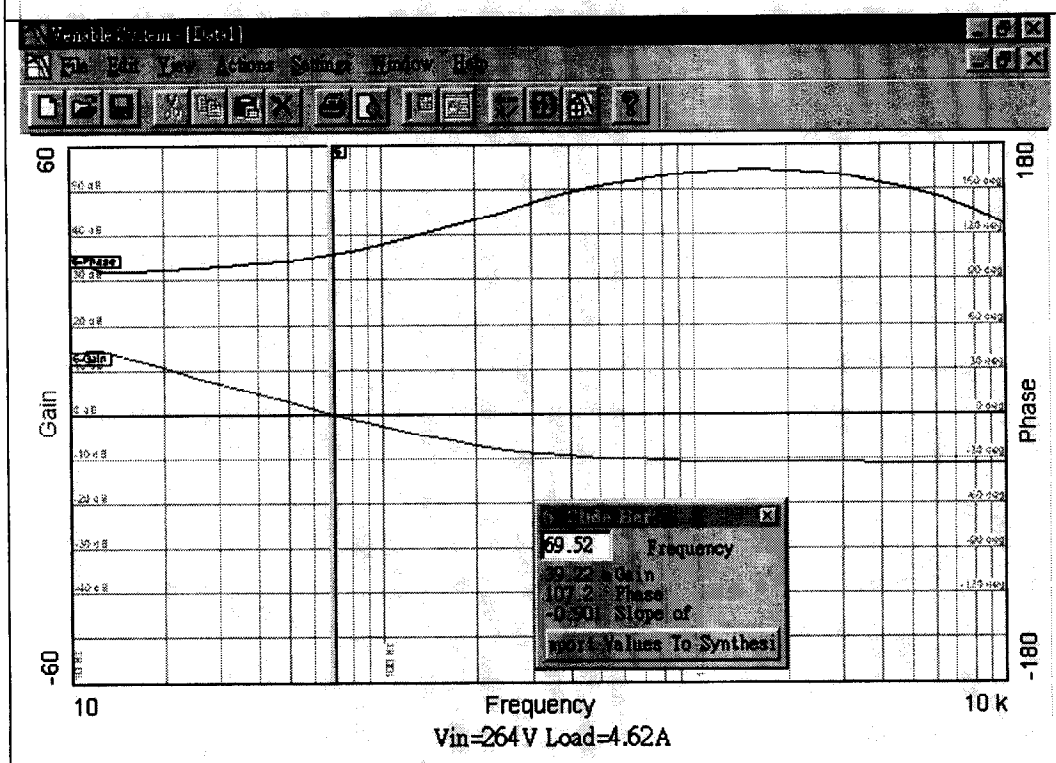
TEST ITEM : LOOP GAIN

TEST EQUIPMENT:

FREQUENCY RESPONSE ANALYZER NF 5060A NF ELECTRONIC INSTRUMENTS



Vin=264V Load=0A



Vin=264V Load=4.62A

RELIABILITY ENGINEERING REPORT

TO : DOC

DOC NO : 0301806

DATE : 01/08/2003

FROM : QRA

SUBJRCT : PA-1900-02D KEYCOMPONENT STRESS TEST REPORT.

DESCRIPTION :

1. Model no. PA-1900-02D PART LIST revision is change from REV. D to REV. G .

2. In PA-1900-02D KEYCOMPONENT TEST REPORT, The difference between REV. D and REV. G description are listed below:

2.1 R315 (11.5K, 1/10W → 16.5K, 1/10W)
Power stress : 26.45% → 18.43%

R068 (10K, 1/10W → 43K, 1/10W)
Power stress : 0.00% → 0.009%

R051, (0.1 1.0W → 0.13, 1.0W)
Power stress : 9.64% → 0.46%

R008 (11.5K, 1/10W → 11.3K, 1/10W)
Power stress : 0.54% → 0.54%

R008-1 (17.4K, 1/10W → 15.4K, 1/10W)
Power stress : 0.00% → 0.00%

R106 (19.6K, 1/10W → 14.3K, 1/10W)
Power stress : 0.00% → 0.00%

R306 (2.49K, 1/10W → 2.37K, 1/10W)
Power stress : 0.00% → 0.00%

R0012,R0013 (27K, 1/4W → 39K, 1/4W)
Power stress : 40.0% → 52.3%

JUDGE : OK

3. CONCLUSION :

3.1 As above list difference , Please refer to the PA-1900-02D KEY COMPONENT STRESS TEST REPORT. The revision of PA-1900-02D KEY COMPONENT STRESS REPORT is kept as REV. D.

3.2 Please file this report in master file of PA-1900-02D as formal document .

PREPARED BY : 張家祥 Jan.08'03 CHECKED BY : ____ APPROVED BY : 林慶陽 Jan.08'03

RELIABILITY ENGINEERING REPORT

TO : DOC

DOC NO : 0211817

DATE : 11/29/2002

FROM : QRA RELIABILITY

SUBJECT : PA-1900-02D KEY COMPONENT STRESS TEST REPORT.

DESCRIPTION :

1. 此份爲 PA-1900-02D KEY COMPONENT STRESS TEST REPORT.

   JUDGE : OK

2. 此份根據 PART LIST REV. D 完成 .

3. 請技資保留原稿存檔 .

敬會 設計工程師：賴威利 4/27/02

設計部經理：Jerry Hsu 11/27/02

PREPARED BY : 張家祥 NOV.27'02 CHECKED BY : d APPROVED BY : 林慶揚 NOV.27'02

KEY COMPONENT STRESS (DERATING) TEST REPORT

MODEL NAME : PA-1900-02D

INPUT AC RANGE : 90VAC - 132VAC

CONTAIN :
- **COMPONENT SPEC.**
- **COMPONENT VOLTAGE AND CURRENT TEST DATA**
- **COMPONENT TEMPERATURE RISE RECORD**

JUDGE : OK

DESIGN ENGINEER : 11/27/02

PREPARE : Nov.27'02 **CHECK :** **APPROVAL :** Nov.27'02

LITEON

KEY COMPONENT STRESS TEST DATA

MODEL NO : PA-1900-02D **REV : D** **DATE :11-27-2002**

RESISTOR				Component Spec.					Worst Case Stress in Test Data						
No.	LOCATION	TYPE	MAKER	VALUE	POWER	K	VOLT	TEMP.	V(rms)		POWER		TEMP.		
					Watt				INPUT	APPLY	Watt	%	INPUT	APPLY	JUDGE
				OHMS	W		V	℃	VAC	V	W		VAC	40℃	
1	R001	R.CF	YAGEO	2M	0.250	1.00	200.00	125.0	132	32.82	538.576u	0.22	132	90.6	OK
2	R0012	R.CF	YAGEO	51K	0.250	1.00	200.00	130.0	***	71.41	99.995m	40.00	90	105.1	OK
3	R0013	R.CF	YAGEO	51K	0.250	1.00	200.00	130.0	***	71.15	99.263m	39.71	90	105.3	OK
4	R002	R.CF	YAGEO	2M	0.250	1.00	200.00	125.0	132	28.45	404.701u	0.16	90	83.2	OK
5	R003	R.HV	---	1M	0.125	1.00	1000.00	155.0	132	58.35	3.405m	2.72	115	94.7	OK
6	R004	R.HV	---	1M	0.125	1.00	1000.00	155.0	132	58.03	3.367m	2.69	115	94.7	OK
7	R005	R.CF	YAGEO	20K	0.100	1.00	50.00	125.0	132	1.38	95.225u	0.10	115	93.6	OK
8	R006	R.HV	---	499K	0.250	1.00	1000.00	155.0	***	107.84	23.306m	9.32	90	86.3	OK
9	R007	R.HV	---	499K	0.250	1.00	1000.00	155.0	***	107.84	23.306m	9.32	90	86.1	OK
10	R008	R.MF	YAGEO	11.5K	0.100	1.00	50.00	125.0	***	2.48	535.244u	0.54	90	86.3	OK
11	R008-1	R.MF	YAGEO	14.7K	0.100	1.00	50.00	125.0	132	7.80m	0.004u	0.00	90	86.4	OK
12	R009	R.HV	---	1M	0.125	1.00	1000.00	155.0	132	48.16	2.319m	1.86	115	94.7	OK
13	R010	R.HV	---	1M	0.125	1.00	1000.00	155.0	132	47.96	2.300m	1.84	115	94.7	OK
14	R011	R.MF	YAGEO	511K	0.125	1.00	150.00	125.0	132	18.06	637.992u	0.51	132	92.0	OK
15	R012	R.MF	YAGEO	3.01K	0.100	1.00	50.00	125.0	***	8.56m	0.024u	0.00	132	86.6	OK
16	R013	R.CF	YAGEO	68K	0.100	1.00	50.00	125.0	90	78.18m	0.090u	0.00	115	70.6	OK
17	R014	R.MO(S)	QUMAO	0.24	1.000	1.00	350.00	200.0	90	0.24	0.242	24.20	115	89.7	OK
18	R016	R.CF	YAGEO	47	0.125	1.00	150.00	125.0	132	0.52	5.807m	4.65	115	94.3	OK

TEMP. = Temperature ; *** : 90VAC - 132VAC
AMBIENT TEMPERATURE : 40℃
POWER(TEST DATA; Watt; W) = APPLY * APPLY(TEST DATA; VOLT; V) / OHMS
EXAMPLE : (R016) Watt = 0.52 * 0.52 / 47 = .005807 W
POWER(TEST DATA; %) = POWER(TEST DATA; Watt; W) / POWER(COMPONENT SPEC.;Watt; W) * 100%
EXAMPLE : (R016) POWER (%) = .005807 / 0.125 * 100 (%) = 4.65%

VOLT(TEST DATA; APPLY; V) < VOLT(COMPONENT SPEC.; V)
TEMP.(TEST DATA; 40℃) < TEMP.(COMPONENT SPEC.; ℃)
POWER(TEST DATA; Watt; W) < POWER(COMPONENT SPEC.; Watt; W) * K

LITEON

KEY COMPONENT STRESS TEST DATA

MODEL NO : PA-1900-02D **REV : D** **DATE :11-27-2002**

RESISTOR				Component Spec.					Worst Case Stress in Test Data						
No.	LOCATION	TYPE	MAKER	VALUE	POWER	K	VOLT	TEMP.	V(rms)		POWER		TEMP.		
					Watt				INPUT	APPLY	Watt	%	INPUT	APPLY	JUDGE
				OHMS	W		V	℃	VAC	V	W		VAC	40℃	
19	R017	R.CF	YAGEO	30	0.125	1.00	150.00	125.0	90	45.56m	69.201u	0.06	132	94.6	OK
20	R022	R.CF	YAGEO	1M	0.125	1.00	150.00	125.0	132	47.25	2.232m	1.79	132	94.3	OK
21	R023	R.CF	YAGEO	1M	0.125	1.00	150.00	125.0	132	46.45	2.157m	1.73	90	92.8	OK
22	R024	R.MF	YAGEO	590K	0.125	1.00	150.00	125.0	132	25.39	1.093m	0.87	115	92.6	OK
23	R025	R.MF	YAGEO	205K	0.100	1.00	50.00	125.0	132	0.59	1.688u	0.00	115	91.2	OK
24	R051	R.MO(S)	QUMAO	0.1	1.000	1.00	350.00	200.0	***	98.19m	96.404m	9.64	115	74.6	OK
25	R065	R.CF	YAGEO	15	0.125	1.00	150.00	125.0	132	0.20	2.681m	2.14	115	95.3	OK
26	R067	R.MF	YAGEO	3.57K	0.125	1.00	50.00	125.0	90	12.42	43.220m	34.58	115	95.3	OK
27	R068	R.MF	YAGEO	10K	0.100	1.00	50.00	125.0	115	6.59m	0.004u	0.00	90	85.2	OK
28	R102	R.CF	YAGEO	47	0.125	1.00	150.00	125.0	***	0.31	2.032m	1.63	90	74.6	OK
29	R103	R.CF	YAGEO	390.0K	0.100	1.00	50.00	125.0	90	78.34m	0.016u	0.00	132	86.3	OK
30	R104	R.CF	YAGEO	2.2M	0.100	1.00	50.00	125.0	115	13.60	84.073u	0.08	115	66.4	OK
31	R105	R.CF	YAGEO	10	0.100	1.00	50.00	125.0	90	3.28m	1.076u	0.00	90	77.5	OK
32	R106	R.MF	YAGEO	19.6K	0.100	1.00	50.00	125.0	***	0.15	1.150u	0.00	115	87.6	OK
33	R107	R.CF	RALEC	15	0.125	1.00	200.00	155.0	132	23.67m	37.352u	0.03	132	90.2	OK
34	R120	R.MF	YAGEO	1K	0.100	1.00	50.00	125.0	***	1.17	1.372m	1.37	90	71.3	OK
35	R121	R.CF	YAGEO	470	0.100	1.00	50.00	125.0	132	56.30m	6.744u	0.01	132	98.6	OK
36	R122	R.CF	YAGEO	47	0.125	1.00	150.00	125.0	***	0.41	3.589m	2.87	115	75.5	OK

TEMP. = Temperature ; *** : 90VAC - 132VAC
AMBIENT TEMPERATURE : 40℃
POWER(TEST DATA; Watt; W) = APPLY * APPLY(TEST DATA; VOLT; V) / OHMS
EXAMPLE : (R122) Watt = 0.41 * 0.41 / 47 = .003589 W
POWER(TEST DATA; %) = POWER(TEST DATA; Watt; W) / POWER(COMPONENT SPEC.;Watt; W) * 100%
EXAMPLE : (R122) POWER (%) = .003589 / 0.125 * 100 (%) = 2.87%

VOLT(TEST DATA; APPLY; V) < VOLT(COMPONENT SPEC.; V)
TEMP.(TEST DATA; 40℃) < TEMP.(COMPONENT SPEC.; ℃)
POWER(TEST DATA; Watt; W) < POWER(COMPONENT SPEC.; Watt; W) * K

LITEON

KEY COMPONENT STRESS TEST DATA

MODEL NO : PA-1900-02D **REV : D** **DATE :11-27-2002**

RESISTOR				Component Spec.					Worst Case Stress in Test Data						
No.	LOCATION	TYPE	MAKER	VALUE	POWER	K	VOLT	TEMP.	V(rms)		POWER		TEMP.		
					Watt				INPUT	APPLY	Watt	%	INPUT	APPLY	JUDGE
				OHMS	W		V	℃	VAC	V	W		VAC	40℃	
37	R123	R.MF	YAGEO	3.01K	0.100	1.00	50.00	125.0	132	0.23	17.713u	0.02	115	82.2	OK
38	R124	R.MF	YAGEO	10K	0.100	1.00	50.00	125.0	115	78.45u	0.000u	0.00	132	66.2	OK
39	R126	R.CF	YAGEO	200K	0.250	1.00	200.00	125.0	***	4.97	123.517u	0.05	90	85.3	OK
40	R200	R.CF	YAGEO	22	0.250	1.00	200.00	125.0	***	0.15	1.084m	0.43	115	71.9	OK
41	R202	R.CF	YAGEO	10K	0.125	1.00	150.00	125.0	132	18.70	34.967m	27.97	132	86.3	OK
42	R203	R.MF	YAGEO	5.11	0.125	1.00	150.00	125.0	132	0.60	69.946m	55.96	132	86.3	OK
43	R206	R.CF	YAGEO	22	0.100	1.00	50.00	125.0	***	0.69	21.377m	21.38	90	87.0	OK
44	R207	R.MF	YAGEO	1K	0.100	1.00	50.00	125.0	***	0.79	625.143u	0.63	132	86.6	OK
45	R208	R.MF	YAGEO	10K	0.100	1.00	50.00	125.0	***	12.81	16.409m	16.41	132	86.3	OK
46	R209	R.MF	YAGEO	1K	0.100	1.00	50.00	125.0	***	6.73	45.293m	45.29	132	86.4	OK
47	R210	R.CF	YAGEO	10.0K	0.125	1.00	50.00	125.0	***	17.59	30.954m	24.76	115	86.4	OK
48	R211	R.ZW	TAI	0.1513	27.500m	1.00	27.50m	155.0	***	23.86m	3.763m	13.68	90	86.3	OK
49	R220	R.CF	YAGEO	10	0.250	1.00	200.00	125.0	***	26.12m	68.225u	0.03	132	86.4	OK
50	R221	R.CF	ROYAL	10	0.125	1.00	200.00	155.0	132	0.53	28.558m	22.85	115	86.5	OK
51	R300	R.CF	YAGEO	110	0.100	1.00	50.00	125.0	132	0.27	662.727u	0.66	115	86.3	OK
52	R301	R.MF	YAGEO	34.8K	0.100	1.00	50.00	125.0	132	60.00m	0.103u	0.00	90	86.3	OK
53	R302	R.MF	YAGEO	5.11K	0.100	1.00	50.00	125.0	90	990.00u	0.000u	0.00	132	86.3	OK
54	R303	R.CF	YAGEO	200	0.100	1.00	50.00	125.0	132	1.02m	0.005u	0.00	90	86.2	OK

TEMP. = Temperature ; *** : 90VAC - 132VAC
AMBIENT TEMPERATURE : 40℃
POWER(TEST DATA; Watt; W) = APPLY * APPLY(TEST DATA; VOLT; V) / OHMS
EXAMPLE : (R303) Watt = .00102 * .00102 / 200 = 0.005uW
POWER(TEST DATA; %) = POWER(TEST DATA; Watt; W) / POWER(COMPONENT SPEC.;Watt; W) * 100%
EXAMPLE : (R303) POWER (%) = 0.005u / 0.100 * 100 (%) = 0.00%

VOLT(TEST DATA; APPLY; V) < VOLT(COMPONENT SPEC.; V)
TEMP.(TEST DATA; 40℃) < TEMP.(COMPONENT SPEC.; ℃)
POWER(TEST DATA; Watt; W) < POWER(COMPONENT SPEC.; Watt; W) * K

LITEON

KEY COMPONENT STRESS TEST DATA

MODEL NO : PA-1900-02D **REV : D** **DATE :11-27-2002**

RESISTOR				Component Spec.					Worst Case Stress in Test Data						
No.	LOCATION	TYPE	MAKER	VALUE	POWER	K	VOLT	TEMP.	V(rms)		POWER		TEMP.		
					Watt				INPUT	APPLY	Watt	%	INPUT	APPLY	JUDGE
				OHMS	W		V	℃	VAC	V	W		VAC	40℃	
55	R304	R.CF	YAGEO	300	0.100	1.00	50.00	125.0	132	5.74m	0.110u	0.00	132	86.4	OK
56	R305	R.MF	YAGEO	200K	0.100	1.00	50.00	125.0	132	5.54m	0.000u	0.00	115	86.3	OK
57	R306	R.MF	YAGEO	2.49K	0.100	1.00	50.00	125.0	***	40.30m	0.652u	0.00	115	86.5	OK
58	R307	R.MF	YAGEO	10K	0.100	1.00	50.00	125.0	132	3.20m	0.001u	0.00	115	86.5	OK
59	R315	R.MF	YAGEO	11.5K	0.100	1.00	50.00	125.0	***	17.44	26.448m	26.45	115	86.6	OK
60	R316	R.MF	YAGEO	10K	0.100	1.00	50.00	125.0	132	6.35m	0.004u	0.00	115	86.6	OK
61	R61	R.CF	YAGEO	10M	0.250	1.00	200.00	125.0	132	6.73	4.524u	0.00	132	79.4	OK
62	R62	R.CF	YAGEO	10M	0.250	1.00	200.00	125.0	132	6.74	4.548u	0.00	132	79.4	OK
63	R63	R.CF	YAGEO	10M	0.250	1.00	200.00	125.0	132	6.74	4.542u	0.00	132	79.4	OK
64	R64	R.CF	YAGEO	10M	0.250	1.00	200.00	125.0	132	6.75	4.555u	0.00	115	99.2	OK

TEMP. = Temperature ; *** : 90VAC - 132VAC
AMBIENT TEMPERATURE : 40℃
POWER(TEST DATA; Watt; W) = APPLY * APPLY(TEST DATA; VOLT; V) / OHMS
EXAMPLE : (R64) Watt = 6.75 * 6.75 / 10M = 4.555uW
POWER(TEST DATA; %) = POWER(TEST DATA; Watt; W) / POWER(COMPONENT SPEC.;Watt; W) * 100%
EXAMPLE : (R64) POWER (%) = 4.555u / 0.250 * 100 (%) = 0.00%

VOLT(TEST DATA; APPLY; V) < VOLT(COMPONENT SPEC.; V)
TEMP.(TEST DATA; 40℃) < TEMP.(COMPONENT SPEC.; ℃)
POWER(TEST DATA; Watt; W) < POWER(COMPONENT SPEC.; Watt; W) * K

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KEY COMPONENT STRESS TEST DATA

MODEL NO : PA-1900-02D

REV : D DATE :11-27-2002

CAPACITOR				Component Spec.						Worst Case Stress in Test Data											
No.	LOCATION	TYPE	MAKER	CAP.	VOLT	RIPPLE	F	T	TEMP.	V(Peak)			I(rms)					TEMP.		
										INPUT	APPLY	%	INPUT	APPLY	FREQ.	Ir'	%	INPUT	APPLY	JUDGE
				F	V	A			℃	VAC	V		VAC	A	Hz	A		VAC	40℃	
1	C001	MEX	MATSU	0.33U	400	---	---	---	85.0	132	186.60	46.7	---	---	---	---	---	115	75.4	OK
2	C002	MEF	MATSU	0.47U	400	---	---	---	85.0	132	196.88	49.2	---	---	---	---	---	132	81.1	OK
3	C003	MEF	MATSU	0.47U	400	---	---	---	85.0	132	200.00	50.0	---	---	---	---	---	90	79.0	OK
4	C004	MON	WALSN	0.01U	50	---	---	---	125.0	132	1.97	3.9	---	---	---	---	---	90	84.5	OK
5	C005	MON	WALSN	1U	16	---	---	---	85.0	115	5.25	32.8	---	---	---	---	---	132	83.9	OK
6	C005-1	MON	WALSN	1U	16	---	---	---	85.0	90	5.56	34.8	---	---	---	---	---	132	83.9	OK
7	C006	DIS	MURAT	1000P	400	---	---	---	85.0	132	77.50	19.4	---	---	---	---	---	132	83.9	OK
8	C008	MON	WALSN	0.1U	100	---	---	---	125.0	132	20.00	20.0	132	2.13m	46000	---	---	90	83.5	OK
9	C009	MON	WALSN	0.1U	16	---	---	---	125.0	132	0.46	2.9	---	---	---	---	---	132	83.6	OK
10	C010	ELE	NCC	10U	50	46.00m	1.80	1.75	105.0	132	11.88	23.8	132	19.71m	46000	6.26m	13.6	132	83.5	OK
11	C024	MON	WALSN	0.47U	50	---	---	---	85.0	132	19.22	38.4	---	---	---	---	---	132	83.8	OK
12	C051	ELE	NCC	120U	400	0.70	1.50	1.75	105.0	132	225.00	56.3	90	1.20	46000	0.46	65.3	90	93.2	OK
13	C051	---	---	---	---	---	1.00	1.75	---	---	---	---	115	51.16u	120	---	---	---	---	---
14	C053	MON	AVX	3300P	500	---	---	---	125.0	132	179.69	35.9	---	---	---	---	---	90	98.9	OK

TEMP. = Temperature ; F = Frequence Multipliers ; T= Temperature Multipliers ; RIPPLE : Ripple Current ; FREQ. = Frequence
AMBIENT TEMPERATURE : 40℃ ; *** : 90VAC - 132VAC
ELE (Cap. < 120uF, 400V)
Ir' =CURRENT(TEST DATA; APPLY; A) / (F * T)
EXAMPLE : (C010) Ir' = .01971 / (1.80 * 1.75) = .00626 A

ELE (Cap. ≧ 120uF, 400V)
I1 (low FREQ.) = CURRENT (TEST DATA; APPLY; A) / F1
I2 (hiigh FREQ.) = CURRENT (TEST DATA; APPLY; A) / F
$Ir' = \sqrt{I_1^2 + I_2^2} / T$
EXAMPLE : (C051)I_1 (120Hz) = 5.082E-05 / 1.001 = 5.076923E-05A
I_2 (46000Hz) = 1.2 / 1.5 = .8A
$Ir' = \sqrt{5.076923E\text{-}05^2 + .8^2} / 1.75$ = .4571429A

MON, DIS, MEX, MEF, PEI
VOLT(TEST DATA; APPLY; V) < VOLT(COMPONENT SPEC.; V) * 90%
TEMP.(TEST DATA; APPLY; 40℃) < TEMP.(COMPONENT SPEC.; ℃)

ELE
VOLT(TEST DATA; APPLY; V) < VOLT(COMPONENT SPEC.; V) * 96% (RATED VOLTAGE ≧ 100 VOLT)
VOLT(TEST DATA; APPLY; V) < VOLT(COMPONENT SPEC.; V) * 85% (RATED VOLTAGE < 100 VOLT)
TEMP.(TEST DATA; APPLY; 40℃) < TEMP.(COMPONENT SPEC.; ℃) - 10
CURRENT(TEST DATA; Ir'; A) < RIPPLE(COMPONENT SPEC.; RIPPLE; A)

LITEON

KEY COMPONENT STRESS TEST DATA

MODEL NO : PA-1900-02D **REV : D** **DATE :11-27-2002**

CAPACITOR				Component Spec.						Worst Case Stress in Test Data											
No.	LOCATION	TYPE	MAKER	CAP.	VOLT	RIPPLE	F	T	TEMP.	V(Peak)			I(rms)					TEMP.		
										INPUT	APPLY	%	INPUT	APPLY	FREQ.	Ir'	%	INPUT	APPLY	JUDGE
				F	V	A			℃	VAC	V		VAC	A	Hz	A		VAC	40℃	
15	C054	ELE	RUBCO	22U	50	0.15	1.00	1.70	105.0	132	12.81	25.6	90	16.98m	46000	9.99m	6.8	90	80.1	OK
16	C054-1	ELE	NCC	10U	50	46.00m	1.80	1.75	105.0	***	0.00	0.0	132	0.13	46000	42.10m	91.5	90	80.2	OK
17	C068	MON	WALSN	1U	10	---	---	---	85.0	90	0.44	4.4	---	---	---	---	---	90	76.1	OK
18	C109	MON	WALSN	0.1U	16	---	---	---	125.0	132	0.53	3.3	---	---	---	---	---	115	86.5	OK
19	C120	MON	WALSN	0.022U	25	---	---	---	125.0	132	1.53	6.1	---	---	---	---	---	90	86.3	OK
20	C122	MON	SNCRA	1000P	200	---	---	---	125.0	132	36.88	18.4	---	---	---	---	---	115	98.5	OK
21	C123	MON	WALSN	0.22U	16	---	---	---	85.0	115	0.59	3.7	---	---	---	---	---	115	84.5	OK
22	C124	MON	WALSN	0.22U	16	---	---	---	85.0	90	793.20u	0.0	---	---	---	---	---	115	84.3	OK
23	C125	MON	WALSN	0.1U	16	---	---	---	125.0	115	46.25u	0.0	---	---	---	---	---	90	86.9	OK
24	C200	MON	SNCRA	1000P	200	---	---	---	125.0	132	63.13	31.6	---	---	---	---	---	90	81.8	OK
25	C201	MON	WALSN	0.1U	16	---	---	---	125.0	132	0.13	0.8	---	---	---	---	---	132	86.5	OK
26	C204	ELE	RUBCO	820U	25	2.15	1.00	1.70	105.0	132	20.00	80.0	115	1.88	46000	1.11	51.4	115	86.3	OK
27	C205	ELE	RUBCO	470U	25	1.21	1.00	1.70	105.0	132	20.00	80.0	132	0.85	46000	0.50	41.2	90	86.5	OK
28	C208	MON	WALSN	0.1U	25	---	---	---	125.0	90	55.78u	0.0	---	---	---	---	---	115	86.5	OK

TEMP. = Temperature ; F = Frequence Multipliers ; T= Temperature Multipliers ; RIPPLE : Ripple Current ; FREQ. = Frequence
AMBIENT TEMPERATURE : 40℃ ; *** : 90VAC - 132VAC
ELE (Cap. < 120uF, 400V)
Ir' =CURRENT(TEST DATA; APPLY; A) / (F * T)
EXAMPLE : (C205) Ir' = 0.85 / (1.00 * 1.70) = 0.50A

MON, DIS, MEX, MEF, PEI
VOLT(TEST DATA; APPLY; V) < VOLT(COMPONENT SPEC.; V) * 90%
TEMP.(TEST DATA; APPLY; 40℃) < TEMP.(COMPONENT SPEC.; ℃)

ELE
VOLT(TEST DATA; APPLY; V) < VOLT(COMPONENT SPEC.; V) * 96% (RATED VOLTAGE ≧ 100 VOLT)
VOLT(TEST DATA; APPLY; V) < VOLT(COMPONENT SPEC.; V) * 85% (RATED VOLTAGE < 100 VOLT)
TEMP.(TEST DATA; APPLY; 40℃) < TEMP.(COMPONENT SPEC.; ℃) - 10
CURRENT(TEST DATA; Ir'; A) < RIPPLE(COMPONENT SPEC.; RIPPLE; A)

LITEON

KEY COMPONENT STRESS TEST DATA

MODEL NO : PA-1900-02D **REV : D** **DATE :11-27-2002**

CAPACITOR				Component Spec.						Worst Case Stress in Test Data											
No.	LOCATION	TYPE	MAKER	CAP.	VOLT	RIPPLE	F	T	TEMP.	V(Peak)			I(rms)					TEMP.		
										INPUT	APPLY	%	INPUT	APPLY	FREQ.	Ir'	%	INPUT	APPLY	JUDGE
				F	V	A			℃	VAC	V		VAC	A	Hz	A		VAC	40℃	
29	C300	MON	WALSN	0.1U	16	---	---	---	125.0	132	45.25u	0.0	---	---	---	---	---	90	86.9	OK
30	C301	MON	WALSN	0.1U	16	---	---	---	125.0	115	0.32	2.0	---	---	---	---	---	132	86.6	OK
31	C303	MON	WALSN	1U	10	---	---	---	85.0	90	0.24	2.4	---	---	---	---	---	90	84.5	OK
32	C303-1	MON	WALSN	1U	10	---	---	---	85.0	132	0.24	2.4	---	---	---	---	---	90	84.5	OK
33	C304	MON	WALSN	0.1U	16	---	---	---	125.0	132	69.24u	0.0	---	---	---	---	---	132	86.6	OK
34	C305	MON	WALSN	220P	50	---	---	---	125.0	132	78.35u	0.0	---	---	---	---	---	115	86.6	OK
35	C306	MON	WALSN	0.1U	16	---	---	---	125.0	132	4.55m	0.0	---	---	---	---	---	115	86.6	OK

TEMP. = Temperature ; F = Frequence Multipliers ; T= Temperature Multipliers ; RIPPLE : Ripple Current ; FREQ. = Frequence
AMBIENT TEMPERATURE : 40℃ ; *** : 90VAC - 132VAC
ELE (Cap. < 120uF, 400V)
Ir' =CURRENT(TEST DATA; APPLY; A) / (F * T)
EXAMPLE : NONE

MON, DIS, MEX, MEF, PEI
VOLT(TEST DATA; APPLY; V) < VOLT(COMPONENT SPEC.; V) * 90%
TEMP.(TEST DATA; APPLY; 40℃) < TEMP.(COMPONENT SPEC.; ℃)

ELE
VOLT(TEST DATA; APPLY; V) < VOLT(COMPONENT SPEC.; V) * 96% (RATED VOLTAGE ≧ 100 VOLT)
VOLT(TEST DATA; APPLY; V) < VOLT(COMPONENT SPEC.; V) * 85% (RATED VOLTAGE < 100 VOLT)
TEMP.(TEST DATA; APPLY; 40℃) < TEMP.(COMPONENT SPEC.; ℃) - 10
CURRENT(TEST DATA; Ir'; A) < RIPPLE(COMPONENT SPEC.; RIPPLE; A)

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KEY COMPONENT STRESS TEST DATA

MODEL NO : PA-1900-02D **REV : D** **DATE :11-27-2002**

DIODE				Component Spec.						Worst Case Stress in Test Data									
No.	LOCATION	P/N	MAKER	Vr	If(av)	K	Rth(j-c)	Vf	TEMP.	Vr(Peak)			If(av)			TEMP.			
										INPUT	APPLY	%	INPUT	APPLY	%	INPUT	APPLY	Tj	JUDGE
				V	A		℃/W	V	℃	VAC	V		VAC	A		VAC	40℃	40℃	
1	D001	LL4148GS08	TEMIC	75	0.15	1.00	300.0	1.0	175.0	132	5.00	6.7	132	154.30u	0.1	132	82.0	82.0	OK
2	D003	MUR460	GS	600	4.00	0.60	28.0	1.0	175.0	132	225.00	37.5	115	1.11	27.8	115	75.3	107.9	OK
3	D004	LL4148GS08	TEMIC	75	0.15	1.00	300.0	1.0	175.0	115	3.57m	0.0	***	0.00	0.0	90	71.8	71.8	OK
4	D050	2KBP08M	GS	800	2.00	0.60	11.0	1.1	165.0	132	196.88	24.6	90	1.12	56.0	115	81.2	94.7	OK
5	D051	BAS21	PHLIP	200	0.20	1.00	500.0	1.3	150.0	115	51.25	25.6	132	9.09m	4.5	90	76.2	81.9	OK
6	D052	LT2A07G	LITON	1000	2.00	0.80	18.0	1.1	150.0	132	350.00	35.0	132	32.25m	1.6	132	82.2	82.8	OK
7	D101	BAS21	PHLIP	200	0.20	1.00	500.0	1.0	150.0	132	26.88	13.4	90	524.50u	0.3	132	84.0	84.3	OK
8	D102	LL4148GS08	TEMIC	75	0.15	1.00	300.0	1.0	175.0	90	4.55m	0.0	132	325.59u	0.2	115	68.4	68.5	OK
9	D201	LL4148GS08	TEMIC	75	0.15	1.00	300.0	1.0	175.0	132	31.25	41.7	132	10.49m	7.0	115	72.6	75.7	OK
10	D202	LL4148GS08	TEMIC	75	0.15	1.00	300.0	1.0	175.0	132	9.37	12.5	115	2.08m	1.4	115	73.1	73.7	OK
11	D203	LL4148GS08	TEMIC	75	0.15	1.00	300.0	1.0	175.0	90	4.56	6.1	90	11.36m	7.6	90	70.9	74.3	OK

TEMP. = Temperature ; Vf = Max. Forword Voltage; *** : 90VAC - 132VAC
AMBIENT TEMPERATURE : 40℃
Rth(j-c) = Thermal Resistance , Junction to case
Tj = Vf(COMPONENT SPEC.; V) * If(av)(TEST DATA; APPLY; A) * Rth(j-c) + TEMP.(TEST DATA; APPLY; 40℃)
EXAMPLE : (D203) Tj = 1.0 * .01136 * 300.0 + 70.9 = 74.3℃

Vr(TEST DATA; APPLY; V) < Vr(COMPONENT SPEC.; V) * 95%
If(av)(TEST DATA; APPLY; A) < If(av)(COMPONENT SPEC.; A) * K
Tj(TEST DATA; 40℃) < TEMP.(COMPONENT SPEC.; ℃)

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KEY COMPONENT STRESS TEST DATA

MODEL NO : PA-1900-02D **REV : D** **DATE :11-27-2002**

ZENER DIODE				Component Spec.			Worst Case Stress in Test Data									
No.	LOCATION	P/N	MAKER	Pd	Iz	TEMP.	Vz(Peak)		Iz(rms)			Pd		TEMP.		
							INPUT	APPLY	INPUT	APPLY	%		%	INPUT	APPLY	JUDGE
				W	A	℃	VAC	V	VAC	A		W		VAC	40℃	
1	ZD001	MMBZ5254BLT1	ON	0.2	10.0m	150.0	132	19.07	115	2.30m	23.0	39.01m	17.34	132	82.4	OK
2	ZD065	BZX84-C15	GS	0.3	0.3	150.0	115	14.06	115	3.79m	1.5	47.34m	15.77	115	84.3	OK
3	ZD200	BZX84-C15	GS	0.3	0.3	150.0	132	11.25	115	28.82m	11.5	37.43m	12.47	115	82.5	OK
4	ZD201	BZX84-C15	GS	0.3	0.3	150.0	132	0.13	115	47.16u	0.0	1.15u	0.00	132	79.0	OK
5	ZD202	BZX84-C15	GS	0.3	0.3	150.0	132	9.50	132	8.02m	3.2	59.59m	19.86	115	83.9	OK

TEMP. = Temperature ; *** : 90VAC - 132VAC
AMBIENT TEMPERATURE : 40℃
Pd = Vz(TEST DATA; APPLY; Vrms) * Iz(TEST DATA; APPLY; A)
EXAMPLE : (ZD202) Pd = 7.43 * .00802 = .05959 W

Iz(TEST DATA; APPLY; A) < Iz(COMPONENT SPEC.; A)
Pd(TEST DATA; W) < Pd(COMPONENT SPEC.; W)
TEMP.(TEST DATA; APPLY; 40℃) < TEMP.(COMPONENT SPEC.; ℃)

LITEON

KEY COMPONENT STRESS TEST DATA

MODEL NO : PA-1900-02D **REV : D** **DATE :11-27-2002**

TRANSISTOR				Component Spec.				Worst Case Stress in Test Data									
No.	LOCATION	P/N	MAKER	Vce	Ic	Rth(j-c)	TEMP.	V(Peak)			I(rms)			TEMP.			
									APPLY	%	INPUT	APPLY	%	INPUT	APPLY	Tj	JUDGE
				V	A	℃/W	℃	VAC	V		VAC	A		VAC	40℃	40℃	
1	Q005	KST4403	SAMSU	40.0	0.60	357.0	150.0	115	14.06	35.2	132	328.1u	0.05	90	83.20	84.7	OK
2	Q065	MMST4401	ROHM	40.0	0.60	625.0	150.0	90	25.94	64.8	115	5.5m	0.92	132	98.40	122.1	OK
3	Q102	MMST4401	ROHM	40.0	0.60	625.0	150.0	115	1.77	4.4	115	3.4m	0.56	132	80.30	82.0	OK
4	Q203	KST4403	SAMSU	40.0	0.60	357.0	150.0	132	8.13	20.3	90	11.9m	1.98	90	87.30	89.1	OK
5	Q205	KST4403	SAMSU	40.0	0.60	357.0	150.0	132	12.50	31.3	132	4.6m	0.76	90	87.30	99.6	OK
6	Q206	MMST4401	ROHM	40.0	0.60	625.0	150.0	90	35.00	87.5	90	10.9m	1.82	132	88.50	89.3	OK

