LITE-ON TECHNOLOGY CORP.

APPROVAL SHEET

CUSTOMER	:	ILLO
CUSTOMER NO	:	PA-1071-11IL-LF
MODEL NO	:	PA-1071-11
PRODUCT NO	:	PA-1071-11IL-LF
ISSUE DATE	:	2016/01/15

Customer Approved By： _____

LITE-ON TECHNOLOGY CORP (光寶科技股份有限公司)
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規 格 書

Electrical Specification

Model No：PA-1071-11

Product No：PA-1071-11IL-LF

Description：12V 70W AC Adaptor

Revision：A

Issued Date：Dec. 03, 2015

光寶科技股份有限公司

LITE-ON TECHNOLOGY CORP.

桃園縣大園鄉三石村三和路 3 巷 7 號（力信工業大樓）

7,Lane 3,San Ho Rd,San-Shin Village,Da-Yuan Hsiang,Taoyuan Hsien 337,Taiwan, R.O.C.

Approved By	Checked By	Prepared By
X	呂文煜	蔡振凱

Change Record			
DCN No	REV	Revision Description	Date
	X01	Initial	Nov. 05, 2015
	A	Release to official revision	Dec. 03, 2015

LITEON

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1. Description

This product is a AC to DC power transfer device, it can provide for a **70W** single dc output with constant voltage source.

2. Electrical

2.1 Input Voltage

a. 100 - 240Vac Nominal.

b. 90 - 264Vac Universal.

2.2 Input Frequency

47- 63Hz.

2.3 Input Current

1.5A max. at 90Vac input & dc output full-loading.

2.4 Inrush Current

Inrush peak current and Joule integral will be measured at different line voltage at high ambient temperature.

Peak current is within specified limit and Joule integral well below fuse and bridge spec.

2.5 Hold-Up time

10msec min. at dc output full-loading and 115Vac input.

2.6 Input wattage

Less than **0.21W** at 230 Vac input & no load condition.

2.7 Efficiency

Average efficiency **88%** minimum min. at 25%, 50%, 75% & 100% of full-loading and 115/230Vac input (After warm up 20 minutes).

2.8 Safety Test

a. Leakage current less than **0.25mA** at 254Vac, 50Hz.

b. Hi-Pot test : **3000 Vac or 4242Vdc**, 10mA, 1 – 3 Sec. between Primary to Secondary ground.

c. Insulation resistance: at dc 500Vdc, 1 Sec. between Primary to Secondary circuit, IR shall >=20MΩ.

2.9 Power line Harmonic

Input current harmonic shall comply with IEC 61000-3-2 class D requirement,
PF value shall >=0.9 at 240Vac input & >=0.95 at 90Vac input & at dc output Full-loading

2.10 Output Voltage and Current

Vout (V)	Range (V)	Iout (min., A)	Iout (max., A)	Peak (10S, A)
12V	**11.4 – 12.6**	**0**	**5.83**	**-**

2.11 Ripple and Noise

Low frequency ripple (< 100KHz) <= **240mVpp**, and Total composite Ripple and Noise. Less than **240mVp-p**, tested by dc loading side parallel with a 10uF/EC. and 0.1uF/Ceramic. Capacitors and Measured Band Width 20MHz.

2.12 Over-Shoot and under-shoot

Less than 10% of nominal Voltage value.

2.13 Protection

a. SCP : Short circuit protection with auto. recovery function.

b. OVP : Over voltage protection with shut down & latch off function.
Tripped voltage will be less than **18Vdc**.

c. OCP : Over current protection with auto. recovery function,
current limit : **8A**(max.).

d. OTP: The adapter shall provide over temperature protection and if the temperature rises to set temperature point, the PSU shall be latch-off.

2.14 LED Indication

Green light for Nominal operation. Blank or Flash for SCP mode.

2.15 Rise time

Rise time shall be less than **50msec**., it should be measured from 10% to 90% of the output voltage.

2.16 Turn on delay time

The output voltage should turn on from AC on to settle within regulation in less than **3.0sec.**

2.17 Temperature Coefficient

Less than 0.2%/C

2.18 Transient Response

Dynamic loading condition.

DC output (V)	I1 (A)	I2 (A)	dVmax.(V)	Time-max.	dI/dT
12.0	**0.0**	**1.95**	**+/- 1.0**	**10 msec.**	**>=50mA/usec.**
12.0	**1.95**	**3.9**	**+/- 1.0**	**10 msec.**	**>=50mA/usec.**
12.0	**3.9**	**5.8**	**+/- 1.0**	**10 msec.**	**>=50mA/usec.**

50% of duty cycle.

3. Environment

3.1 Temperature

a. Operation : **0 to 40** ℃

b. Storage : -40 to 70 ℃

3.2 Humidity

a. Operation : 20 to 80%

b. Storage : 10 to 90%

3.3 Altitude

From sea level to **5000m**.

4. EMC

4.1 EMS

Test Item	Test Specification	IEC Standards
ESD	Contact **+/- 8KV**	61000-4-2
ESD	Air **+/- 15KV**	61000-4-2
RS	FR: 26MHz-1.0GHz, Field Strength: 3V/M	61000-4-3
EFT	**+/- 1KV (DM) & +/- 2KV (CM)**	61000-4-4
SURGE	**+/- 4KV (DM) & +/- 4KV (CM)**	61000-4-5
CS	3V/M	61000-4-6
DIPS	**0% 250Cy, 70% 25Cy, 0% 0.5Cy**	61000-4-11

4.2 EMI

Standards	Specification
FCC	**Part 15,class B**
VCCI	**Class B**
CISPR	**Part 22,class B**

5. Reliability

5.1 Life (E-cap.)

12,000 hours (8 hours/day x 300 days/year x 5 years)

At DC output full-loading, AC 115/230 Vac input & ambient temperature 25℃.

5.2 M.T.B.F.

50,000 Power On Hours at 25℃.

5.3 Temperature Rise.

Less than **45℃** at nominal AC input / DC output full-loading and environment temperature 25+/-1℃ on Top/Bottom of plastic case.

5.4 Burn-in

100% Burn-In with 80~100% full-loading & 35~40℃ Environment temperature.

5.5 Vibration Test

Operation random vibration test condition as following:

Acceleration	Orientation	Duration
6G rms	X, Y, Z (3axes)	15 min/axis

After test no abnormally shall be found.

5.6 Drop-Test

Test height is 100cm, after drop test no function abnormally to be noted.