TEMP. = Temperature ; *** : 90VAC - 132VAC
AMBIENT TEMPERATURE : 40℃
Rth(j-c) = Thermal Resistance , Junction to case
Tj = Vce(TESTDATA; APPLY; Vrms) * Ic (TEST DATA; APPLY; A)* Rth(j-c) + TEMP.(TEST DATA; APPLY; 40℃)
EXAMPLE : (Q206) Tj = .11741 * .01093 * 625.0 + 88.50 = 89.3℃

Vce(TEST DATA; APPLY; V) < Vce(COMPONENT SPEC.; V) * 95%
Ic(TEST DATA; APPLY; A) < Ic(COMPONENT SPEC.; A) * 80%
Tj(TEST DATA; 40℃) < TEMP.(COMPONENT SPEC.; ℃)

LITEON

KEY COMPONENT STRESS TEST DATA

MODEL NO : PA-1900-02D **REV : D** **DATE :11-27-2002**

IC				Component Spec.				Worst Case Stress in Test Data										
No.	LOCATION	P/N	MAKER	V	I	TEMP.	Rth(j-C)	V(Peak)			Vout	I(rms)			TEMP.			
								INPUT	APPLY	%	V	INPUT	APPLY	%	INPUT	APPLY	Tj	JUDGE
				V	A	℃	℃/W	VAC	V			VAC	A		VAC	40℃	40℃	
1	IC1	L6561D	STM	18	30.00m	150.0	150.0	132	12.66	70.33	10.67	132	18.30m	61.00	115	91.6	108.9	OK
2	IC100	LTA201P	PHILIP	20	62.50m	150.0	100.0	90	14.06	70.30	------	115	15.61m	24.98	115	85.3	95.7	OK
3	IC302	TSM103AID	STM	36	20.00m	150.0	175.0	132	20.63	57.31	------	115	466.00u	2.33	115	90.2	91.8	OK

TEMP. = Temperature ; *** : 90VAC - 132VAC
AMBIENT TEMPERATURE : 40℃
(1) IC1
Tj = [Vin(TEST DATA; APPLY; Vrms) - Vout] * I(TEST DATA; APPLY; A) * Rth(j-c) + TEMP.(TEST DATA; APPLY; 40℃)
EXAMPLE:(IC1) Tj =(4.37 - 10.67) * .0183 * 150.0 + 91.6 = 108.9℃
(2) IC100,IC302
Tj = V(TEST DATA; APPLY; Vrms) * I(TEST DATA; APPLY; A) * Rth(j-c) + TEMP.(TEST DATA; APPLY; 40℃)
EXAMPLE:(IC302) Tj = 20.22 * .000466 * 175.0 + 90.2 = 91.8℃

Vcc(TEST DATA; APPLY; V) < Vcc(COMPONENT SPEC.; V) * 95%
Ic(TEST DATA; APPLY; A) < Ic(COMPONENT SPEC.; A) * 80%
Tj(TEST DATA; APPLY; 40℃) < TEMP.(COMPONENT SPEC.; ℃)

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KEY COMPONENT STRESS TEST DATA

MODEL NO : PA-1900-02D

REV : D DATE :11-27-2002

MOSFET				Component Spec.					Worst Case Stress in Test Data													
No.	LOCATION	P/N	MAKER	Vds	Vgs	Id	Rth(j-c)	TEMP.	Vds(Peak)			Vgs(Peak)			Id(rms)			P	TEMP.			
									INPUT	APPLY	%	INPUT	APPLY	%	INPUT	APPLY	%		INPUT	APPLY	Tj	JUDGE
				V	V	A	℃/W	℃	VAC	V		VAC	V		VAC	A		W	VAC	40℃	40℃	
1	Q001	2SK2842	TOSHB	500	30.0	12.0	3.1	150.0	132	256.3	51.3	132	12.19	40.6	90	1.20	10.00	0.75	90	91.3	93.6	OK
2	Q002	2N7002	PHLIP	60	40.0	0.2	500.0	150.0	132	2.8	4.7	132	0.28	0.7	132	532.80u	0.30	5.60m	132	82.4	85.2	OK
3	Q050	2SK2843	TOSHB	600	30.0	10.0	2.8	150.0	132	418.8	69.8	132	11.41	38.0	90	1.17	11.70	0.51	90	98.5	99.9	OK
4	Q103	2N7002	PHLIP	60	40.0	0.2	500.0	150.0	132	12.8	21.4	132	0.42	1.0	90	1.96m	1.09	19.00u	115	87.8	87.8	OK
5	Q200	STP40NF10L	STM	100	15.0	40.0	1.0	175.0	132	62.5	62.5	132	13.13	87.5	90	3.33	8.32	0.31	90	87.5	87.8	OK
6	Q201	STP40NF10L	STM	100	15.0	40.0	1.0	175.0	132	63.1	63.1	132	13.25	88.3	90	3.33	8.32	0.31	90	91.2	91.5	OK
7	Q204	2N7002	PHLIP	60	40.0	0.2	500.0	150.0	132	12.5	20.8	115	11.25	28.1	90	38.56m	21.42	12.50m	132	90.8	97.1	OK

TEMP. = Temperature ; *** : 90VAC - 132VAC
AMBIENT TEMPERATURE : 40℃
Rth(j-c) = Thermal Resistance , Junction to case
Tj = P (TEST DATA; W) * Rth(j-c) + TEMP.(TEST DATA; APPLY; 40℃)
EXAMPLE : (Q204) Tj =12.50m *500.0 + 90.8 = 97.1℃

Vds(TEST DATA; APPLY; V) < Vds(COMPONENT SPEC.; V) * 95%
Id(TEST DATA; APPLY; A) < Id(COMPONENT SPEC.; A) * 80%
Tj(TEST DATA; APPLY; 40℃) < TEMP.(COMPONENT SPEC.; ℃)
Vgs(TEST DATA; APPLY; V) < Vgs(COMPONENT SPEC.; V) * 95%

LITEON

KEY COMPONENT STRESS TEST DATA

MODEL NO : PA-1900-02D **REV : D** **DATE :11-27-2002**

CHOKE		Component Spec.	Worst Case Stress in Test Data		
No.	LOCATION	TEMP.(WINDING)	TEMP.		
			INPUT	APPLY	JUDGE
		℃	VAC	40℃	
1	T1	130	90	108.2	OK
2	L001	130	90	78.2	OK
3	L002	130	132	86.0	OK
4	L003	130	90	92.7	OK
5	L010	130	90	87.7	OK
6	L200	130	90	86.5	OK

TEMP. = Temperature ; *** : 90VAC - 132VAC
AMBIENT TEMPERATURE : 40℃

TEMP.(TEST DATA; APPLY; 40℃) < TEMP.(COMPONENT SPEC.; ℃)

LITEON KEY COMPONENT STRESS TEST DATA

MODEL NO : PA-1900-02D **REV : D** **DATE :11-27-2002**

PHOTO-COUPLE				Component Spec.					Worst Case Stress in Test Data									
No.	LOCATION	P/N	MAKER	Vce(Vr)	Ic(If)	P	TEMP.	Rth(j-c)	Vr(Peak)			Ic(If)			P	TEMP.		
									INPUT	APPLY	%	INPUT	APPLY	%		INPUT	APPLY	Tj	JUDGE
				V	A	W	℃	℃/W	VAC	V		VAC	A		W	VAC	40℃	40℃	
1	PC300	LTV-817M-PRA	LITON	35.0	50.0m	0.15	125.0	500.0	115	12.030	34.4	90	1.79m	3.6	20.42m	115	81.5	91.7	OK
2	PC3002	LTV-817M-PRA	LITON	6.0	50.0m	70.00m	125.0	500.0	132	0.620	10.3	90	731.30u	1.5	438.78u	115	81.5	81.7	OK
3	PC301	LTV-817M-PRA	LITON	35.0	50.0m	0.15	125.0	500.0	132	12.660	36.2	90	1.37m	2.7	16.88m	90	79.6	88.0	OK
4	PC3012	LTV-817M-PRA	LITON	6.0	50.0m	70.00m	125.0	500.0	132	15.600m	0.3	90	931.00u	1.9	1.69u	115	86.4	86.4	OK

TEMP. = Temperature ; *** : 90VAC - 132VAC
AMBIENT TEMPERATURE : 40℃
Tj = Vce(Vr)(TEST DATA; APPLY; Vrms) * Ic(If)(TEST DATA; APPLY; A) * Rth(j-c) + TEMP.(TEST DATA; APPLY; 40℃)
EXAMPLE : (PC3012) Tj = .00181 * .000931 * 500.0 + 86.4 = 86.4℃

Vce(Vr)(TEST DATA; APPLY; V) < Vce(Vr)(COMPONENT SPEC.; V) * 95%
Ic(If)(TEST DATA; APPLY; A) < Ic(If)(COMPONENT SPEC.; A) * 80%
P(TEST DATA; APPLY; W) < P(COMPONENT SPEC.; W)
Tj(TEST DATA; 40℃) < TEMP.(COMPONENT SPEC.; ℃)

LITEON

KEY COMPONENT STRESS TEST DATA

MODEL NO : PA-1900-02D **REV : D** **DATE :11-27-2002**

THERMISTOR				Component Spec.			Worst Case Stress in Test Data					
No.	LOCATION	TYPE	MAKER	VALUE	I	TEMP.	I(rms)			TEMP		
							INPUT	APPLY	%	INPUT	APPLY	JUDGE
				OHMS	A	℃	VAC	A		VAC	40℃	
1	RT100	R.TH	THINK	100K	2.00m	125.0	132	1.26m	63.00	90	84.9	OK

TEMP. = Temperature ; *** : 90VAC - 132VAC
AMBIENT TEMPERATURE : 40℃

I(TEST DATA; APPLY; A) < I(COMPONENT SPEC.; A)
Temp.(TEST DATA; 50℃) < TEMP.(COMPONENT SPEC. ; ℃)

KEY COMPONENT STRESS (DERATING) TEST REPORT

MODEL NAME : PA-1900-02D

INPUT AC RANGE : 180VAC - 265VAC

CONTAIN :
- **COMPONENT SPEC.**
- **COMPONENT VOLTAGE AND CURRENT TEST DATA**
- **COMPONENT TEMPERATURE RISE RECORD**

JUDGE : OK

DESIGN ENGINEER : 賴威到 11/27/02

PREPARE : 張家偉 NOV.27'02 **CHECK :** _____ **APPROVAL :** 林慶揚 NOV. 27'02

LITEON

KEY COMPONENT STRESS TEST DATA

MODEL NO : PA-1900-02D **REV : D** **DATE :11-27-2002**

RESISTOR				Component Spec.					Worst Case Stress in Test Data						
No.	LOCATION	TYPE	MAKER	VALUE	POWER	K	VOLT	TEMP.	V(rms)		POWER		TEMP.		
					Watt				INPUT	APPLY	Watt	%	INPUT	APPLY	JUDGE
				OHMS	W		V	℃	VAC	V	W		VAC	40℃	
1	R001	R.CF	YAGEO	2M	0.250	1.00	200.00	125.0	265	66.09	2.184m	0.87	180	91.2	OK
2	R0010	R.CF	YAGEO	51K	0.250	1.00	200.00	130.0	***	70.33	96.975m	38.79	230	105.3	OK
3	R0011	R.CF	YAGEO	51K	0.250	1.00	200.00	130.0	***	70.04	96.177m	38.47	180	105.2	OK
4	R0012	R.CF	YAGEO	51K	0.250	1.00	200.00	130.0	***	70.19	96.589m	38.64	230	105.5	OK
5	R0013	R.CF	YAGEO	51K	0.250	1.00	200.00	130.0	180	70.04	96.184m	38.47	230	105.3	OK
6	R002	R.CF	YAGEO	2M	0.250	1.00	200.00	125.0	265	57.56	1.657m	0.66	265	89.0	OK
7	R003	R.HV	---	1M	0.125	1.00	1000.00	155.0	265	126.45	15.991m	12.79	230	87.0	OK
8	R004	R.HV	---	1M	0.125	1.00	1000.00	155.0	265	112.87	12.741m	10.19	265	92.8	OK
9	R005	R.CF	YAGEO	20K	0.100	1.00	50.00	125.0	265	2.78	386.900u	0.39	230	86.3	OK
10	R006	R.HV	---	499K	0.250	1.00	1000.00	155.0	***	194.82	76.065m	30.43	230	83.7	OK
11	R007	R.HV	---	499K	0.250	1.00	1000.00	155.0	***	194.82	76.065m	30.43	230	83.7	OK
12	R008	R.MF	YAGEO	11.5K	0.100	1.00	50.00	125.0	***	4.49	1.753m	1.75	230	92.2	OK
13	R008-1	R.MF	YAGEO	14.7K	0.100	1.00	50.00	125.0	***	7.28m	0.004u	0.00	230	89.1	OK
14	R009	R.HV	---	1M	0.125	1.00	1000.00	155.0	265	98.85	9.772m	7.82	230	87.0	OK
15	R010	R.HV	---	1M	0.125	1.00	1000.00	155.0	265	88.56	7.843m	6.27	230	87.0	OK
16	R011	R.MF	YAGEO	511K	0.125	1.00	150.00	125.0	265	38.49	2.900m	2.32	265	93.4	OK
17	R012	R.MF	YAGEO	3.01K	0.100	1.00	50.00	125.0	***	8.56m	0.024u	0.00	230	90.2	OK
18	R013	R.CF	YAGEO	68K	0.100	1.00	50.00	125.0	265	2.94	127.121u	0.13	265	88.5	OK

TEMP. = Temperature ; *** : 180VAC - 265VAC
AMBIENT TEMPERATURE : 40℃
POWER(TEST DATA; Watt; W) = APPLY * APPLY(TEST DATA; VOLT; V) / OHMS
EXAMPLE : (R013) Watt = 2.94 * 2.94 / 68K = 127.121uW
POWER(TEST DATA; %) = POWER(TEST DATA; Watt; W) / POWER(COMPONENT SPEC.;Watt; W) * 100%
EXAMPLE : (R013) POWER (%) = 127.121u / 0.100 * 100 (%) = 0.13%

VOLT(TEST DATA; APPLY; V) < VOLT(COMPONENT SPEC.; V)
TEMP.(TEST DATA; 40℃) < TEMP.(COMPONENT SPEC.; ℃)
POWER(TEST DATA; Watt; W) < POWER(COMPONENT SPEC.; Watt; W) * K

LITEON

KEY COMPONENT STRESS TEST DATA

MODEL NO : PA-1900-02D **REV : D** **DATE :11-27-2002**

RESISTOR				Component Spec.					Worst Case Stress in Test Data						
No.	LOCATION	TYPE	MAKER	VALUE	POWER	K	VOLT	TEMP.	V(rms)		POWER		TEMP.		
					Watt				INPUT	APPLY	Watt	%	INPUT	APPLY	JUDGE
				OHMS	W		V	℃	VAC	V	W		VAC	40℃	
19	R014	R.MO(S)	QUMAO	0.24	1.000	1.00	350.00	200.0	180	0.12	60.180m	6.02	180	87.1	OK
20	R016	R.CF	YAGEO	47	0.125	1.00	150.00	125.0	265	6.90m	1.013u	0.00	230	94.3	OK
21	R017	R.CF	YAGEO	30	0.125	1.00	150.00	125.0	265	67.45m	151.652u	0.12	265	94.8	OK
22	R022	R.CF	YAGEO	1M	0.125	1.00	150.00	125.0	265	98.76	9.753m	7.80	265	87.8	OK
23	R023	R.CF	YAGEO	1M	0.125	1.00	150.00	125.0	265	100.44	10.088m	8.07	230	87.0	OK
24	R024	R.MF	YAGEO	590K	0.125	1.00	150.00	125.0	265	36.36	2.241m	1.79	230	94.8	OK
25	R025	R.MF	YAGEO	205K	0.100	1.00	50.00	125.0	265	8.77	375.268u	0.38	230	90.2	OK
26	R051	R.MO(S)	QUMAO	0.1	1.000	1.00	350.00	200.0	180	71.53m	51.166m	5.12	230	74.4	OK
27	R065	R.CF	YAGEO	15	0.125	1.00	150.00	125.0	265	0.26	4.510m	3.61	230	95.2	OK
28	R067	R.MF	YAGEO	3.57K	0.125	1.00	50.00	125.0	180	10.98	33.783m	27.03	180	95.2	OK
29	R068	R.MF	YAGEO	10K	0.100	1.00	50.00	125.0	230	5.70m	0.003u	0.00	265	85.3	OK
30	R102	R.CF	YAGEO	47	0.125	1.00	150.00	125.0	265	0.35	2.636m	2.11	180	75.5	OK
31	R103	R.CF	YAGEO	390.0K	0.100	1.00	50.00	125.0	180	56.45m	0.008u	0.00	265	87.3	OK
32	R104	R.CF	YAGEO	2.2M	0.100	1.00	50.00	125.0	***	14.75	98.944u	0.10	230	66.3	OK
33	R105	R.CF	YAGEO	10	0.100	1.00	50.00	125.0	180	3.46m	1.197u	0.00	180	75.4	OK
34	R106	R.MF	YAGEO	19.6K	0.100	1.00	50.00	125.0	265	0.16	1.317u	0.00	180	86.3	OK
35	R107	R.CF	RALEC	15	0.125	1.00	200.00	155.0	265	26.67m	47.420u	0.04	180	88.2	OK
36	R120	R.MF	YAGEO	1K	0.100	1.00	50.00	125.0	265	1.19	1.421m	1.42	180	71.3	OK

TEMP. = Temperature ; *** : 180VAC - 265VAC
AMBIENT TEMPERATURE : 40℃
POWER(TEST DATA; Watt; W) = APPLY * APPLY(TEST DATA; VOLT; V) / OHMS
EXAMPLE : (R120) Watt = 1.19 * 1.19 / 1K = .001421 W
POWER(TEST DATA; %) = POWER(TEST DATA; Watt; W) / POWER(COMPONENT SPEC.;Watt; W) * 100%
EXAMPLE : (R120) POWER (%) = .001421 / 0.100 * 100 (%) = 1.42%

VOLT(TEST DATA; APPLY; V) < VOLT(COMPONENT SPEC.; V)
TEMP.(TEST DATA; 40℃) < TEMP.(COMPONENT SPEC.; ℃)
POWER(TEST DATA; Watt; W) < POWER(COMPONENT SPEC.; Watt; W) * K

LITEON

KEY COMPONENT STRESS TEST DATA

MODEL NO : PA-1900-02D **REV : D** **DATE :11-27-2002**

RESISTOR				Component Spec.					Worst Case Stress in Test Data						
No.	LOCATION	TYPE	MAKER	VALUE	POWER	K	VOLT	TEMP.	V(rms)		POWER		TEMP.		
					Watt				INPUT	APPLY	Watt	%	INPUT	APPLY	JUDGE
				OHMS	W		V	℃	VAC	V	W		VAC	40℃	
37	R121	R.CF	YAGEO	470	0.100	1.00	50.00	125.0	265	85.96m	15.722u	0.02	230	97.4	OK
38	R122	R.CF	YAGEO	47	0.125	1.00	150.00	125.0	230	0.57	6.858m	5.49	230	76.7	OK
39	R123	R.MF	YAGEO	3.01K	0.100	1.00	50.00	125.0	265	0.25	20.787u	0.02	230	80.9	OK
40	R124	R.MF	YAGEO	10K	0.100	1.00	50.00	125.0	265	5.43	2.948m	2.95	230	66.3	OK
41	R126	R.CF	YAGEO	200K	0.250	1.00	200.00	125.0	***	4.97	123.528u	0.05	180	85.5	OK
42	R200	R.CF	YAGEO	22	0.250	1.00	200.00	125.0	***	0.42	8.149m	3.26	265	74.6	OK
43	R202	R.CF	YAGEO	10K	0.125	1.00	150.00	125.0	***	28.13	79.157m	63.33	230	86.4	OK
44	R203	R.MF	YAGEO	5.11	0.125	1.00	150.00	125.0	***	0.61	72.702m	58.16	230	86.4	OK
45	R206	R.CF	YAGEO	22	0.100	1.00	50.00	125.0	***	0.72	23.337m	23.34	180	86.6	OK
46	R207	R.MF	YAGEO	1K	0.100	1.00	50.00	125.0	***	1.24	1.536m	1.54	265	86.3	OK
47	R208	R.MF	YAGEO	10K	0.100	1.00	50.00	125.0	***	11.81	13.938m	13.94	180	86.4	OK
48	R209	R.MF	YAGEO	1K	0.100	1.00	50.00	125.0	***	4.57	20.885m	20.89	230	86.6	OK
49	R210	R.CF	YAGEO	10.0K	0.125	1.00	50.00	125.0	***	17.61	31.004m	24.80	180	86.3	OK
50	R211	R.ZW	TAI	0.1513	27.500m	1.00	27.50m	155.0	***	23.86m	3.763m	13.68	180	86.4	OK
51	R220	R.CF	YAGEO	10	0.250	1.00	200.00	125.0	***	26.12m	68.225u	0.03	230	86.5	OK
52	R221	R.CF	ROYAL	10	0.125	1.00	200.00	155.0	***	0.54	28.699m	22.96	265	86.3	OK
53	R300	R.CF	YAGEO	110	0.100	1.00	50.00	125.0	180	0.39	1.383m	1.38	180	86.5	OK
54	R301	R.MF	YAGEO	34.8K	0.100	1.00	50.00	125.0	230	70.00m	0.141u	0.00	180	86.4	OK

TEMP. = Temperature ; *** : 180VAC - 265VAC
AMBIENT TEMPERATURE : 40℃
POWER(TEST DATA; Watt; W) = APPLY * APPLY(TEST DATA; VOLT; V) / OHMS
EXAMPLE : (R301) Watt = .07 * .07 / 34.8K = 0.141uW
POWER(TEST DATA; %) = POWER(TEST DATA; Watt; W) / POWER(COMPONENT SPEC.;Watt; W) * 100%
EXAMPLE : (R301) POWER (%) = 0.141u / 0.100 * 100 (%) = 0.00%

VOLT(TEST DATA; APPLY; V) < VOLT(COMPONENT SPEC.; V)
TEMP.(TEST DATA; 40℃) < TEMP.(COMPONENT SPEC.; ℃)
POWER(TEST DATA; Watt; W) < POWER(COMPONENT SPEC.; Watt; W) * K

LITEON

KEY COMPONENT STRESS TEST DATA

MODEL NO : PA-1900-02D **REV : D** **DATE :11-27-2002**

RESISTOR				Component Spec.					Worst Case Stress in Test Data						
No.	LOCATION	TYPE	MAKER	VALUE	POWER	K	VOLT	TEMP.	V(rms)		POWER		TEMP.		
					Watt				INPUT	APPLY	Watt	%	INPUT	APPLY	JUDGE
				OHMS	W		V	℃	VAC	V	W		VAC	40℃	
55	R302	R.MF	YAGEO	5.11K	0.100	1.00	50.00	125.0	180	700.00u	0.000u	0.00	180	86.5	OK
56	R303	R.CF	YAGEO	200	0.100	1.00	50.00	125.0	265	973.40u	0.005u	0.00	180	86.3	OK
57	R304	R.CF	YAGEO	300	0.100	1.00	50.00	125.0	265	7.28m	0.177u	0.00	180	86.3	OK
58	R305	R.MF	YAGEO	200K	0.100	1.00	50.00	125.0	230	5.92m	0.000u	0.00	180	86.4	OK
59	R306	R.MF	YAGEO	2.49K	0.100	1.00	50.00	125.0	***	52.13m	1.091u	0.00	180	86.2	OK
60	R307	R.MF	YAGEO	10K	0.100	1.00	50.00	125.0	180	2.61m	0.001u	0.00	230	86.6	OK
61	R315	R.MF	YAGEO	11.5K	0.100	1.00	50.00	125.0	***	17.44	26.448m	26.45	230	86.6	OK
62	R316	R.MF	YAGEO	10K	0.100	1.00	50.00	125.0	265	6.89m	0.005u	0.00	180	86.5	OK
63	R61	R.CF	YAGEO	10M	0.250	1.00	200.00	125.0	265	14.00	19.590u	0.01	230	82.4	OK
64	R62	R.CF	YAGEO	10M	0.250	1.00	200.00	125.0	265	14.51	21.041u	0.01	230	82.4	OK
65	R63	R.CF	YAGEO	10M	0.250	1.00	200.00	125.0	265	14.06	19.763u	0.01	230	82.4	OK
66	R64	R.CF	YAGEO	10M	0.250	1.00	200.00	125.0	265	15.18	23.029u	0.01	230	102.4	OK

TEMP. = Temperature ; *** : 180VAC - 265VAC
AMBIENT TEMPERATURE : 40℃
POWER(TEST DATA; Watt; W) = APPLY * APPLY(TEST DATA; VOLT; V) / OHMS
EXAMPLE : (R64) Watt = 15.18 * 15.18 / 10M = 23.029uW
POWER(TEST DATA; %) = POWER(TEST DATA; Watt; W) / POWER(COMPONENT SPEC.;Watt; W) * 100%
EXAMPLE : (R64) POWER (%) = 23.029u / 0.250 * 100 (%) = 0.01%

VOLT(TEST DATA; APPLY; V) < VOLT(COMPONENT SPEC.; V)
TEMP.(TEST DATA; 40℃) < TEMP.(COMPONENT SPEC.; ℃)
POWER(TEST DATA; Watt; W) < POWER(COMPONENT SPEC.; Watt; W) * K

LITEON

KEY COMPONENT STRESS TEST DATA

MODEL NO : PA-1900-02D **REV : D** **DATE :11-27-2002**

CAPACITOR				Component Spec.						Worst Case Stress in Test Data											
No.	LOCATION	TYPE	MAKER	CAP.	VOLT	RIPPLE	F	T	TEMP.	V(Peak)			I(rms)					TEMP.		
										INPUT	APPLY	%	INPUT	APPLY	FREQ.	Ir'	%	INPUT	APPLY	JUDGE
				F	V	A			℃	VAC	V		VAC	A	Hz	A		VAC	40℃	
1	C001	MEX	MATSU	0.33U	400	---	---	---	85.0	265	374.00	93.5	---	---	---	---	---	180	74.8	NG
2	C002	MEF	MATSU	0.47U	400	---	---	---	85.0	265	381.25	95.3	---	---	---	---	---	180	79.2	NG
3	C003	MEF	MATSU	0.47U	400	---	---	---	85.0	265	379.63	94.9	---	---	---	---	---	180	79.1	NG
4	C004	MON	WALSN	0.01U	50	---	---	---	125.0	265	4.03	8.1	---	---	---	---	---	230	84.4	OK
5	C005	MON	WALSN	1U	16	---	---	---	85.0	180	4.56	28.5	---	---	---	---	---	180	84.0	OK
6	C005-1	MON	WALSN	1U	16	---	---	---	85.0	180	5.19	32.4	---	---	---	---	---	180	84.0	OK
7	C006	DIS	MURAT	1000P	400	---	---	---	85.0	265	151.56	37.9	---	---	---	---	---	265	84.0	OK
8	C008	MON	WALSN	0.1U	100	---	---	---	125.0	265	41.88	41.9	265	748.40u	46000	---	---	180	83.9	OK
9	C009	MON	WALSN	0.1U	16	---	---	---	125.0	265	0.46	2.9	---	---	---	---	---	180	83.7	OK
10	C010	ELE	NCC	10U	50	46.00m	1.80	1.75	105.0	265	11.88	23.8	230	27.01m	46000	8.57m	18.6	230	83.6	OK
11	C024	MON	WALSN	0.47U	50	---	---	---	85.0	265	35.00	70.0	---	---	---	---	---	230	83.5	OK
12	C051	ELE	NCC	120U	400	0.70	1.50	1.75	105.0	265	379.75	94.9	180	0.88	46000	0.33	47.7	180	93.8	OK
13	C051	---	---	---	---	---	1.00	1.75	---	---	---	---	180	50.78u	120	---	---	---	---	---
14	C053	MON	AVX	3300P	500	---	---	---	125.0	230	173.44	34.7	---	---	---	---	---	230	98.9	OK

TEMP. = Temperature ; F = Frequence Multipliers ; T= Temperature Multipliers ; RIPPLE : Ripple Current ; FREQ. = Frequence
AMBIENT TEMPERATURE : 40℃ ; *** : 180VAC - 265VAC
ELE (Cap. < 120uF, 400V)
Ir' =CURRENT(TEST DATA; APPLY; A) / (F * T)
EXAMPLE : (C010) Ir' = .02701 / (1.80 * 1.75) = .00857 A

ELE (Cap. ≧ 120uF, 400V)
I1 (low FREQ.) = CURRENT (TEST DATA; APPLY; A) / F1
I2 (hiigh FREQ.) = CURRENT (TEST DATA; APPLY; A) / F
$Ir' = \sqrt{I_1^2 + I_2^2} / T$
EXAMPLE : (C051)I_1 (120Hz) = 5.078E-05 / 1.001 = 5.072927E-05A
I_2 (46000Hz) = .8763 / 1.5 = .5842A
$Ir' = \sqrt{5.072927E\text{-}05^2 + .5842^2} / 1.75 = .3338286A$

MON, DIS, MEX, MEF, PEI
VOLT(TEST DATA; APPLY; V) < VOLT(COMPONENT SPEC.; V) * 90%
TEMP.(TEST DATA; APPLY; 40℃) < TEMP.(COMPONENT SPEC.; ℃)

ELE
VOLT(TEST DATA; APPLY; V) < VOLT(COMPONENT SPEC.; V) * 96% (RATED VOLTAGE ≧ 100 VOLT)
VOLT(TEST DATA; APPLY; V) < VOLT(COMPONENT SPEC.; V) * 85% (RATED VOLTAGE < 100 VOLT)
TEMP.(TEST DATA; APPLY; 40℃) < TEMP.(COMPONENT SPEC.; ℃)
CURRENT(TEST DATA; Ir'; A) < RIPPLE(COMPONENT SPEC.; RIPPLE; A)

LITEON

KEY COMPONENT STRESS TEST DATA

MODEL NO : PA-1900-02D

REV : D DATE :11-27-2002

CAPACITOR				Component Spec.						Worst Case Stress in Test Data											
No.	LOCATION	TYPE	MAKER	CAP.	VOLT	RIPPLE	F	T	TEMP.	V(Peak)			I(rms)					TEMP.		
										INPUT	APPLY	%	INPUT	APPLY	FREQ.	Ir'	%	INPUT	APPLY	JUDGE
				F	V	A			℃	VAC	V		VAC	A	Hz	A		VAC	40℃	
15	C054	ELE	RUBCO	22U	50	0.15	1.00	1.70	105.0	265	12.81	25.6	230	18.43m	46000	10.84m	7.4	230	79.6	OK
16	C054-1	ELE	NCC	10U	50	46.00m	1.80	1.75	105.0	265	12.81	25.6	230	0.13	46000	41.08m	89.3	230	79.5	OK
17	C068	MON	WALSN	1U	10	---	---	---	85.0	265	0.48	4.8	---	---	---	---	---	180	75.4	OK
18	C109	MON	WALSN	0.1U	16	---	---	---	125.0	265	0.56	3.5	---	---	---	---	---	230	86.5	OK
19	C120	MON	WALSN	0.022U	25	---	---	---	125.0	265	1.59	6.4	---	---	---	---	---	180	86.3	OK
20	C122	MON	SNCRA	1000P	200	---	---	---	125.0	265	35.94	18.0	---	---	---	---	---	180	98.4	OK
21	C123	MON	WALSN	0.22U	16	---	---	---	85.0	265	0.63	3.9	---	---	---	---	---	180	84.9	OK
22	C124	MON	WALSN	0.22U	16	---	---	---	85.0	265	789.14u	0.0	---	---	---	---	---	180	84.4	OK
23	C125	MON	WALSN	0.1U	16	---	---	---	125.0	180	68.20u	0.0	---	---	---	---	---	180	86.5	OK
24	C200	MON	SNCRA	1000P	200	---	---	---	125.0	265	96.25	48.1	---	---	---	---	---	230	84.7	OK
25	C201	MON	WALSN	0.1U	16	---	---	---	125.0	230	0.13	0.8	---	---	---	---	---	230	86.4	OK
26	C204	ELE	RUBCO	820U	25	2.15	1.00	1.70	105.0	265	20.00	80.0	230	1.53	46000	0.90	41.9	230	86.5	OK
27	C205	ELE	RUBCO	470U	25	1.21	1.00	1.70	105.0	265	20.00	80.0	180	0.69	46000	0.41	33.6	180	86.6	OK
28	C208	MON	WALSN	0.1U	25	---	---	---	125.0	265	55.68u	0.0	---	---	---	---	---	265	86.5	OK

TEMP. = Temperature ; F = Frequence Multipliers ; T= Temperature Multipliers ; RIPPLE : Ripple Current ; FREQ. = Frequence
AMBIENT TEMPERATURE : 40℃ ; *** : 180VAC - 265VAC
ELE (Cap. < 120uF, 400V)
Ir' =CURRENT(TEST DATA; APPLY; A) / (F * T)
EXAMPLE : (C205) Ir' = 0.69 / (1.00 * 1.70) = 0.41A

MON, DIS, MEX, MEF, PEI
VOLT(TEST DATA; APPLY; V) < VOLT(COMPONENT SPEC.; V) * 90%
TEMP.(TEST DATA; APPLY; 40℃) < TEMP.(COMPONENT SPEC.; ℃)

ELE
VOLT(TEST DATA; APPLY; V) < VOLT(COMPONENT SPEC.; V) * 96% (RATED VOLTAGE ≧ 100 VOLT)
VOLT(TEST DATA; APPLY; V) < VOLT(COMPONENT SPEC.; V) * 85% (RATED VOLTAGE < 100 VOLT)
TEMP.(TEST DATA; APPLY; 40℃) < TEMP.(COMPONENT SPEC.; ℃) - 10
CURRENT(TEST DATA; Ir'; A) < RIPPLE(COMPONENT SPEC.; RIPPLE; A)

LITEON

KEY COMPONENT STRESS TEST DATA

MODEL NO : PA-1900-02D **REV : D** **DATE :11-27-2002**

CAPACITOR				Component Spec.						Worst Case Stress in Test Data											
No.	LOCATION	TYPE	MAKER	CAP.	VOLT	RIPPLE	F	T	TEMP.	V(Peak)			I(rms)						TEMP.		
										INPUT	APPLY	%	INPUT	APPLY	FREQ.	Ir'	%		INPUT	APPLY	JUDGE
				F	V	A			℃	VAC	V		VAC	A	Hz	A			VAC	40℃	
29	C300	MON	WALSN	0.1U	16	---	---	---	125.0	230	55.62u	0.0	---	---	---	---	---		265	86.5	OK
30	C301	MON	WALSN	0.1U	16	---	---	---	125.0	230	0.29	1.8	---	---	---	---	---		180	86.5	OK
31	C303	MON	WALSN	1U	10	---	---	---	85.0	265	0.22	2.3	---	---	---	---	---		265	84.5	OK
32	C303-1	MON	WALSN	1U	10	---	---	---	85.0	265	0.22	2.3	---	---	---	---	---		230	84.5	OK
33	C304	MON	WALSN	0.1U	16	---	---	---	125.0	265	45.72u	0.0	---	---	---	---	---		180	86.7	OK
34	C305	MON	WALSN	220P	50	---	---	---	125.0	180	56.21u	0.0	---	---	---	---	---		230	86.6	OK
35	C306	MON	WALSN	0.1U	16	---	---	---	125.0	265	4.55m	0.0	---	---	---	---	---		230	86.6	OK

TEMP. = Temperature ; F = Frequence Multipliers ; T= Temperature Multipliers ; RIPPLE : Ripple Current ; FREQ. = Frequence
AMBIENT TEMPERATURE : 40℃ ; *** : 180VAC - 265VAC
ELE (Cap. < 120uF, 400V)
Ir' =CURRENT(TEST DATA; APPLY; A) / (F * T)
EXAMPLE : NONE

MON, DIS, MEX, MEF, PEI
VOLT(TEST DATA; APPLY; V) < VOLT(COMPONENT SPEC.; V) * 90%
TEMP.(TEST DATA; APPLY; 40℃) < TEMP.(COMPONENT SPEC.; ℃)

ELE
VOLT(TEST DATA; APPLY; V) < VOLT(COMPONENT SPEC.; V) * 96% (RATED VOLTAGE ≧ 100 VOLT)
VOLT(TEST DATA; APPLY; V) < VOLT(COMPONENT SPEC.; V) * 85% (RATED VOLTAGE < 100 VOLT)
TEMP.(TEST DATA; APPLY; 40℃) < TEMP.(COMPONENT SPEC.; ℃) - 10
CURRENT(TEST DATA; Ir'; A) < RIPPLE(COMPONENT SPEC.; RIPPLE; A)

LITEON

KEY COMPONENT STRESS TEST DATA

MODEL NO : PA-1900-02D **REV : D** **DATE :11-27-2002**

DIODE				Component Spec.						Worst Case Stress in Test Data									
No.	LOCATION	P/N	MAKER	Vr	If(av)	K	Rth(j-c)	Vf	TEMP.	Vr(Peak)			If(av)			TEMP.			
										INPUT	APPLY	%	INPUT	APPLY	%	INPUT	APPLY	Tj	JUDGE
				V	A		℃/W	V	℃	VAC	V		VAC	A		VAC	40℃	40℃	
1	D001	LL4148GS08	TEMIC	75	0.15	1.00	300.0	1.0	175.0	265	27.50	36.7	230	189.30u	0.1	180	83.6	83.7	OK
2	D003	MUR460	GS	600	4.00	0.60	28.0	1.0	175.0	265	376.80	62.8	265	0.93	23.2	265	75.3	102.6	OK
3	D004	LL4148GS08	TEMIC	75	0.15	1.00	300.0	1.0	175.0	265	3.58m	0.0	***	0.00	0.0	180	72.4	72.4	OK
4	D050	2KBP08M	GS	800	2.00	0.60	11.0	1.1	165.0	265	383.63	48.0	180	0.27	13.6	180	76.3	79.6	OK
5	D051	BAS21	PHLIP	200	0.20	1.00	500.0	1.3	150.0	265	90.63	45.3	230	12.79m	6.4	265	76.5	84.5	OK
6	D052	LT2A07G	LITON	1000	2.00	0.80	18.0	1.1	150.0	230	518.75	51.9	180	26.12m	1.3	265	83.6	84.1	OK
7	D101	BAS21	PHLIP	200	0.20	1.00	500.0	1.0	150.0	265	35.63	17.8	265	402.66u	0.2	265	86.2	86.4	OK
8	D102	LL4148GS08	TEMIC	75	0.15	1.00	300.0	1.0	175.0	265	4.86m	0.0	265	356.87u	0.2	180	68.8	68.9	OK
9	D201	LL4148GS08	TEMIC	75	0.15	1.00	300.0	1.0	175.0	265	57.81	77.1	265	12.29m	8.2	265	75.6	79.3	OK
10	D202	LL4148GS08	TEMIC	75	0.15	1.00	300.0	1.0	175.0	265	9.37	12.5	265	2.34m	1.6	265	75.5	76.2	OK
11	D203	LL4148GS08	TEMIC	75	0.15	1.00	300.0	1.0	175.0	180	6.69	8.9	265	12.34m	8.2	265	74.3	78.0	OK

TEMP. = Temperature ; Vf = Max. Forword Voltage; *** : 180VAC - 265VAC
AMBIENT TEMPERATURE : 40℃
Rth(j-c) = Thermal Resistance , Junction to case
Tj = Vf(COMPONENT SPEC.; V) * If(av)(TEST DATA; APPLY; A) * Rth(j-c) + TEMP.(TEST DATA; APPLY; 40℃)
EXAMPLE : (D203) Tj = 1.0 * .01234 * 300.0 + 74.3 = 78.0℃

Vr(TEST DATA; APPLY; V) < Vr(COMPONENT SPEC.; V) * 95%
If(av)(TEST DATA; APPLY; A) < If(av)(COMPONENT SPEC.; A) * K
Tj(TEST DATA; 40℃) < TEMP.(COMPONENT SPEC.; ℃)

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KEY COMPONENT STRESS TEST DATA

MODEL NO : PA-1900-02D **REV : D** **DATE :11-27-2002**

ZENER DIODE				Component Spec.			Worst Case Stress in Test Data									
No.	LOCATION	P/N	MAKER	Pd	Iz	TEMP.	Vz(Peak)		Iz(rms)			Pd		TEMP.		
							INPUT	APPLY	INPUT	APPLY	%		%	INPUT	APPLY	JUDGE
				W	A	℃	VAC	V	VAC	A		W		VAC	40℃	
1	ZD001	MMBZ5254BLT1	ON	0.2	10.0m	150.0	180	26.25	180	1.00m	10.0	26.65m	11.84	265	84.5	OK
2	ZD065	BZX84-C15	GS	0.3	0.3	150.0	265	14.06	230	3.95m	1.6	50.48m	16.82	265	85.5	OK
3	ZD200	BZX84-C15	GS	0.3	0.3	150.0	265	11.25	230	25.85m	10.3	28.50m	9.50	265	84.7	OK
4	ZD201	BZX84-C15	GS	0.3	0.3	150.0	180	0.13	180	48.50u	0.0	1.11u	0.00	265	87.6	OK
5	ZD202	BZX84-C15	GS	0.3	0.3	150.0	265	13.12	180	10.97m	4.4	78.55m	26.17	265	84.7	OK

TEMP. = Temperature ; *** : 180VAC - 265VAC
AMBIENT TEMPERATURE : 40℃
Pd = Vz(TEST DATA; APPLY; Vrms) * Iz(TEST DATA; APPLY; A)
EXAMPLE : (ZD202) Pd = 7.16 * .01097 = .07855 W

Iz(TEST DATA; APPLY; A) < Iz(COMPONENT SPEC.; A)
Pd(TEST DATA; W) < Pd(COMPONENT SPEC.; W)
TEMP.(TEST DATA; APPLY; 40℃) < TEMP.(COMPONENT SPEC.; ℃)

LITEON

KEY COMPONENT STRESS TEST DATA

MODEL NO : PA-1900-02D **REV : D** **DATE :11-27-2002**

TRANSISTOR				Component Spec.				Worst Case Stress in Test Data									
No.	LOCATION	P/N	MAKER	Vce	Ic	Rth(j-c)	TEMP.	V(Peak)			I(rms)			TEMP.			
									APPLY	%	INPUT	APPLY	%	INPUT	APPLY	Tj	JUDGE
				V	A	℃/W	℃	VAC	V		VAC	A		VAC	40℃	40℃	
1	Q005	KST4403	SAMSU	40.0	0.60	357.0	150.0	265	14.53	36.3	230	178.2u	0.03	180	83.60	84.4	OK
2	Q065	MMST4401	ROHM	40.0	0.60	625.0	150.0	265	23.44	58.6	230	8.3m	1.39	180	98.50	131.1	OK
3	Q102	MMST4401	ROHM	40.0	0.60	625.0	150.0	230	2.38	6.0	265	8.5m	1.41	265	82.20	87.1	OK
4	Q203	KST4403	SAMSU	40.0	0.60	357.0	150.0	265	7.50	18.8	265	11.3m	1.88	230	87.40	89.2	OK
5	Q205	KST4403	SAMSU	40.0	0.60	357.0	150.0	265	13.12	32.8	230	4.5m	0.75	180	87.50	99.1	OK
6	Q206	MMST4401	ROHM	40.0	0.60	625.0	150.0	265	31.25	78.1	230	10.6m	1.76	180	87.50	88.8	OK

TEMP. = Temperature ; *** : 180VAC - 265VAC
AMBIENT TEMPERATURE : 40℃
Rth(j-c) = Thermal Resistance , Junction to case
Tj = Vce(TESTDATA; APPLY; Vrms) * Ic (TEST DATA; APPLY; A)* Rth(j-c) + TEMP.(TEST DATA; APPLY; 40℃)
EXAMPLE : (Q206) Tj = .20044 * .01056 * 625.0 + 87.50 = 88.8℃

Vce(TEST DATA; APPLY; V) < Vce(COMPONENT SPEC.; V) * 95%
Ic(TEST DATA; APPLY; A) < Ic(COMPONENT SPEC.; A) * 80%
Tj(TEST DATA; 40℃) < TEMP.(COMPONENT SPEC.; ℃)

LITEON KEY COMPONENT STRESS TEST DATA

MODEL NO : PA-1900-02D **REV : D** **DATE :11-27-2002**

IC				Component Spec.				Worst Case Stress in Test Data										
No.	LOCATION	P/N	MAKER	V	I	TEMP.	Rth(j-C)	V(Peak)			Vout	I(rms)			TEMP.			JUDGE
								INPUT	APPLY	%	V	INPUT	APPLY	%	INPUT	APPLY	Tj	
				V	A	℃	℃/W	VAC	V			VAC	A		VAC	40℃	40℃	
1	IC1	L6561D	STM	18	30.00m	150.0	150.0	265	12.81	71.17	8.06	265	27.28m	90.93	265	84.2	99.3	OK
2	IC100	LTA201P	PHILIP	20	62.50m	150.0	100.0	265	14.53	72.65	------	265	16.37m	26.19	265	85.6	96.5	OK
3	IC302	TSM103AID	STM	36	20.00m	150.0	175.0	265	20.63	57.31	------	230	435.70u	2.18	265	90.9	92.4	OK

TEMP. = Temperature ; *** : 180VAC - 265VAC
AMBIENT TEMPERATURE : 40℃
(1) IC1
Tj = [Vin(TEST DATA; APPLY; Vrms) - Vout] * I(TEST DATA; APPLY; A) * Rth(j-c) + TEMP.(TEST DATA; APPLY; 40℃)
EXAMPLE:(IC1) Tj =(4.37 - 8.06) * .02728 * 150.0 + 84.2 = 99.3℃
(2) IC100,IC302
Tj = V(TEST DATA; APPLY; Vrms) * I(TEST DATA; APPLY; A) * Rth(j-c) + TEMP.(TEST DATA; APPLY; 40℃)
EXAMPLE:(IC302) Tj = 20.2 * .0004357 * 175.0 + 90.9 = 92.4℃

Vcc(TEST DATA; APPLY; V) < Vcc(COMPONENT SPEC.; V) * 95%
Ic(TEST DATA; APPLY; A) < Ic(COMPONENT SPEC.; A) * 80%
Tj(TEST DATA; APPLY; 40℃) < TEMP.(COMPONENT SPEC.; ℃)

LITEON

KEY COMPONENT STRESS TEST DATA

MODEL NO : PA-1900-02D **REV : D** **DATE :11-27-2002**

MOSFET				Component Spec.					Worst Case Stress in Test Data													
No.	LOCATION	P/N	MAKER	Vds	Vgs	Id	Rth(j-c)	TEMP.	Vds(Peak)			Vgs(Peak)			Id(rms)			P	TEMP.			
									INPUT	APPLY	%	INPUT	APPLY	%	INPUT	APPLY	%		INPUT	APPLY	Tj	JUDGE
				V	V	A	℃/W	℃	VAC	V		VAC	V		VAC	A		W	VAC	40℃	40℃	
1	Q001	2SK2842	TOSHB	500	30.0	12.0	3.1	150.0	230	418.8	83.8	180	12.34	41.1	180	0.68	5.66	0.75	180	90.7	93.0	OK
2	Q002	2N7002	PHLIP	60	40.0	0.2	500.0	150.0	180	2.6	4.4	265	10.31	25.8	180	664.20u	0.37	5.60m	265	84.5	87.3	OK
3	Q050	2SK2843	TOSHB	600	30.0	10.0	2.8	150.0	180	568.8	94.8	265	10.94	36.5	180	0.59	5.93	0.51	180	94.2	95.6	OK
4	Q103	2N7002	PHLIP	60	40.0	0.2	500.0	150.0	265	13.0	21.6	180	0.47	1.2	265	833.50u	0.46	19.00u	230	87.7	87.7	OK
5	Q200	STP40NF10L	STM	100	15.0	40.0	1.0	175.0	265	94.3	94.3	180	13.63	90.9	230	3.07	7.67	0.31	180	85.2	85.5	OK
6	Q201	STP40NF10L	STM	100	15.0	40.0	1.0	175.0	180	93.8	93.8	180	13.38	89.2	230	3.07	7.67	0.31	180	85.3	85.6	OK
7	Q204	2N7002	PHLIP	60	40.0	0.2	500.0	150.0	265	13.1	21.9	265	10.62	26.5	230	49.46m	27.48	12.50m	180	88.0	94.3	OK

TEMP. = Temperature ; *** : 180VAC - 265VAC
AMBIENT TEMPERATURE : 40℃
Rth(j-c) = Thermal Resistance , Junction to case
Tj = P (TEST DATA; W) * Rth(j-c) + TEMP.(TEST DATA; APPLY; 40℃)
EXAMPLE : (Q204) Tj =12.50m *500.0 + 88.0 = 94.3℃

Vds(TEST DATA; APPLY; V) < Vds(COMPONENT SPEC.; V) * 95%
Id(TEST DATA; APPLY; A) < Id(COMPONENT SPEC.; A) * 80%
Tj(TEST DATA; APPLY; 40℃) < TEMP.(COMPONENT SPEC.; ℃)
Vgs(TEST DATA; APPLY; V) < Vgs(COMPONENT SPEC.; V) * 95%

LITEON

KEY COMPONENT STRESS TEST DATA

MODEL NO : PA-1900-02D **REV : D** **DATE :11-27-2002**

CHOKE		Component Spec.	Worst Case Stress in Test Data		
No.	LOCATION	TEMP.(WINDING)	TEMP.		
			INPUT	APPLY	JUDGE
		℃	VAC	40℃	
1	T1	130	180	107.6	OK
2	L001	130	180	75.9	OK
3	L002	130	265	86.3	OK
4	L003	130	265	79.6	OK
5	L010	130	180	75.1	OK
6	L200	130	180	82.8	OK

TEMP. = Temperature ; *** : 180VAC - 265VAC
AMBIENT TEMPERATURE : 40℃

TEMP.(TEST DATA; APPLY; 40℃) < TEMP.(COMPONENT SPEC.; ℃)

LITEON

KEY COMPONENT STRESS TEST DATA

MODEL NO : PA-1900-02D

REV : D DATE :11-27-2002

PHOTO-COUPLE				Component Spec.					Worst Case Stress in Test Data											
No.	LOCATION	P/N	MAKER	Vce(Vr)	Ic(If)	P	TEMP.	Rth(j-c)	Vr(Peak)			Ic(If)			P	TEMP.			
									INPUT	APPLY	%	INPUT	APPLY	%		INPUT	APPLY	Tj	JUDGE
				V	A	W	℃	℃/W	VAC	V		VAC	A		W	VAC	40℃	40℃	
1	PC300	LTV-817M-PRA	LITON	35.0	50.0m	0.15	125.0	500.0	265	12.190	34.8	180	756.80u	1.5	8.64m	265	82.0	86.3	OK
2	PC3002	LTV-817M-PRA	LITON	6.0	50.0m	70.00m	125.0	500.0	265	0.620	10.3	230	692.00u	1.4	415.20u	265	82.0	82.2	OK
3	PC301	LTV-817M-PRA	LITON	35.0	50.0m	0.15	125.0	500.0	230	12.810	36.6	265	655.40u	1.3	8.09m	265	78.6	82.6	OK
4	PC3012	LTV-817M-PRA	LITON	6.0	50.0m	70.00m	125.0	500.0	265	15.580m	0.3	180	426.40u	0.9	0.81u	265	88.6	88.6	OK

TEMP. = Temperature ; *** : 180VAC - 265VAC
AMBIENT TEMPERATURE : 40℃
Tj = Vce(Vr)(TEST DATA; APPLY; Vrms) * Ic(If)(TEST DATA; APPLY; A) * Rth(j-c) + TEMP.(TEST DATA; APPLY; 40℃)
EXAMPLE : (PC3012) Tj = .0023 * .0003538 * 500.0 + 88.6 = 88.6℃

Vce(Vr)(TEST DATA; APPLY; V) < Vce(Vr)(COMPONENT SPEC.; V) * 95%
Ic(If)(TEST DATA; APPLY; A) < Ic(If)(COMPONENT SPEC.; A) * 80%
P(TEST DATA; APPLY; W) < P(COMPONENT SPEC.; W)
Tj(TEST DATA; 40℃) < TEMP.(COMPONENT SPEC.; ℃)

LITEON

KEY COMPONENT STRESS TEST DATA

MODEL NO : PA-1900-02D **REV : D** **DATE :11-27-2002**

THERMISTOR				Component Spec.			Worst Case Stress in Test Data					
No.	LOCATION	TYPE	MAKER	VALUE	I	TEMP.	I(rms)			TEMP		
							INPUT	APPLY	%	INPUT	APPLY	JUDGE
				OHMS	A	℃	VAC	A		VAC	40℃	
1	RT100	R.TH	THINK	100K	2.00m	125.0	180	872.00u	43.60	265	84.2	OK

TEMP. = Temperature ; *** : 180VAC - 265VAC
AMBIENT TEMPERATURE : 40℃

I(TEST DATA; APPLY; A) < I(COMPONENT SPEC.; A)
Temp.(TEST DATA; 50℃) < TEMP.(COMPONENT SPEC. ; ℃)

RELIABILITY ENGINEERING REPORT

TO : DOC

DOC NO : 0301803

DATE : 01/08/2003

FROM : QRA RELIABILITY

SUBJECT : PA-1900-02D MTBF TEST REPORT.

DESCRIPTION :

1. 此份爲 PA-1900-02D MTBF TEST REPORT.

MIL-217F PREDITABLE MTBF : 115VAC : 140,819 Hours, Ambient : 25 °C
230VAC : 130,807Hours, Ambient : 25 °C

2. 此份根據 PART LIST REV. D 完成 .

3. 請技資保留原稿存檔 .

敬會 設計工程師 : 賴成烈 1/8/03

設計部經理 : Jerry Hsu 1/8/03

PREPARED BY : 張家祥 Jan.03'03 CHECKED BY : _____ APPROVED BY : 林宣揚 Jan.03'03

PA-1900-02D MTBF REPORT LIST REV. D 01-03-2003

COMPONENT	FAILURE RATE	Q'TY	PAGE NO.
Resistor	268.03	66	1, 2, 3
Capacitor	614.52	34	4, 5
Diode	866.53	16	6
Transformer	262.28	1	7
Transistor	9.90	6	8
IC	1445.11	3	9
MOSFET	2994.01	7	10
Choke	68.01	5	11
Photo-Couple	507.93	4	12
Thermistor	65.00	1	13
TOTAL	**7101.31**	**143**	
MTBF	**140819**	**HOURS**	

REFER DOCUMENT : MIL - HDBK 217F

CUSTOMER MTBF SPEC. : 125,000 Hours

ACTUAL MTBF : 140,819 Hours

JUDGE : OK

PREPARED : 張家祥 Jan 10'03 CHECK : 人 APPROVED : 許慶揚 Jan. 03'02

COMPONENT FAILURE RATE ANALYSIS

RESISTOR

Model NO. : PA-1900-02D	INPUT : 115VAC	OUTPUT : MAX LOAD AT : 25 ℃	REV. D	Page 1

RATING				STRESS				$\lambda p = \lambda b * \pi E * \pi R * \pi Q * 1000$				
Location	TYPE	OHM	W(rate)	Vac(V)	Vdc(V)	Vrms(V)	Watt	λb	πE	πR	πQ	λP
R001	R.CF	2M	.25	28.55	-1.0m	28.55	407.6u	0.00069	1.0	1.600	5.0	5.50739
R0010	R.CF	51K	.25	4.73	71.06	71.22	99.4m	0.00106	1.0	1.000	5.0	5.30438
R0011	R.CF	51K	.25	2.44	70.94	70.98	98.8m	0.00106	1.0	1.000	5.0	5.28920
R0012	R.CF	51K	.25	2.44	71.21	71.25	99.5m	0.00106	1.0	1.000	5.0	5.30661
R0013	R.CF	51K	.25	4.5	70.97	71.11	99.2m	0.00106	1.0	1.000	5.0	5.29761
R002	R.CF	2M	.25	22.31	-1.1m	22.31	248.9u	0.00069	1.0	1.600	5.0	5.50357
R003	R.HV	1M	.125	16.34	47.95	50.66	2.6m	0.00070	1.0	1.100	5.0	3.86525
R004	R.HV	1M	.125	15.35	47.96	50.36	2.5m	0.00070	1.0	1.100	5.0	3.86423
R005	R.CF	20K	.1	474.0m	1.11	1.21	72.8u	0.00069	1.0	1.000	5.0	3.43873
R006	R.HV	499K	.25	2.81	107.8	107.84	23.3m	0.00076	1.0	1.100	5.0	4.18443
R007	R.HV	499K	.25	2.81	107.8	107.84	23.3m	0.00076	1.0	1.100	5.0	4.18443
R008	R.MF	11.5K	.1	70.0m	2.48	2.48	535.2u	0.00069	1.0	1.000	5.0	3.45613
R008-1	R.MF	14.7K	.1	7.3m	0.1m	7.3m	0.0u	0.00069	1.0	1.000	5.0	3.43600
R009	R.HV	1M	.125	17.06	38.15	41.79	1.7m	0.00070	1.0	1.100	5.0	3.83768
R010	R.HV	1M	.125	16.46	38.25	41.64	1.7m	0.00070	1.0	1.100	5.0	3.83726
R011	R.MF	511K	.125	410.0m	15.73	15.74	484.5u	0.00069	1.0	1.100	5.0	3.79562
R012	R.MF	3.01K	.1	8.6m	0.1m	8.6m	0.0u	0.00069	1.0	1.000	5.0	3.43600
R013	R.CF	68K	.1	32.6m	46.6m	56.8m	0.0u	0.00069	1.0	1.000	5.0	3.43600
R014	R.MO(S)	0.24	1	136.8m	77.1m	157.1m	102.8m	0.00077	1.0	1.000	5.0	3.84397
R016	R.CF	47	.125	492.6m	0.0m	492.6m	5.2m	0.00072	1.0	1.000	5.0	3.59446
R017	R.CF	30	.125	0.0m	5.6m	5.6m	1.1u	0.00069	1.0	1.000	5.0	3.43603
R022	R.CF	1M	.125	17.12	37.24	40.99	1.7m	0.00070	1.0	1.100	5.0	3.83545
R023	R.CF	1M	.125	16.36	36.86	40.33	1.6m	0.00070	1.0	1.100	5.0	3.83366
R024	R.MF	590K	.125	340.3m	22.02	22.02	822.0u	0.00069	1.0	1.100	5.0	3.80683
R025	R.MF	205K	.1	369.7m	0.0m	369.7m	0.7u	0.00069	1.0	1.100	5.0	3.77962
TOTAL												**103.1105**

COMPONENT FAILURE RATE ANALYSIS

RESISTOR

Model NO. : PA-1900-02D INPUT : 115VAC OUTPUT : MAX LOAD AT : 25 ℃ REV. D Page 2

RATING				STRESS				$\lambda p = \lambda b * \pi E * \pi R * \pi Q * 1000$				
Location	TYPE	OHM	W(rate)	Vac(V)	Vdc(V)	Vrms(V)	Watt	λb	πE	πR	πQ	λP
R051	R.MO(S)	0.1	1	87.0m	45.5m	98.2m	96.4m	0.00076	1.0	1.000	5.0	3.81728
R065	R.CF	15	.125	126.3m	152.0m	197.6m	2.6m	0.00070	1.0	1.000	5.0	3.51501
R067	R.MF	3.57K	.125	104.5m	12.28	12.28	42.3m	0.00099	1.0	1.000	5.0	4.97018
R068	R.MF	10K	.1	0.4m	6.6m	6.6m	0.0u	0.00069	1.0	1.000	5.0	3.43600
R102	R.CF	47	.125	308.9m	0.1m	308.9m	2.0m	0.00070	1.0	1.000	5.0	3.49747
R103	R.CF	390.0K	.1	0.7m	76.3m	76.3m	0.0u	0.00069	1.0	1.100	5.0	3.77960
R104	R.CF	2.2M	.1	12.0	6.4	13.60	84.1u	0.00069	1.0	1.600	5.0	5.50264
R105	R.CF	10	.1	0.1m	2.7m	2.7m	0.7u	0.00069	1.0	1.000	5.0	3.43602
R106	R.MF	19.6K	.1	55.0m	139.7m	150.1m	1.2u	0.00069	1.0	1.000	5.0	3.43604
R107	R.CF	15	.125	0.1m	18.4m	18.5m	22.7u	0.00069	1.0	1.000	5.0	3.43668
R120	R.MF	1K	.1	54.5m	1.17	1.17	1.4m	0.00070	1.0	1.000	5.0	3.48784
R121	R.CF	470	.1	0.0m	6.6m	6.6m	0.1u	0.00069	1.0	1.000	5.0	3.43600
R122	R.CF	47	.125	410.5m	1.5m	410.5m	3.6m	0.00071	1.0	1.000	5.0	3.54530
R123	R.MF	3.01K	.1	54.0m	220.0m	226.5m	17.0u	0.00069	1.0	1.000	5.0	3.43664
R124	R.MF	10K	.1	0.0m	0.1m	78.5u	0.0u	0.00069	1.0	1.000	5.0	3.43600
R126	R.CF	200K	.25	50.3m	4.97	4.97	123.5u	0.00069	1.0	1.100	5.0	3.78163
R200	R.CF	22	.25	154.2m	0.4m	154.2m	1.1m	0.00069	1.0	1.000	5.0	3.45225
R202	R.CF	10K	.125	14.11	12.19	18.65	34.8m	0.00093	1.0	1.000	5.0	4.65494
R203	R.MF	5.11	.125	498.2m	138.1m	517.0m	52.3m	0.00109	1.0	1.000	5.0	5.42533
R206	R.CF	22	.1	491.1m	478.5m	685.6m	21.4m	0.00087	1.0	1.000	5.0	4.33859
R207	R.MF	1K	.1	769.5m	181.5m	790.6m	625.1u	0.00069	1.0	1.000	5.0	3.45952
R208	R.MF	10K	.1	6.91	10.78	12.80	16.4m	0.00082	1.0	1.000	5.0	4.10941
R209	R.MF	1K	.1	6.72	10.1m	6.72	45.2m	0.00113	1.0	1.000	5.0	5.62515
R210	R.CF	10.0K	.125	43.5m	17.59	17.59	31.0m	0.00090	1.0	1.000	5.0	4.50241
R211	R.ZW	0.1513	.0275	0.0m	23.9m	23.9m	3.8m	0.00080	1.0	1.000	5.0	3.98949
TOTAL												**99.5074**

COMPONENT FAILURE RATE ANALYSIS

RESISTOR

Model NO. : PA-1900-02D INPUT : 115VAC OUTPUT : MAX LOAD AT : 25 ℃ REV. D Page 3

RATING				STRESS				$\lambda p = \lambda b * \pi E * \pi R * \pi Q * 1000$				
Location	TYPE	OHM	W(rate)	Vac(V)	Vdc(V)	Vrms(V)	Watt	λb	πE	πR	πQ	λP
R220	R.CF	10	.25	0.0m	26.1m	26.1m	68.2u	0.00069	1.0	1.000	5.0	3.43702
R221	R.CF	10	.125	451.8m	-2.0m	451.8m	20.4m	0.00082	1.0	1.000	5.0	4.10653
R300	R.CF	110	.1	0.0m	260.0m	260.0m	614.5u	0.00069	1.0	1.000	5.0	3.45912
R301	R.MF	34.8K	.1	0.0m	30.0m	30.0m	0.0u	0.00069	1.0	1.000	5.0	3.43600
R302	R.MF	5.11K	.1	0.0m	0.7m	700.0u	0.0u	0.00069	1.0	1.000	5.0	3.43600
R303	R.CF	200	.1	0.6m	0.6m	802.3u	0.0u	0.00069	1.0	1.000	5.0	3.43600
R304	R.CF	300	.1	5.5m	0.0m	5.5m	0.1u	0.00069	1.0	1.000	5.0	3.43600
R305	R.MF	200K	.1	5.4m	0.0m	5.4m	0.0u	0.00069	1.0	1.100	5.0	3.77960
R306	R.MF	2.49K	.1	25.9m	30.7m	40.1m	0.6u	0.00069	1.0	1.000	5.0	3.43602
R307	R.MF	10K	.1	2.7m	0.0m	2.7m	0.0u	0.00069	1.0	1.000	5.0	3.43600
R315	R.MF	11.5K	.1	52.2m	17.44	17.44	26.4m	0.00092	1.0	1.000	5.0	4.58602
R316	R.MF	10K	.1	0.0m	5.3m	5.3m	0.0u	0.00069	1.0	1.000	5.0	3.43600
R61	R.CF	10M	.25	770.9m	5.74	5.79	3.4u	0.00069	1.0	1.600	5.0	5.49767
R62	R.CF	10M	.25	775.1m	5.76	5.81	3.4u	0.00069	1.0	1.600	5.0	5.49767
R63	R.CF	10M	.25	791.3m	5.75	5.80	3.4u	0.00069	1.0	1.600	5.0	5.49767
R64	R.CF	10M	.25	797.4m	5.76	5.81	3.4u	0.00069	1.0	1.600	5.0	5.49767
TOTAL												**65.41099**

COMPONENT FAILURE RATE ANALYSIS

CAPACITOR

Model NO. : PA-1900-02D	INPUT : 115VAC	OUTPUT : MAX LOAD AT : 25 ℃	REV. D	Page 4

RATING				STRESS	$\lambda p = \lambda b * \pi E * \pi Q * \pi CV * 1000$				
Location	TYPE	CAP.	V(rate)	V	λb	πE	πQ	πCV	λP
C001	MEX	0.33UF	400	162.60	0.00226	1.0	10.000	1.001	22.64407
C002	MEF	0.47UF	400	119.15	0.00133	1.0	10.000	1.032	13.76206
C003	MEF	0.47UF	400	113.32	0.00128	1.0	10.000	1.032	13.19313
C004	MON	0.01UF	50	1.81	0.00064	1.0	3.000	1.129	2.15260
C005	MON	1UF	16	5.25	0.00159	1.0	3.000	1.874	8.95061
C005-1	MON	1UF	16	5.06	0.00150	1.0	3.000	1.874	8.41949
C006	DIS	1000PF	400	67.50	0.00081	1.0	3.000	0.877	2.13634
C008	MON	0.1UF	100	17.19	0.00075	1.0	3.000	1.455	3.28902
C009	MON	0.1UF	16	50.0u	0.00063	1.0	3.000	1.455	2.76823
C010	ELE	10UF	50	11.88	0.01325	1.0	3.000	0.515	20.45837
C024	MON	0.47UF	50	16.72	0.00164	1.0	3.000	1.725	8.51029
C051	ELE	120UF	400	221.88	0.02831	1.0	3.000	0.805	68.35382
C053	MON	3300PF	500	179.69	0.00172	1.0	3.000	1.000	5.17203
C054	ELE	22UF	50	12.66	0.01352	1.0	3.000	0.593	24.05826
C054-1	ELE	10UF	50	0.0u	0.01197	1.0	3.000	0.515	18.47579
C068	MON	1UF	10	418.8m	0.00069	1.0	3.000	1.874	3.88788
C109	MON	0.1UF	16	525.0m	0.00064	1.0	3.000	1.455	2.77185
C120	MON	0.022UF	25	1.53	0.00064	1.0	3.000	1.232	2.36341
C122	MON	1000PF	200	36.88	0.00078	1.0	3.000	0.877	2.05539
C123	MON	0.22UF	16	593.8m	0.00069	1.0	3.000	1.587	3.28868
C124	MON	0.22UF	16	789.5u	0.00069	1.0	3.000	1.587	3.28247
C125	MON	0.1UF	16	46.2u	0.00063	1.0	3.000	1.455	2.76823
C200	MON	1000PF	200	62.50	0.00135	1.0	3.000	0.877	3.55335
C201	MON	0.1UF	16	125.0m	0.00063	1.0	3.000	1.455	2.76827
C204	ELE	820UF	25	18.80	0.05268	1.0	3.000	1.138	179.78210
TOTAL									**428.8658**

COMPONENT FAILURE RATE ANALYSIS

CAPACITOR

Model NO. : PA-1900-02D	INPUT : 115VAC	OUTPUT : MAX LOAD AT : 25 ℃	REV. D	Page 5

RATING				STRESS	$\lambda p = \lambda b * \pi E * \pi Q * \pi CV * 1000$				
Location	TYPE	CAP.	V(rate)	V	λb	πE	πQ	πCV	λP
C205	ELE	470UF	25	18.80	0.05268	1.0	3.000	1.029	162.64380
C208	MON	0.1UF	25	42.7u	0.00063	1.0	3.000	1.455	2.76823
C300	MON	0.1UF	16	44.3u	0.00063	1.0	3.000	1.455	2.76823
C301	MON	0.1UF	16	325.0m	0.00063	1.0	3.000	1.455	2.76908
C303	MON	1UF	10	237.5m	0.00069	1.0	3.000	1.874	3.87926
C303-1	MON	1UF	10	243.8m	0.00069	1.0	3.000	1.874	3.87942
C304	MON	0.1UF	16	46.9u	0.00063	1.0	3.000	1.455	2.76823
C305	MON	220PF	50	56.2u	0.00063	1.0	3.000	0.742	1.41211
C306	MON	0.1UF	16	4.6m	0.00063	1.0	3.000	1.455	2.76823
TOTAL									**185.6566**

COMPONENT FAILURE RATE ANALYSIS

DIODE

Model NO. : PA-1900-02D INPUT : 115VAC OUTPUT : MAX LOAD AT : 25 ℃ REV. D Page 6

RATING						STRESS			$\lambda p = \lambda b * \pi E * \pi Q * \pi T * \pi S * \pi C * 1000$						
Location	P/N	TYPE	V(rate)	If(A)	Tj(℃)	Vr(V)	If(A)	Tj(℃)	λb	πE	πQ	πT	πS	πC	λP
D001	LL4148GS08	FR	75	.15	175	2.34	-134.5u	62.5	0.06900	1.0	5.5	3.191	0.054	1.0	65.40240
D003	MUR460	FR	600	4	175	218.75	1.11	77.9	0.06900	1.0	5.5	4.781	0.086	1.0	156.26330
D004	LL4148GS08	FR	75	.15	175	3.6m	0.0u	56.7	0.06900	1.0	5.5	2.711	0.054	1.0	55.55516
D050	2KBP08M	BRIDGE	800	2	165	168.75	894.5m	77.0	0.00500	1.0	5.5	4.672	0.054	1.0	6.93822
D051	BAS21	FR	200	.2	150	51.25	8.2m	65.7	0.06900	1.0	5.5	3.477	0.054	1.0	71.25942
D052	LT2A07G	GENERAL	1000	2	150	343.75	-21.5m	67.1	0.00380	1.0	5.5	3.613	0.075	1.0	5.63804
D101	BAS21	FR	200	.2	150	26.88	253.5u	66.6	0.06900	1.0	5.5	3.566	0.054	1.0	73.06856
D102	LL4148GS08	FR	75	.15	175	4.4m	287.6u	53.5	0.06900	1.0	5.5	2.472	0.054	1.0	50.65778
D201	LL4148GS08	FR	75	.15	175	31.25	9.9m	60.6	0.06900	1.0	5.5	3.023	0.119	1.0	136.68700
D202	LL4148GS08	FR	75	.15	175	9.37	2.1m	58.7	0.06900	1.0	5.5	2.871	0.054	1.0	58.82569
D203	LL4148GS08	FR	75	.15	175	4.44	11.2m	56.6	0.06900	1.0	5.5	2.699	0.054	1.0	55.32017
ZD001	MMBZ5254BLT1	ZENER	27	.01	150	16.57	2.3m	71.1	0.00200	1.0	5.5	2.377	1.000	1.0	26.14472
ZD065	BZX84-C15	ZENER	15.6	.25	150	14.06	3.8m	75.0	0.00200	1.0	5.5	2.529	1.000	1.0	27.81864
ZD200	BZX84-C15	ZENER	15.6	.25	150	11.25	28.8m	71.9	0.00200	1.0	5.5	2.405	1.000	1.0	26.45941
ZD201	BZX84-C15	ZENER	15.6	.25	150	125.0m	47.2u	63.0	0.00200	1.0	5.5	2.076	1.000	1.0	22.83883
ZD202	BZX84-C15	ZENER	15.6	.25	150	9.50	6.5m	74.6	0.00200	1.0	5.5	2.514	1.000	1.0	27.64968
TOTAL															**866.527**

COMPONENT FAILURE RATE ANALYSIS

TRANSFORMER

Model NO. : PA-1900-02D	INPUT : 115VAC	OUTPUT : MAX LOAD AT : 25 ℃			REV. D	Page 7
RATING		STRESS	$\lambda p = \lambda b * \pi E * \pi Q * 1000$			
Location	MAKER	TYPE	Ths(℃)	λb	πE	πQ	λP
T1	LITON	C30/19-52PC4	88.9	0.00874	1.0	30.0	262.27860
TOTAL							**262.2786**

COMPONENT FAILURE RATE ANALYSIS

TRANSISTOR

Model NO. : PA-1900-02D INPUT : 115VAC OUTPUT : MAX LOAD AT : 25 ℃ REV. D Page 8

RATING					STRESS			$\lambda p = \lambda b * \pi R * \pi Q * \pi A * \pi S * \pi T * \pi E * 1000$							
Location	P/N	Vce(rate)(V)	Ie(A)	Tj(℃)	Vce(V)	Ie(A)	Tj(℃)	λb	πR	πQ	πA	πS	πT	πE	λP
Q005	KST4403	40	.6	150	14.06	268.7u	66.8	0.00074	0.678	8.0	0.700	0.134	2.391	1.0	0.89908
Q065	MMST4401	40	.6	150	24.06	5.5m	106.8	0.00074	0.551	8.0	0.700	0.290	4.608	1.0	3.05775
Q102	MMST4401	40	.6	150	1.77	3.4m	65.5	0.00074	0.551	8.0	0.700	0.052	2.335	1.0	0.27536
Q203	KST4403	40	.6	150	8.13	11.1m	73.3	0.00074	0.678	8.0	0.700	0.084	2.689	1.0	0.63849
Q205	KST4403	40	.6	150	12.50	4.3m	83.8	0.00074	0.678	8.0	0.700	0.119	3.221	1.0	1.07324
Q206	MMST4401	40	.6	150	34.40	10.3m	73.1	0.00074	0.551	8.0	0.700	0.647	2.678	1.0	3.95967
TOTAL															**9.90358**

COMPONENT FAILURE RATE ANALYSIS

IC

Model NO. : PA-1900-02D INPUT : 115VAC OUTPUT : MAX LOAD AT : 25 ℃															REV. D Page 9
RATING						STRESS			λp = (C1* πT+C2* πE)* πQ* πL*1000						
Location	MAKER	TYPE	Vcc(V)	I(A)	Tj(℃)	Vcc(V)	I(A)	Tj(℃)	πQ	C1	πT	C2	πE	πL	λP
IC1	STM	L6561D	18	.03	150	12.66	15.0m	86.9	10.0	.01	7.784	0.003	.5	1.000	795.41900
IC100	PHILIP	LTA201P	20	.0625	150	13.91	15.6m	70.7	10.0	.01	2.901	0.006	.5	1.000	321.17410
IC302	STM	TSM103AID	36	.02	150	20.63	466.0u	71.8	10.0	.01	3.115	0.003	.5	1.000	328.51330
TOTAL															**1445.106**

COMPONENT FAILURE RATE ANALYSIS

MOSFET

Model NO. : PA-1900-02D INPUT : 115VAC OUTPUT : MAX LOAD AT : 25 ℃ REV. D Page 10

		RATING					STRESS			$\lambda p = \lambda b * \pi E * \pi Q * \pi T * \pi A * 1000$					
Location	MAKER	TYPE	Vds(V)	Id(A)	Pr(W)	Tj(℃)	Vds(V)	Id(A)	Tj(℃)	λb	πE	πQ	πT	πA	λP
Q001	TOSHB	2SK2842	500	12	30	150	228.13	804.1m	73.5	.012	1.0	5.5	2.471	4.000	652.40950
Q002	PHLIP	2N7002	60	.18	.3	150	2.81	368.6u	68.4	.012	1.0	5.5	2.273	0.700	105.01250
Q050	TOSHB	2SK2843	600	10	35	150	412.50	759.2m	78.7	.012	1.0	5.5	2.682	4.000	707.93630
Q103	PHLIP	2N7002	60	.18	.3	150	12.81	1.0m	72.8	.012	1.0	5.5	2.442	0.700	112.83990
Q200	STM	STP40NF10L	100	40	30	175	62.50	3.32	71.8	.012	1.0	5.5	2.403	4.000	634.47940
Q201	STM	STP40NF10L	100	40	30	175	61.88	3.32	73.8	.012	1.0	5.5	2.482	4.000	655.23680
Q204	PHLIP	2N7002	60	.18	.3	150	12.50	37.4m	79.8	.012	1.0	5.5	2.729	0.700	126.09440
TOTAL															**2994.009**

COMPONENT FAILURE RATE ANALYSIS

CHOKE

Model NO. : PA-1900-02D INPUT : 115VAC OUTPUT : MAX LOAD AT : 25 ℃								REV. D Page 11
RATING			STRESS	$\lambda p = \lambda b * \pi E * \pi Q * \pi C * 1000$				
Location	MAKER	TYPE	Ths(℃)	λb	πE	πQ	πC	λP
L001	LITON	TR12*6*4	58.5	0.00058	1.0	20.0	1.0	11.68277
L002	LITON	TR16*12*8	73.7	0.00085	1.0	20.0	1.0	17.03271
L003	LITON	T60-26	68.3	0.00073	1.0	20.0	1.0	14.52218
L010	LITON	RM10 NC2H	39.8	0.00046	1.0	20.0	1.0	9.18368
L200	LITON	TR9*5*3	70.9	0.00078	1.0	20.0	1.0	15.58785
TOTAL								**68.00919**