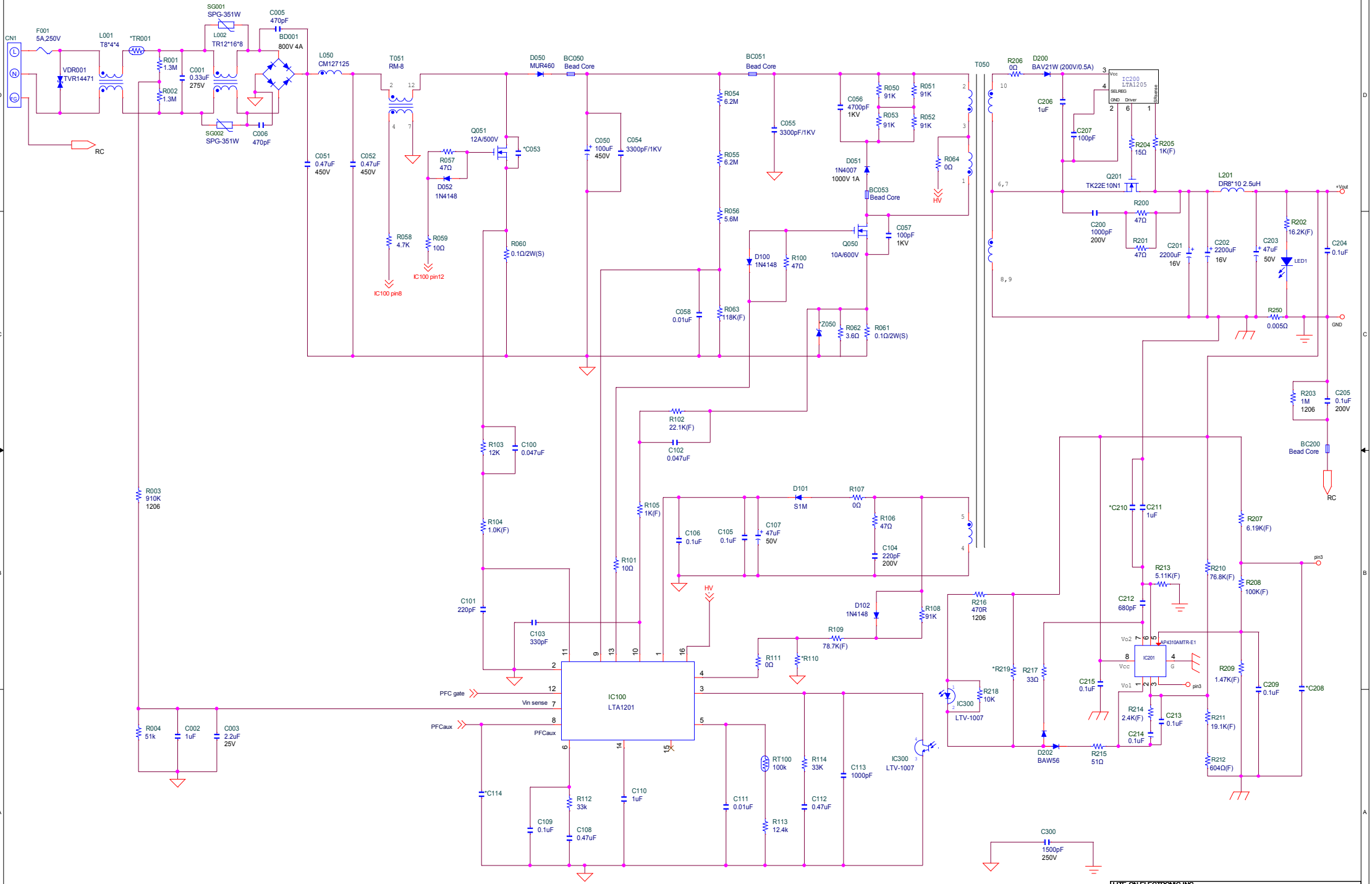
6. Mechanical

6.1 Plastic enclosure：**PC** material.

6.2 Physical Size：**150 mm(L) * 65 mm (W) * 35 mm (H).**

6.3 DC cord: **1050 mm**, **16 AWG** wires.

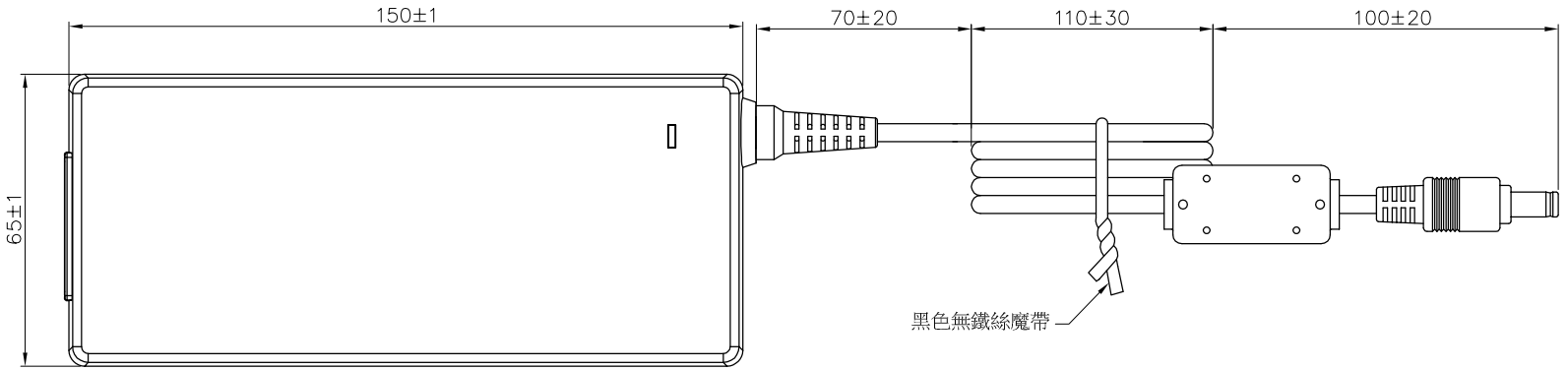
6.4 Weight : **500g.**

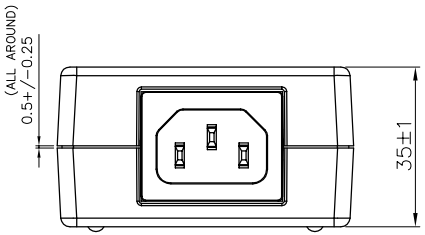


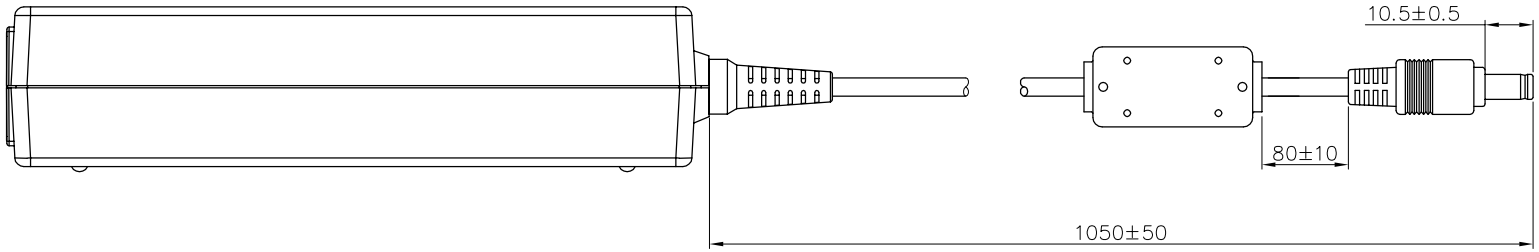
LITE-ON ELECTRONIC,INC.		
Size	Model Name: PA-1071-11IL-LF	Rev. A
Designer: Arvin Hsu	Draftsman:	Approver: / Checker:
Date: Thursday, December 03, 2015	Sheet 1 of 1	

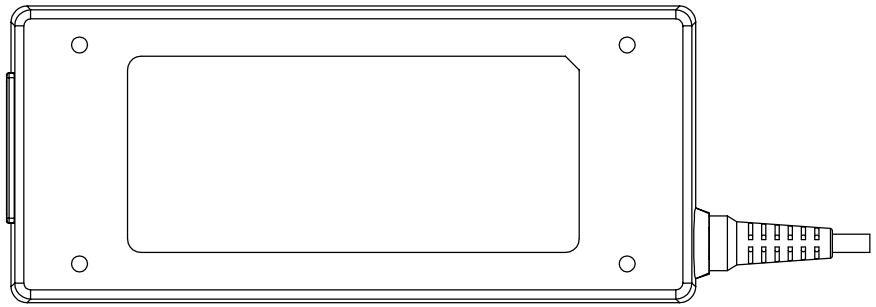
NOTES: UNLESS OTHERWISE SPECIFIED.

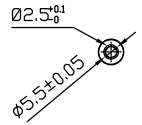
1. ALL DIMENSIONS ARE IN mm.
   TOLERANCES TO BE ±0.25 mm.
2. PARTS SPECIFIED AS FOLLOWS:
2−1. ENCLOSURE:
   * MEET V−0 FLAMMABILITY.
   * COLOR: BLACK.
   * TEXTURE: MOLDTECH MT11020.
2−2. AC RECEPTACLE:
   * IEC 320, C14 CERTIFIED, 3 WAY.
   * COLOR: BLACK PER MAKER.
2−3. DC OUTPUT:
   * PLUG INSULATOR: BLACK.
   * PLUG POLARITY: (+)—◉—(−)
   * CABLE: UL/ CSA, AWM 1571, VW−1, 80°C, 16AWG.
   * JACKET COLOR: BLACK.









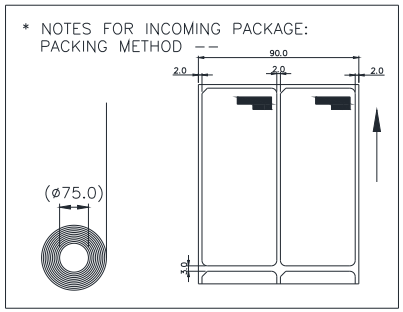


				SHEET	1/1
⚠01	Release	2015/05/11		CODE	
REVISION	DESCRIPTION	DATE	CHECKER	UNIT: mm	SCALE:

2D FILE	PA-1071-111L-LF_PIX(821412)	DESIGNER	Felix	TITLE: OUTLINE	PART NO.:
3D FILE		APPROVER	Brian	PROJECT: PA-1071-111L-LF	DRAWING NO.: REV.: X01

NOTES: UNLESS OTHERWISE SPECIFIED.

1. ALL DIMENSIONS ARE IN mm.
   TOLERANCES TO BE ＋0/－0.2 mm.
2. THE ARRANGEMENT OF LAMINATE WITH
   MATERIAL THICKNESS AS FOLLOWS:
   ① POLYESTER FILM(MATT) 0.025
   ② ACRYLIC ADHESIVE 0.026
   ③ POLYESTER FILM WHITE #75 0.075
   ④ F07D ADHESIVE 0.035
   GRAND TOTAL THK. 0.161 ± 10%
3. THE LINES ARE 0.5 mm WIDE.
4. COLOR: CHARACTERS, LOGOS AND
   LINES SHALL BE WHITE, BASE TO
   BE BLACK (GE #701).(黑底白字)
5. APPROVED VENDOR MUST BE UL
   RECOGNIZED AND CSA CERTIFIED.
6. THE LABEL SHALL BE MARKED
   WITH THE CSA VENDOR IDENTIFICATION
   MARK AS SPECIFIED IN THE CSA LIST.
7. LETTERING SHOULD BE CLEAR-CUT,
   SURFACE TO BE FREE OF DEFECT.
8. THE LABEL IS SUPPOSED TO BE PASTED ON PC CASE EVENLY AND PROPERLY.
   IT'S NOT ALLOWED TO HAVE ANY BULGE ON THE LABEL UNTIL TOTALLY COOLED OFF
   AT ROOM TEMPERATURE AFTER BEING BURNT IN FOR 48 HOURS IN OVEN AT 85℃.

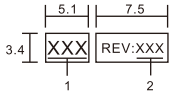


LABEL SIZE:
98(L) x 42(W),
R3(3X), C2

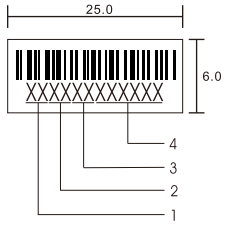


SEE NOTE 6

9.S/N SPECIFIED AS FOLLOWS: (PRINTED BY LITE-ON)
1--SERIAL MODEL: IL
2--REVISION: Rev: A01, A02, OR BLANK (PRODUCT REVISION OF CUSTOMER)