COMPONENT FAILURE RATE ANALYSIS

PHOTO-COUPLE

Model NO. : PA-1900-02D INPUT : 115VAC OUTPUT : MAX LOAD AT : 25 ℃ REV. D Page 12

				RATING			STRESS			$\lambda p = \lambda b * \pi E * \pi Q * \pi T * 1000$				
Location	MAKER	P/N	TYPE	Vr(V)	If(A)	Tj(℃)	Vr(V)	If(A)	Tj(℃)	λb	πE	πQ	πT	λP
PC300	LITON	LTV-817M-PRA	TRANSISTOR	35	.05	125	12.03	806.8u	71.1	0.00550	1.0	8.0	3.505	154.23350
PC3002	LITON	LTV-817M-PRA	DIODE	6	.05	125	620.0m	565.8u	66.7	0.00400	1.0	8.0	3.154	100.91620
PC301	LITON	LTV-817M-PRA	TRANSISTOR	35	.05	125	12.66	906.8u	67.0	0.00550	1.0	8.0	3.177	139.80840
PC3012	LITON	LTV-817M-PRA	DIODE	6	.05	125	15.6m	544.6u	71.4	0.00400	1.0	8.0	3.530	112.96950
TOTAL														**507.9275**

COMPONENT FAILURE RATE ANALYSIS

THERMISTOR

Model NO. : PA-1900-02D	INPUT : 115VAC	OUTPUT : MAX LOAD AT : 25 ℃	REV. D	Page 13

RATING			$\lambda p = \lambda b * \pi E * \pi Q * 1000$			
Location	MAKER	TYPE	λb	πE	πQ	λP
RT100	THINK	R.TH	.065	1.0	1.0	65.00000
TOTAL						**65.000**

PA-1900-02D MTBF REPORT LIST REV. D 01-03-2003

COMPONENT	FAILURE RATE	Q'TY	PAGE NO.
Resistor	272.99	66	1, 2, 3
Capacitor	1295.97	34	4, 5
Diode	1137.31	16	6
Transformer	252.70	1	7
Transistor	8.85	6	8
IC	1287.37	3	9
MOSFET	2769.67	7	10
Choke	67.31	5	11
Photo-Couple	487.68	4	12
Thermistor	65.00	1	13
TOTAL	**7644.84**	**143**	
MTBF	**130807**	**HOURS**	

REFER DOCUMENT : MIL - HDBK 217F

CUSTOMER MTBF SPEC. : 125,000 Hours

ACTUAL MTBF : 130,807 Hours

JUDGE : OK

PREPARED : 張家祥 Jan,03'03 CHECK : 又 APPROVED : 林慶揚 Jan.03'02

COMPONENT FAILURE RATE ANALYSIS

RESISTOR

Model NO. : PA-1900-02D INPUT : 230VAC OUTPUT : MAX LOAD AT : 25 ℃ REV. D Page 1

RATING				STRESS				$\lambda p = \lambda b * \pi E * \pi R * \pi Q * 1000$				
Location	TYPE	OHM	W(rate)	Vac(V)	Vdc(V)	Vrms(V)	Watt	λb	πE	πR	πQ	λP
R001	R.CF	2M	.25	57.33	30.6m	57.33	1.6m	0.00069	1.0	1.600	5.0	5.53718
R0010	R.CF	51K	.25	9.36	69.7	70.33	97.0m	0.00105	1.0	1.000	5.0	5.24738
R0011	R.CF	51K	.25	1.91	69.97	70.00	96.1m	0.00105	1.0	1.000	5.0	5.22664
R0012	R.CF	51K	.25	1.9	69.88	69.91	95.8m	0.00104	1.0	1.000	5.0	5.22099
R0013	R.CF	51K	.25	4.18	69.16	69.29	94.1m	0.00104	1.0	1.000	5.0	5.18258
R002	R.CF	2M	.25	45.0	19.4m	45.00	1.0m	0.00069	1.0	1.600	5.0	5.52195
R003	R.HV	1M	.125	29.04	102.96	106.98	11.4m	0.00076	1.0	1.100	5.0	4.17684
R004	R.HV	1M	.125	28.62	99.74	103.76	10.8m	0.00075	1.0	1.100	5.0	4.15222
R005	R.CF	20K	.1	895.0m	2.24	2.41	290.9u	0.00069	1.0	1.000	5.0	3.44693
R006	R.HV	499K	.25	2.14	194.8	194.81	76.1m	0.00096	1.0	1.100	5.0	5.26825
R007	R.HV	499K	.25	2.14	194.8	194.81	76.1m	0.00096	1.0	1.100	5.0	5.26825
R008	R.MF	11.5K	.1	50.0m	4.49	4.49	1.8m	0.00070	1.0	1.000	5.0	3.50239
R008-1	R.MF	14.7K	.1	7.3m	0.1m	7.3m	0.0u	0.00069	1.0	1.000	5.0	3.43600
R009	R.HV	1M	.125	30.85	79.81	85.56	7.3m	0.00073	1.0	1.100	5.0	4.02914
R010	R.HV	1M	.125	30.53	74.33	80.36	6.5m	0.00073	1.0	1.100	5.0	3.99884
R011	R.MF	511K	.125	860.0m	32.37	32.38	2.1m	0.00070	1.0	1.100	5.0	3.84793
R012	R.MF	3.01K	.1	8.6m	0.0m	8.6m	0.0u	0.00069	1.0	1.000	5.0	3.43600
R013	R.CF	68K	.1	23.9m	36.6m	43.7m	0.0u	0.00069	1.0	1.000	5.0	3.43600
R014	R.MO(S)	0.24	1	68.1m	27.2m	73.3m	22.4m	0.00070	1.0	1.000	5.0	3.52100
R016	R.CF	47	.125	6.3m	0.0m	6.3m	0.8u	0.00069	1.0	1.000	5.0	3.43602
R017	R.CF	30	.125	46.3m	0.7m	46.3m	71.6u	0.00069	1.0	1.000	5.0	3.43815
R022	R.CF	1M	.125	30.87	89.69	94.85	9.0m	0.00074	1.0	1.100	5.0	4.08854
R023	R.CF	1M	.125	30.31	76.59	82.37	6.8m	0.00073	1.0	1.100	5.0	4.01030
R024	R.MF	590K	.125	1.11	33.79	33.81	1.9m	0.00070	1.0	1.100	5.0	3.84408
R025	R.MF	205K	.1	1.06	6.05	6.14	184.0u	0.00069	1.0	1.100	5.0	3.78720
TOTAL												**106.0608**

COMPONENT FAILURE RATE ANALYSIS

RESISTOR

Model NO. : PA-1900-02D INPUT : 230VAC OUTPUT : MAX LOAD AT : 25 ℃ REV. D Page 2

RATING				STRESS				$\lambda p = \lambda b * \pi E * \pi R * \pi Q * 1000$				
Location	TYPE	OHM	W(rate)	Vac(V)	Vdc(V)	Vrms(V)	Watt	λb	πE	πR	πQ	λP
R051	R.MO(S)	0.1	1	64.6m	25.6m	69.4m	48.2m	0.00072	1.0	1.000	5.0	3.62167
R065	R.CF	15	.125	133.8m	200.9m	241.4m	3.9m	0.00071	1.0	1.000	5.0	3.55458
R067	R.MF	3.57K	.125	251.7m	10.73	10.73	32.3m	0.00091	1.0	1.000	5.0	4.55379
R068	R.MF	10K	.1	0.2m	5.7m	5.7m	0.0u	0.00069	1.0	1.000	5.0	3.43600
R102	R.CF	47	.125	338.6m	0.2m	338.7m	2.4m	0.00070	1.0	1.000	5.0	3.51000
R103	R.CF	390.0K	.1	24.6m	0.0m	24.6m	0.0u	0.00069	1.0	1.100	5.0	3.77960
R104	R.CF	2.2M	.1	13.16	6.42	14.64	97.5u	0.00069	1.0	1.600	5.0	5.50345
R105	R.CF	10	.1	0.1m	2.3m	2.4m	0.6u	0.00069	1.0	1.000	5.0	3.43602
R106	R.MF	19.6K	.1	63.7m	143.5m	157.0m	1.3u	0.00069	1.0	1.000	5.0	3.43604
R107	R.CF	15	.125	20.4m	0.1m	20.5m	27.9u	0.00069	1.0	1.000	5.0	3.43683
R120	R.MF	1K	.1	61.0m	1.18	1.18	1.4m	0.00070	1.0	1.000	5.0	3.48876
R121	R.CF	470	.1	0.0m	58.3m	58.3m	7.2u	0.00069	1.0	1.000	5.0	3.43627
R122	R.CF	47	.125	567.7m	8.5m	567.7m	6.9m	0.00073	1.0	1.000	5.0	3.64806
R123	R.MF	3.01K	.1	58.0m	235.0m	242.1m	19.5u	0.00069	1.0	1.000	5.0	3.43673
R124	R.MF	10K	.1	4.45	0.0m	4.45	2.0m	0.00070	1.0	1.000	5.0	3.51108
R126	R.CF	200K	.25	59.4m	4.97	4.97	123.5u	0.00069	1.0	1.100	5.0	3.78163
R200	R.CF	22	.25	423.4m	0.4m	423.4m	8.1m	0.00071	1.0	1.000	5.0	3.56042
R202	R.CF	10K	.125	23.33	15.71	28.13	79.1m	0.00137	1.0	1.000	5.0	6.85610
R203	R.MF	5.11	.125	580.9m	182.1m	608.8m	72.5m	0.00129	1.0	1.000	5.0	6.47312
R206	R.CF	22	.1	489.8m	522.7m	716.4m	23.3m	0.00089	1.0	1.000	5.0	4.43238
R207	R.MF	1K	.1	1.22	216.0m	1.24	1.5m	0.00070	1.0	1.000	5.0	3.49406
R208	R.MF	10K	.1	4.7	10.8	11.78	13.9m	0.00080	1.0	1.000	5.0	3.99779
R209	R.MF	1K	.1	4.56	10.0m	4.56	20.8m	0.00086	1.0	1.000	5.0	4.31150
R210	R.CF	10.0K	.125	37.7m	17.61	17.61	31.0m	0.00090	1.0	1.000	5.0	4.50439
R211	R.ZW	0.1513	.0275	0.0m	23.9m	23.9m	3.8m	0.00080	1.0	1.000	5.0	3.98949
TOTAL												**101.1898**

COMPONENT FAILURE RATE ANALYSIS

RESISTOR

Model NO. : PA-1900-02D INPUT : 230VAC OUTPUT : MAX LOAD AT : 25 ℃ REV. D Page 3

RATING				STRESS				$\lambda p = \lambda b * \pi E * \pi R * \pi Q * 1000$				
Location	TYPE	OHM	W(rate)	Vac(V)	Vdc(V)	Vrms(V)	Watt	λb	πE	πR	πQ	λP
R220	R.CF	10	.25	0.0m	26.1m	26.1m	68.2u	0.00069	1.0	1.000	5.0	3.43702
R221	R.CF	10	.125	534.9m	-9.0m	535.0m	28.6m	0.00088	1.0	1.000	5.0	4.41154
R300	R.CF	110	.1	0.0m	360.0m	360.0m	1.2m	0.00070	1.0	1.000	5.0	3.48047
R301	R.MF	34.8K	.1	0.0m	70.0m	70.0m	0.1u	0.00069	1.0	1.000	5.0	3.43600
R302	R.MF	5.11K	.1	0.0m	0.1m	56.0u	0.0u	0.00069	1.0	1.000	5.0	3.43600
R303	R.CF	200	.1	0.7m	0.6m	884.4u	0.0u	0.00069	1.0	1.000	5.0	3.43600
R304	R.CF	300	.1	7.3m	0.1m	7.3m	0.2u	0.00069	1.0	1.000	5.0	3.43600
R305	R.MF	200K	.1	5.9m	0.0m	5.9m	0.0u	0.00069	1.0	1.100	5.0	3.77960
R306	R.MF	2.49K	.1	42.1m	30.7m	52.1m	1.1u	0.00069	1.0	1.000	5.0	3.43604
R307	R.MF	10K	.1	2.6m	0.0m	2.6m	0.0u	0.00069	1.0	1.000	5.0	3.43600
R315	R.MF	11.5K	.1	46.5m	17.44	17.44	26.4m	0.00092	1.0	1.000	5.0	4.58601
R316	R.MF	10K	.1	0.0m	5.7m	5.7m	0.0u	0.00069	1.0	1.000	5.0	3.43600
R61	R.CF	10M	.25	1.07	11.6	11.65	13.6u	0.00069	1.0	1.600	5.0	5.49792
R62	R.CF	10M	.25	1.07	11.08	11.13	12.4u	0.00069	1.0	1.600	5.0	5.49789
R63	R.CF	10M	.25	1.08	13.06	13.10	17.2u	0.00069	1.0	1.600	5.0	5.49801
R64	R.CF	10M	.25	1.09	11.36	11.41	13.0u	0.00069	1.0	1.600	5.0	5.49791
TOTAL												**65.7384**

COMPONENT FAILURE RATE ANALYSIS

CAPACITOR

Model NO. : PA-1900-02D INPUT : 230VAC OUTPUT : MAX LOAD AT : 25 ℃									REV. D Page 4
RATING				STRESS	$\lambda p = \lambda b * \pi E * \pi Q * \pi CV * 1000$				
Location	TYPE	CAP.	V(rate)	V	λb	πE	πQ	πCV	λP
C001	MEX	0.33UF	400	326.00	0.03920	1.0	10.000	1.001	392.42230
C002	MEF	0.47UF	400	230.98	0.00789	1.0	10.000	1.032	81.40730
C003	MEF	0.47UF	400	230.07	0.00776	1.0	10.000	1.032	80.03513
C004	MON	0.01UF	50	3.59	0.00064	1.0	3.000	1.129	2.17829
C005	MON	1UF	16	4.38	0.00121	1.0	3.000	1.874	6.82334
C005-1	MON	1UF	16	4.19	0.00115	1.0	3.000	1.874	6.45634
C006	DIS	1000PF	400	126.56	0.00150	1.0	3.000	0.877	3.94112
C008	MON	0.1UF	100	35.63	0.00170	1.0	3.000	1.455	7.40574
C009	MON	0.1UF	16	462.5m	0.00063	1.0	3.000	1.455	2.77070
C010	ELE	10UF	50	11.88	0.01325	1.0	3.000	0.515	20.45837
C024	MON	0.47UF	50	32.50	0.00770	1.0	3.000	1.725	39.86283
C051	ELE	120UF	400	369.75	0.08759	1.0	3.000	0.805	211.49270
C053	MON	3300PF	500	173.44	0.00161	1.0	3.000	1.000	4.84256
C054	ELE	22UF	50	12.81	0.01358	1.0	3.000	0.593	24.15772
C054-1	ELE	10UF	50	12.81	0.01358	1.0	3.000	0.515	20.96138
C068	MON	1UF	10	481.3m	0.00069	1.0	3.000	1.874	3.89335
C109	MON	0.1UF	16	550.0m	0.00064	1.0	3.000	1.455	2.77239
C120	MON	0.022UF	25	1.56	0.00064	1.0	3.000	1.232	2.36460
C122	MON	1000PF	200	35.94	0.00077	1.0	3.000	0.877	2.02651
C123	MON	0.22UF	16	618.8m	0.00069	1.0	3.000	1.587	3.28950
C124	MON	0.22UF	16	742.3u	0.00069	1.0	3.000	1.587	3.28247
C125	MON	0.1UF	16	65.2u	0.00063	1.0	3.000	1.455	2.76823
C200	MON	1000PF	200	39.75	0.00082	1.0	3.000	0.877	2.15304
C201	MON	0.1UF	16	125.0m	0.00063	1.0	3.000	1.455	2.76827
C204	ELE	820UF	25	18.80	0.05268	1.0	3.000	1.138	179.78210
TOTAL									**1110.316**

COMPONENT FAILURE RATE ANALYSIS

CAPACITOR

Model NO. : PA-1900-02D INPUT : 230VAC OUTPUT : MAX LOAD AT : 25 ℃ REV. D Page 5									
RATING				STRESS	$\lambda p = \lambda b * \pi E * \pi Q * \pi CV * 1000$				
Location	TYPE	CAP.	V(rate)	V	λb	πE	πQ	πCV	λP
C205	ELE	470UF	25	18.80	0.05268	1.0	3.000	1.029	162.64380
C208	MON	0.1UF	25	44.7u	0.00063	1.0	3.000	1.455	2.76823
C300	MON	0.1UF	16	55.6u	0.00063	1.0	3.000	1.455	2.76823
C301	MON	0.1UF	16	293.8m	0.00063	1.0	3.000	1.455	2.76886
C303	MON	1UF	10	225.0m	0.00069	1.0	3.000	1.874	3.87898
C303-1	MON	1UF	10	225.0m	0.00069	1.0	3.000	1.874	3.87898
C304	MON	0.1UF	16	44.5u	0.00063	1.0	3.000	1.455	2.76823
C305	MON	220PF	50	46.2u	0.00063	1.0	3.000	0.742	1.41211
C306	MON	0.1UF	16	4.6m	0.00063	1.0	3.000	1.455	2.76823
TOTAL									**185.6557**

COMPONENT FAILURE RATE ANALYSIS

DIODE

Model NO. : PA-1900-02D INPUT : 230VAC OUTPUT : MAX LOAD AT : 25 ℃ REV. D Page 6

RATING						STRESS			$\lambda p = \lambda b * \pi E * \pi Q * \pi T * \pi S * \pi C * 1000$						
Location	P/N	TYPE	V(rate)	If(A)	Tj(℃)	Vr(V)	If(A)	Tj(℃)	λb	πE	πQ	πT	πS	πC	λP
D001	LL4148GS08	FR	75	.15	175	21.25	-189.3u	65.1	0.06900	1.0	5.5	3.418	0.054	1.0	70.04456
D003	MUR460	FR	600	4	175	335.75	670.9m	64.8	0.06900	1.0	5.5	3.397	0.244	1.0	314.45690
D004	LL4148GS08	FR	75	.15	175	3.5m	0.0u	49.8	0.06900	1.0	5.5	2.219	0.054	1.0	45.46658
D050	2KBP08M	BRIDGE	800	2	165	328.13	224.5m	57.0	0.00500	1.0	5.5	2.735	0.115	1.0	8.62658
D051	BAS21	FR	200	.2	150	70.63	12.8m	65.7	0.06900	1.0	5.5	3.477	0.080	1.0	105.19360
D052	LT2A07G	GENERAL	1000	2	150	518.75	-19.5m	65.1	0.00380	1.0	5.5	3.421	0.203	1.0	14.50785
D101	BAS21	FR	200	.2	150	25.63	385.3u	67.7	0.06900	1.0	5.5	3.669	0.054	1.0	75.17903
D102	LL4148GS08	FR	75	.15	175	4.1m	123.6u	48.9	0.06900	1.0	5.5	2.162	0.054	1.0	44.31445
D201	LL4148GS08	FR	75	.15	175	37.81	10.1m	59.7	0.06900	1.0	5.5	2.953	0.189	1.0	212.12600
D202	LL4148GS08	FR	75	.15	175	9.37	2.0m	57.3	0.06900	1.0	5.5	2.757	0.054	1.0	56.49018
D203	LL4148GS08	FR	75	.15	175	6.56	12.2m	59.2	0.06900	1.0	5.5	2.906	0.054	1.0	59.55460
ZD001	MMBZ5254BLT1	ZENER	27	.01	150	24.70	953.5u	69.3	0.00200	1.0	5.5	2.308	1.000	1.0	25.39339
ZD065	BZX84-C15	ZENER	15.6	.25	150	14.06	3.9m	72.6	0.00200	1.0	5.5	2.433	1.000	1.0	26.76036
ZD200	BZX84-C15	ZENER	15.6	.25	150	11.25	25.9m	68.1	0.00200	1.0	5.5	2.260	1.000	1.0	24.86104
ZD201	BZX84-C15	ZENER	15.6	.25	150	93.8m	35.3u	71.0	0.00200	1.0	5.5	2.372	1.000	1.0	26.09380
ZD202	BZX84-C15	ZENER	15.6	.25	150	13.12	10.4m	75.9	0.00200	1.0	5.5	2.567	1.000	1.0	28.23818
TOTAL															**1137.307**

COMPONENT FAILURE RATE ANALYSIS

TRANSFORMER

Model NO. : PA-1900-02D	**INPUT : 230VAC**	**OUTPUT : MAX LOAD AT : 25 ℃**			**REV. D**	**Page 7**
RATING			**STRESS**	**$\lambda p = \lambda b * \pi E * \pi Q * 1000$**		
Location	MAKER	TYPE	Ths(℃)	λb	πE	πQ	λP
T1	LITON	C30/19-52PC4	88.3	0.00842	1.0	30.0	252.69690
TOTAL							**252.6969**

COMPONENT FAILURE RATE ANALYSIS

TRANSISTOR

Model NO. : PA-1900-02D INPUT : 230VAC OUTPUT : MAX LOAD AT : 25 ℃ REV. D Page 8

RATING					STRESS			$\lambda p = \lambda b * \pi R * \pi Q * \pi A * \pi S * \pi T * \pi E * 1000$							
Location	P/N	Vce(rate)(V)	Ie(A)	Tj(℃)	Vce(V)	Ie(A)	Tj(℃)	λb	πR	πQ	πA	πS	πT	πE	λP
Q005	KST4403	40	.6	150	14.22	178.2u	65.8	0.00074	0.678	8.0	0.700	0.135	2.351	1.0	0.89504
Q065	MMST4401	40	.6	150	23.13	8.3m	115.8	0.00074	0.551	8.0	0.700	0.270	5.242	1.0	3.23687
Q102	MMST4401	40	.6	150	2.38	4.3m	65.6	0.00074	0.551	8.0	0.700	0.054	2.341	1.0	0.28945
Q203	KST4403	40	.6	150	7.50	11.1m	74.0	0.00074	0.678	8.0	0.700	0.080	2.722	1.0	0.61554
Q205	KST4403	40	.6	150	13.12	4.5m	83.5	0.00074	0.678	8.0	0.700	0.124	3.200	1.0	1.11877
Q206	MMST4401	40	.6	150	29.38	10.6m	73.3	0.00074	0.551	8.0	0.700	0.439	2.691	1.0	2.69623
TOTAL															**8.8519**

COMPONENT FAILURE RATE ANALYSIS

IC

Model NO. : PA-1900-02D INPUT : 230VAC OUTPUT : MAX LOAD AT : 25 ℃									REV. D Page 9						
RATING						STRESS			λp = (C1* πT+C2* πE)* πQ* πL*1000						
Location	MAKER	TYPE	Vcc(V)	I(A)	Tj(℃)	Vcc(V)	I(A)	Tj(℃)	πQ	C1	πT	C2	πE	πL	λP
IC1	STM	L6561D	18	.03	150	12.50	23.7m	88.0	10.0	.01	8.269	0.003	.5	1.000	843.95620
IC100	PHILIP	LTA201P	20	.0625	150	14.22	15.9m	64.3	10.0	.01	1.908	0.006	.5	1.000	221.89250
IC302	STM	TSM103AID	36	.02	150	20.63	435.7u	65.3	10.0	.01	2.045	0.003	.5	1.000	221.51830
TOTAL															**1287.367**

COMPONENT FAILURE RATE ANALYSIS

MOSFET

Model NO. : PA-1900-02D INPUT : 230VAC OUTPUT : MAX LOAD AT : 25 ℃ REV. D Page 10

			RATING				STRESS			$\lambda p = \lambda b * \pi E * \pi Q * \pi T * \pi A * 1000$					
Location	MAKER	TYPE	Vds(V)	Id(A)	Pr(W)	Tj(℃)	Vds(V)	Id(A)	Tj(℃)	λb	πE	πQ	πT	πA	λP
Q001	TOSHB	2SK2842	500	12	30	150	418.75	354.1m	70.1	.012	1.0	5.5	2.339	4.000	617.47430
Q002	PHLIP	2N7002	60	.18	.3	150	500.0m	551.4u	63.6	.012	1.0	5.5	2.097	0.700	96.90008
Q050	TOSHB	2SK2843	600	10	35	150	568.00	362.6m	69.5	.012	1.0	5.5	2.315	4.000	611.15860
Q103	PHLIP	2N7002	60	.18	.3	150	12.81	743.0u	72.7	.012	1.0	5.5	2.438	0.700	112.65840
Q200	STM	STP40NF10L	100	40	30	175	94.25	3.07	69.2	.012	1.0	5.5	2.304	4.000	608.13280
Q201	STM	STP40NF10L	100	40	30	175	93.25	3.07	69.1	.012	1.0	5.5	2.300	4.000	607.13380
Q204	PHLIP	2N7002	60	.18	.3	150	13.12	49.5m	74.7	.012	1.0	5.5	2.515	0.700	116.21450
TOTAL															**2769.672**

COMPONENT FAILURE RATE ANALYSIS

CHOKE

Model NO. : PA-1900-02D INPUT : 230VAC OUTPUT : MAX LOAD AT : 25 ℃								REV. D Page 11
RATING			STRESS	$\lambda p = \lambda b * \pi E * \pi Q * \pi C * 1000$				
Location	MAKER	TYPE	Ths(℃)	λb	πE	πQ	πC	λP
L001	LITON	TR12*6*4	60.0	0.00060	1.0	20.0	1.0	12.00091
L002	LITON	TR16*12*8	71.6	0.00080	1.0	20.0	1.0	15.94947
L003	LITON	T60-26	62.0	0.00062	1.0	20.0	1.0	12.48773
L010	LITON	RM10 NC2H	61.1	0.00061	1.0	20.0	1.0	12.26433
L200	LITON	TR9*5*3	68.6	0.00073	1.0	20.0	1.0	14.60799
TOTAL								**67.31043**

COMPONENT FAILURE RATE ANALYSIS

PHOTO-COUPLE

Model NO. : PA-1900-02D INPUT : 230VAC OUTPUT : MAX LOAD AT : 25 ℃

				RATING			STRESS			$\lambda p = \lambda b * \pi E * \pi Q * \pi T * 1000$				
Location	MAKER	P/N	TYPE	Vr(V)	If(A)	Tj(℃)	Vr(V)	If(A)	Tj(℃)	λb	πE	πQ	πT	λP
PC300	LITON	LTV-817M-PRA	TRANSISTOR	35	.05	125	12.19	583.6u	68.3	0.00550	1.0	8.0	3.282	144.42400
PC3002	LITON	LTV-817M-PRA	DIODE	6	.05	125	620.0m	692.0u	65.2	0.00400	1.0	8.0	3.044	97.39553
PC301	LITON	LTV-817M-PRA	TRANSISTOR	35	.05	125	12.81	536.8u	64.8	0.00550	1.0	8.0	3.014	132.62280
PC3012	LITON	LTV-817M-PRA	DIODE	6	.05	125	15.6m	366.4u	71.5	0.00400	1.0	8.0	3.539	113.23440
TOTAL														**487.6768**

COMPONENT FAILURE RATE ANALYSIS

THERMISTOR

Model NO. : PA-1900-02D	INPUT : 230VAC	OUTPUT : MAX LOAD AT : 25 ℃	REV. D	Page 13

RATING			$\lambda p = \lambda b * \pi E * \pi Q * 1000$			
Location	MAKER	TYPE	λb	πE	πQ	λP
RT100	THINK	R.TH	.065	1.0	1.0	65.00000
TOTAL						**65.000**

LITEON

D. Q. E. SECTION, POWER Q.R.A.

DESIGN QUALIFICATION ENGINEERING REPORT			FILE NO. : D-030032
☐ α TEST	☑ β TEST	☐ CURRENT	DATE :2003/1/15
TEST ITEM : SUMMARY REPORT		MODEL NO. : PA-1900-02D	
QUANTITY : 24		SER. NO. :	

一・ELECTRICAL FUNCTION TEST

No.	TEST ITEMS	RESULT	FILE NO.:
1	HIGH-TEMP.: ATE PROGRAM TEST	OK	021300
2	LOW-TEMP.: ATE PROGRAM TEST	OK	021299
3	HI-TEMP.: KEY COMPONENTS OF THERMAL TEST	OK	020907
4	MAIN POWER MOSFET TEST	OK	021302
5	BIAS VOLTAGE TEST	OK	021196
6	PFC POWER MOSFET TEST	OK	021197
7	OUTPUT WAVEFORM	OK	021297

二・ENVIRONMENTAL TEST

No.	TEST ITEMS	RESULT	FILE NO.:
1	ENVIRONMENTAL TEST	OK	021296
2	EMC TEST	OK	021301
3	BURN IN TEST	OK	021298

三・MECHANICAL INSPECTION

No.	TEST ITEMS	RESULT	FILE NO.:
1	VIBRATION TEST	OK	020913
2	DROP TEST	OK	020913

NOTE :

1.File no.021302,021301,021296,021298,021297,021300,021299,021196,021197for Test Sample : X5, PCB :X6

2.File no.020907 for Test Sample : X3, PCB :X4

3.DVT reports follow EVT stage.

CONCLUSION: ☑ PASS ☐ NG

PREPARED BY:Annie Shih	CHECKED BY:----------	APPROVED BY:Kevin Cheng

LITEON

D. Q. E. SECTION, POWER Q.R.A.

DESIGN QUALIFICATION HIGH-TEMP. ATE REPORT			FILE NO. : 021300
☑ α TEST	☐ β TEST	☐ CURRENT	DATE : 2002/12/17
TEST ITEM : High Temp. Electrical Test		MODEL NO. : PA-1900-02D	
QUANTITY : 2		SER. NO. : 1 , 2	

1.Purpose: Test the power supply's electrical function in high temperature environment by ATE and manual tes

2.Test Condition:

Vin:	90～265	Vac
Freq.:	47～63	Hz
Temp.:	40	℃

Load :
FL: +19.5V@ 4.62A
ML: +19.5V@ 0A

3.Test Item & Result:

ATE FUNCTION TEST REPORT

NO.	CONTENTS	RESULT	REMARK
1	Line Regulation	OK	20.475V ~ 18.525V
2	Ripple & Noise	OK	0.5 Vp-p
3	Peak Load	OK	4.34 A (4 sec.)
4	O.V.P.	OK	23.5V
5	S.C.P.	OK	
6	O.C.P.	OK	
7	Line Transients	OK	@ 230Vac 50 Hz
8	Inrush Current	OK	no damage
9	Turn-On Time ,T1	OK	< 4 sec.
10	Hold-Up Time,T4	OK	> 10 ms
11	Output Rise Time,T2	OK	2 ma < T2 < 20ms
12	LED Turn On Delay Time,T3	OK	T3 < 1 sec.
13	Output Fall Time, T5	OK	T5 > 5ms
14	Input Current	OK	< 1.5 A
15	Dynamic Load Current	OK	
16	Input Over Voltage Withstanding	OK	300 Vrms for 1 sec.
17	Input Under Voltage Withstandin	OK	any under voltage
18	Efficiency	OK	EFF% > 85%
19	1W Power requirement	OK	0.025A@115V/60Hz
20	Application of AC input Power	OK	Ts < 4 sec.
21	Removal of AC input power	OK	* 4
22	Thermal protection trip point	OK	105℃ < t_{trip} < 120℃

NOTE :
1.Sample REV: X5
2.PCB REV: X9
3.Part List REV: 0F
*4.The output decay time must less 10 sec. besides no load condition.

CONCLUSION: ☑ PASS ☐ NG

PREPARED BY:Annie Shih	CHECKED BY:----------	APPROVED BY:Kevin Cheng

LITE-ON

D. Q. E. SECTION, POWER Q.R.A.

DESIGN QUALIFICATION LOW-TEMP. ATE REPORT			FILE NO. : 021299
☑ α TEST	☐ β TEST	☐ CURRENT	DATE : 2002/12/17
TEST ITEM : Low Temp. Electrical Test			MODEL NO. : PA-1900-02D
QUANTITY : 2			SER. NO. : 1 , 2

1.Purpose: Test the power supply's electrical function in low temperature environment by ATE and manual test

2.Test Condition:

Vin:	90～265	Vac
Freq.:	47～63	Hz
Temp.:	0	℃

Load :

FL: +19.5V@ 4.62A

ML: +19.5V@ 0A

3.Test Item & Result:

ATE FUNCTION TEST REPORT

NO.	CONTENTS	RESULT	REMARK
1	Line Regulation	OK	20.475V ~ 18.525V
2	Ripple & Noise	OK	0.5 Vp-p
3	Peak Load	OK	4.62 A (4 sec.)
4	O.V.P.	OK	23.5V
5	S.C.P.	OK	
6	O.C.P.	OK	
7	Line Transients	OK	@ 230Vac 50 Hz
8	Inrush Current	OK	no damage
9	Turn-On Time ,T1	OK	< 4 sec.
10	Hold-Up Time,T4	OK	> 10 ms
11	Output Rise Time,T2	OK	2 ma < T2 < 20ms
12	LED Turn On Delay Time,T3	OK	T3 < 1 sec.
13	Output Fall Time, T5	OK	T5 > 5ms
14	Input Current	OK	< 1.5 A
15	Dynamic Load Current	OK	
16	Input Over Voltage Withstanding	OK	300 Vrms for 1 sec.
17	Input Under Voltage Withstandin	OK	any under voltage
18	Efficiency	OK	EFF% > 85%
19	1W Power requirement	OK	0.025A@115V/60Hz
20	Application of AC input Power	OK	Ts < 4 sec.
21	Removal of AC input power	OK	* 4

NOTE :

1.Sample REV: X5

2.PCB REV: X6

3.Part List REV: 0E

*4.The output decay time must less 10 sec. besides no load condition.

CONCLUSION: ☑ PASS ☐ NG

PREPARED BY:Annie Shih	CHECKED BY:----------	APPROVED BY:Kevin Cheng

LITEON

D. Q. E. SECTION, POWER Q.R.A.

DESIGN QUALIFICATION THERMAL REPORT			FILE NO. : 020907
☑ α TEST	☐ β TEST	☐ CURRENT	DATE :2002/9/25
TEST ITEM :	TEMP. PROFILE TEST	MODEL NO. :	PA-1900-02D
QUANTITY :	1 EA.	SER. NO. :1	

1.Test Condition:

INPUT: 264V,180V,132V,90V FREQUENCY :63Hz / 60Hz / 47Hz

LOAD: +19.5V@4.62A

CHAMBER TEMPERATURE: 40 ℃

2.Record:

Location	Component	SPEC.	264V	180V	132V	90V
D050	BRG 800V 2A 2KBP08M	165℃	75℃	79℃	81℃	95℃
L002	CHOKE DR 16*9.6*8 SM100	130℃	73℃	76℃	76℃	90℃
L001	CHOKE FR 12*6*4 SM100-2	120℃	63℃	65℃	65℃	74℃
L003	CHOKE T60-26 300UH +-13%	130℃	79℃	82℃	81℃	96℃
Q001	MFET N 500V 12A 0.52 2SK2842	150℃	84℃	86℃	84℃	99℃
Q050	MFET N 600V 10A 0.54 2SK2843	150℃	88℃	91℃	87℃	99℃
D052	DIO 1000V 1A FR107 DO41	175℃	101℃	103℃	102℃	113℃
D003	DIO 600V 4A MUR460 GS	175℃	91℃	95℃	93℃	106℃
C051	C.ELE 120UF 400V M 18*31.5 KMG	105℃	86℃	88℃	85℃	95℃
Q200	MFET N 100V 75A 0.014 IRFB4710	175℃	82℃	84℃	82℃	88℃
L200	CHOKE TR9 *5*3 R7K 150T	130℃	85℃	86℃	85℃	91℃
Q201	MFET N 100V 75A 0.014 IRFB4710	175℃	80℃	82℃	80℃	86℃
PC301	IC PHO 4P LTV-817M-PRA 100-160	100℃	87℃	89℃	86℃	93℃
L010	CHOKE A1900-02D RM10N PL9	130℃	78℃	80℃	78℃	89℃
T1	XFMR A1900-02D DS3319 PL9	130℃	91℃	93℃	91℃	100℃
P1	Point above L010	-------	63℃	64℃	63℃	67℃
P2	Ponit above T1	-------	57℃	58℃	57℃	62℃
AMB		-------	40℃	40℃	40℃	40℃

3.Result: All remain within the specified limits.

NOTE :

1.PCB : X4

2.Sample : X03

3.Part List : 0B

CONCLUSION: ☑ PASS ☐ NG

PREPARED BY:Annie Shih	CHECKED BY:Kevin Cheng	APPROVED BY:Roger Huang

LITEON

D. Q. E. SECTION, POWER Q.R.A.

DESIGN QUALIFICATION CIRCUIT STRUCTURE REPORT			FILE NO. : 021302
☑ α TEST	☐ β TEST	☐ CURRENT	DATE :2003/1/14
TEST ITEM : Mosfet Voltage Test		MODEL NO. :PA-1900-02D	
QUANTITY :1		SER. NO. :1	

1.Test Condition:

INPUT: Hi-Line : 264 V, Frequency : 63 Hz ; Low-Line : 90 V, Frequency : 47 Hz ;
LOAD: FL: +19.5V@4.62A
ML: +19.5V@0A

2.Record:

A.Main power Mosfet source: MFET N 600V 10A 0.54 2SK2843 Vds : 600V Vgs : 30V Id,plus : 40A

Q050 Vds		Low-Line		High-Line		JUDGE (v)
		FL	ML	FL	ML	
Vds	Vp-p	484	404	620	544	OK
	Vmax	482	402	618	542	
Vds short	Vp-p	508	480	656	512	REF
	Vmax	504	478	654	514	

ID	Low-Line		Hi-Line		JUDGE (A)
	FL	ML	FL	ML	
	4.6	3.52	4.68	3.08	OK

VGS	Low-Line		Hi-Line		JUDGE (v)
	FL	ML	FL	ML	
Vp-p	12	12.16	12.08	11.44	OK
Vmax	11.32	11.4	11.24	11.4	

3.Result : The voltage is over spec. as short.

NOTE :

1.Sample REV : X5
2.PCB MB REV : X6
3.Part List REV : 0E
4. The Eas calculated by P/T, Dearbear Lai, 0.0593 mJ is less than spec. value 828 mJ.
Attached the mail information.

CONCLUSION: ☑ PASS ☐ NG

PREPARED BY:Annie Shih	CHECKED BY:----------	APPROVED BY: Kevin Cheng

Annie Shin

寄件者: Dearbear Lai
寄件日期: 2003年1月14日星期二 下午 4:53
收件者: Annie Shin
副本: Kevin Cheng; Frank Shieh
主旨: RE: 回信： The Vds waveform of 2843

重要性: 高

Annie

The worst case is 0.0593mJ.

best regards,

Dearbear Lai
Product &Technology Engineer
PC Power SBU,Power Conversion BU
Peripherals & Components SBG,
Lite-On Technology Corp.
EMAIL : dearbear.lai@liteon.com <----- email changed
TEL : 886-2-22226181 EXT : 5271
Fax : 886-2-22212420

-----Original Message-----
From: Annie Shin
Sent: Friday, January 10, 2003 9:39 AM
To: Dearbear Lai
Cc: Kevin Cheng; Frank Shieh
Subject: FW: 回信： The Vds waveform of 2843

Dearbear:
PA-1900-02D的MOSFET 使用TOSHIBA的2843.
Fuji的Jack Cheng沒有資料可提供....
麻煩你計算或者找TOSHIBA的廠商...
澄清這點才能順利發報告
ANNIE SHIH
LITEON ELECTRONICS, INC.
Power Conversion Division-QRA
Qualification Sec.
TEL : 02-2222-6181 ext : 5159 or 5128

-----Original Message-----
From: jack.chang@wpi.com.tw [mailto:jack.chang@wpi.com.tw]
Sent: Thursday, January 09, 2003 6:18 PM
To: Annie Shin
Subject: 回信： The Vds waveform of 2843

Dear Annie
Can you give me fuji 2SK3502-01MR waveform

Best Regards,

http://www.fujisemiconductor.com/ ========== Jack Chang Ext: 5383
世平興業股份有限公司
World Peace Industrial Co.,Ltd.

DID:886-2-27895383
Tel:886-2-27885200
Fax:886-2-27883255 ~ 6
E-mail:Jack.Chang@eeco.com.tw
Web :www.eeco.com.tw
==========

Annie Shin
<Annie.Shin@l iteon.com>
2002/12/25 03:57 PM

收件人： "'jack.chang@wpi.com.tw'" <jack.chang@wpi.com.tw>
副本抄送： Kevin Cheng <Kevin.Cheng@liteon.com>, Dearbear Lai <Dearbear.Lai@liteon.com>
主旨： The Vds waveform of 2843

Hi, Jack :
The information of Vds test as below :
The 2843 mosfet running temp.74℃, the case temp.50℃, the room temp.22.5℃. Input voltage 264V,63 Hz. Pls resend me your result, ASAP, and thanks for your help. Annie Shih

ANNIE SHIH
LITEON ELECTRONICS, INC.
Power Conversion Division-QRA
Qualification Sec.
TEL : 02-2222-6181 ext : 5159
5128
(See attached file: continue.bmp)(See attached file: Short.bmp)(See attached file: Turn off.bmp)(See attached file: Turn on.bmp)

LITEON

D. Q. E. SECTION, POWER Q.R.A.

DESIGN QUALIFICATION CIRCUIT STRUCTURE REPORT			FILE NO. : 021196
☑ α TEST	☐ β TEST	☐ CURRENT	DATE :2002/12/18
TEST ITEM :	Bias Voltage Test	MODEL NO. : PA-1900-02D	
QUANTITY :	1 EA	SER. NO. :1	

1.Test Condition:

INPUT: Hi-Line: 264 V , FREQUENCE : 60 H Low-Line: 90 V , FREQUENCE : 47 Hz

LOAD: FL: +19.5V : 4.62A

ML: +19.5V :0A

2.Record:

A.Primary Mosfet Bias Voltage for PWM IC : IC 100 Vcc : 20V

Vcc(V	High-Line		Low-Line	
	FL	ML	FL	ML
IC100	19.9	19.7	19.9	19.7

B.Bias Voltage for PFC Voltage : IC 1 Vcc : 11 ~ 18V

Vcc(V	High-Line		Low-Line	
	FL	ML	FL	ML
IC1	13.4	1.15	13.5	0.5

C.Secondary Bias Voltage : IC 302 Vcc : 36V

Vcc(V	High-Line		Low-Line	
	FL	ML	FL	ML
IC302	14.5	14.3	14.3	14.3

3.Result : OK !

NOTE :

1.Sample REV : X04

2.PCB MB REV : X5

3.Part List REV : 0D

CONCLUSION: ☑ PASS ☐ NG

PREPARED BY:Annie Shih	CHECKED BY:----------	APPROVED BY:Kevin Cheng

LITEON

D. Q. E. SECTION, POWER Q.R.A.

DESIGN QUALIFICATION CIRCUIT STRUCTURE REPORT			FILE NO. : 021197
☑ α TEST	☐ β TEST	☐ CURRENT	DATE :2002/12/18
TEST ITEM : PFC Mosfet Voltage Test		MODEL NO. :PA-1900-02D	
QUANTITY :1		SER. NO. :1	

1.Test Condition:

INPUT: Hi-Line : 264 V, Frequency : 63 Hz ; Low-Line : 90 V, Frequency : 47 Hz ;

LOAD: FL: +19.5V@4.62A

ML: +19.5V@0A

2.Record:

A.Main power Mosfet source: 2SK2842 Vds : 500V Vgs : 30V Id,plus : 48A

Q001 Vds		Low-Line		High-Line		JUDGE (v)
		FL	ML	FL	ML	
Vds	Vp-p	346	284	464	416	OK
	Vmax	345	281	460	414	
Vds short	Vp-p	312	/	428	/	OK
	Vmax	310	127	422	374	

ID	Low-Line		Hi-Line		JUDGE (A)
	FL	ML	FL	ML	
	11.16	3.1	11.5	2.75	OK

VGS	Low-Line		Hi-Line		JUDGE (v)
	FL	ML	FL	ML	
Vp-p	13.8	0	13.8	0	OK
Vmax	13.3	0	13.5	0	

3.Result : OK !

NOTE :

1.Sample REV : X4

2.PCB MB REV : X5

3.Part List REV : 0D

CONCLUSION: ☑ PASS ☐ NG

PREPARED BY:Annie Shih	CHECKED BY: ----------	APPROVED BY:Kevin Cheng

LITEON

D. Q. E. SECTION, POWER Q.R.A.

DESIGN QUALIFICATION CIRCUIT STRUCTURE REPORT			FILE NO. : 021297
☑ α TEST	☐ β TEST	☐ CURRENT	DATE : 2002/12/17
TEST ITEM : Output Waveform		MODEL NO. :PA-1900-02D	
QUANTITY :		SER. NO. : 1 ~ 2	

1.Test Condition:

INPUT: Hi-Line: 264 V; Low-Line: 90 V; FREQUENCE: 47/6 Hz

LOAD: FL: +19.5V@4.62A

ML: +19.5V@0 A

2.Record:

A.Power on Waveform:

	Hi-Line		Low-Line		JUDGE
Output	FL	ML	FL	ML	
+19.5V	OK	OK	OK	OK	OK

B.Power off Waveform:

	Hi-Line		Low-Line		JUDGE
Output	FL	ML	FL	ML	
+19.5V	OK	OK	OK	OK	OK

NOTE :

1.PCB : X6

2.Sample : X05

3.Part List : 0E

CONCLUSION: ☑ PASS ☐ NG

PREPARED BY: Annie Shih	CHECKED BY: ----------	APPROVED BY: Kevin Cheng

LITEON

D. Q. E. SECTION, POWER Q.R.A.

DESIGN QUALIFICATION ENVIRONMENTAL TEST REPORT			FILE NO. : 021296
☑ α TEST	☐ β TEST	☐ CURRENT	DATE : 2002/12/17
TEST ITEM : Environmental Test		MODEL NO. : PA-1900-02D	
QUANTITY : 2		SER. NO. : 1～2	

ENVIRONMENTAL TEST REPORT

NO.	TEST ITEM	RESULT	REMARK
1	OPERATING: HIGH TEMP. & HUMI.	OK	
	LOW TEMP. & HUMI.	OK	
2	POWER ON/OFF CYCLING	OK	
3	WARM UP	OK	
4	COLD START	OK	
5	BURN IN	OK	
6	INITIAL TOLERANCE	OK	
7	TEMPERATURE COEFFICIENT	OK	
8	SHORT TERM STABILITY	OK	
9	STATIC LINE /LOAD REGULATIO	OK	

NOTE :

1.PCB : X5

2.Sample : X04

3.Part List : 0D

CONCLUSION: ☑ PASS ☐ NG ☐ REFERENCE

PREPARED BY:Annie Shih	CHECKED BY:----------	APPROVED BY:Kevin Cheng

PA-1900-02D ENVIRONMENTAL TEST CONDITION RECORD

1.Operating at Temperature & Humidity Test

1-1.High temperature test condition:

Vin : 90Vac , 264Vac Freq. : 47Hz , 63Hz

Temp.: 40 ℃ Humi.: 95 %

Load : +19.5V@4.62A

Result: All outputs remain within the specified limits.

1-2.Low temperature test condition:

Vin : 90Vac , 264Vac Freq. : 47Hz , 63Hz

Temp.: 0 ℃ Humi.:----------

Load : +19.5V@4.62A

Result: All outputs remain within the specified limits.

2.Power on/off Cycling Test :

Test condition:

Vin : 265Vac Freq.: 63Hz

Temp. : 40℃ Humi.: ------

Load : +19.5V@4.62A

On/Off cycling : 15 Sec ON , 15 Sec OFF

Times : 14000 times

Result: The power supply survive repeated applications of on/off cycling.

3.Warm-up Test

Test condition:

Vin : 90Vac , 264Vac Freq. : 47Hz , 63Hz

Temp.: 40℃

Load : +19.5V@4.62A

Power supply at ambience time > 8Hr

Result: No component damage.

4.Cold-Start Test

Test condition:

Vin : 90Vac , 264Vac Freq. : 47Hz , 63Hz

Temp.: 0℃

Load : +19.5V@4.62A

Power supply at ambience time > 8Hr

Result: No component damage.

5.Burn In Test

Test condition:

Vin : 110Vac , 220Vac Freq. : 60Hz

Temp.: 40℃

Load : +19.5V@4.62A

Time 168 Hr

Result: All outputs remain within the specified limits.

6.Initial Tolerance

Test condition:

Vin : 110Vac , 220Vac Freq. : 60Hz

Temp.: 22℃

Load : +19.5V@4.62A

Test result : 18.745V ==>18.844V

Result: The output voltage vary within the specified limits.

7.Temperature Coefficient

Test condition:

Vin : 110Vac Freq. : 60Hz

Temp.: 0℃ ~40 ℃

Load : +19.5V@4.62A

Measurement Time : 30 mins

Result: The coefficient vary within 2.5mV / ℃.

8. Short Term stabilty

Test condition:

Vin : 110Vac Freq. : 60Hz

Load : +19.5V@4.62A

Temp.: 22 ℃

Measurement Time : 12 hours

Test result : 18.985V ==> 18.980V

Result: The output voltage vary within the specified limits.

9. Static Line / Load Regulation

Test condition:

Temp.: 22 ℃

Measurement Time : 30 mins

Vin : 90Vac ~ 264 Vac

Load : 0 A ~ 4.62 A

Result: The output voltage vary within the specified limits.

LITEON

D. Q. E. SECTION, POWER Q.R.A.

DESIGN QUALIFICATION EMC TEST REPORT			FILE NO. : 021301
☑ α TEST	☐ β TEST	☐ CURRENT	DATE : 2002/12/18
TEST ITEM : EMC Test		MODEL NO. : PA-1900-02D	
QUANTITY : 2 EA		SER. NO. : 1~2	

EMC TEST ITEM

NO.	TEST ITEM	RESULT	REMARK
1	Leakage Current	OK	
2	Hi-pot Test	OK	
3	Lightning Surge Test	OK	
4	ESD Test	OK	
5	Harmoics Test	OK	
6	EMI Compliance Requirements	OK	
7	Electric Fast Transients / Burst Immun	OK	

NOTE :

1.PCB :X5

2.Sample : X04

3.Part List : 0D

CONCLUSION: ☑ PASS ☐ NG ☐ REFERENCE

PREPARED BY:Annie Shih	CHECKED BY:----------	APPROVED BY:Kevin Cheng

PA-1900-02D EMC TEST CONDITION RECORD

1.Leakage Current Test

Accord to SPEC. , the leakage current shall be less than 0.12mA.
Test condition : 254V / 60Hz
Test Record :

	NtoG	LtoG
No1	0.011mA	0.015mA
No2	0.01mA	0.01mA

Result: The leakage current remain within the specified limits.

2.Hi-pot Test

Test condition : 3KVac , 1 minute, the max DC cut off current is 10mA.
Test Record :

	Vac
No1	1.39mA
No2	1.26mA

Result: The trip currents are remain within the specified limits.

3.Lightning Surge Test

Accord to Spec., 1. ± 1KV Line to Line/ ±2.5 KV Line to Earth ,The UUT some performance degradation allowed. 2. ± 0.5KV Line to Line/ ±1 KV Line to Earth. The UUT normal operation, No degradation , No failures.
Test condition :110Vac/60Hz ; 220Vac / 60Hz
Surge angle : 0° ,45°, 90° ,135°, 180° ,225°, 270° ,315° . 5 times per angle. And 20 seconds per time.
Load : +19.5V@4.62A

Result: PASS .

4.ESD Test

Test condition : 110 Vac / 60 Hz Load : +19.5V@4.62A
All test for 2 and 3 pin AC code .
1. Accord to IEC 61000-4-2 ,level 4, ± 15 KV air discharge / ±8KV contact discharge. The UUT temporar performance degradation .Recovery by operator is acceptable. No hardware failure.

Air:	+/- 15	kV Discharge	20	times	Interval:	1	sec.
Contact:	+/- 8	kV Discharge	20	times	Interval:	1	sec.

2. Accord to IEC 61000-4-2 ,level 3, ± 10 KV air discharge / ± 6KV contact discharge. The UUT some performance degradation allowed.

Air:	+/- 10	kV Discharge	20	times	Interval:	1	sec.
Contact:	+/- 6	kV Discharge	20	times	Interval:	1	sec.

Result: PASS .

5.Harmoics Test

Accord to IEC 61000-3-2 , class A
Test condition1. : 230 V /5 ; Load : +19.5 V@4.62A
Test condition2. : 230 V /5 ; Load : +19.5 V@3.85A
Attached a copy of report tested in Liteon.
Result: PASS .

6.EMI Compiance Requirements

Accord to EN 55022 ,Class B , 4dB

Test condition :

CISPR 22 Class B 230V/ 50Hz--- at 0.15MHZ~30MHZ

FCC Class B 120V/60Hz---at 0.45MHZ~30MHZ

Load : +19.5V@4.62A

Attached a copy of report tested by ADT.

Result: PASS .

7.Electric Fast Transient / Burst Immunity

Accord to EN 1000-4-4/EN61000-4-4 Level 3 requirements.

Test condition : Input Voltage : 230Vac / 50Hz , 120 Vac / 60Hz

The UUT performance degradation allowed. No data lost Self recoverable.No hardware failures.

Result: PASS .

LITEON

D. Q. E. SECTION, POWER Q.R.A.

DESIGN QUALIFICATION CIRCUIT STRUCTURE REPORT			FILE NO. : 021298
☑ α TEST	☐ β TEST	☐ CURRENT	DATE : 2002/12/17
TEST ITEM : BURN IN TEST		MODEL NO. : PA-1900-02D	
QUANTITY : 4 EA		SER. NO. : 1 ~3	

1.Test Condition:

INPUT: Hi-Line: 220 V; Low-Line: 110 V; FREQUENCE: 60 Hz

LOAD: FL : +19.5V@ 3.34 A

TEMP : 40℃

TIME : 72 hours (min)

2.Result :

PASS.

NOTE :

1.PCB :X5

2.Sample : X04

3.Part List : 0D

CONCLUSION: ☑ PASS ☐ NG

PREPARED BY: Annie Shih	CHECKED BY:----------	APPROVED BY:Kevin Cheng

LITEON

D. Q. E. SECTION, POWER Q.R.A.

DESIGN QUALITY MECHANICAL REPORT			FILE NO. : 020913
☑ α TEST	☐ β TEST	☐ CURRENT	DATE : 26-Sep-02'
TEST ITEM : Mechanical Test		MODEL NO. : PA-1900-02D	
QUANTITY : 6 units		PCB REV. : XX	

1.DROP TEST

1-1.TEST CONDITION:

1. Sample unit keeps 36" away from the earth then free falls into carpeted plane.
2. Drop sequence : 6 faces (one time / per face)

1-2.RESULT: O.K

There is no damage found after drop test

2. Vibration Test

2-1.TEST CONDITION:

2-1-1 Operating

---0.001 g^2 / Hz 7 Hz.
---0.007 g^2 / Hz 21 Hz.
---0.0027 g^2 / Hz 32 Hz.
---0.005 g^2 / Hz 80 Hz.
---0.04 g^2 / Hz 155 Hz.
---0.01 g^2 / Hz 190 Hz.
---0.017 g^2 / Hz 230 Hz.
---0.006 g^2 / Hz 234 Hz.
---0.013 g^2 / Hz 260Hz.
---0.005 g^2 / Hz 600 Hz.
---0.005 g^2 / Hz 700 Hz.
---0.0015 g^2 / Hz 800 Hz.
---(~2.17 Grms)30 minutes / axis along all axes.

2-1-1 Non-Operating

---0.004 g^2 / Hz 7 Hz.
---0.013 g^2 / Hz 20 Hz.
---0.1 g^2 / Hz 156 Hz.
---0.026 g^2 / Hz 200 Hz.
---0.0037 g^2 / Hz 282 Hz.
---0.01 g^2 / Hz 312 Hz.
---0.0002 g^2 / Hz 400 Hz.
---0.0002 g^2 / Hz 500 Hz.
---0.00009 g^2 / Hz 600Hz.
---0.00023 g^2 / Hz 700 Hz.
---0.0003 g^2 / Hz 800 Hz.
---(~3.08 Grms)30 minutes / axis along all axes.

2-2.RESULT: O.K

There is no damage found after vibration test.

CONCLUSION: ☑ PASS ☐ NG ☐ REFERENCE

PREPARED BY: Y.M.Lee	CHECKED BY:W.H.Lin	APPROVED BY:Roger Huang

3. SHOCK TEST

3-1.TEST CONDITION:

3-1-1. Operating: 200 g, 1 ms, half sine wave applied in both directions of three mutually orthogonal axe

3-1-2. Non-Operating: 500 g,1 ms, half sine wave applied in both directions of three mutually orthogonal

3-2.RESULT: O.K

There is no damage found after 90 g, 10ms shock test.

Quality Notice

Power - QRA

文 號: QN-2003006　　發文日期: 2003/01/15

受文者: 技資中心

副本送:

文件主旨: **PA-1900-02D 機種品質管理計劃發行**

詳細內容:

1. 發行 PA-1900-02D 的 " 檢驗作業指導書 " REV : A 和
   " 出貨檢驗程式 " REV : A 。
2. 各單位對內容若有意見，請隨時撥冗指正。

PREPARED BY: 15 Jan '03

APPROVED BY: 15 Jan 2003

QUALITY INSPECTION CRITERIA

MODEL NO.: PA-1900-02D

CUSTOMER: DELL

DATE: 2003 , 1 , 15

CONTENTS:

1. Workmanship inspection item

REV.: A

2. Outgoing ATE program

REV.: A

PREPARED BY: Annie Shih 15/Jan. '03

CHECKED BY: X

APPROVED BY: Kevin Cheng for 17 Jan 2003

LITEON

Date: 2003/1/15 Rev. No.: A Page: 1 of 2

一. 檢驗內容:

NO.	檢驗項目	檢驗內容
1	外觀尺寸及人工作業 Outside Structure & Workmanship	1.外箱： a.內部尺寸：參考實際尺寸 b.標示機種不正確(含條碼): PA-1900-02D c.沒有安規標示。 d.紙箱破孔大於10mm。 e.外觀髒污。 f.紙箱潮濕。 g.紙板與紙楞分離。 h.封箱膠帶黏貼不確實。
		2.數量： a.電源供應器數量不足。 b.電源線數量不足。
		3.塑膠袋： a.破孔或刮傷大於15mm。 b.漏裝。 c.沒用膠帶封口。 d.膠帶封口位置不正確。
		4.隔板： a.斷裂。 b.水平或垂直隔板遺落。 c.漏裝。 d.紙板潮濕。 e.紙板與紙楞分離。
		5.紙板： a.漏裝。 b.紙板潮濕。 c.紙板破損。
		6.使用手冊： a.漏裝。 b.內容錯誤。 c.髒污及潮濕。
		7.外殼： a.尺寸：請參閱外形圖

一. 檢驗內容:

NO.	檢驗項目	檢驗內容
		b.顏色：黑色 c.上下殼接合縫: 線條彎曲 縫隙大小差距大於0.3mm d.超音波熔接: 上下殼段差大於0.2mm 接合縫內溢膠 有大於0.3mm毛邊 外殼變形 外殼不均勻發亮 e.刮傷: 任何面刮痕大於2mm f.凹痕: 有任何凹痕,塑料不足 g.上面及側面有接合線 h.顏色不均勻 I.表面不潔
		8.輸入插座： a.顏色不符。 b.接頭部份金屬生鏽。 c.鬆動、破損、變形。
		9.輸出線： a.尺寸: 請參閱外形圖。 b.顏色: 黑色 c.線材未綁附束線帶。 d.接頭生鏽,燒傷,變形,堵塞,沾膠,斷裂。 e.線檔與外殼有大於0.5mm縫隙。 f.線材壓傷,刮傷,變形,破皮。
		10.標籤： a.標籤內容錯誤。 b.主標籤、BAR CODE、日期或版本標籤印刷模糊，不完整。 c.標籤漏貼。 d.不可殘缺、破損、變形、浮起。 e.標籤方向不可顛倒。 f.標籤黏貼位置錯誤。

PA-1900-02D OUTGOING TEST PROGRAM LIST

SEQ	TEST NAME	TEST CONTENT	NOTE
1	TURN ON & SEQ.	TURN ON TIME	
2	LINE REG.	LINE REGULATION AND RIPPLE & NOISE	FL
3	LINE REG.	LINE REGULATION AND RIPPLE & NOISE	ML
4	INPUT/OUTPUT	EFFICIENCY	
5	OVP/UVP	OVER VOLTAGE PROTECTION	
6	HOLD ON & SEQ	RESET	
7	OLP	OVER CURRENT PROTECTION	
8	HOLD ON & SEQ	RESET	
9	SHORT CIRCUIT	SHORT CIRCUIT PROTECTION	
10	HOLD ON & SEQ	RESET	
11	HOLD UP & SEQ.	HOLD UP TIME	
12	TURN ON & SEQ.	TURN ON TIME	
13	LINE REG.	LINE REGULATION AND RIPPLE & NOISE	FL
14	LINE REG.	LINE REGULATION AND RIPPLE & NOISE	ML
15	INPUT/OUTPUT	EFFICIENCY	
16	OVP/UVP	OVER VOLTAGE PROTECTION	
17	HOLD ON & SEQ	RESET	
18	OLP	OVER CURRENT PROTECTION	
19	HOLD ON & SEQ	RESET	
20	SHORT CIRCUIT	SHORT CIRCUIT PROTECTION	
21	HOLD ON & SEQ	RESET	
22	HOLD UP & SEQ.	HOLD UP TIME	

◎ SEQ 1～11 are low line and SEQ. 12～22 are high line.

CHROMA ATE INC. ¶

CHROMA 6000 POWER SUPPLY AUTOMATIC TEST SYSTEM (Version 7.01)

Model name :1900-02D
MM/DD/YY :01152003

Serial No. :0
Start Time :
End Time :

SEQ 1 : TURN ON &SEQ. ( )
Vin (V)= 115.000 Fin (Hz)= 60.0
PHon (mS)= 0.000 Vin Port = 1 UUT OFF-S= 3.000

O/P #	Load Name	I/R Amp/ohm	Rise (A/us)	Von (V)	Va (V)	Vb (V)
1	+19.5	4.620	0.100	13.650	18.525	20.475

O/P #	Start trigger	Start active	End trigger	End active
1	1	H	7	H

O/P #	Ton-ms max	Ton-ms min	Ton-ms Reading	Vos Reading
1	4000.000	*	------	------

(Tref O/P # *)	MAX	MIN	READING/+	READING/-
Inrush(A):	*		------	------
Tds (mS):	*	*	------	
Tdl (mS):	*	*	------	
Tdls (mS):	*		------	

SEQ 2 : LINE REG. (FL)
Vin Port1= 1 Vin Port2= 1 Vin Port3= 1
Vin-1 (V)= 115.000 Vin-2 (V)= 115.000 Vin-3 (V)= 115.000
Fin-1(Hz)= 60.0 Fin-2(Hz)= 63.0 Fin-3(Hz)= 47.0
Delay (S)= 1.000 Meas. (S)= 1.000

O/P #	I/R Amp/ohm	Slew rate (A/us)	dV+ max	dV- max	dV-21 Reading	dV-31 Reading
1	4.620	0.100	*	*	------	------

O/P #	Vdc max	Vdc min	Vdc-1 Reading	Vdc-2 Reading	Vdc-3 Reading
1	20.475	18.525	------	------	------

O/P #	Noise LPF KHz/Hz	Vpp max	Vpp-1 Reading	Vpp-2 Reading	Vpp-3 Reading
1	20M	0.500	------	------	------

SEQ 3 : LINE REG. (ML)
Vin Port1= 1 Vin Port2= 1 Vin Port3= 1
Vin-1 (V)= 115.000 Vin-2 (V)= 115.000 Vin-3 (V)= 115.000
Fin-1(Hz)= 60.0 Fin-2(Hz)= 63.0 Fin-3(Hz)= 47.0
Delay (S)= 1.000 Meas. (S)= 1.000

O/P #	I/R Amp/ohm	Slew rate (A/us)	dV+ max	dV- max	dV-21 Reading	dV-31 Reading
1	0.000	0.100	*	*	------	------

O/P #	Vdc max	Vdc min	Vdc-1 Reading	Vdc-2 Reading	Vdc-3 Reading
1	20.475	18.525	------	------	------

O/P #	Noise LPF KHz/Hz	Vpp max	Vpp-1 Reading	Vpp-2 Reading	Vpp-3 Reading

1	20M	0.500	------	------	------

SEQ 4 : INPUT/OUTPUT (EFF%)
Vin (V)= 115.000 Fin (Hz)= 60.0
Delay (S)= 1.000 Meas. (S)= 1.000

O/P #	Load Name	I/R Amp/ohm	Idc Reading
1	+19.5	4.620	------

O/P #	Vdc max	Vdc min	Vdc Reading	Noise LPF KHz/Hz	Vpp max	Vpp Reading
1	20.475	18.525	------	20M	0.500	------

	MAX	MIN	READING/+	READING/-
Iinrms(A):	*	*	------	
Iinpk (A):	*	*	------	------
Pin (W):	*	*	------	
Pdc (W):	*	*	------	
Eff (%):	*	85.000	------	
PF :	*	*	------	
Vin (V):	*	*	------	

SEQ 5 : OVP/UVP ( )
Vin (V)= 120.000 Fin (Hz)= 60.0 Delay (S)= 1.000
Which LD= 1 UUT OFF-S= 3.000 I-limit = 6.000
Vstart(V)= 20.000 Vend (V)= 25.000 Vstep (V)= 0.100
Step (S)= 0.100 Release-S= 0.000
Vtrig (V)= 0.100 Slope = FALL Trig port= M1
Trig DLY= 0.000 Meas. DLY= 0.000

O/P #	Load Name	I/R Amp/ohm	V-disable max	V-disable min	V-disable Reading
1	+19.5	4.620	*	*	------

O/P # 1	MAX	MIN	READING
Vvp (V):	23.500	20.500	------
Tvp (mS):	*	*	------

SEQ 6 : HOLD ON ADJ. ( )
Vin (V)= 120.000 Fin (Hz)= 60.0

O/P #	Load Name	I/R Amp/ohm	Vdc max	Vdc min	Vdc Reading
1	+19.5	4.620	20.475	18.525	------

SEQ 7 : OLP ( )
Vin (V)= 120.000 Fin (Hz)= 60.0 Volp (V)= 0.000
I/R Start= 4.620 I/R End = 4.620 I/R Step = 1.000
Step (S)= 0.100 I/R Rec. = 0.000 Vrec (V)= *
Which LD= 1 Step (S)= 0.100 UUT OFF-S= 3.000

O/P # 1	MAX	MIN	READING
OLP point:	6.120	*	------
Tolp (mS):	*	*	------
Trec (mS):	*	*	------

SEQ 8 : HOLD ON ADJ. ( )
Vin (V)= 120.000 Fin (Hz)= 60.0

O/P #	Load Name	I/R Amp/ohm	Vdc max	Vdc min	Vdc Reading
1	+19.5	4.620	20.475	18.525	------

SEQ 9 : SHORT CIRCUIT ( )
Vin (V)= 120.000 Fin (Hz)= 60.0 Delay (S)= 1.000
Which LD= 1 Short (S)= 1.000 UUT OFF-S= 3.000

O/P #	Load Name	I/R Amp/ohm	V-disable max	V-disable min	V-disable Reading

1	+19.5	4.620	*	*	------

	MAX	MIN	READING/+	READING/-
Iinpk (A):	*	*	------	------
Pin (W):	*	*	------	
Iscrms(A):	*	*	------	
Iscpk (A):	*		------	

SEQ 10 : HOLD ON ADJ. ( )
Vin (V)= 120.000 Fin (Hz)= 60.0

O/P #	Load Name	I/R Amp/ohm	Vdc max	Vdc min	Vdc Reading
1	+19.5	4.620	20.475	18.525	------

SEQ 11 : HOLD UP &SEQ. ( )
Vin (V)= 115.000 Fin (Hz)= 63.0
Delay (S)= 1.000 UUT OFF-S= 3.000

O/P #	Load Name	I/R Amp/ohm	Rise (A/us)	Va (V)	Vb (V)
1	+19.5	2.320	0.100	0.200	20.475

O/P #	Start trigger	Start active	End trigger	End active
1	1	L	7	L

O/P #	Thd-ms max	Thd-ms min	Thd-ms Reading
1	10000.000	10.000	------

(Tref O/P # *)	MAX	MIN	READING
Tds (mS):	*	*	------
Tdl (mS):	*	*	------
Tdls (mS):	*		------

SEQ 12 : TURN ON &SEQ. ( )
Vin (V)= 230.000 Fin (Hz)= 60.0
PHon (mS)= 0.000 Vin Port = 1 UUT OFF-S= 3.000

O/P #	Load Name	I/R Amp/ohm	Rise (A/us)	Von (V)	Va (V)	Vb (V)
1	+19.5	4.620	0.100	13.650	18.525	20.475

O/P #	Start trigger	Start active	End trigger	End active
1	1	H	7	H

O/P #	Ton-ms max	Ton-ms min	Ton-ms Reading	Vos Reading
1	4000.000	*	------	------

(Tref O/P # *)	MAX	MIN	READING/+	READING/-
Inrush(A):	*		------	------
Tds (mS):	*	*	------	
Tdl (mS):	*	*	------	
Tdls (mS):	*		------	

SEQ 13 : LINE REG. (FL)
Vin Port1= 1 Vin Port2= 1 Vin Port3= 1
Vin-1 (V)= 230.000 Vin-2 (V)= 230.000 Vin-3 (V)= 230.000
Fin-1(Hz)= 60.0 Fin-2(Hz)= 63.0 Fin-3(Hz)= 47.0
Delay (S)= 1.000 Meas. (S)= 1.000

O/P #	I/R Amp/ohm	Slew rate (A/us)	dV+ max	dV- max	dV-21 Reading	dV-31 Reading

1	4.620	0.100	*	*	------	------

O/P #	Vdc max	Vdc min	Vdc-1 Reading	Vdc-2 Reading	Vdc-3 Reading
1	20.475	18.525	------	------	------

O/P #	Noise LPF KHz/Hz	Vpp max	Vpp-1 Reading	Vpp-2 Reading	Vpp-3 Reading
1	20M	0.500	------	------	------

SEQ 14 : LINE REG. (ML)

Vin Port1=	1	Vin Port2=	1	Vin Port3=	1
Vin-1 (V)=	230.000	Vin-2 (V)=	230.000	Vin-3 (V)=	230.000
Fin-1(Hz)=	60.0	Fin-2(Hz)=	63.0	Fin-3(Hz)=	47.0
Delay (S)=	1.000	Meas. (S)=	1.000		

O/P #	I/R Amp/ohm	Slew rate (A/us)	dV+ max	dV- max	dV-21 Reading	dV-31 Reading
1	0.000	0.100	*	*	------	------

O/P #	Vdc max	Vdc min	Vdc-1 Reading	Vdc-2 Reading	Vdc-3 Reading
1	20.475	18.525	------	------	------

O/P #	Noise LPF KHz/Hz	Vpp max	Vpp-1 Reading	Vpp-2 Reading	Vpp-3 Reading
1	20M	0.500	------	------	------

SEQ 15 : INPUT/OUTPUT (EFF%)

Vin (V)=	230.000	Fin (Hz)=	60.0
Delay (S)=	1.000	Meas. (S)=	1.000

O/P #	Load Name	I/R Amp/ohm	Idc Reading
1	+19.5	4.620	------

O/P #	Vdc max	Vdc min	Vdc Reading	Noise LPF KHz/Hz	Vpp max	Vpp Reading
1	20.475	18.525	------	20M	0.500	------

	MAX	MIN	READING/+	READING/-
Iinrms(A):	*	*	------	
Iinpk (A):	*	*	------	------
Pin (W):	*	*	------	
Pdc (W):	*	*	------	
Eff (%):	*	85.000	------	
PF :	*	*	------	
Vin (V):	*	*	------	

SEQ 16 : OVP/UVP ( )

Vin (V)=	230.000	Fin (Hz)=	60.0	Delay (S)=	1.000
Which LD=	1	UUT OFF-S=	3.000	I-limit =	6.000
Vstart(V)=	20.000	Vend (V)=	25.000	Vstep (V)=	0.100
Step (S)=	0.100	Release-S=	0.000		
Vtrig (V)=	0.100	Slope =	FALL	Trig port=	M1
Trig DLY=	0.000	Meas. DLY=	0.000		

O/P #	Load Name	I/R Amp/ohm	V-disable max	V-disable min	V-disable Reading
1	+19.5	4.620	*	*	------

O/P # 1	MAX	MIN	READING
Vvp (V):	23.500	20.500	------
Tvp (mS):	*	*	------

SEQ 17 : HOLD ON ADJ. ( )

Vin (V)=	230.000	Fin (Hz)=	60.0

O/P #	Load Name	I/R Amp/ohm	Vdc max	Vdc min	Vdc Reading
1	+19.5	4.620	20.475	18.525	------

SEQ 18 : OLP ( )

Vin (V)=	230.000	Fin (Hz)=	60.0	Volp (V)=	0.000
I/R Start=	4.620	I/R End =	4.620	I/R Step =	1.000
Step (S)=	0.100	I/R Rec. =	0.000	Vrec (V)=	*
Which LD=	1	Step (S)=	0.100	UUT OFF-S=	3.000

O/P # 1	MAX	MIN	READING
OLP point:	6.120	*	------
Tolp (mS):	*	*	------
Trec (mS):	*	*	------

SEQ 19 : HOLD ON ADJ. ( )

Vin (V)= 230.000 Fin (Hz)= 60.0

O/P #	Load Name	I/R Amp/ohm	Vdc max	Vdc min	Vdc Reading
1	+19.5	4.620	20.475	18.525	------

SEQ 20 : SHORT CIRCUIT ( )

Vin (V)=	230.000	Fin (Hz)=	60.0	Delay (S)=	1.000
Which LD=	1	Short (S)=	1.000	UUT OFF-S=	3.000

O/P #	Load Name	I/R Amp/ohm	V-disable max	V-disable min	V-disable Reading
1	+19.5	4.620	*	*	------

	MAX	MIN	READING/+	READING/-
Iinpk (A):	*	*	------	------
Pin (W):	*	*	------	
Iscrms(A):	*	*	------	
Iscpk (A):	*		------	

SEQ 21 : HOLD ON ADJ. ( )

Vin (V)= 230.000 Fin (Hz)= 60.0

O/P #	Load Name	I/R Amp/ohm	Vdc max	Vdc min	Vdc Reading
1	+19.5	4.620	20.475	18.525	------

SEQ 22 : HOLD UP &SEQ. ( )

Vin (V)=	230.000	Fin (Hz)=	63.0
Delay (S)=	1.000	UUT OFF-S=	3.000

O/P #	Load Name	I/R Amp/ohm	Rise (A/us)	Va (V)	Vb (V)
1	+19.5	2.320	0.100	0.200	20.475

O/P #	Start trigger	Start active	End trigger	End active
1	1	L	7	L

O/P #	Thd-ms max	Thd-ms min	Thd-ms Reading
1	10000.000	10.000	------

(Tref O/P # *)	MAX	MIN	READING
Tds (mS):	*	*	------
Tdl (mS):	*	*	------
Tdls (mS):	*		------

LITEON

MANUFACTURING TEST REQUIREMENT

PA-1900-02D

APPROVED BY: Jerry Hsu .

MODEL	REV	Written By	LITE-ON Technology Corp.
PA-1900-02D	A Dec/30/02	*Dearbear Lai*	SHEET 1 of 8

LITEON

REV.	ITEM	DESCRIPTIONS OF CHANGE	CHANGED	REF. DOC.
NO.			DATE :	NO.
X1		INITIAL	07/25/02	DN-
X2		Updated the power loss at light load	10/15/02	
A	3.1	Updated OVP range to 20.5~23.5V	12/30/02	

CONTENTS

1. INPUT/OUTPUT REQUIREMENT

Input Voltage	Input Frequency
90Vac ~ 265Vac	47Hz ~ 63Hz

DC Output	MIN	MAX	PEAK	UNIT
19.5V	0	4.62	5.62(4s)	A

2. Detail Description:

2.1. Inrush current

Test condition			Design Requirement
AC input	DC output		
100V/60Hz	+19.5	4.62A	REF
240V/50Hz			REF

2.2. Rated current

Test condition			Design Requirement
AC input	DC output		
90V/60Hz	+19.5V	4.62A	1.5A(max)

2.3. Power factor

Test condition			Design Requirement
AC input	DC output		
230V/50Hz	+19.5V	4.62A	0.9(min)

2.4. Hold-up time

Test condition			Design Requirement
AC input	DC output		
90V/60Hz	+19.5V	4.62A	10ms(min)

2.5. Turn-on time

Test condition			Design Requirement
AC input	DC output		
90V/47Hz 240V/50Hz	+19.5V	4.62A	4sec.(max)

2.6. Output rise time

Test condition			Design Requirement
AC input	DC output		
90V/60Hz 240V/50Hz	+19.5V	4.62A	20mS

Note1: Measured from the 10% point to the 90% point on voltage waveform.

2.7. Power supply efficiency

Test condition			Design Requirement
AC input	DC output		
90V/60Hz 240V/50Hz	+19.5V	4.62A	85%(min)

2.8. No load power loss

Test condition			Design Requirement
AC input	DC output		
115V/60Hz	+19.5V	0.0255A	1.0W(REF)

Note1: Using the power meter of YOKOGAWA WT-110.

2.9. Output combine regulation & Ripple/Noise test

Note 1: The ripple/noise voltage of the outputs shall be measured at the pins of the mating output connect.

Note 2: A high frequency 1nF ceramic capacitor shall be used to terminate each output at the measurement point.

Note 3: The ripple frequencies greater then 20MHz shall be attenuated by the measurement.