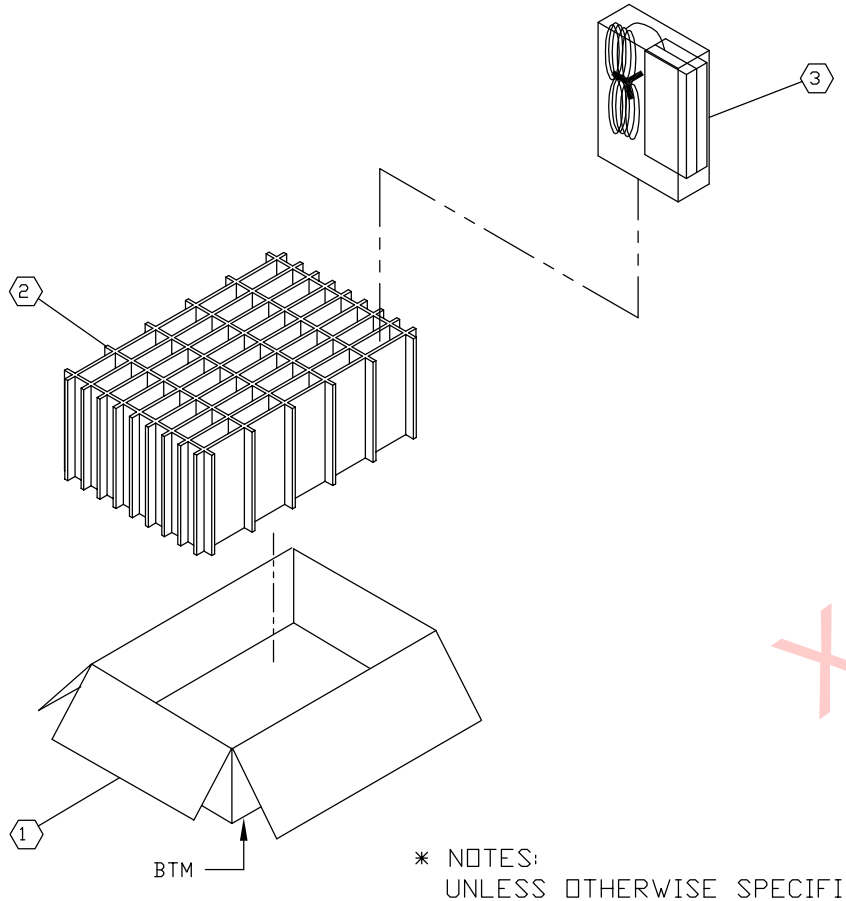
10. BAR CODE(CODE128) SPECIFIED AS FOLLOWS: (PRINTED BY LITE-ON)
1 – FACTORY CODE, CHINA SU ZHOU (FORDGOOD) – A2
CHINA SU ZHOU (LI SHIN) – A3
DONGGUAN (LITEON FABRICATION 2) – L2
DONGGUAN (LITEON FABRICATION 3) – L3
CHANGZHOU (LITEON) --> C1
2 – A.D. THE END NUMBER OF PRODUCT YEAR,
1995--95, 1996--96, 1997--97..... ; 2000--2K, 3000--3K.....
3 – WEEK, PRODUCT WEEK 01,02,03,...
4 – PRODUCT NO.: SERIAL NO. (MONTH RESET FROM 000001~999999)



SCALE: 1:1

REVISION	DESCRIPTION	DATE	CHECKER
A	Release	2015/11/11	

PRINTING DATE	2015/11/11		2D FILE	604987_PA-1071-11IL-LF	DESIGNER	Felix		TITLE: SPEC LABEL	PART NO.: 604987 (93-M107111DL1-ROHS)
FINAL DATE	2015/11/11							PROJECT: PA-1071-11IL-LF	DRAWING NO.: 493-604987 REV.: A
UNIT : mm	SCALE:		SAFETY	Paul Chi	APPROVER	Brain			

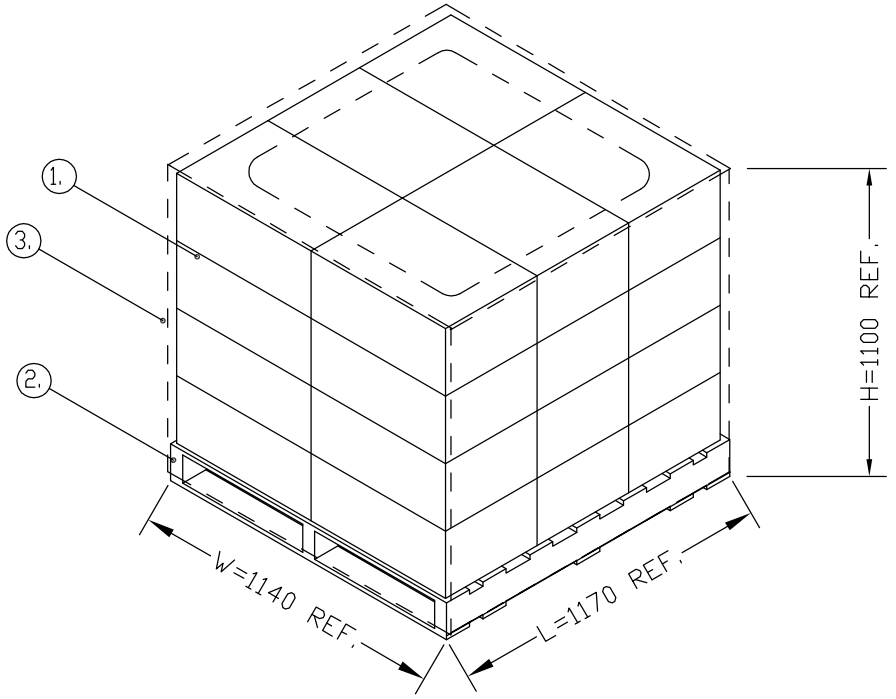


X01

* NOTES:
UNLESS OTHERWISE SPECIFIED,
1. STAMP OR LABEL MODEL'S CONTENTS ON THE CARTON FOR EACH SHIPPING.
2. CARTON USES PACKING TAPE TO SEAL.