Test condition			Design Requirement	
AC input	DC output		Item	
90V/47Hz	+19.5V	0A	Ripple/Noise	<500mVp-p
			Regulation	19.5V@+/-5%
90V/47Hz		4.62A	Ripple/Noise	<500mVp-p
			Regulation	19.5V@+/-5%
100V/60Hz		0A	Ripple/Noise	<500mVp-p
			Regulation	19.5V@+/-5%
100V/60Hz		4.62A	Ripple/Noise	<500mVp-p
			Regulation	19.5V@+/-5%
240V/50Hz		0A	Ripple/Noise	<500mVp-p
			Regulation	19.5V@+/-5%
240V/50Hz		4.62A	Ripple/Noise	<500mVp-p
			Regulation	19.5V@+/-5%
264V/50Hz		0A	Ripple/Noise	<500mVp-p
			Regulation	19.5V@+/-5%
264V/50Hz		4.62A	Ripple/Noise	<500mVp-p
			Regulation	19.5V@+/-5%

2.10.Dynamic load

Test condition			Design Requirement
AC input	DC output		
90V/60Hz	+19.5V	0 ~4.62A	Rise: 0.1A/uS Fall: 0.1A/uS Frequency: 50Hz~10KHz
100V/60Hz			
240V/50Hz			
265V/50Hz			

Note: Set the load change frequency at 50Hz & 1KHz & 10KHz and duty at 50%.

3. Protection

3.1. Over voltage protection

Test condition			Design Requirement		
AC input	DC output				
90V/60Hz	+19.5V	0A	MIN	MAX	Shutdown & Latch off
240V/50Hz		4.62A	20.5	23.5	

3.2. Over current protection

Test condition			Design Requirement
AC input	DC output		
90V/60Hz	+19.5V	6.12A(max)	Shutdown & Latch off
240V/50Hz			

3.3. Short circuit protection

Test condition		Design Requirement
AC input	DC output	
90V/60Hz	Short output terminal of DC plug + and - .	.No damage shall occur. .Shutdown & Latch off.
100V/60Hz		
240V/50Hz		
264V/50Hz		

3.4. Over temperature protection

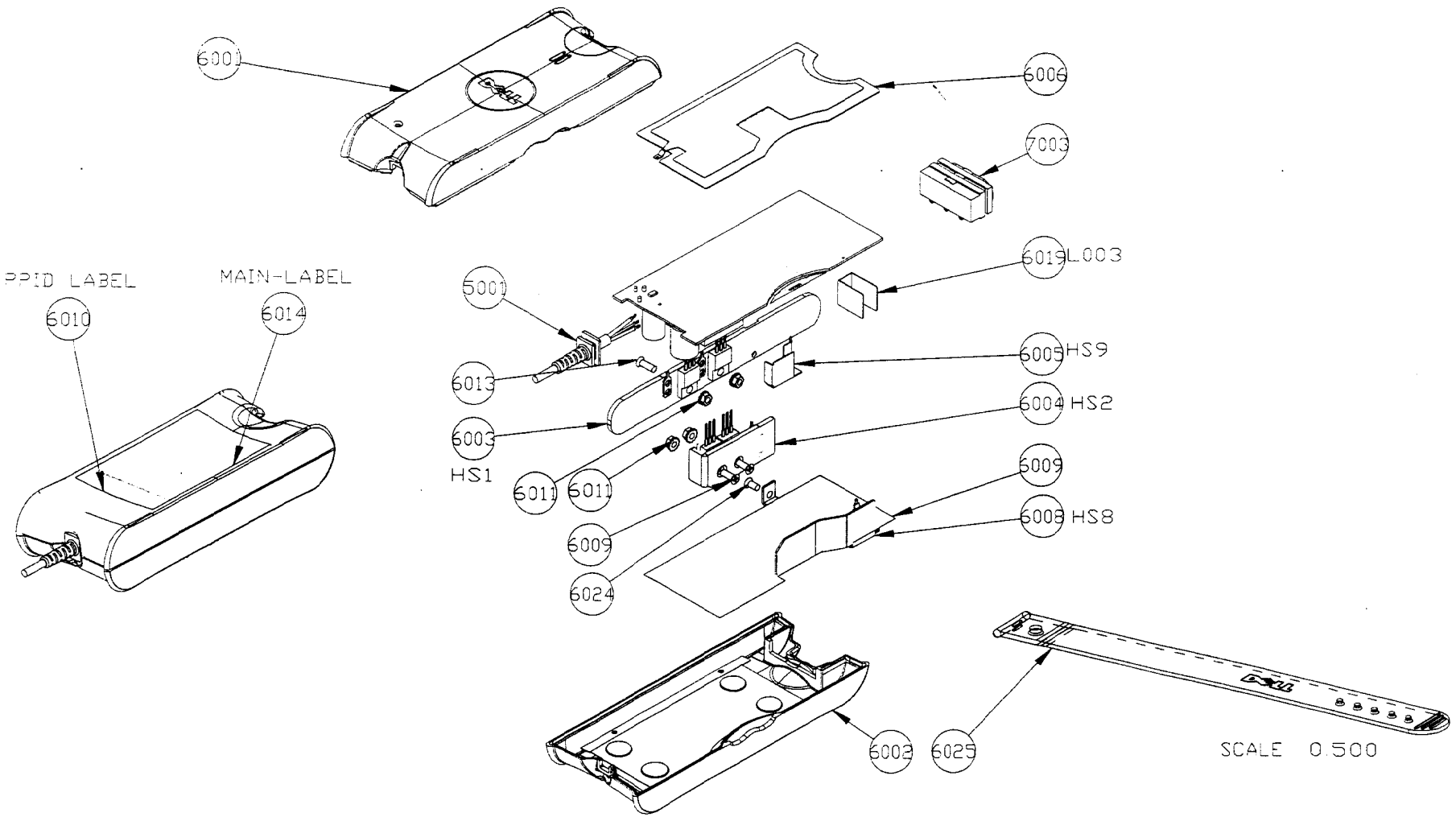
When the inside temperature of PSU rise to 110 ~ 130 degree C, the PSU will shutdown and latch off until the AC reset. Please short the RT100 to make sure the OTP circuit could work well. It simulation the over temperature condition occur.

4. HI-POT test

Apply DC2150V on primary to secondary 1sec. No component, no arcing, no noise, and the cut off current shall below 10mA.

5. Insulation resistance

Apply DC 500V to primary-secondary and measured the resistance shall be large than 30M ohms.



				PRINTING DATE	24-Dec-2002		2D FILE	ASSEMBLY_PA-1900-02D	DESIGNER	AmyKung		TITLE: Ass'y DRAWING	PART NO: ----------
A	RELEASED	24-Dec-2002		FINAL DATE	24-Dec-2002								
REVISION	DESCRIPTION	DATE	ZONE	UNIT: mm	SCALE: 0.500		3D FILE	ASSY	CHECKER		APPROVED	PROJECT: PA-1900-02D	DRAWING NO.: 3AAA00541 REV: A

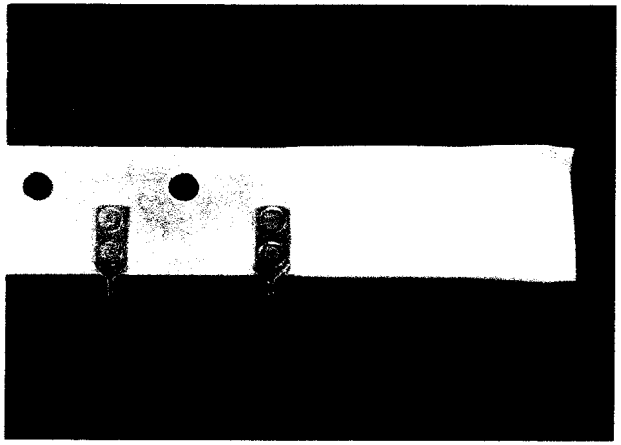
LITEON LITE-ON ELECTRONICS, INC.

PA-1900-02D SPECIAL ASSEMBLING INSRTUCTION

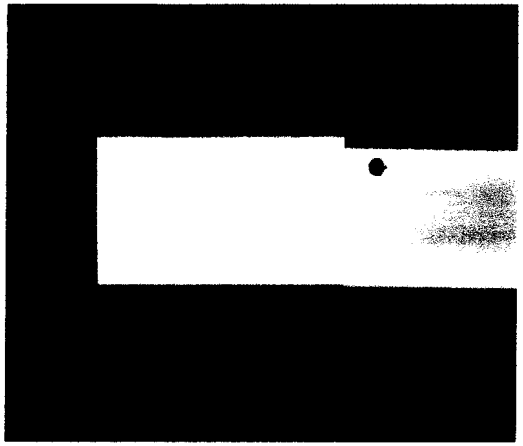
Partlist Rev: 0H REV:B

一. 安規要求：	膠類料號
1.1 L003 & PCB, T050 & PCB, L002與PCB,L001&PCB,C205&C204&PCB C054&C054-1&PCB,,須點RTV膠. 1.2 HS1,HS2上之3M TAPE須貼齊 ,貼正,不得歪斜. 1.3 DC CORD 近 HOOK之線外皮,不得因焊錫而有熔化之現象.	(131921)RTV
二. 客戶要求：	**膠類料號**
2.1 HS1,HS2端子過錫爐後須補焊.	
三. 設計性要求：	**膠類料號**
3.1 HS1(Q050)(Q001), HS2(Q200)(Q201), L002, L010, C002,C003,L003,L200, T1,不可浮件,歪斜,須和PCB緊貼.	
3.2 T1上方與HS之間,C051 & PCB,需塗RTV膠.	(131921)RTV
3.3 H/S之端子須確實焊錫牢固於PCB上.	
3.4 須貼TAPE(P/N:120289)於C051上.	
3.5 C205須平貼PCB零件面,並於後焊作業時,穿出銅片折彎(彎腳朝外)吃錫.	
3.6 Q050與散熱片以及Q200與散熱片之間的接觸面須塗散熱膏.	(134059)14-SA04
3.7 HS1靠近二次測需貼TAPE(P/N:135236)-1350F,需反摺. 圖(一)	
3.7 HS1靠近一次測需貼TAPE(P/N:135771)-1350F, 不需反摺. 圖(二)	
3.8 HS2需貼TAPE(P/N:135237)--1350F,需反摺.	
3.9 HS8內側需貼TAPE(P/N:135085)--1350F,不需反摺.圖(三) HS8靠近HS2 TAPE(P/N:135771)--1350F,需反摺.圖(三~1)	
4.0 HS8靠近C054需貼TAPE(P/N:135771)--1350F,不需反摺.圖(四)	
4.1 L002,L003與 INSULATION之間的接觸面須塗 RTV膠.	(131921)RTV
4.2 BRIDGE 與 HS 二者之間需貼TAPE(P/N.135723)雙面膠.	
4.3 JP1與JP2需平貼於PCB上,以免造成C051浮高.	
4.4 DC CORD線材端子需斜差入PCB後加銲錫	
4.5 L002需貼TAPE(P/N:135086)--1350F.圖(六)	
4.6 鉚接中縫必須控制在 0.8~1.1mm.	
4.7 L010 焊錫面須塗 RTV膠.	(131921)RTV
4.8 FG線於C051&C003須用熱溶膠固定.	(133296)
4.9 PCB 焊錫面塗 RTV膠.圖(七)	(131921)RTV
5.0 C051底部即右側靠T051面塗 RTV膠.	(131921)RTV
5.1 C051頂部靠 HS8側面塗 RTV膠.	(131921)RTV
四. 其他要求：	**膠類料號**
4.1 Q050, D200 焊錫腳須每支縱向剪切, 以銅刷清錫珠.	
4.2 焊錫面一般腳長,不得大於1.7mm.(DC CORD 出腳除外)	
4.3 PCB板零件面高度限高 19.2 mm(MAX)	
4.4 C051插於PCB後,總高不得高於19mm.	
4.5 L, N 線點膠,須於INLET 組裝時點,以避免INLET浮高. L, N 線組裝時,將交叉點落在L00&C001之間.圖(五)	
4.6 皮帶組裝方式,請參考-- (135670組裝方式.doc)	
4.7 組裝外殼時, 上蓋先裝並確定PCB及DC DORD整個被完全卡入上蓋, 再裝下蓋. (以上先裝INLET端).	
4.8 所有零件過完錫爐後,須扶正補焊,方得組裝.	
4.9 包裝膠膜捆綁,以1個棧板爲單位.	
5.0 包裝貨物內容表示方式(打印or 貼紙),另以DN通知或依工廠習慣處理.	
5.1 接地接腳,銲錫後高度不能超過SHIELD的平面,以免組裝case時, 錫球與case干涉	

Prepared by: Amy Kung Checked by: Approved by:



圖(一)



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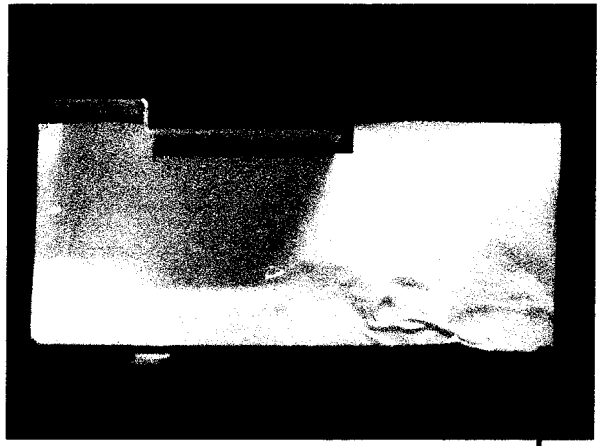
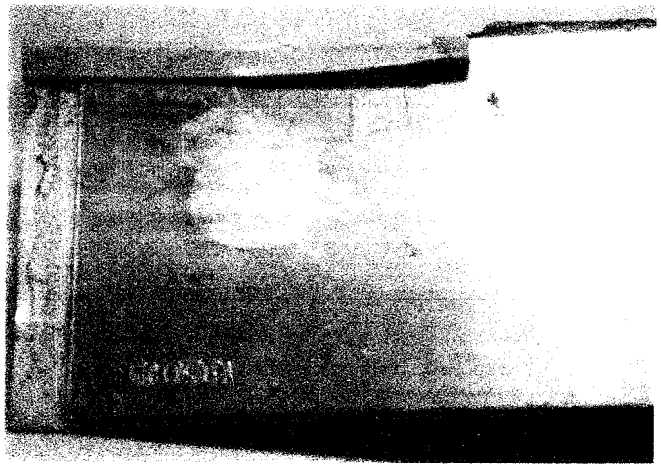


對齊H/S 邊貼.

圖(三)

二次測多出5mm.



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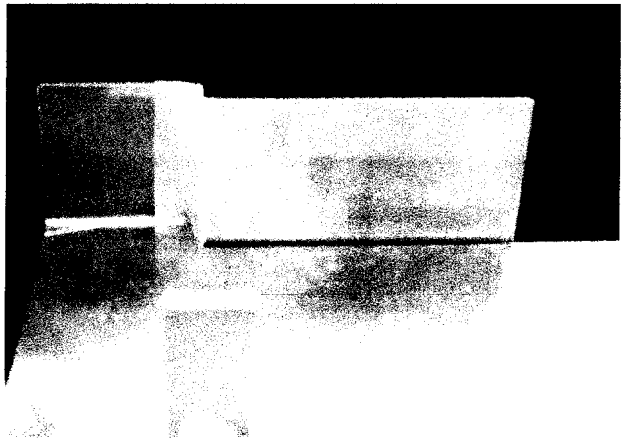
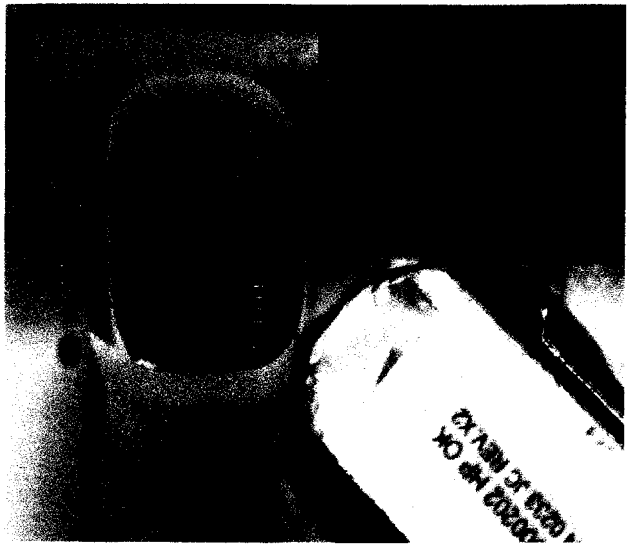


圖(四)

圖(五)



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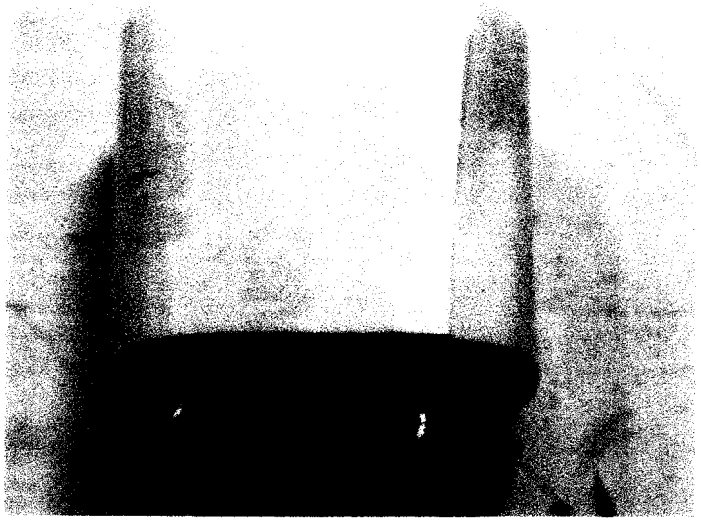
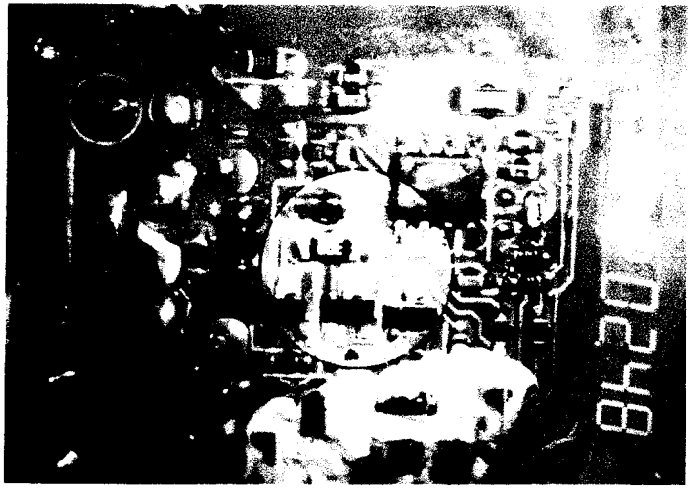


圖(六)



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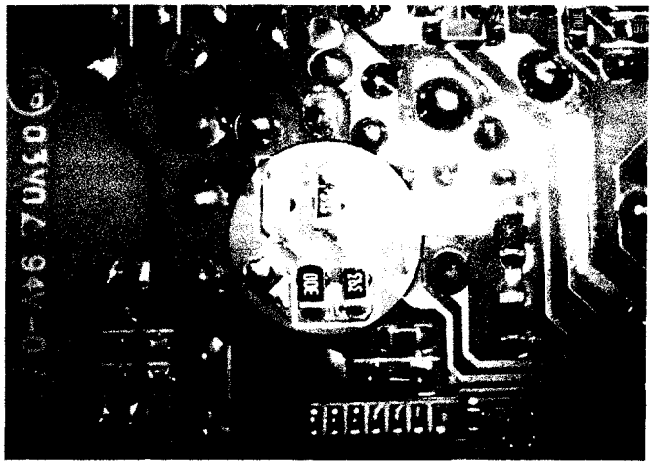
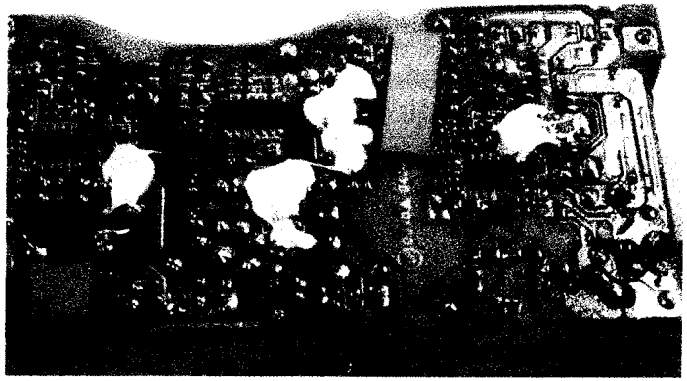


圖(七)



圖(七)

PA-1900-02D DVT2 Report(工廠報告)

File NO.: SBU1-PRR-0301001

To : Dearbear Lai,Amy Kung,Harvey Fan,JH Jiang, XF Xie,Moon Li,J Liu,Tracy Wang,Javy Lee

Issue Date: 1/03

CC : HC Cheng,David Chen,Jerry Hsu,Alex Yih Frank Shieh,Sheera Yang,AD Yuan,

From : SBU1 NPI IE Bravechi

Lot Information :

Input Date : 12/8/02
Line # :L2-18
Lot Qty : 650

Product Rev : X07
P/L Rev : 0E
Customer : DELL

Over All Test Loss (OATL) :

Station	INITIAL	OLP	HI-POT	ATE	B/I	HI-POT	ATE	OATY
Input Qty	1870	1870	1870	1870	1870	1870	1870	
Reject Qty	0	1200	0	0	500	0	0	
Yied (%)	100.00%	35.83%	100.00%	100.00%	73.26%	100.00%	100.00%	26.249%
OATL :		737,510	DPPM					

Attachments as below :

(1). FA & CA (2 Pages)
(2). Solder Quality Analysis Report (4 Pages)
(3). FMEA (1 Pages)
(4). Issue track list (2 Pages)
(5). Electrical CPK (7 Pages)
(6). CASE CPK (Pages)
(7). ORT Results (Pages)
(8). Ultrasonic Report (3 Pages)
(9). Uninput 2nd Source List (Pages)
(10). PMP & Flow Chart (9 Pages)
(11). Test Plan (6 Pages)

Open Issues :

No	Section	Item No
(a)	FA&CA	PCB turn yellow after B/I
(b)	Solderability	OK
(c)	FMEA	OK
(d)	Issue track list	Item 5
(e)	Elec.CPK	90Vac/240Vac : OLP CPK<1
(f)	Case CPK	N/A
(g)	ORT	N/A
(h)	Ultrasonic	

Conclusion :
1. 此Model.OLP Cpk仅作参考,制程OLP站控制.
2. PCB在变压器位置会变黄的问题待PESP/T进一步study.
3. 同意投入Pilot Run.

Prepared : [signature] 1/2/02   Checked : [signature] 1/3/2002   Approved : [signature] 1/3/02

PA-1900-02D OATL Report For DVT2

Customer Name : DELL **Customer P/N :** **Date : 12/14/2002**

Station	Initial	OLP	Hi-pot-1	ATE-1	Burn In	Hi-pot-2	ATE-2		OATY(%)
Input Qty	1870	1870	1870	1870	1870	1870	1870		
Reject Qty	0	1200	0	0	500	0	0		
Yied (%)	100.0%	35.8%	100.0%	100.0%	73.3%	100.0%	100.0%		26.25%
OATL :	737510	(DPPM)							

Remarks : **OATY = Multiplication of all test station yield (%)**

OATL = (1-OATY)*10^6 (DPPM).

Prepared By: 蔣佳芊 12/14.02 **Checked By:** **Approved By:** 12/20/02

PA-1900-02D FA&CA FOR DVT 2

Customer Name : DELL **Customer P/N :** **Date : 12/14/2002**

Station :OLP test

No	Symptom	Q'ty	Root Cause	Corrective Action	Verification / Remarks	Responsible /Due Date	Occur Stage
1	The OLP point less than spec (spec:5.62A~6.12A,actual value:5.30A~5.62A)	1200	Design issue	Please R/D change R306 from 2.37K to 2.55K	open	Dearbear Lai	DVT2

Station :Burn In test

No	Symptom	Q'ty	Root Cause	Corrective Action	Verification / Remarks	Responsible /Due Date	Occur Stage
1	PCB trace become yellow near the main transformer (input:220V load: 4.2A temp:37.5+/-2.5 degree B/I time:24H)	500	Design issue	Rrquest R&D to study related circuit .	open	Dearbear Lai	DVT2

Station : ATE station

No	Symptom	Q'ty	Root Cause	Corrective Action	Verification / Remarks	Responsible /Due Date	Occur Stage
1	The power supply have high frequency noise at 4.62A~5.62A (inpput:120V~140V)	1870	Design issue	Rrquest R&D to study related circuit .	open	Dearbear Lai	DVT2

CPK ISSUE

NO	Failure item	Cpk Value	Worst Condition	Corrective Action	Verification / Remarks	Responsible /Due Date	Occur Stage
1	15;16 (OLP)	<1	Input:90V/60Hz&240V/60Hz	Request R&D to study related circuit .	open	Dearbear Lai	DVT2

LITEON

SOLDER QUALITY ANALYSIS REPORT

TO:張弛.賴威列
FROM:鐘就環

STAGE: DVT2
DATE: 2002/12/08

PARAMETER	LINE	L2-18	DENSITY [g/cm^3]	0.842	TOTAL DOT [bit]	22000	
	MODEL	PA-1900-02D	REAL. DENSITY[g/cm	0.842	SOLDER TIME [sec.]	3	
	PREHEAT I [°C]	420/320	SOLDER'S TEMP. [°C]	242	TOTAL DOT/PCB[bit]	440	
	REAL TEMP. [oC]	105	REAL TEMP. [°C]	242	SPOT CHECK [pcs]	50	
	SOLDER WAVE	DOUBLE WAVES	SPEED [m/min	1.40	PCB DIRECTION	雙聯板過錫爐(見附圖)	
SKIPPING	LOCATION	Q001	Q050				
	Q'TY	7	13				
	DPPM	318	591				
SHORTS	LOCATION						
	Q'TY						
	DPPM						
OTHERS	LOCATION						
	Q'TY						
	DPPM						
TOTAL	DEFECT DOT	20					
	DPPM	909					

PREPARED BY: 鐘就環 12/11/02

CHECKED BY: 余超名 12/12/02

APPROVED BY: 沈林鴻 12/12/02

LITEON

SOLDERING QUALITY ANALYSIS/TRACING REPORT

MODEL：PA-1900-02D　　STAGE:DVT2　　DATE:2002/12/08

階段 Phase	項目 Item	不良類別 Classify	不良位置 Location	不良率 DPPM	原因分析 Root Cause	建議改善對策 Proposal	責任者 n Charg	責任單位回覆 Response	完成期限 ue Dat	執行狀態 Status
DVT2	1	空焊	Q001	318	此過錫爐治具底部過小,造成PCB過錫爐時易与爪鉤相互碰撞而導致此兩元件偏位,引起空焊	把此錫爐治具錫爐底邊寬加大2mm,以使過錫爐時不与爪鉤相碰撞	IE/張弛	同意改善	DVT3	
			Q050	591						
DVT	1	空焊	Q001	545	此HS1來料底部不平整且D050的散熱銅片把HS1頂出PCB板因而易使HS1本体60%以上浮高造成此兩元件空焊或平腳	建議1.把D050之散熱銅片寬度瘦減小0.15mm避免把HS1頂出PCB板 2.請R/D及IE考慮在插此件對其作彎PIN腳處理以免其 浮高.	RD/賴威列&IE張馳	叫IE改善過錫治具以利吃錫	DVT2	有增加過錫爐治具
			Q050	500						
	2	平腳	Q001	682					DVT2	OK
			Q050	591						
EVT 3	1	空焊	Q001	545	Q001,Q050,孔徑寬度實測爲1.00mm;而此零件腳寬爲0.74mm,造成難以吃錫而空焊.	建議R/D將此孔徑減小0.10mm,以利吃錫.	RD/賴威列	叫IE改善過錫治具以利吃錫	EVT4	有增加過錫爐治具
	2	空焊	Q050	500						
	3	空焊	Q200	727	Q201,Q200,孔徑寬度爲1.0mm;而此零件腳寬爲0.75mm,造成難以吃錫而空焊.	建議R/D將此孔徑減小0.10mm,以利吃錫.	RD/賴威列	FMEA10同意依規格減小0.10mm		OK
	4	空焊	Q201	682						
EVT1/2	1	空焊	L003	284	零件腳插入后絕緣漆露出焊錫面,而導致空焊	建議縮短絕緣漆段腳長	IE/張弛	同意	EVT3	已改善
	2	腳長	RT100	2273	腳長14mm,超出零件腳露出焊錫面之規格(5mm)	建議加工零件時減短腳長	IE/張弛	同意	EVT3	已改善
	3	平腳	C001	2273	被L010擠歪斜,插件沒法到位	建議改小L010本体尺寸	RD/賴威列	FMEA:12	EVT3	已改善

PREPARED BY:　　CHECKED BY:　　APPROVED BY:

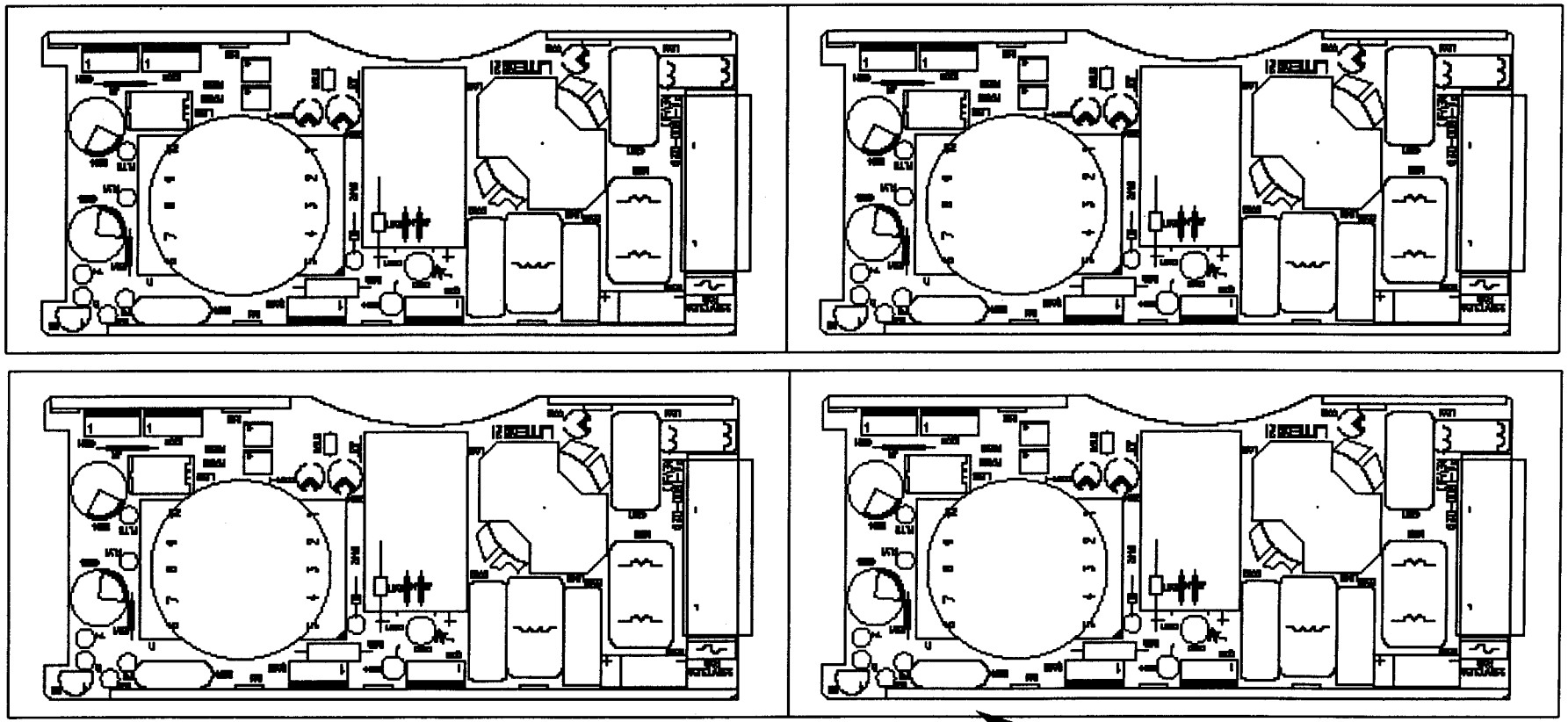
LITEON

SOLDER QUALITY ANALYSIS REPORT

STAGE: DVT2

DATE: 2002/12/08

MODEL: PA-1900-02D



PCB零件面過錫方向示意圖

PREPARED BY: 12/11/02 CHECKED BY: 12/12'02 APPROVED BY: 12/13/02

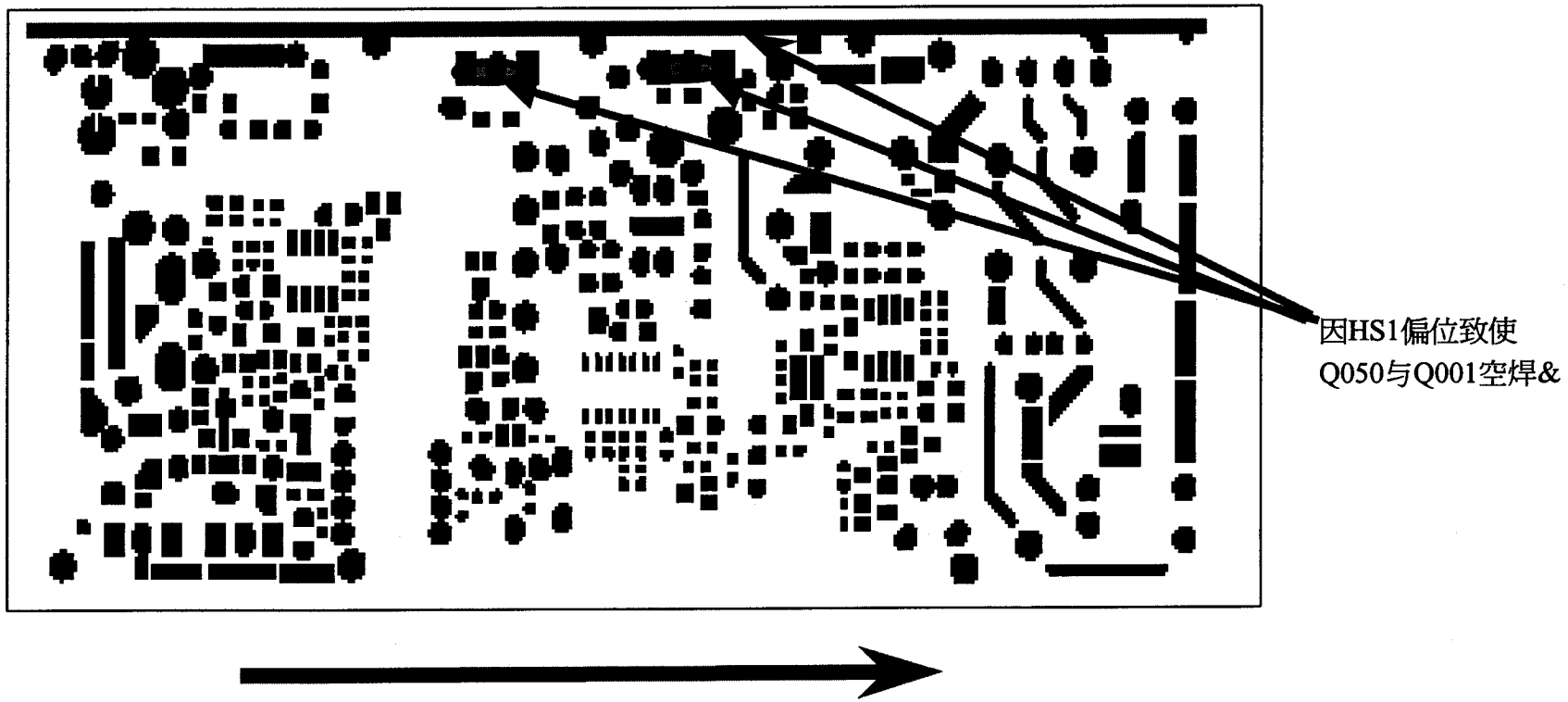
LITEON

SOLDER QUALITY ANALYSIS REPORT

STAGE: DVT2

DATE 2002/12/8

MODEL: PA-1900-02D



PCB板焊錫面過錫方向

PREPARED BY: 12/11/02 CHECKED BY: 12/12/02 APPROVED BY: 12/13/02

FAILURE MODE EFFECT ANALYSIS (失效模式影響度分析)

Model Name: PA-1900-02D **Customer : DELL** **HI Date: 12/8/02** **QTY: 1870Pcs**

DVTII:	PCB Rev: X6	Part List Rev:0E	Customer Spec Rev:X07	Schematic Rev:

Team Member		Occurrence Ranking	Severity/Effect Ranking	Detection Ranking		Remark
QC:	林蓉英/鄔洪波	1.Remote chance ---- < 0.01%	1.No negative impact to quality	1.Certain to be detected for 100%	7. Hard to be detected once in peocess,manual inspection	O=Ocurrence D=Detection S=Serverity
SAFETY:	張新萍	2.Very low ---------- 0.01 ~ 0.1 %	2.Increase less operating time : <15sec	2. Easy to be detected with tools or instruments,readily for evidence	8.Failure detected may destroy the unit	RPN=O*S*D
MQE:	鍾毅斌	3.Moderate ---------- 0.1 ~ 1 %	3.Increase more operating time: > 15sec	3. Easy to be detected with tools or instruments,slips by unoticed	9. Hve change of recurrence after detection	RPN=Risk Prior number
AI:	李聯忠	4.High ----------1 ~ 5 %	4.Inconvenience in Fit / Cosmetic 5.Specification Deviation	4. Difficult to be detected twice in process even with tools or instruments	10.Slips by undetected with reliability possible	To take action when RPN >144
IE/PE	張馳/蔣家華	5.Almost Certain -------- 5 ~ 100 %	6.Customer Reject of Fit or Cosmetic	5. Difficult to be detected once in process even with tools or instruments		RPN-----Top row of the risk assesment column for before improvement.
MFG:	楊文彬		7.Function failure 8.Totally dysfunctional	6. Hard to be detected twice in peocess,manual inspection		RPN-----Bottom row of the risk assesment column for after improvement.
TE:	陳昌付		9.Presents injury hazard			
RM:	余艷紅/鐘就環		10.Fatal if used			
P&T:	賴威列/龔慧清					