* PACKING ASS'Y DRAWING:
1. ALL DIMENSIONS ARE IN mm.
2. PARTS SPECIFIED AS FOLLOWS:

ITEM	PART NO.	DESCRIPTION	Q'TY
3	751696	PE BAG	1
2	784739	PARTITION	1/40
1	730048	OUT-CTN	1/40



* PALLET ASS'Y DRAWING:
1. ALL DIMENSIONS ARE IN mm.
2. PARTS SPECIFIED AS FOLLOWS:

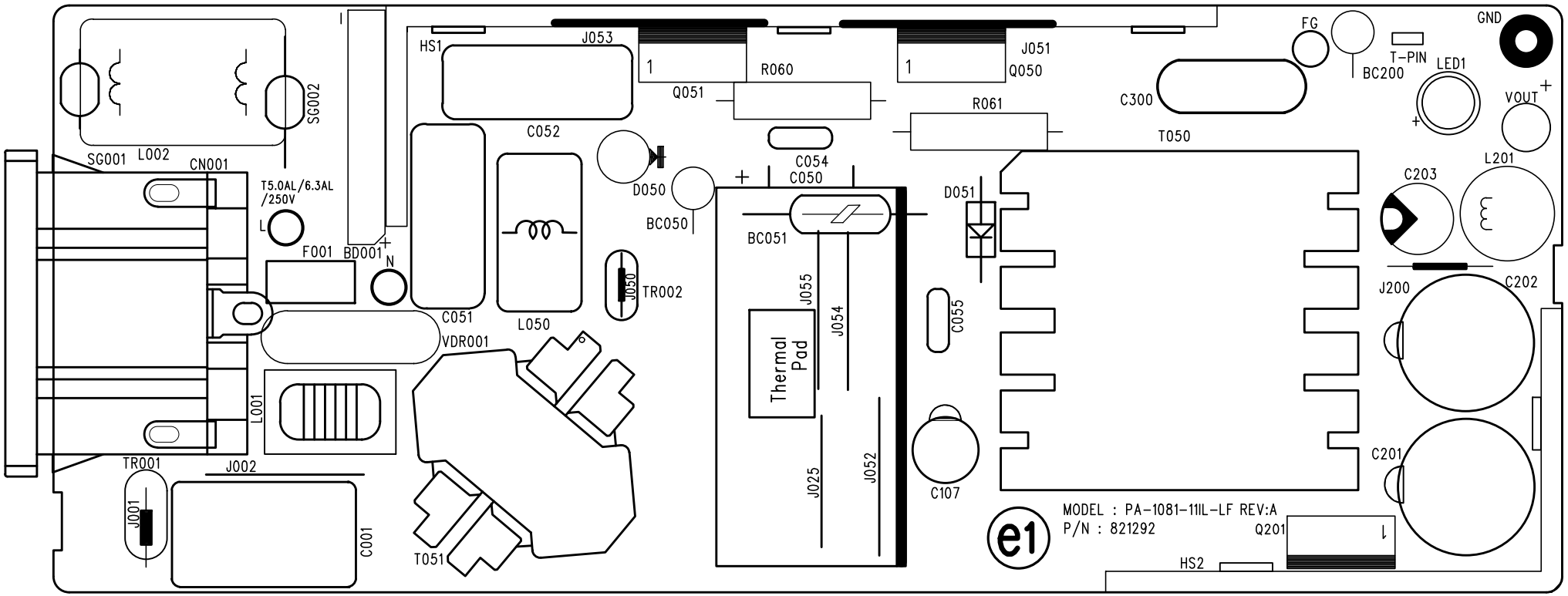
ITEM	PART NAME	QUANTITY
1.	CARTON	1 CARTON=40 UNITS
2.	PALLET	1 PALLET=4 LAYERS =24 CARTONS =960 UNITS
3.	POLYESTER FILM	2 LAYERS MIN. =960 UNITS

REVISION	DESCRIPTION	DATE	CHECKER	UNIT: mm	SCALE:	SHEET 1/1 CODE
X01	Release	2015/06/28				

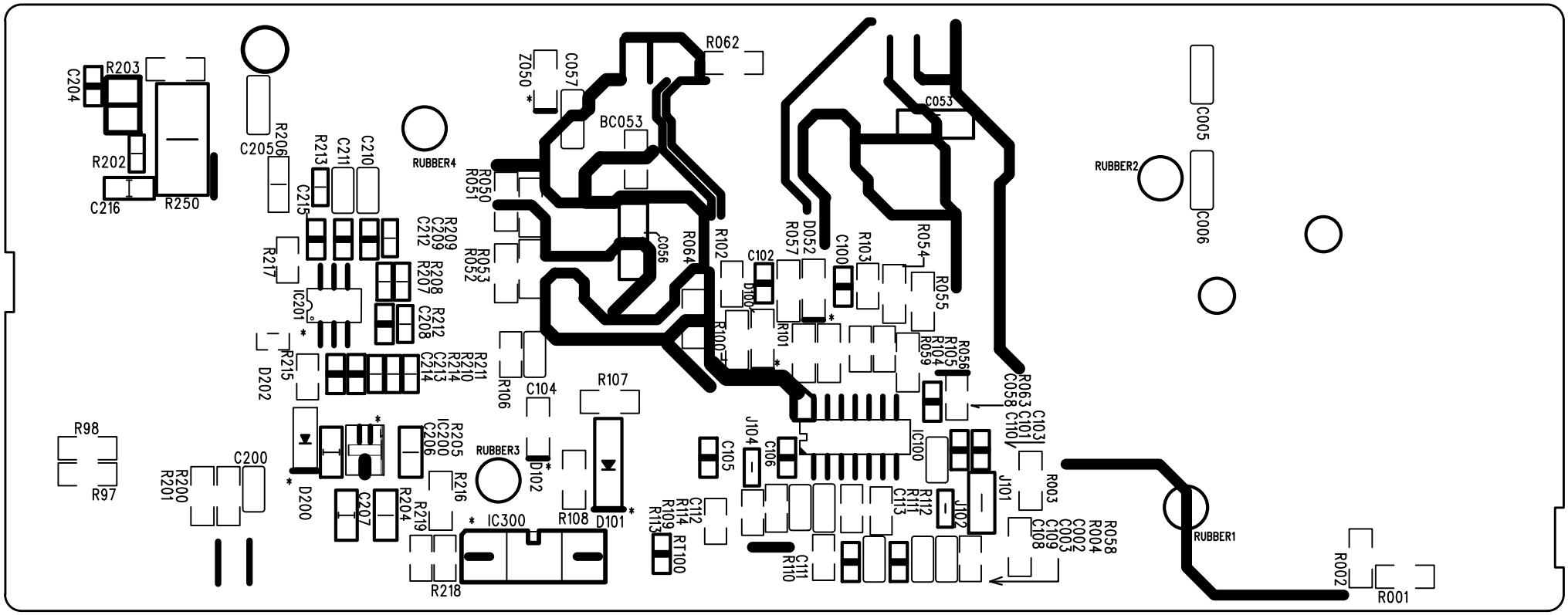
2D FILE PA-1071-11IL-LF_PML
3D FILE
DESIGNER Felix
APPROVER Brian

LITEON®

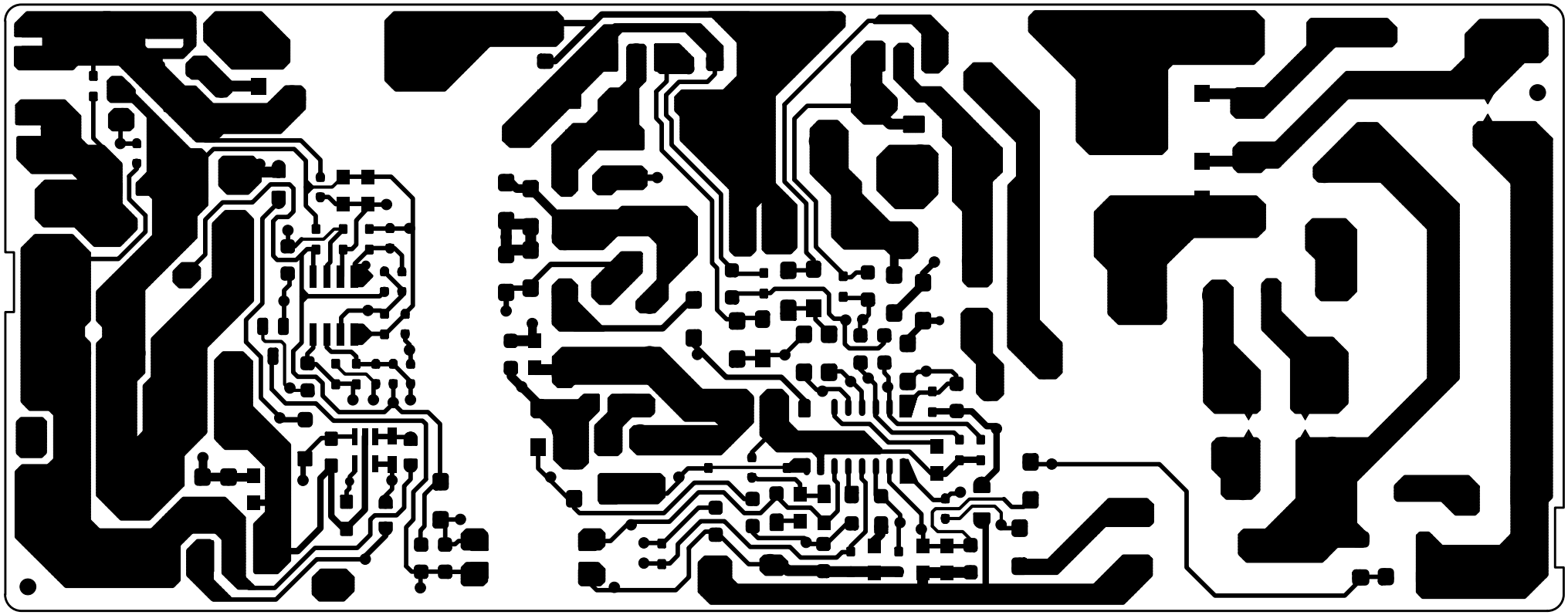
TITLE: PACKING ASS'Y
PROJECT: PA-1071-11IL-LF
PART NO.:
DRAWING NO.:
REV.: X01

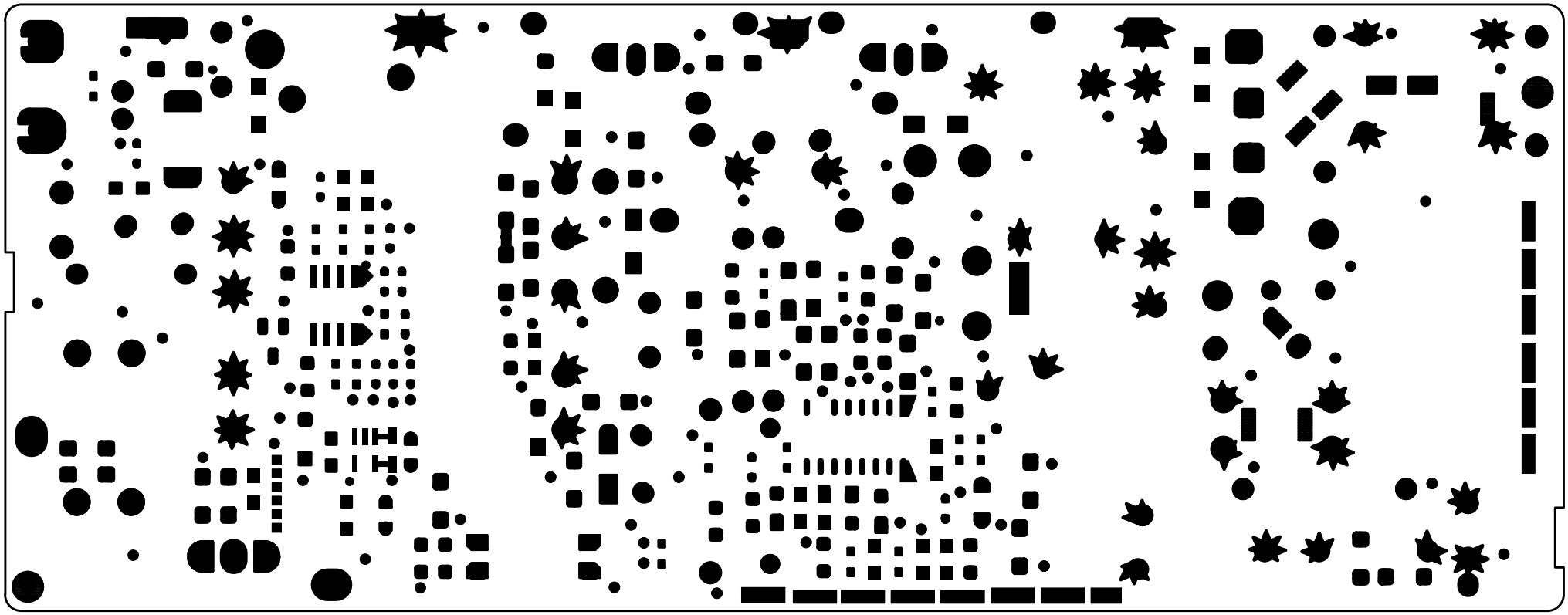


PA-1081-11IL-LF_A.pcb - Thu Nov 26 11:15:22 2015



PA-1081-11IL-LF_A.pcb - Thu Nov 26 11:16:37 2015





PA-1081-11IL-LF_A.pcb - Thu Nov 26 11:17:47 2015

LITE-ON TECHNOLOGY CORP.