No.	工程名稱	故障模式	故障影響	影響度	發生度	檢出度	RPN	改善對策	負責人	是否違反設計規範	對策回覆日期及狀況	階段
	Name of Process	Potential Failure Mode	Effect of Potential Failure	S'TY	F/O	DET.		IE suggestiCorrective Action	Res.	Whther disobey guideline	RD Action respond/due day	Stage
1	Hi-Pot	綠地線焊點與L001相靠近,原因爲FG線套管未完全套到根部同時INLET E PIN被拉離INLET本体.	HIPOT測試不良	6	2	6	72	將L001TAPE加寬5mm,同時FG線鉤焊時向黑線方向傾斜45度角,套管套到根部.	Amy		將TAPE由15mm變更爲20mm	DVT2
				4	1	4	16					
2	PK	FG 線繞線時無法固定位置,容易跑到L010上,且在T050位置時易跑出HS8,造成銲合不良	銲合不良	6	5	6	180	建議在FG縮短5mm(L=120mm)情況下考量用熱融膠將FG線固定	Amy		修改p/l,用熱溶膠固定	DVT2
				5	4	5	100					
3												

Prepared by: Checked by: Approved by:

ISSUES TRACKING LIST

Customer: DELL Current Stage : DVTII PCB REV: MB:X7 HI time: 12/8 Input q'ty:1870

Team member

IE:張馳 PE: 蔣家華 RM: 鐘就環 TE:陳昌付 AI:李聯中 MFG:楊文彬 SQM:唐家剛

IPQC:范銀星 OQC :覃建德 SAFETY: 張新萍 MC: 吳榮華 PC:沈濤

NO	階段	工程名稱	問題點描述	建議改善對策	責任部門對策回復	Person in Charge	Due day	對策實施狀況及確認結果	確認人	是否違反設計規範
1	DVTIII	HI	一次側金道及焊點距錫面銅片不足5mm.(絕緣片兩端定位線不足EMI片長度,廠商來料時以二次側定位線爲准致使一次側弧口處不足5mm,此爲來料不良.)不符安規要求.	已知會SQM周小平,要求廠商改善.(P/N:135000 俐達)	知會廠商修改	SQM 周小平	12/20'02	下次追蹤	張新萍/周小平	
2	DVTIII	OLP	1.The OLP point less than spec (spec:5.62A~6.12A,actual value:5.30A~5.62A);2.CPK<1.5	Please R/D change R306 from 2.37K to 2.55K & check relative circuit	已授權工廠自行使用此元件	Dearbear	12/20'02	由PE決定該電阻阻值	JH Jiang	
3	DVTIII	P/L	PCB板上無舊料號,無法識別PCB是否正確	請在PCB上列舊料號	update	CAD	12/20'02	OK	Moon Li	
4	DVTIII	P/L	123798在此机种中禁用,P/L上有鍵,影響作業	請更新Parts List	update p/l	Dearbear	12/20'02	OK	Moon Li	
5	DVTIII	B/I	PCB trace become yellow near the main transformer (input:220V load: 4.2A temp:37.5+/-2.5 degree B/I time:24H)	R/D is studing related circuit	pcb耐溫125度爲何100度 B/I會發黃	vender	12/20'02	待確認	JH Jiang	

ISSUES TRACKING LIST

NO	階段	工程名稱	問題點描述	建議改善對策	責任部門對策回復	Person in Charge	Due day	對策實施狀況及確認結果	確認人	是否違反設計規範
6	DVTIII	AS	PPID Label 超出CASE邊框	請Creat 一新料for該機種,尺寸寬度減少爲50mm	已修改,改鍵新料	Amy	12/20'02	待確認	張馳	
7	DVTIII	TU	OUTPUT 黑色線材HOOK將其套管和HS1 TAPE刺破.HIPOT不良	將HS1 3*4的孔改爲4*4的孔.	修改h/s 孔4*5	Amy	12/24'02	待追蹤	張新萍	
8	DVTIII	AS	銅片鉚接點不平刺破HS2 TAPE.易將HS2 TAPE刺破,產生HIPOT不良	將HS2對應處鉚接點取消,保留其余三個.(此次因CASE來料不良所以鉚點不光滑,后續如由廠商直接鉚接可避免此問題)	廠商鉚接處理	Amy	12/24'02	待追蹤	張新萍	
9	DVTIII	ATE	The power supply have high frequency noise at 4.62A~5.62A (inpput:120V~140V).	Rrquest R&D to study related circuit .	變更元件 (R008;R008-1)	Dearbear	12/20'02	待確認	JH Jiang	
10										
11										
12										

Prepared by: 12/30/02

Checked by: 12/30/02

Approved by: 12/31/02

LITEON ULTRASONIC QUALITY ANALYSIS/TRACING REPORT

TO: IE張弛 /P/T龔慧清/SQM唐家剛

FROM: SBU1-RM鐘就環

STAGE:DVT2

DATE:12/23/2002

LINE	Sample	MODEL	PA-1900-02D				
Pressure[kg/cm2]	4.5	Delay times[sec]	0.6	Welding times[sec]	0.68	Hardening times[sec]	0.5
Power	4	Total Produce [pcs]	1870				
Welding Defect	縫隙大小不均					Target pass or fail	suggest into stage
Q'TY	1168						
DPPM	624599					624599>3000 DPPM 爲Fail	DVT3
TOTAL DEFECT [pcs]	1168			Target:3000DPPM			
TOTAL DPPM	624599						

階段 Phase	項目 Item	不良類別 Classify	不良率 DPPM	原因分析 Root Cause	建議改善對策 Proposal	責任者 In Charge	責任單位回覆 Response	完成期限 Due Date	執行狀態 Status
DVT2	1	縫隙大小不均(大于Spec:0.3mm)	624599	1.DC cord及燈罩側處熔接線與熔接槽發生側壁熔接導致中縫過大 2.Case熔接線整体高度及粗細不均造成未鉚中縫在1.25mm~1.55mm之間導致鉚合后中縫大	請P/TPush廠商修模,并確保: 1.熔接線不与熔接槽發生側壁熔接; 2.熔接線及Case各相關尺寸均符合設計Spec規格.工廠將繼續追蹤	R/D 龔慧清	請廠商繼續改善,同時進一步追蹤厂商另開新模之狀況.	DVT3	
DVT1	1	机台中縫隙大(大于Spec:0.8~1.1mm)	287692	DC cord及燈罩側處熔接線與熔接槽發生側壁熔接導致中縫過大	請P/TPush廠商修模,并確保熔接線不与熔接槽發生側壁熔接.工廠將繼續追蹤	R/D 龔慧清	請廠商改善且厂商已有另開新模	DVT2	

PREPARED BY: Dec/28/02

CHECKED BY:

APPROVED BY: 12/30/02

EI-13-F06

LITEON

ULTRASONIC QUALITY ANALYSIS/TRACING REPORT

MODEL:PA-1900-02D
STAGE:DV T2

階段	項目	不良類別	不良率	原因分析	建議改善對策	責任者	責任單位回覆	完成期限	執行狀態
Phase	Item	Classify	DPPM	Root Cause	Proposal	In Charge	Response	Due Date	Status
EVT3	1	机台中縫隙大小不均勻	633333	組裝后机芯高度&寬度大于未鉚合Case 內空高及寬度, 致使鉚合時各點受力不均.(詳情見附件)	建議R/D把机芯高度尺寸減小0.3mm或Case內空加大0.3mm;	R/D 龔慧清	FMEA13 設計已變更,機芯降低1mm	EVT4	
	2	鉚合后Case強度不夠	423333	1.因机芯高度過高而難以鉚合,造成中縫大,以致鉚合強度不夠; 2.机体case材質太脆,而致鉚合后外槽壁破裂/Drop時本体破裂.	1.建議R/D把机芯高度尺寸減小0.3mm或Case內空加大0.3mm; 2.知會厂商改善材質.	R/D 龔慧清	FMEA14	EVT4	OK
	3	壓亮	1000000	因机芯高度過高而難以鉚合,但要保證鉚合強度故加大了鉚合強度后,易把Case壓亮.	建議R/D把机芯高度尺寸減小0.3mm或Case內空加大0.3mm以利于鉚合	R/D 龔慧清	FMEA13	EVT3	OK
	4	Inlet端溢膠	805000	因L&N線需交叉插件且點膠，導致Inlet很難卡到PCB上，組裝困難,且導致INLET向外擠壓造成INLET處鉚合後溢膠	建議: 1.將PCB上L&N線位置交換. 2.將INLET處Case壁厚減小0.3mm	R/D 龔慧清	FMEA6	EVT4	OK

PREPARED BY: 龔慧清 Dec/28/01

CHECKED BY: _____

APPROVED BY: 周志 12/30/01

EI-13-F06

LITEON

ULTRASONIC QUALITY ANALYSIS/TRACING REPORT

MODEL:PA-1900-02D
STAGE:DV T2

階段	項目	不良類別	不良率	原因分析	建議改善對策	責任者	責任單位回覆	完成期限	執行狀態
Phase	Item	Classify	DPPM	Root Cause	Proposal	In Charge	Response	Due Date	Status
EVT2	1	机台中縫隙大小不均勻	1000000	組裝后机芯高度&寬度大于未鉚合Case 內空高及寬度, 致使鉚合時各點受力不均.(詳情見附件)	建議R/D重新確認 机芯及Case尺寸.即將Case內空加高0.4mm,內寬加大0.4mm;	R/D 龔慧清	FEMA14及FEMA17	EVT3	
	2	机台Inlet及DC-CORD兩端縫隙大	1000000	机台未鉚合Case中縫隙比inlet及DC-CORD兩端尺寸小及其兩端之熔接線先与熔接槽壁互熔后,致使超聲線無法再熔接下去而縫隙大.	建議R/D知會厂商改善上下Case兩端的熔接線与熔接槽壁的緊配平行尺寸,使之有0.15mm的活動空間.	R/D 龔慧清	FEMA18	EVT3	
	3	燈罩溢膠	145454	1.因机芯過高,爲使机台能鉚合良好故壓力及熔接參數調整較大導致溢膠;2.燈罩与燈罩孔配合空隙可能太小,鉚合時易互相摩擦而溢膠.	建議R/D先改善机芯与CASE尺寸,即建議R/D重新確認机芯及Case尺寸.然後才進一步考慮是否改善燈罩与燈罩孔的空隙配合.	R/D 龔慧清	FEMA17	EVT3	已改善
EVT	1	机殼強度不夠	1000000	組裝后机芯高度&寬度大于未鉚合Case 內空高及寬度, 根本無法鉚合.(詳情見附件)	建議R/D重新確認机芯及Case尺寸.即將Case內空加高0.5mm	R/D 龔慧清	已有机芯將寬度及高度各減少0.2mm	EVT2	已有改善,但效果還不夠好,尙需繼續改善.
	2	机台隙縫大小不均勻	1000000	机台未鉚合Case中逢比inlet及DC_CORD兩端尺寸小	建議R/D重新確認Case尺寸.	R/D 龔慧清	已有將超聲線相對改良	EVT2	已有改善,但效果還不夠好,尙需繼續改善.

PREPARED BY: 12/20/02 CHECKED BY: APPROVED BY: 12/20/02

PA-1900-02D DVT2 CPK Report

DESCRIPTION :

A. The requirement of CPK value is over 1.5 .

B .CPK failure item List :

Test SEQ .	CPK Value	Worst Conditon
15;16 (OLP)	0.673&0.653	Input:90V/60Hz&240V/60Hz

Remarks:The OLP Cpk (0.673&0.653) is only for reference , but OLP point may be adjusted into spec in ocp test station .

Please see the data for details.

Prepared By: 蒋佳笑 12/4.02 **Checked By:** [illegible] **Approved by:** [illegible] 12/20/02

PA-1900-02D DVT2 CPK

Item	TURN ON	HOLD UP	TURN ON	TURN ON	TURN ON	TURN ON	SCP	SCP
Vin/Fin	100V/60Hz	90V/60Hz	90V/47Hz	90V/60Hz	240V/50Hz	240V/50Hz	90V/60Hz	100V/60Hz
Load	4.62A	4.62A	4.62A	4.62A	4.62A	4.62A	3A	3A
Item	Iinrush	Tds	Ton	Rise time	Ton	Rise time	Pin	Pin
NO.	1	2	3	4	5	6	7	8
1	45.96	27.732	623.471	10.386	265.106	6.369	0.156	0.187
2	42.429	27.075	604.664	10.596	256.137	6.579	0.156	0.156
3	42.617	27.011	605.137	9.664	252.386	5.647	0.156	0.156
4	43.023	25.9	654.131	10.146	269.759	6.129	0.156	0.156
5	43.304	27.391	597.782	10.634	249.627	6.617	0.156	0.156
6	46.867	27.253	623.813	9.955	253.334	5.938	0.156	0.156
7	45.523	27.642	616.06	10.571	271.831	6.554	0.156	0.156
8	45.71	27.109	600.854	10.301	246.874	6.284	0.156	0.187
9	45.554	27.138	602.92	10.388	253.143	6.371	0.156	0.187
10	45.21	27.577	601.879	9.984	251.261	5.967	0.156	0.187
11	46.617	27.397	594.857	10.107	257.336	6.09	0.156	0.187
12	46.523	27.463	596.669	10.44	256.134	6.423	0.156	0.156
13	42.523	27.451	609.911	10.987	257.837	6.97	0.156	0.156
14	46.929	27.227	594.925	10.248	241.619	6.231	0.156	0.187
15	42.492	27.259	662.987	10.658	262.328	6.641	0.156	0.156
16	14.429	27.49	434.449	13.076	243.97	9.059	0.156	0.187
17	46.46	27.639	604.955	10.279	258.152	6.262	0.156	0.187
18	41.898	27.301	627.338	10.195	267.182	6.178	0.156	0.187
19	46.804	28.511	617.108	10.427	267.232	6.41	0.156	0.187
20	46.054	26.677	616.031	10.789	267.014	6.772	0.156	0.187
21	46.96	27.234	595.412	12.983	245.948	8.966	0.156	0.156
22	47.429	26.641	613.266	10.266	260.946	6.249	0.156	0.156
23	47.242	27.148	627.274	11.083	267.164	7.066	0.156	0.187
24	46.523	27.044	600.278	12.283	245.154	8.266	0.156	0.156
25	45.554	26.11	615.346	11.285	260.907	7.268	0.156	0.156
26	46.804	27.123	595.39	12.914	242.074	8.897	0.156	0.156
27	46.304	27.426	594.59	11.594	247.457	7.577	0.156	0.187
28	45.367	27.101	609.722	10.419	256.993	6.402	0.156	0.187
29	46.773	27.341	600.673	9.726	248.631	5.709	0.156	0.187
30	42.585	27.718	604.468	10.296	263.141	6.279	0.187	0.156
31	44.21	27.196	621.956	10.653	262.488	6.636	0.156	0.156
32	44.835	26.901	608.046	12.557	253.988	8.54	0.156	0.156
33	43.429	25.855	616.165	10.836	264.239	6.819	0.156	0.156
34	44.585	26.881	605.027	10.724	263.996	6.707	0.156	0.156
35	47.054	26.248	611.634	11.713	256.998	7.696	0.156	0.156
36	42.242	27.427	615.246	10.861	255.575	6.844	0.156	0.156
37	45.804	27.258	597.462	10.01	250.855	5.993	0.156	0.187
38	46.929	27.146	606.803	13.137	255.104	9.12	0.187	0.156
39	47.273	26.666	612.33	10.515	258.718	6.498	0.156	0.156
40	46.554	26.752	612.765	10.446	254.574	6.429	0.156	0.156
41	47.148	26.994	599.379	12.745	243.854	8.728	0.187	0.187
42	42.492	27.711	637.239	9.8	256.556	5.783	0.156	0.156
43	46.929	26.953	630.856	10.277	269.244	6.26	0.156	0.187
44	46.179	27.426	565.907	10.532	272.624	6.515	0.156	0.187
45	46.492	27.325	604.57	10.442	249.316	6.425	0.156	0.187
46	45.992	27.832	615.364	10.994	256.411	6.977	0.187	0.156
47	45.585	27.1	600.467	9.878	244.452	5.861	0.156	0.187
48	46.648	26.121	621.429	10.729	262.069	6.712	0.156	0.156
49	42.523	26.846	589.96	10.133	237.036	6.116	0.187	0.156
50	46.96	26.431	605.271	9.963	252.244	5.946	0.156	0.156
UNIT	A	ms	ms	ms	ms	ms	w	w
UCL	220		4000	20	4000	20.0	10	10
LCL		10						
MAX	47.429	28.511	662.987	13.137	272.624	9.1	0.187	0.187
MIN	14.429	25.855	434.449	9.664	237.036	5.6	0.156	0.156
AVER	44.767	27.124	606.485	10.793	256.140	6.8	0.159	0.169
S	4.704	0.508	29.411	0.931	8.619	0.9	0.009	0.015
Ca								
Cp	12.416	11.241	38.461	3.296	144.798	4.7	349.18	212.026
CPK	12.416	11.241	38.461	3.296	144.798	4.7	349.18	212.026
RESULT	OK	OK	OK	OK	OK	OK	OK	OK

PA-1900-02D DVT2 CPK

Item	INPUT/OUTPUT			INPUT/OUTPUT		INPUT/OUTPUT	OLP	OLP	SCP	SCP
Vin/Fin	90V/50Hz			240V/50Hz		230V/60Hz	90V/60Hz	240V/50Hz	240V/50Hz	264V/63Hz
Load	4.62A			4.62A		4.62A	4.62A	4.62A	3A	3A
Item	Iinrms	EFF	PF	Iinrms	EFF	PF	POINT	POINT	Pin	Pin
NO.	9	10	11	12	13	14	15	16	17	18
1	1.208	87.731	0.933	0.428	88.969	0.971	5.95	5.95	0.468	0.468
2	1.206	87.772	0.932	0.427	89.077	0.97	6.00	6	0.39	0.703
3	1.219	87.699	0.931	0.43	89.112	0.971	5.90	5.9	0.468	0.703
4	1.224	87.538	0.928	0.43	89.101	0.971	5.70	5.75	0.39	0.468
5	1.209	87.769	0.934	0.429	89.024	0.971	5.70	5.75	0.39	0.625
6	1.21	87.799	0.934	0.429	89.209	0.97	6.00	6	0.39	0.625
7	1.214	87.457	0.931	0.428	88.932	0.972	5.85	5.85	0.468	0.468
8	1.22	87.582	0.928	0.43	88.872	0.971	5.85	5.85	0.468	0.625
9	1.216	87.658	0.93	0.428	89.094	0.973	6.00	6	0.468	0.703
10	1.215	87.79	0.928	0.428	88.948	0.972	5.80	5.8	0.39	0.703
11	1.213	87.724	0.934	0.43	89.059	0.972	6.05	6.05	0.468	0.39
12	1.207	87.682	0.936	0.428	88.976	0.973	5.75	5.75	0.39	0.703
13	1.213	87.776	0.933	0.428	89.136	0.973	6.05	6.05	0.468	0.703
14	1.217	87.832	0.93	0.429	89.209	0.972	6.00	6.05	0.39	0.468
15	1.212	87.794	0.932	0.428	89.091	0.973	5.95	6	0.546	0.39
16	1.206	88.207	0.933	0.427	89.459	0.972	5.80	5.8	0.468	0.703
17	1.222	87.724	0.928	0.434	88.422	0.969	5.85	5.85	0.468	0.625
18	1.218	87.637	0.93	0.428	88.979	0.974	5.80	5.8	0.546	0.468
19	1.219	87.75	0.93	0.43	88.905	0.973	6.00	6	0.39	0.468
20	1.201	87.777	0.937	0.428	88.926	0.97	5.70	5.75	0.39	0.468
21	1.2	87.842	0.939	0.428	89.06	0.971	5.85	5.9	0.39	0.625
22	1.215	87.619	0.928	0.428	89.013	0.97	5.95	5.95	0.39	0.703
23	1.208	87.825	0.936	0.428	89.29	0.971	6.05	6.05	0.468	0.39
24	1.221	87.529	0.929	0.431	88.762	0.97	5.90	5.9	0.468	0.703
25	1.205	87.744	0.933	0.427	89.018	0.97	5.80	5.8	0.468	0.703
26	1.205	87.527	0.935	0.428	88.698	0.972	5.90	5.9	0.39	0.625
27	1.195	87.794	0.945	0.429	89.063	0.97	5.70	5.7	0.468	0.703
28	1.204	87.716	0.934	0.426	89.132	0.971	5.80	5.85	0.39	0.703
29	1.201	87.75	0.943	0.43	88.955	0.971	5.90	5.95	0.468	0.703
30	1.225	87.734	0.927	0.431	89.01	0.971	5.95	5.95	0.546	0.468
31	1.223	87.582	0.926	0.429	89.081	0.971	5.80	5.8	0.468	0.468
32	1.222	87.615	0.928	0.43	89.015	0.972	5.85	5.9	0.39	0.703
33	1.222	87.562	0.929	0.429	89.196	0.971	5.90	5.95	0.468	0.468
34	1.215	87.451	0.929	0.428	88.865	0.97	6.00	6	0.468	0.468
35	1.221	87.47	0.928	0.429	88.784	0.973	6.00	6	0.546	0.703
36	1.211	87.728	0.931	0.427	89.041	0.973	5.95	5.95	0.468	0.703
37	1.226	87.701	0.925	0.428	89.209	0.974	6.00	6	0.468	0.625
38	1.205	87.704	0.936	0.428	88.948	0.973	5.95	5.95	0.468	0.468
39	1.204	87.63	0.933	0.426	88.888	0.972	5.95	5.95	0.546	0.468
40	1.214	87.707	0.93	0.428	89.004	0.973	5.95	6	0.39	0.468
41	1.209	87.652	0.935	0.428	89.045	0.972	6.05	6.05	0.468	0.468
42	1.217	87.663	0.93	0.43	88.872	0.971	6.00	6.05	0.468	0.468
43	1.199	87.709	0.936	0.426	89.113	0.97	6.05	6.05	0.468	0.468
44	1.216	87.728	0.933	0.428	89.209	0.974	5.85	5.9	0.468	0.468
45	1.212	87.593	0.931	0.428	88.902	0.972	5.80	5.85	0.468	0.703
46	1.22	87.717	0.928	0.431	89.011	0.967	6.05	6.05	0.468	0.468
47	1.218	87.658	0.928	0.429	88.966	0.971	5.90	5.9	0.39	0.703
48	1.215	87.674	0.928	0.428	89.099	0.97	5.80	5.8	0.468	0.703
49	1.218	87.47	0.93	0.429	88.888	0.973	6.05	6.05	0.39	0.703
50	1.22	87.728	0.929	0.429	89.004	0.972	5.95	6	0.468	0.468
UNIT	A	%		A	%		A	A	W	W
UCL	1.5			0.8			6.12	6.12	10	10
LCL		85	0.9		85	0.9	5.62	5.62		
MAX	1.226	88.207	0.945	0.434	89.459	0.974	6.050	6.050	0.546	0.703
MIN	1.195	87.451	0.925	0.426	88.422	0.967	5.700	5.700	0.390	0.390
AVER	1.213	87.690	0.932	0.429	89.013	0.971	5.907	5.922	0.449	0.579
S	0.008	0.126	0.004	0.001	0.161	0.001	0.105	0.101	0.049	0.117
Ca							0.148	0.208		
Cp	12.59	7.119	2.61	85.894	8.306	16.980	0.790	0.824	65.339	26.737
CPK	12.59	7.119	2.61	85.894	8.306	16.980	0.673	0.653	65.339	26.737
RESULT	OK	OK	OK	OK	OK	OK	FAIL	FAIL	OK	OK

PA-1900-02D DVT2 CPK

Item	COMBINE REG						COMBINE REG					
Vin/Fin	90V/47Hz-100V/60Hz-132V/63Hz						90V/47Hz-100V/60Hz-132V/63Hz					
Load	4.62A-0A-4.62A						0A-4.62A-0A					
Item	Vdc1	Vdc2	Vdc3	Vpp1	Vpp2	Vpp3	Vdc1	Vdc2	Vdc3	Vpp1	Vpp2	Vpp3
NO.	19	20	21	22	23	24	25	26	27	28	29	30
1	19.2	19.487	19.206	0.122	0.037	0.13	19.487	19.206	19.487	0.038	0.124	0.037
2	19.168	19.462	19.168	0.125	0.038	0.128	19.468	19.168	19.468	0.038	0.124	0.038
3	19.325	19.625	19.325	0.126	0.04	0.127	19.625	19.325	19.625	0.04	0.125	0.042
4	19.318	19.6	19.318	0.127	0.038	0.129	19.6	19.318	19.6	0.039	0.128	0.039
5	19.256	19.556	19.256	0.134	0.039	0.137	19.562	19.256	19.562	0.039	0.133	0.039
6	19.281	19.568	19.281	0.123	0.038	0.124	19.575	19.281	19.575	0.037	0.123	0.037
7	19.206	19.5	19.206	0.147	0.039	0.153	19.5	19.206	19.5	0.04	0.156	0.039
8	19.275	19.562	19.275	0.132	0.044	0.134	19.562	19.275	19.562	0.044	0.131	0.043
9	19.262	19.562	19.262	0.131	0.04	0.138	19.562	19.262	19.562	0.042	0.133	0.041
10	19.243	19.55	19.243	0.136	0.042	0.139	19.556	19.243	19.55	0.043	0.136	0.042
11	19.325	19.618	19.325	0.134	0.039	0.136	19.618	19.331	19.625	0.039	0.129	0.039
12	19.25	19.543	19.25	0.128	0.039	0.133	19.543	19.243	19.543	0.039	0.125	0.039
13	19.3	19.581	19.3	0.126	0.036	0.13	19.581	19.3	19.587	0.038	0.126	0.037
14	19.325	19.618	19.325	0.127	0.036	0.13	19.618	19.325	19.618	0.036	0.129	0.033
15	19.268	19.55	19.268	0.123	0.038	0.126	19.55	19.268	19.55	0.039	0.125	0.038
16	19.293	19.593	19.293	0.119	0.037	0.124	19.593	19.293	19.593	0.037	0.123	0.036
17	19.325	19.612	19.325	0.127	0.042	0.128	19.612	19.325	19.618	0.042	0.127	0.043
18	19.281	19.581	19.281	0.126	0.037	0.124	19.581	19.281	19.581	0.037	0.125	0.037
19	19.318	19.6	19.325	0.124	0.037	0.128	19.6	19.318	19.6	0.038	0.123	0.036
20	19.187	19.487	19.187	0.128	0.033	0.131	19.487	19.187	19.487	0.033	0.127	0.033
21	19.231	19.525	19.231	0.125	0.041	0.126	19.518	19.231	19.525	0.041	0.124	0.041
22	19.206	19.493	19.212	0.126	0.036	0.124	19.5	19.212	19.5	0.036	0.124	0.036
23	19.281	19.581	19.281	0.124	0.038	0.123	19.581	19.287	19.581	0.038	0.122	0.038
24	19.293	19.593	19.293	0.13	0.038	0.13	19.593	19.293	19.593	0.039	0.128	0.039
25	19.162	19.456	19.162	0.123	0.038	0.123	19.456	19.162	19.462	0.038	0.123	0.038
26	19.168	19.475	19.168	0.127	0.038	0.126	19.475	19.168	19.475	0.038	0.123	0.038
27	19.268	19.562	19.268	0.128	0.039	0.129	19.562	19.268	19.562	0.04	0.127	0.039
28	19.156	19.456	19.156	0.132	0.04	0.132	19.456	19.156	19.456	0.04	0.127	0.041
29	19.3	19.6	19.3	0.13	0.039	0.133	19.6	19.3	19.6	0.041	0.129	0.038
30	19.368	19.668	19.368	0.127	0.038	0.129	19.668	19.375	19.668	0.039	0.126	0.039
31	19.281	19.568	19.281	0.122	0.041	0.125	19.575	19.281	19.575	0.041	0.123	0.04
32	19.312	19.593	19.312	0.126	0.038	0.129	19.593	19.312	19.593	0.039	0.126	0.038
33	19.306	19.606	19.306	0.135	0.036	0.137	19.606	19.306	19.606	0.035	0.136	0.035
34	19.175	19.481	19.168	0.132	0.039	0.147	19.481	19.175	19.481	0.038	0.151	0.038
35	19.268	19.568	19.275	0.129	0.037	0.13	19.575	19.275	19.575	0.036	0.126	0.036
36	19.225	19.525	19.225	0.124	0.038	0.126	19.525	19.225	19.525	0.038	0.125	0.038
37	19.331	19.637	19.331	0.125	0.039	0.127	19.637	19.331	19.637	0.039	0.124	0.039
38	19.25	19.537	19.25	0.133	0.039	0.134	19.537	19.25	19.537	0.04	0.131	0.041
39	19.137	19.437	19.137	0.126	0.039	0.126	19.437	19.137	19.437	0.04	0.125	0.039
40	19.25	19.531	19.25	0.122	0.037	0.122	19.531	19.25	19.531	0.037	0.124	0.037
41	19.25	19.556	19.25	0.127	0.037	0.13	19.556	19.25	19.556	0.037	0.128	0.037
42	19.287	19.587	19.287	0.123	0.037	0.128	19.593	19.293	19.593	0.036	0.123	0.035
43	19.162	19.462	19.162	0.127	0.039	0.126	19.462	19.162	19.462	0.04	0.126	0.039
44	19.331	19.625	19.331	0.122	0.036	0.129	19.625	19.331	19.625	0.037	0.123	0.036
45	19.212	19.506	19.212	0.125	0.035	0.127	19.512	19.212	19.512	0.034	0.123	0.034
46	19.287	19.568	19.287	0.13	0.038	0.127	19.568	19.287	19.568	0.038	0.127	0.038
47	19.268	19.581	19.268	0.127	0.042	0.133	19.575	19.268	19.581	0.043	0.128	0.042
48	19.225	19.512	19.225	0.126	0.04	0.13	19.512	19.225	19.512	0.04	0.125	0.039
49	19.287	19.581	19.287	0.128	0.038	0.126	19.581	19.287	19.581	0.038	0.124	0.038
50	19.287	19.581	19.293	0.142	0.036	0.138	19.587	19.293	19.587	0.039	0.136	0.039
UNIT	V	V	V	V	V	V	V	V	V	V	V	V
UCL	20.475	20.475	20.475	0.50	0.50	0.50	20.475	20.475	20.475	0.50	0.50	0.50
LCL	18.525	18.525	18.525				18.525	18.525	18.525			
MAX	19.368	19.668	19.368	0.147	0.044	0.153	19.668	19.375	19.668	0.044	0.156	0.043
MIN	19.137	19.437	19.137	0.119	0.033	0.122	19.437	19.137	19.437	0.033	0.122	0.033
AVER	19.259	19.554	19.260	0.128	0.038	0.130	19.555	19.260	19.556	0.039	0.128	0.038
S	0.056	0.054	0.056	0.005	0.002	0.006	0.054	0.056	0.054	0.002	0.006	0.002
Ca	0.247	0.056	0.246				0.057	0.246	0.057			
Cp	5.853	5.968	5.827	24.285	78.053	20.786	5.983	5.806	5.970	69.891	19.296	67.125
CPK	4.409	5.637	4.392	24.285	78.053	20.786	5.645	4.378	5.628	69.891	19.296	67.125
RESULT	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK

PA-1900-02D DVT2 CPK

Item	COMBINE REG						COMBINE REG					
Vin/Fin	180V/47Hz-240V/50Hz-264V/63Hz						180V/47Hz-240V/50Hz-264V/63Hz					
Load	4.62A-0A-4.62A						0A-4.62A-0A					
Item	Vdc1	Vdc2	Vdc3	Vpp1	Vpp2	Vpp3	Vdc1	Vdc2	Vdc3	Vpp1	Vpp2	Vpp3
NO.	31	32	33	34	35	36	37	38	39	40	41	42
1	19.218	19.493	19.225	0.11	0.041	0.111	19.493	19.225	19.487	0.041	0.109	0.041
2	19.187	19.468	19.187	0.109	0.042	0.117	19.468	19.187	19.468	0.042	0.107	0.042
3	19.337	19.631	19.337	0.117	0.044	0.114	19.625	19.337	19.625	0.044	0.114	0.045
4	19.331	19.606	19.337	0.117	0.043	0.118	19.6	19.337	19.600	0.041	0.111	0.044
5	19.275	19.562	19.275	0.124	0.043	0.12	19.562	19.275	19.556	0.043	0.120	0.043
6	19.3	19.575	19.306	0.105	0.041	0.108	19.575	19.3	19.575	0.041	0.108	0.042
7	19.225	19.5	19.225	0.133	0.043	0.129	19.5	19.231	19.500	0.043	0.123	0.043
8	19.3	19.562	19.3	0.124	0.049	0.121	19.562	19.3	19.562	0.047	0.118	0.050
9	19.275	19.562	19.281	0.12	0.046	0.119	19.562	19.281	19.562	0.045	0.117	0.045
10	19.256	19.55	19.262	0.125	0.046	0.121	19.55	19.262	19.556	0.047	0.121	0.048
11	19.35	19.618	19.35	0.122	0.042	0.115	19.625	19.35	19.625	0.043	0.115	0.043
12	19.268	19.543	19.262	0.109	0.043	0.114	19.543	19.262	19.543	0.043	0.111	0.045
13	19.312	19.581	19.318	0.114	0.04	0.116	19.587	19.318	19.587	0.040	0.112	0.040
14	19.337	19.618	19.343	0.118	0.039	0.114	19.618	19.343	19.625	0.040	0.115	0.039
15	19.287	19.556	19.293	0.116	0.042	0.112	19.556	19.293	19.550	0.042	0.111	0.042
16	19.3	19.593	19.306	0.106	0.04	0.109	19.593	19.306	19.593	0.039	0.104	0.040
17	19.343	19.618	19.343	0.111	0.045	0.113	19.618	19.343	19.612	0.045	0.112	0.045
18	19.3	19.581	19.3	0.111	0.04	0.109	19.581	19.3	19.581	0.041	0.110	0.042
19	19.337	19.6	19.343	0.115	0.04	0.114	19.6	19.343	19.600	0.041	0.111	0.040
20	19.206	19.487	19.206	0.112	0.038	0.115	19.487	19.206	19.487	0.037	0.114	0.038
21	19.25	19.525	19.256	0.121	0.045	0.112	19.525	19.25	19.525	0.045	0.110	0.044
22	19.231	19.5	19.231	0.115	0.039	0.11	19.5	19.231	19.500	0.040	0.111	0.039
23	19.3	19.581	19.306	0.109	0.041	0.109	19.581	19.306	19.581	0.041	0.109	0.041
24	19.312	19.593	19.312	0.113	0.042	0.112	19.593	19.312	19.593	0.043	0.112	0.043
25	19.181	19.456	19.187	0.111	0.042	0.108	19.462	19.187	19.462	0.042	0.107	0.042
26	19.187	19.475	19.187	0.111	0.041	0.111	19.475	19.187	19.475	0.041	0.109	0.042
27	19.287	19.562	19.293	0.117	0.043	0.113	19.562	19.293	19.562	0.044	0.116	0.044
28	19.168	19.462	19.175	0.115	0.043	0.123	19.462	19.175	19.456	0.044	0.122	0.044
29	19.318	19.6	19.318	0.124	0.043	0.116	19.6	19.318	19.600	0.043	0.116	0.043
30	19.393	19.668	19.393	0.107	0.043	0.117	19.668	19.393	19.668	0.042	0.109	0.042
31	19.3	19.575	19.306	0.108	0.043	0.108	19.575	19.306	19.575	0.044	0.106	0.044
32	19.331	19.6	19.337	0.114	0.042	0.111	19.593	19.337	19.600	0.043	0.119	0.042
33	19.318	19.606	19.325	0.121	0.039	0.118	19.606	19.325	19.606	0.039	0.118	0.039
34	19.187	19.481	19.193	0.118	0.042	0.12	19.487	19.193	19.481	0.043	0.117	0.041
35	19.287	19.575	19.293	0.114	0.04	0.125	19.575	19.293	19.575	0.037	0.113	0.041
36	19.237	19.525	19.243	0.108	0.041	0.107	19.525	19.237	19.525	0.043	0.112	0.041
37	19.343	19.637	19.35	0.11	0.041	0.109	19.637	19.35	19.643	0.042	0.112	0.042
38	19.262	19.537	19.275	0.119	0.042	0.114	19.537	19.275	19.537	0.043	0.112	0.043
39	19.15	19.437	19.156	0.111	0.043	0.112	19.437	19.156	19.437	0.043	0.106	0.043
40	19.268	19.531	19.268	0.114	0.04	0.109	19.531	19.268	19.531	0.041	0.109	0.041
41	19.262	19.562	19.268	0.114	0.04	0.121	19.556	19.268	19.556	0.041	0.112	0.041
42	19.306	19.587	19.306	0.109	0.04	0.11	19.593	19.306	19.587	0.040	0.110	0.040
43	19.175	19.462	19.181	0.113	0.042	0.111	19.462	19.181	19.462	0.043	0.112	0.042
44	19.343	19.625	19.35	0.11	0.037	0.114	19.631	19.35	19.631	0.041	0.116	0.041
45	19.231	19.506	19.231	0.114	0.038	0.117	19.512	19.231	19.512	0.039	0.117	0.038
46	19.306	19.568	19.306	0.113	0.041	0.108	19.575	19.312	19.568	0.041	0.108	0.041
47	19.281	19.581	19.281	0.113	0.045	0.115	19.581	19.287	19.581	0.046	0.111	0.046
48	19.25	19.512	19.25	0.113	0.044	0.111	19.512	19.25	19.518	0.044	0.113	0.044
49	19.306	19.587	19.306	0.113	0.042	0.112	19.581	19.306	19.581	0.042	0.110	0.042
50	19.312	19.587	19.312	0.113	0.042	0.119	19.581	19.312	19.587	0.042	0.125	0.042
UNIT	V	V	V	V	V	V	V	V	V	V	V	V
UCL	20.475	20.475	20.475	0.50	0.50	0.50	20.475	20.475	20.475	0.50	0.50	0.50
LCL	18.525	18.525	18.525				18.525	18.525	18.525			
MAX	19.393	19.668	19.393	0.133	0.049	0.129	19.668	19.393	19.668	0.047	0.125	0.050
MIN	19.150	19.437	19.156	0.105	0.037	0.107	19.437	19.156	19.437	0.037	0.104	0.038
AVER	19.277	19.556	19.280	0.114	0.042	0.114	19.556	19.280	19.556	0.042	0.113	0.042
S	0.056	0.055	0.056	0.006	0.002	0.005	0.054	0.056	0.055	0.002	0.005	0.002
Ca	0.229	0.058	0.226				0.058	0.226	0.058			
Cp	5.816	5.961	5.835	22.995	67.878	26.198	6.014	5.829	5.936	70.749	27.790	65.916
CPK	4.483	5.617	4.518	22.995	67.878	26.198	5.666	4.513	5.594	70.749	27.790	65.916
RESULT	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK

PA-1900-02D DVT2 CPK

Item	DYNAMIC		DYNAMIC		DYNAMIC		DYNAMIC		DYNAMIC		DYNAMIC	
Vin/Fin	90V/60Hz		90V/60Hz		100V/60Hz		100V/60Hz		240V/50Hz		240V/50Hz	
Load	0~4.62A (50Hz)		0~4.62A (10KHz)		0~4.62A (50Hz)		0~4.62A (10KHz)		0~4.62A (50Hz)		0~4.62A (10KHz)	
Item	Vdc1	Vdc2	Vdc1	Vdc2	Vdc1	Vdc2	Vdc1	Vdc2	Vdc1	Vdc2	Vdc1	Vdc2
NO.	43	44	45	46	47	48	49	50	51	52	53	54
1	19.518	19.243	19.587	19.1	19.518	19.225	19.568	19.187	19.531	19.237	19.562	19.112
2	19.487	19.218	19.512	19.131	19.487	19.15	19.5	19.131	19.481	19.175	19.518	19.068
3	19.65	19.356	19.662	19.231	19.656	19.375	19.662	19.306	19.65	19.381	19.668	19.243
4	19.618	19.268	19.65	19.293	19.618	19.287	19.656	19.293	19.625	19.343	19.668	19.212
5	19.587	19.318	19.593	19.143	19.581	19.237	19.593	19.243	19.6	19.275	19.618	19.243
6	19.593	19.287	19.612	19.175	19.593	19.256	19.612	19.225	19.606	19.268	19.643	19.281
7	19.518	19.275	19.537	19.143	19.525	19.175	19.537	19.2	19.525	19.275	19.556	19.106
8	19.587	19.225	19.606	19.168	19.593	19.231	19.612	19.162	19.612	19.331	19.631	19.256
9	19.581	19.218	19.593	19.187	19.581	19.262	19.631	19.187	19.593	19.312	19.618	19.256
10	19.575	19.212	19.631	19.143	19.568	19.306	19.587	19.162	19.568	19.306	19.6	19.156
11	19.643	19.362	19.706	19.225	19.656	19.3	19.712	19.312	19.662	19.387	19.681	19.225
12	19.562	19.206	19.581	19.175	19.562	19.306	19.581	19.193	19.581	19.256	19.593	19.212
13	19.612	19.325	19.675	19.206	19.612	19.25	19.681	19.193	19.625	19.287	19.65	19.275
14	19.631	19.381	19.662	19.231	19.643	19.3	19.7	19.218	19.65	19.375	19.693	19.3
15	19.568	19.318	19.6	19.231	19.581	19.262	19.6	19.156	19.581	19.243	19.65	19.256
16	19.618	19.318	19.625	19.193	19.618	19.275	19.631	19.256	19.618	19.331	19.65	19.193
17	19.631	19.368	19.656	19.231	19.637	19.287	19.662	19.256	19.65	19.387	19.681	19.243
18	19.612	19.343	19.618	19.193	19.618	19.343	19.618	19.168	19.612	19.331	19.656	19.206
19	19.631	19.356	19.656	19.3	19.637	19.275	19.65	19.306	19.637	19.381	19.668	19.306
20	19.506	19.137	19.568	19.162	19.506	19.162	19.537	19.1	19.512	19.181	19.55	19.087
21	19.556	19.187	19.556	19.131	19.562	19.3	19.568	19.143	19.575	19.262	19.593	19.131
22	19.525	19.256	19.593	19.15	19.537	19.268	19.55	19.137	19.543	19.281	19.575	19.118
23	19.6	19.312	19.637	19.25	19.606	19.331	19.631	19.168	19.625	19.287	19.637	19.25
24	19.606	19.35	19.637	19.218	19.618	19.243	19.656	19.175	19.612	19.331	19.656	19.231
25	19.5	19.231	19.512	19.056	19.487	19.187	19.556	19.056	19.5	19.231	19.525	19.081
26	19.5	19.175	19.518	19.156	19.5	19.15	19.512	19.143	19.512	19.243	19.537	19.162
27	19.6	19.331	19.6	19.268	19.581	19.318	19.65	19.168	19.606	19.262	19.625	19.181
28	19.487	19.106	19.512	19.075	19.481	19.218	19.506	19.087	19.5	19.231	19.512	19.156
29	19.618	19.356	19.637	19.212	19.625	19.287	19.65	19.281	19.631	19.3	19.65	19.2
30	19.687	19.331	19.712	19.337	19.693	19.356	19.706	19.268	19.693	19.412	19.737	19.343
31	19.606	19.287	19.618	19.237	19.593	19.337	19.612	19.243	19.612	19.337	19.637	19.275
32	19.625	19.318	19.656	19.193	19.631	19.281	19.643	19.25	19.631	19.3	19.668	19.275
33	19.637	19.281	19.65	19.2	19.625	19.343	19.662	19.206	19.637	19.362	19.675	19.312
34	19.5	19.206	19.525	19.137	19.506	19.237	19.525	19.075	19.525	19.156	19.537	19.175
35	19.6	19.243	19.637	19.168	19.606	19.237	19.65	19.181	19.606	19.337	19.631	19.256
36	19.543	19.225	19.556	19.168	19.543	19.168	19.568	19.137	19.543	19.231	19.587	19.175
37	19.662	19.337	19.668	19.281	19.662	19.287	19.675	19.3	19.675	19.312	19.7	19.281
38	19.562	19.237	19.618	19.181	19.562	19.225	19.625	19.193	19.581	19.306	19.606	19.156
39	19.468	19.081	19.481	19.043	19.462	19.181	19.475	19.031	19.468	19.187	19.481	19.118
40	19.556	19.312	19.587	19.2	19.562	19.306	19.581	19.137	19.562	19.25	19.612	19.156
41	19.587	19.312	19.593	19.212	19.587	19.212	19.593	19.2	19.587	19.262	19.612	19.162
42	19.612	19.35	19.618	19.181	19.612	19.275	19.65	19.193	19.625	19.293	19.65	19.256
43	19.481	19.118	19.5	19.125	19.481	19.143	19.5	19.068	19.481	19.193	19.5	19.081
44	19.656	19.375	19.675	19.293	19.65	19.381	19.687	19.25	19.656	19.325	19.687	19.318
45	19.537	19.175	19.575	19.112	19.531	19.168	19.568	19.106	19.55	19.256	19.568	19.175
46	19.587	19.325	19.625	19.268	19.593	19.331	19.618	19.187	19.612	19.35	19.637	19.256
47	19.593	19.262	19.656	19.193	19.593	19.256	19.6	19.168	19.612	19.268	19.618	19.181
48	19.543	19.293	19.55	19.181	19.543	19.262	19.556	19.193	19.556	19.262	19.587	19.181
49	19.6	19.35	19.618	19.243	19.6	19.262	19.625	19.262	19.612	19.35	19.643	19.275
50	19.606	19.262	19.631	19.237	19.606	19.262	19.625	19.193	19.618	19.337	19.668	19.287
UNIT	V	V	V	V	V	V	V	V	V	V	V	V
UCL	20.475	20.475	20.475	20.475	20.475	20.475	20.475	20.475	20.475	20.475	20.475	20.475
LCL	18.525	18.525	18.525	18.525	18.525	18.525	18.525	18.525	18.525	18.525	18.525	18.525
MAX	19.687	19.381	19.712	19.337	19.693	19.381	19.712	19.312	19.693	19.412	19.737	19.343
MIN	19.468	19.081	19.481	19.043	19.462	19.143	19.475	19.031	19.468	19.156	19.481	19.068
AVER	19.579	19.274	19.606	19.191	19.581	19.262	19.607	19.189	19.589	19.292	19.618	19.209
S	0.053	0.075	0.055	0.062	0.055	0.060	0.058	0.068	0.054	0.060	0.057	0.070
Ca	0.081	0.231	0.108	0.317	0.083	0.245	0.110	0.319	0.092	0.214	0.121	0.299
Cp	6.101	4.341	5.946	5.225	5.920	5.393	5.579	4.780	5.984	5.390	5.669	4.613
CPK	5.605	3.336	5.302	3.571	5.431	4.074	4.967	3.256	5.436	4.238	4.982	3.235
RESULT	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK

PA-1900-02D DVT2 CPK

Item	DYNAMIC		DYNAMIC		INPUT/OUTPUT
Vin/Fin	265V/50Hz		265V/50Hz		115V/50Hz
Load	0~4.62A (50Hz)		0~4.62A (10KHz)		0.0255A
Item	Vdc1	Vdc2	Vdc1	Vdc2	Pin
NO.	55	56	57	58	59
1	19.525	19.268	19.575	19.112	0.93
2	19.5	19.218	19.512	19.131	0.93
3	19.65	19.381	19.668	19.312	0.93
4	19.637	19.393	19.662	19.218	0.94
5	19.581	19.25	19.612	19.175	0.95
6	19.6	19.325	19.631	19.237	0.95
7	19.531	19.181	19.55	19.2	0.95
8	19.606	19.356	19.625	19.231	0.93
9	19.587	19.262	19.612	19.256	0.95
10	19.587	19.275	19.587	19.212	0.95
11	19.656	19.362	19.7	19.237	0.94
12	19.587	19.318	19.606	19.181	0.95
13	19.618	19.375	19.656	19.281	0.94
14	19.65	19.381	19.681	19.268	0.94
15	19.6	19.337	19.631	19.243	0.95
16	19.612	19.281	19.637	19.2	0.95
17	19.65	19.356	19.681	19.243	0.94
18	19.612	19.35	19.643	19.268	0.94
19	19.643	19.312	19.668	19.306	0.95
20	19.512	19.218	19.55	19.112	0.95
21	19.568	19.3	19.6	19.156	0.94
22	19.556	19.281	19.568	19.112	0.93
23	19.612	19.337	19.65	19.206	0.95
24	19.625	19.331	19.668	19.281	0.94
25	19.512	19.206	19.531	19.143	0.94
26	19.512	19.15	19.537	19.137	0.95
27	19.606	19.318	19.637	19.262	0.93
28	19.5	19.168	19.525	19.125	0.94
29	19.637	19.287	19.662	19.256	0.94
30	19.693	19.425	19.725	19.356	0.93
31	19.606	19.337	19.637	19.237	0.95
32	19.65	19.375	19.662	19.293	0.94
33	19.656	19.287	19.675	19.306	0.95
34	19.525	19.225	19.543	19.168	0.95
35	19.612	19.331	19.637	19.175	0.94
36	19.556	19.206	19.581	19.131	0.95
37	19.681	19.331	19.681	19.281	0.95
38	19.575	19.293	19.606	19.243	0.93
39	19.468	19.118	19.493	19.068	0.95
40	19.568	19.243	19.606	19.206	0.94
41	19.6	19.237	19.612	19.212	0.95
42	19.631	19.356	19.656	19.193	0.94
43	19.487	19.143	19.506	19.062	0.96
44	19.662	19.387	19.681	19.25	0.94
45	19.55	19.218	19.581	19.131	0.94
46	19.618	19.293	19.643	19.275	0.95
47	19.606	19.25	19.618	19.212	0.96
48	19.562	19.262	19.587	19.206	0.94
49	19.612	19.356	19.65	19.218	0.96
50	19.625	19.293	19.637	19.2	0.94
UNIT	V	V	V	V	w
UCL	20.475	20.475	20.475	20.475	1
LCL	18.525	18.525	18.525	18.525	
MAX	19.693	19.425	19.725	19.356	0.960
MIN	19.468	19.118	19.493	19.062	0.930
AVER	19.592	19.291	19.618	19.210	0.944
S	0.054	0.072	0.055	0.066	0.008
Ca	0.095	0.215	0.121	0.297	
Cp	6.049	4.526	5.956	4.930	2.273
CPK	5.476	3.555	5.237	3.466	2.273
RESULT	OK	OK	OK	OK	OK

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TEST PLAN

CUSTOMER :	DELL
PROJECT NAME :	
CUSTOMER P/N :	
LITEON P/N :	PA-1900-02D
PRODUCT REV :	0E
PROCESS NAME :	DVT2
DATE :	12/13/2002

Prepared By : 蔣佳年 12/4.2 Checked By : Approved By :

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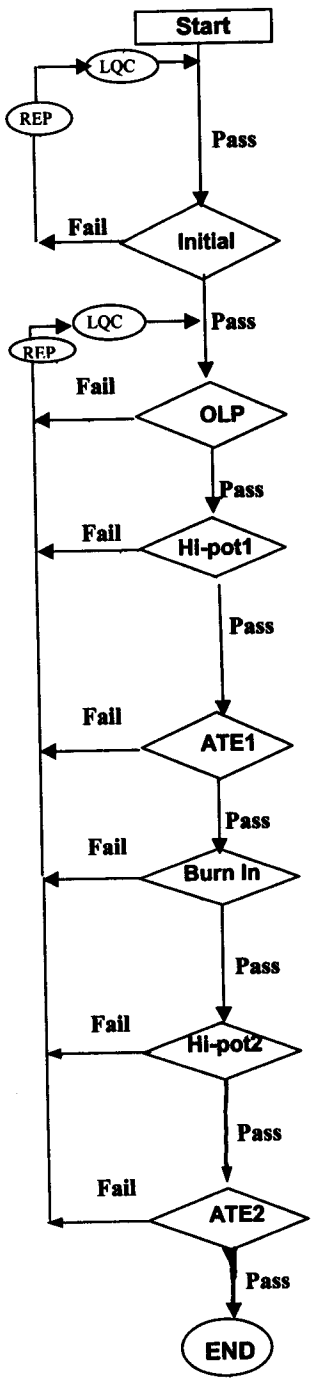
TEST FLOW FOR DVT 2

Customer Name :DELL **LITEON P/N :PA-1900-02D** **Date : 12/13/2002**



1.Initial Test
(Refer to Initial test plan)

Vac=90V Fin=47Hz

2. OLP Test

Vin=220Vac Fin=50Hz
Load=5.62A uut don't shutown
Load=6.12A uut shutown and latch off

3.Hi-pot Test
a.Grounding resistance
b.Primary to Secondary
c.Insulation resistance test

25A,8V, 3 sec resistance:100mΩ(max)
2150VDC 1sec current Max=250uA
DC500V 3sec resistance min=30Mohm

4. ATE Test
(Refer to ATE TEST PLAN)

Vin=90~264Vac Fin=47~63Hz
Program Name:190002D

5.Burn In

Vin=220V+/-10% Temp:37.5+/2.5deg.C
+18.5V/4.2A
24hours , 25min ON, 5min ON-OFF
(30s ON, 30S OFF cycle)

6.Hi-pot Test
a.Grounding resistance
b.Primary to Secondary
c.Insulation resistance test

25A,8V, 3 sec resistance:100mΩ(max)
2150VDC 1sec current Max=250uA
DC500V 3sec resistance min=30Mohm

7. ATE Test

Vin=90~264Vac Fin=47~63Hz
Program Name:190002D

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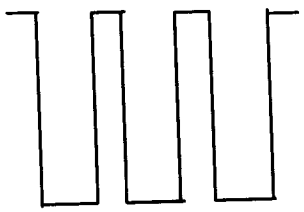
INITIAL TEST PLAN FOR DVT 2

Customer Name : DELL **LITEON P/N : PA-1900-02D** **Date : 12/13/2002**

Test Item	Test Process
(1). AC waveform & turn on test.	a).Set the electronic load at 4.62A b). AC waveform as Fig1.  FIG 1
(2).OVP	a).set the electronic load at 0A b).Short R303 supply shall be shutdown and latched off.
(3).OTP	a).Set the electronic load at 0.5A b).Supply shall be shutdown
Remarks :	

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ATE TEST PLAN FOR DVT 2

Customer Name : DELL **LITEON P/N : PA-1900-02D** **Date : 12/13/2002**

TEST ITEM	TEST CONDITION	SPECIFICATION
SEQ 1 : TURN ON &SEQ. (90V)	Vin=90Vac Fin=47Hz	Max=4S
	+19.5V	
	4.62V	
SEQ 2 : INPUT/OUTPUT (90V)	Vin=90Vac Fin=60Hz	Eff Min=85%
	+19.5V	Input Current Max=1.5A
	4.62V	
SEQ 3 : INPUT/OUTPUT (115V)	Vin=115Vac Fin=60Hz	Pin Max=1W
	+19.5V	
	0.0255A	
SEQ 4 : INPUT/OUTPUT (240V)	Vin=240Vac Fin=50Hz	Eff Min=85%
	+19.5V	
	4.62A	
SEQ 5 : HOLD UP &SEQ. (90V)	Vin=90Vac Fin=60Hz	
	+19.5V	Min=10mS
	4.62V	
SEQ 6 : TURN ON &SEQ. (90V)	Vin=90Vac Fin=60Hz	
	+19.5V	Max=20mS(rise time)
	4.62V	
SEQ 7 : SHORT CIRCUIT (90V)	Vin=90Vac Fin=60Hz	Output shall shutdown and latch off
	+19.5V	
	3A	
SEQ 8 : TURN ON &SEQ. (100V)	Vin=100Vac Fin=60Hz	
	+19.5V	
	4.62V	
SEQ 9 : SHORT CIRCUIT (100V)	Vin=100Vac Fin=60Hz	Output shall shutdown and latch off
	+19.5V	
	3A	
SEQ 10 : TURN ON &SEQ. (240)	Vin=240Vac Fin=50Hz	Max=4S
	+19.5V	
	4.62A	
SEQ 11 : SHORT CIRCUIT (240V)	Vin=240Vac Fin=50Hz	Output shall shutdown and latch off
	+19.5V	
	3A	
SEQ 12 : TURN ON &SEQ. (240V)	Vin=240Vac Fin=50Hz	Max=20mS(rise time)
	+19.5V	
	4.62A	
SEQ 13 : SHORT CIRCUIT (264V)	Vin=264Vac Fin=50Hz	Output shall shutdown and latch off
	+19.5V	
	3A	
SEQ 14 : TURN ON &SEQ. (100V)	Vin=100Vac Fin=60Hz	
	+19.5V	
	4.62A	

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ATE TEST PLAN FOR DVT 2

Customer Name : DELL **LITEON P/N : PA-1900-02D** **Date : 12/13/2002**

SEQ 15 : COMBINE REG. (L)	Vin=90Vac Fin=47Hz	spec .	19.5V
	+19.5V	Vdc(H)	20.475
	4.62A	Vdc(L)	18.525
	Vin=100Vac Fin=60Hz	Vpp	0.5V
	+19.5V		
	0A		
	Vin=132Vac Fin=63Hz		
	+19.5V		
	4.62A		
SEQ 16 : COMBINE REG. (L)	Vin=90Vac Fin=47Hz	spec .	19.5V
	+19.5V	Vdc(H)	20.475
	0A	Vdc(L)	18.525
	Vin=100Vac Fin=60Hz	Vpp	0.5V
	+19.5V		
	4.62A		
	Vin=132Vac Fin=63Hz		
	+19.5V		
	0A		
SEQ 17 : COMBINE REG. (H)	Vin=180Vac Fin=47Hz	spec .	19.5V
	+19.5V	Vdc(H)	20.475
	4.62A	Vdc(L)	18.525
	Vin=240Vac Fin=50Hz	Vpp	0.5V
	+19.5V		
	0A		
	Vin=264Vac Fin=50Hz		
	+19.5V		
	4.62A		
SEQ 18 : COMBINE REG. (H)	Vin=180Vac Fin=47Hz	spec .	19.5V
	+19.5V	Vdc(H)	20.475
	0A	Vdc(L)	18.525
	Vin=240Vac Fin=50Hz	Vpp	0.5V
	+19.5V		
	4.62A		
	Vin=264Vac Fin=50Hz		
	+19.5V		
	0A		
SEQ 19 : DYNAMIC (L)	Vin=90Vac Fin=47Hz	spec .	19.5V
	+19.5V	Vdc(H)	20.475
	0A	Vdc(L)	18.525
	4.62A		
SEQ 20 : DYNAMIC (L)	Vin=90Vac Fin=47Hz	spec .	19.5V
	+19.5V	Vdc(H)	20.475
	0A	Vdc(L)	18.525
	4.62A		

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ATE TEST PLAN FOR DVT 2

Customer Name : DELL **LITEON P/N : PA-1900-02D** **Date : 12/13/2002**

SEQ 21 : DYNAMIC (H)	Vin=240Vac Fin=50Hz	spec .	19.5V
	+19.5V	Vdc(H)	20.475
	0A	Vdc(L)	18.525
	4.62A		
SEQ 22 : DYNAMIC (H)	Vin=240Vac Fin=50Hz	spec .	19.5V
	+19.5V	Vdc(H)	20.475
	0A	Vdc(L)	18.525
	4.62A		
SEQ 23 : TURN ON &SEQ. (90V)	Vin=100Vac Fin=60Hz		
	+19.5V		
	4.62V		
SEQ 24 : OLP (90V)	Vin=90Vac Fin=60Hz	Output shall shutdown and latch off	
	+19.5V		
	5.62~6.12A		
SEQ 25 : TURN ON &SEQ. (240V)	Vin=240Vac Fin=50Hz	Max=4S	
	+19.5V		
	4.62A		
SEQ 26 : OLP (240V)	Vin=240Vac Fin=50Hz	Output shall shutdown and latch off	
	+19.5V		
	5.62~6.12A		
SEQ 27 : TURN ON &SEQ. (240V)	Vin=240Vac Fin=50Hz	Max=4S	
	+19.5V		
	4.62A		
SEQ 28 : HOLD UP &SEQ. (230V)	Vin=230Vac Fin=50Hz		
	+19.5V	Min=10mS	
	4.62A		

World Class Supplier Process

PROCESS MANAGEMENT PLAN

Customer Part name: APR/Linbergh/Kapalua	Supplier	LITEON	Control Location
Customer Part Number: **PA-1900-02D**	Facility	**LITE POWER PLANT Ⅲ**	A. Receiving Inspection
P/N: **9T215**			B. In-Process
P/LRev.: **0E**			C. Final Inspection
Supplier ENG Manager: Robert Wen	S.Q.A:		Plan Effective Date:2002/12/19 PMP Rev.: 0B

Revision History	Reason for Change	Plan effective date	Revised by	Checked by	Approved by
0A	Initial	2002/11/19	Bravechi	Sky Hu	Robert Wen
0B	Add ID Chip Scan	2002/12/19	Bravechi	Sky Hu / [illegible]	Robert Wen

World Class Supplier Process

PROCESS MANAGEMENT PLAN

Customer Project name: APR/Linbergh/Kapalua	Supplier	**LITEON**
Customer Part Number: 9T215	Facility	**LITE POWER PLANT Ⅲ**
P/N: PA-1900-02D		
P/L Rev.: **0E**		
Supplier ENG Manager: Robert Wen	S.Q.A:	

Control Location
A. Receiving Inspection
B. In-Process
C. Final Inspection

Plan Effective Date:2002/12/19 PMP Rev.:0B

Processes		Machine, Device, Jig Tools for Manufacturing	Characteristics		Methods						
No.	Process Name		Process Parameters	Product Characteristics	Product/Process Specification	Evaluation Method	Sample Size	Frequency	Analysis Methods	Reactions If out of Control Conditions are Encountered	Responsibility
1	kit (already check-			Wrong Comp.	Part list	Visual				Send back the parts	Foreman
	ed by IQC) issued			Comp. Value						Inform IQC	Line Leader/ ME
	by material store									Request for CA form Vendor for all	IQC / ME
										nonconformance	
2	Auto Insertion	SEQ machine		Comp. Reverse	MOI	Visual	100%	Once/4hours	P-chart	When defects over 1200DPPM(SEQ & VCD	ME/AI Engineer
		VCD machine		Comp. Missing	MOI					machine) or 800DPPM(AVK machine) inform	
				Polarity	PCB marking					ME, Check the root cause.	
		AVK machine		Comp. Value	MOI					Adjust machine coordinate & fixture.	ME/Technician
				Comp. Damage	Workmanship standard					Implement corrective action .	ME/AI Engineer
				Lead Clinching						Verify corrective action.	ME/AI Engineer
				Borken							
				Scratch							
				Lead Length	1.3mm to 1.8mm	Caliper			Pass/Fail		
3	AI LQC	Check PCB fixture		Comp. Reverse		Visual	100%	Once/2hours	Daily report	If defects occurred, take repair in accordance	AI foreman
				Comp. Missing						with MOI and record it in daily report.	
				Polarity	PCB marking						
				Comp. Value	Part List						
				Lead Clinching	Workmanship standard						
				Borken	Workmanship standard						
				Scratch	Workmanship standard						
				Lead Length	Workmanship standard	Caliper					
4	Radial Insertion	RI Machine		Comp. Reverse	MOI	Visual	100%	Once/4hours	P-chart	When defects over 0.5%,stop operation	AI Supervisor
				Comp. missing	MOI					to purge units since last inspection sort.	AI Supervisor
				Comp. value	MOI					Implement corrective action .	ME/AI Supervisor
				Polarity	PCB marking					Verify corrective action.	AI Supervisor
				Comp. damage	workmanship standard						
				Lead clinching	workmanship standard						
				Lead length	1.3mm to 1.8mm	Caliper			Pass/Fail		
5	RI LQC	Check PCB fixture		Comp. Reverse		Visual	100%	Once/2hours	Daily report	If defects occurred, take repair in accordance	AI foreman
				Comp. Missing						with MOI and record it in daily report.	
				Polarity	PCB marking						
				Comp. Value	Part List						
				Lead Clinching	Workmanship standard						
				Borken	workmanship standard						
				Scratch	workmanship standard						
				Lead Length	workmanship standard	Caliper					
6	SMD	SMD Machine		Comp. Reverse	MOI	Visual	100%	Once/4hours	P-chart	When defects over control limit, inform Engineer(	AI Engnieer

World Class Supplier Process

PROCESS MANAGEMENT PLAN

Customer Project name: APR/Linbergh/Kapalua			Supplier	LITEON				Control Location			
Customer Part Number: 9T215			Facility	LITE POWER PLANT III				A. Receiving Inspection			
P/N: PA-1900-02D								B. In-Process			
P/L Rev.: **0E**								C. Final Inspection			
Supplier ENG Manager: Robert Wen			S.Q.A:					Plan Effective Date:2002/12/19			PMP Rev.:0B
				Polarity	MOI					control limit:SMD:200DPPM;VCD:1200DPPM;RH:	Technician
				Comp. Damage						1000DPPM.) Check the root cause.	
				comp.missing						Implement corrective action.	
				wrong location						Verify corrective action.	
7	SMD LQC	Check PCB fixture		Comp. Reverse		Visual	100%	Once/2hours	Daily report	If defects occurred, take repair in accordance	AI foreman
				Polarity	PCB marking					with MOI and record it in daily report.	
				Comp. Damage	workman standard						
				comp.missing	MOI						
				wrong location	MOI						
8	Preparation	Performing fixture		Comp. value	Part list	Visual	2pcs/part	Once/2hours		When defects found, feetback to operaters and	Foreman
		ES-driver		Part No.						record it in report.	
				Approval part.						No problem found marked with green label.	
				Vendor						5 defects found marked with red label.	
				Comp. lead length	MOI	Steel-ruler				3 defects found with yellow label.	
				Leads pitch	Follow MOI	Steel-ruler				1 defects found with blue blabel.	
				Torque	Follow MOI						
		test fixturre									
9	Hand insertion			Location	MOI	Visual	100%	Once/shift	Pass/Fail	When defects found, feetback to operaters and	Foreman
				Part No./Comp. Value	Part list					record it in report.	
				Forming	Workmanship standard					No problem found marked with green label.	
				Comp. Damaged	Workmanship standard					5 defects found marked with red label.	
				Wrong/lifting	MOI					3 defects found with yellow label.	
				Polarity reverse	MOI					1 defects found with blue blabel.	
				Slant/missing	MOI						
10	H/I LQC			Location	MOI	Visual	100%	Once/2hours	Check record	When defect rate over UCL inform line leader.	IE /Foreman
				Part No./Comp. Value						Check the root cause of the problem	IE engineer
				Forming						and take corrective action.	
				Comp. Damaged						Verify corrective action.	IE/IPQC engineer
				Wrong							
				Polarity reverse							
				Slant/missing							
				lifting							
11	Wave soldering	Wave soldering	Solder temp.		240℃	Thermometer	100%	Once/4hours	Wave soldering	when defects over 1500DPPM, inform RM.	RM/IPQC engineer
		machine	Belt Speed		1.30+/-0.1m/min.	Stop watch				Check the root cause and take	RM engineer
			Preheat 1 temp.		320+/-10℃	Thermometer			contral chart	corrective action and containment.	
			Preheat 2 temp.		410+/-10℃	Thermometer				Verify corrective action.	RM/IPQC engineer
			Dip time		3.0 +/-1sec.	Dip test					
			Flux density		0.842+/-0.02g/cm³	hydrometer	100%	Once/2hours	X-R chart		

World Class Supplier Process

PROCESS MANAGEMENT PLAN

Customer Project name: APR/Linbergh/Kapalua			Supplier Facility	LITEON LITE POWER PLANT Ⅲ				Control Location A. Receiving Inspection B. In-Process C. Final Inspection				
Customer Part Number: 9T215												
P/N: PA-1900-02D												
P/L Rev.: **0E**								Plan Effective Date:2002/12/19				PMP Rev.:0B
Supplier ENG Manager: Robert Wen			S.Q.A:									
				Soldering Quality	workmanship standard		20PCS	Once/2hours	Records list of defect			
12	Touch-up	Soldering Iron	Solder temp.		Follow MOI	Temp. Tester	100%	Once/4hours	check record	When defects occurred, feetback to operators		Foreman
										and record it in report.		
13	TU LQC			Solder Crack	Workmanship	MOI	100%	Once/2hours	Check record	When defect rate over UCL inform IE engineer		IE / IPQC engineer
				Solder Excessive	standard					Check the root cause of the problem.		Line leader
				Solder Insufficient						and take corrective action.		
				Solder Short						Verify corrective action.		
				Solder Splash								
				Solder Spot/ball								
				Cold Soldering								
				Missing Soldering								
14	Initial test						100%	Once/4hours	P-Chart	When defect rate over UCL inform PE engineer.		PE/Line leader
										Check the root cause of the prolbem and		Technician / PE
		Test fixture		Input voltage	90Vac/47Hz	Voltage display				take the corrective action.		PE/IPQC
		Auto Test-		Output Voltage	18.525~20.475 V	waveform display				Verify corrective action.		engineer
		System		Output Load	4.62A	waveform display						
				AC waveform	MOI							
				OVP	SPS shut down&Latch off							
				OTP	SPS shut down&Latch off							
15	OLP			Input voltage	220Vac/50Hz					and take the corrective action.		
				OLP Point	5.62-6.12A					When defect rate over UCL inform PE engineer.		
					UUT shutdown and latch off					verify the corrective action		
16	Insert and solder	Soldering Iron	Solder temp.		375 degC. -450 degC.	Temp. Tester	100%	Once/4hours	check record	When defects occurred, feetback to operaters		Foreman
	DC Code			Slant						and record it in report.		
17	Apply Glue	Glue machine		Glue Location	MOI	Visual	100%	Once/4hours	Maintenance	When the machine was damaged, inform RM		Foreman /
									daily sheet	and record it in report.		RM engineer
18	Ass'y LQC			Assembly	MOI	Visual	100%	Once/4hours	P- Chart	When defect rate over UCL inform IE engineer		IE/Line leader
				workmanship						Check the root cause of the prolbem and		Technician / IE
19	Hi-pot Test-1	Extench elec-				Alarm	100%	Once/2hours	Daily Record	When failure (1pcs), inform line leader & engineer.		PE / Line leader
				Insulation test	500Vdc SPE:30~50Mohm							
		tronic 7440		Ground test	25A/8Vdc					Check the root cause of the problem		Technician
				Ground resistance	0-100mΩ					and take the corrective action.		PE engineer
				Dwell time	3s					Implement corrective action.		IPQC engineer
				Pri. to Sec.	Volt. 2150Vdc							
				Leakage limit	0.25mA(MAX) 0.0mA(min)							

World Class Supplier Process

PROCESS MANAGEMENT PLAN

Customer Project name: APR/Linbergh/Kapalua			Supplier	LITEON				Control Location				
Customer Part Number: 9T215			Facility	LITE POWER PLANT Ⅲ				A. Receiving Inspection				
P/N: PA-1900-02D								B. In-Process				
P/L Rev.: 0E								C. Final Inspection				
Supplier ENG Manager: Robert Wen			S.Q.A:					Plan Effective Date:2002/12/19				PMP Rev.:0B
				Dwell time	1s							
20	ATE-1	ATE fixture		Input voltage	90~264V	pass/fail test	100%	Once/2hours	Monitoring	When defect rate over UCL inform PE engineer.	PE/Line leader	
		ATE test system		Frequency	47~63Hz					Check the root cause of the problem.	Technician / PE	
				Loading	0~4.62A					and take the corrective action.		
				TURN-ON TIME	4S					When defect rate over UCL inform PE engineer.	PE/Line leader	
				TURN-ON RISE TIME	20mS					verify the corrective action	PE/IPQC engineer	
				Combine	0A/4.62A/0A							
				Dynamic load	0~4.62A							
				Input / output	85%(min)							
				Hold up time	10mS							
21	Ultrasonic	Ultrasonic Welding		Pressure	4.5+/-0.5Kg/cm^2	MOI	100%	Once/2hours	Daily Record	When defects found, inform RM engineer.	Foreman/RM engineer	
	Welding	machine		Delay times	0.60+/-0.08S					Check the root cause of the problem and	RM engineer	
				Welding times	0.68+/-0.08S					take corrective action.		
				Hardening times	0.50+/-0.08S					Implement corrctive action.	Line leader	
				Power	4+/-1					Verify corrective action.	IPQC engineer	
22	Burn-in test	Burn-room		Input	220v+/-10%	Led	100%	Once/4hours	P- Chart	When defect rate over UCL inform PE enginee	PE/Line leader	
				Output Voltage	18.525~20.475					Check the root cause of the prolbem and	Technician / PE	
				Temperature	37.5+/-2.5 ℃					take the corrective action.		
				Time	25 min. on					Verify corrective action.	PE/IPQC engineer	
					5 min.off(30 Sec/on; 30 Sec/off)					For the different stages of model,perform the		
					following B/I test plan					B/I reduction plan.(See detail in B/I test plan)		
				Load	Load:4.2A							
23	Hi-pot Test-2	Extench elec-				Alarm	100%	Once/2hours	Daily Record	When failure (1pcs), inform line leader & engineer.	PE / Line leader	
				Insulation test	500Vdc SPE:30~50Mohm							
		tronic 7440		Ground test	25A/8Vdc					Check the root cause of the problem	Technician	
				Ground resistance	0-100mΩ					and take the corrective action.	PE engineer	
				Dwell time	3s					Implement corrective action.	IPQC engineer	
				Pri. to Sec.	Volt. 2150Vdc							
				Leakage limit	0.25mA(MAX) 0.0mA(min)							
				Dwell time	1s							
24	ATE-2	ATE fixture		Input voltage	90~264V	pass/fail test	100%	Once/2hours	Monitoring	When defect rate over UCL inform PE engineer.	PE/Line leader	
		ATE test system		Frequency	47~63Hz					Check the root cause of the problem.	Technician / PE	
				Loading	0~4.62A					and take the corrective action.		
				TURN-ON TIME	4S					When defect rate over UCL inform PE engineer.	PE/Line leader	
				TURN-ON RISE TIME	20mS					verify the corrective action	PE/IPQC engineer	
				Combine	0A/4.62A/0A							

World Class Supplier Process

PROCESS MANAGEMENT PLAN

Customer Project name: APR/Linbergh/Kapalua			Supplier	LITEON				Control Location				
Customer Part Number: 9T215			Facility	LITE POWER PLANT III				A. Receiving Inspection				
P/N: PA-1900-02D								B. In-Process				
P/L Rev.: **0E**								C. Final Inspection				
Supplier ENG Manager: Robert Wen			S.Q.A:					Plan Effective Date:2002/12/9				PMP Rev.:0B
				Input / output	85%(min)							
				Hold up time	10mS							
25	LED	Visual		LED light Turn On		Visual	100%		Pass/Fail	When defect found inform Line leader.	Operator	
										Check the root cause and take corrective		
										action and verify corrective action.		
26	Labeling				MOI	Visual	100%		Pass/Fail	When defect found inform Line leader.	Operator	
										Check the root cause and take corrective		
										action and verify corrective action.	Foreman/Line	
27	Packing LQC	Visual		SPS structure	MOI	Visual	100%	Once/2hours	check record	When defects over UCL inform line leader.	leader	
										Check the root cause of the problem and take	IE / Line leader	
										corrective action .	IE / Line leader	
										Implementcorrective action.		
										Verify corrective action.	IE / Line leader	
28	Scan PPID Label	Scanner			MOI	Alarm/Visual			Pass/Fail	When defect found inform Line leader.	IE / IPQC	
		Scan Fixture								Check the root cause and take corrective	Line leader/TE	
										action and verify corrective action.	IPQC/IE	
29	Write ID Chip	Scanner			MOI	Alarm/Visual			Pass/Fail	When defect found inform Line leader.	Line leader/TE	
		Write ID Chip Fixture								Check the root cause and take corrective	IPQC	
										action and verify corrective action.		
30	Read ID Chip	Scanner			MOI	Alarm/Visual			Pass/Fail	When defect found inform Line leader.	Line leader/TE	
		Read ID Chip Fixture								Check the root cause and take corrective	IPQC	
		AC Power								action and verify corrective action.		
31	Packing			Power Q'TY	MOI	Visual	100%	Once/sheet	Pass/fail	When defects found, inform IPQC leader.	Line leader	
				Packing order						corrective action and containment.	IPQC leader	
32	Outgoing insp.	Power testing		Electric function	OQC inspection checklist	Led		one pallet	OQC inspection	When defect found, inform PE engineer.	OQC supervisor	
		Hi-pot tester			product spec.	Tester		Sample size:50	report	Check the root cause of the problem.	OQC supervisor	
		Electronic-load			product spec.	Visual		or all check		and take the corrective action.	ENG engineer	
		ATE Fixture			product spec.			(follow QI-03)		Implement corrective action.	foreman	
		Measuring rule		DC Cord length	Appearance drawing					Verify corrective action.	MFG supervisor	
		Caliper		Case high	Appearance drawing						IPQC engineer	
		Scanner		Check ID Chip information	MOI	Alarm/Visual						
		Read ID Chip Fixture										
33	Outgoing			Input	230Vac	ORT report		3 units/day	Pass/Fail	When defect found inform engineering	CQS supervisor	
	Reliability test			Time	168Hours					stop shipment	QC manager	

World Class Supplier Process

PROCESS MANAGEMENT PLAN

Customer Project name: APR/Linbergh/Kapalua			Supplier Facility	**LITEON** **LITE POWER PLANT Ⅲ**				Control Location A. Receiving Inspection B. In-Process C. Final Inspection			
Customer Part Number: 9T215											
P/N: PA-1900-02D P/L Rev.: **0E**											
Supplier ENG Manager: Robert Wen			S.Q.A:					Plan Effective Date:2002/12/9			PMP Rev.:0B
				Loading	Full load					search root cause and give CA	ENG engineer
				ORT plan						IQA	MFG supervisor
										verify	IPQC engineer