MODEL : PA-1081-11IL-LF Rev. A

PCB : CEM-1 1.6mm 2oz

P/N : 821292

DATE : 2015-11-26

HOLE SIZE TOLERANCE : + / - 0.05mm

Copper Tolerance. >1mm + / -0.1mm

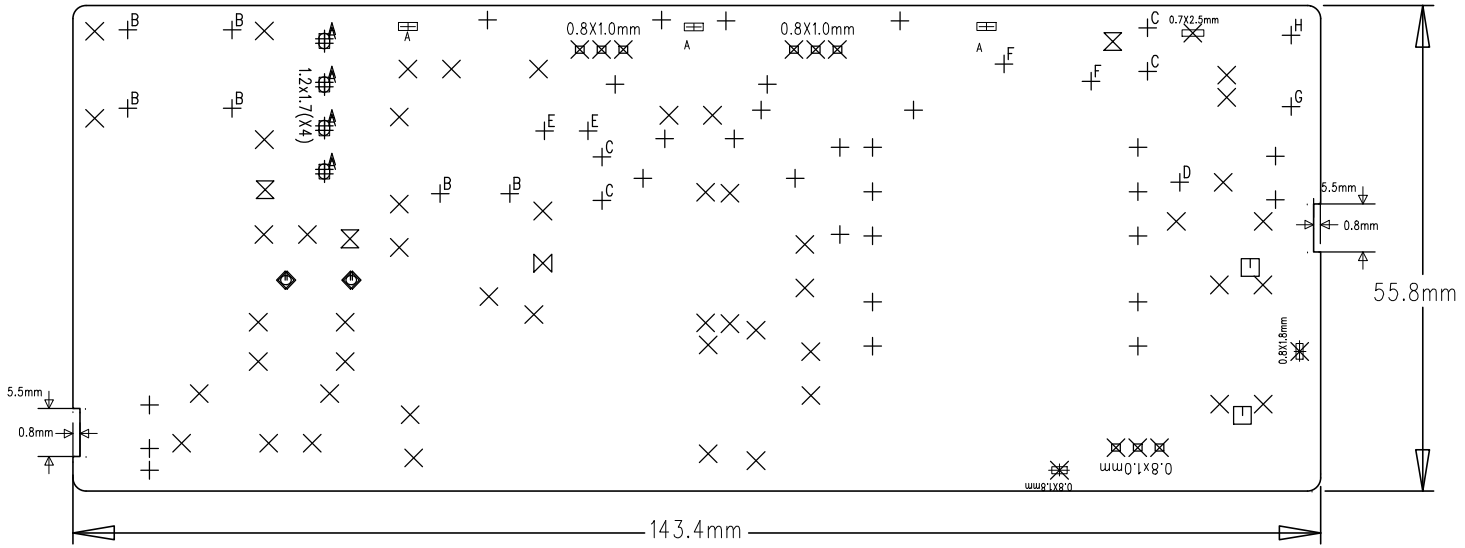
<1mm + / -10%

Thickness Tolerance : 1.6mm + / -0.15mm

Silkcreen Tolerance : 0.5 + / -0.1mm

	NC	
	PUNCH	
1.2X1.7	NC	1.2X1.9
	PUNCH	1.2X1.7
0.9X2.2	NC	0.9X2.4
	PUNCH	0.9X2.2
0.8X1.8	NC	0.8X2.0
	PUNCH	0.8X1.8
0.7X2.5	NC	0.7X2.7
	PUNCH	0.7X2.5
0.8X1.0	NC	0.8X1.2
	PUNCH	0.8X1.0

A : 0.9 x 2.2mm



SIZE	QTY	SYM	PLATED	TOL
1.2	29	+	YES	+/-0.05
1	61	X	YES	+/-0.05
0.7	2	□	NO	+/-0.05
1 x 1.2	2	◇	YES	+/-0.05
1.6	3	⧖	NO	+/-0.05
1	1	⊠	NO	+/-0.05
1.2 x 1.7	4	+A	YES	+/-0.05
0.9	6	+B	YES	+/-0.05
1.05	4	+C	YES	+/-0.05
1.1	1	+D	YES	+/-0.05
1.6	2	+E	YES	+/-0.05
0.8	2	+F	YES	+/-0.05
2.5	1	+G	YES	+/-0.05
2.5	1	+H	NO	+/-0.05

Lite-On Technology Corporation.
Power SBG.

MODEL: PA-1071-11IL-LF_MB
UPDATE: 2015/12/2
REV: 0D

Parts List

DVT

DATE: 2015/12/3

ITEM	U	F	R	C	PARTNO	OLDPARTNO	DESCRIPTION	MAKER	MAKERPN	FILENO	LOCATION	QTY
1001		*			798049	LTV-1007-TP1-G-HF	IC PHO 4PLTV-1007-TP1-G80-160SOP	LITE-ON	798049	RD-AP1304350A	IC300	1.000000
1001-A		*			793918	32-STCLT101724-HF	IC PHO 4P TCLT1017 80-160 SOP	VISHAY	TCLT1017	RD-AP1206004A		0.000000
1002					786671	34-FTK10A60DR31-ROHS	MFET N 600V 10A0.75TK10A60DRSC67	TOSHIBA	TK10A60DR	RD-AP1009035A	Q050	1.000000
1002-A					787181	34-FAOTF10N60L69-HF	MFET N 600V 10A 0.75 AOTF10N60L	ALPHA & OMEGA	AOTF10N60L	RD-AP1012003A		0.000000
1002-B					732612	34-FSTP10NK6ZFP19-HF	MFET N 600V10A0.75STP10NK60ZFP	STM	STP10NK60ZFP	RD-AP1306278B		0.000000
1003					786672	34-FTK12A50DR31-ROHS	MFET N 500V 12A0.52TK12A50DRSC67	TOSHIBA	TK12A50DR	RD-AP1104112A	Q051	1.000000
1003-A					786581	34-FAOTF12N50L69-HF	MFET N 500V 12A 0.52 AOTF12N50L	ALPHA & OMEGA	AOTF12N50L	RD-AP1011136A		0.000000
1003-B					786622	34-FFDPF12N50NZ26-HF	MFET N 500V 11.5A0.52FDPF12N50NZ	FAIRCHILD	FDPF12N50NZ	RD-AP1111242A		0.000000
1004					741719	33-SS1M24-ROHS	DIO 1000V 1A S1M SMA	VISHAY	S1M	RD-AP1210462B	D101	1.000000
1004-A					771586	33-SS1M71-ROHS	DIO 1000V 1A S1M DO214AC	TS	S1M	RD-AP1211042B		0.000000
1005					796110	34-FTK22E10N131-ROHS	MFET N 105V 52A 0.0138 TK22E10N1	TOSHIBA	TK22E10N1	RD-AP1212284A	Q201	1.000000
1005-A					786331	34-FPSMN013-100PS18-ROHS	MFET N100V67A0.0139PSMN013-100PS	PHILIPS	PSMN013-100PS	RD-AP1208232A		0.000000
1006					729075	33-BGBU40813-ROHS	BRG 800V 4A GBU408 LITON	LITE-ON SEMI	GBU408	RD-AP1005078C	BD001	1.000000
1006-A					717485	33-BGBU4K24-ROHS	BRG 800V 4A GBU4K	VISHAY	GBU4K–E3/45	RD-AP0804510B		0.000000
1007		*			813490	33-ETVR14471KFABT1Y-ROHS	ABSORBER300V4500ATVR14471KFABT1Y				VDR001	1.000000
1008					768731	33-RMUR460-HF13-HF	DIO 600V 4A MUR460-HF DO201AD	LITE-ON SEMI	MUR460_HF	RD-AP0912119A	D050	1.000000
1008-A					768096	33-RMUR460-G71-HF	DIO 600V 4A MUR460-G DO201AD	TS	MUR460-G	RD-AP0911342A		0.000000
1009					724526	33-SBAW5618-HF	DIO 70V 0.25A BAW56 SOT23	PHILIPS	BAW56	RD-AP0504203A	D202	1.000000
1009-A					734579	33-SBAW5647-ROHS	DIO 70V 0.2A BAW56 SOT23	DII	BAW56	RD-AP1211490B		0.000000
1010					811490	33-S1N4148W-G71-HF	DIO 100V 0.15A 1N4148W-G SOD123	TS	1N4148W-G	RD-AP13122337A	D052,D100,D102	3.000000
1010-A					753893	33-S1N4148W-7-F47-ROHS	DIO 75V 0.3A 1N4148W-7-F SOD123	DII	1N4148W-7-F	RD-AP0601325A		0.000000
1010-B					810955	33-S1N4148W-HF13-HF	DIO 100V 0.15A 1N4148W-HF SOD123	LITE-ON SEMI	1N4148W-HF	RD-AP1311176A		0.000000
1011					796689	32-SLTA1205N18-HF	IC SR CONTROL 6P LTA1205N SO	NXP	LTA1205N	RD-AP1309185C	IC200	1.000000
1012					795877	32-SLTA1201R18-HF	IC PWM 16P LTA1201R SO	NXP	LTA1201R	RD-AP1303190A	IC100	1.000000
1013					758079	32-SAP4310AMTR-E190-ROHS	IC OPA 8P AP4310AMTR-E1 SOIC	BCD	AP4310AMTR-E1	RD-AP0904004A	IC201	1.000000
1014					750846	33-SBAV21W-7-F47-HF	DIO 200V 0.5A BAV21W-7-F SOD123	DII	BAV21W-7-F	RD-AP0709233A	D200	1.000000
1014-A					768645	33-SBAV21W-V-G24-HF	DIO 200V 0.25A BAV21W-V-G SOD123	VISHAY	BAV21W-V-G	RD-AP1011094A		0.000000
1014-B					811604	33-SBAV21W-G71-HF	DIO 250V 0.2A BAV21W-G SOD123	TS	BAV21W-G	RD-AP1311027A		0.000000
1015					760922	33-R1N4007G13-ROHS	DIO 1000V 1A 1N4007G DO41	LITE-ON SEMI	1N4007G	RD-AP0807307A	D051	1.000000
1015-A					793152	33-R1N4007G71-HF	DIO 1000V 1A 1N4007G DO41	TS	IN4007	RD-AP1205249A		0.000000
1016					820421	LTL-17KGH5D-042A-ROHS	LED CIR LTL17KGH5D-042A GRN	LITE-ON	LTL17KGH5D-042A	RD-AP1511601A	LED1	1.000000
1017					760684	33-ESPG-351W-ROHS	ABSORBER 350V 2000A SPG-351W	LI SHIN	SPG-351W-LF	RD-AP0707232A	SG001, SG002	2.000000
2001					904703	30-FG100CJBSS3-HF	R.MO 0.1 2W(S) J RSS FTABT	FUTABA	RSS02JR100S000NH	RD-AP1511167AA	R060,R061	2.000000

Parts List

DVT

ITEM	U	F	R	C	PARTNO	OLDPARTNO	DESCRIPTION	MAKER	MAKERPN	FILENO	LOCATION	QTY
2001-A					917886	30-FG100CJBSS2B-HF	R.MO 0.1 2W(S) J MO QUMAO					0.000000
2002		*			790956	30-SJ104F10SA-HF	R.TH NTC 100K F 0603 NCP18WF12RB	MURATA	NCP18WF104F12RB	RD-AP1402866G	RT100	1.000000
2003					716375	30-S000J8SA-HF	R.CF 0 1/8W J 0805	KOA	RK73Z2ATQTD	RD-AP1208499N	R111,R206	2.000000
2004					713311	30-S100J4SA-HF	R.CF 10 1/4W J 1206	KOA	RK73B2BTQTD100J	RD-AP1208499N	R059,R101	2.000000
2005					713678	30-S470J4SA-HF	R.CF 47 1/4W J 1206	KOA	RK73B2BTQTD470J	RD-AP1208499N	R057,R100,R200,R201	4.000000
2006					725094	30-S565J4SA-HF	R.CF 5.6M 1/4W J 1206	KOA	RK73B2BTQTD565J	RD-AP1208499N	R056	1.000000
2007					758301	30-S123F8SA-HF	R.MF 12K 1/8W F 0805	KOA	RK73H2ATQTD1202F	RD-AP1208499N	R103	1.000000
2008					718790	30-S123F8SA4-HF	R.MF 12.4K 1/8W F 0805	KOA	RK73H2ATQTD1242F	RD-AP1208499N	R113	1.000000
2009					754881	30-S223F8SA1-HF	R.MF 22.1K 1/8W F 0805	KOA	RK73H2ATQTD2212F	RD-AP1208499N	R102	1.000000
2010					736521	30-S333F8SA-HF	R.MF 33K 1/8W F 0805	KOA	RK73H2ATQTD3302F	RD-AP1208499N	R114,R112	2.000000
2011					714238	30-S150J8SA-HF	R.CF 15 1/8W J 0805	KOA	RK73B2ATQTD150J	RD-AP1208499N	R204	1.000000
2012					760634	30-S472F4SA-HF	R.MF 4.7K 1/4W F 1206	TA-I	RM12FTN472	RD-AP0708112A	R058	1.000000
2013					909740	30-S5102F8SA2-HF	R.MF 51K 1/8W F 0805 RC YAGEO	YAGEO	RC0805FR-0751KL	RD-AP1511337AU	R004	1.000000
2013-A					911921	30-S5102F8SA6-HF	R.MF 51K 1/8W F 0805 RTT RALEC	RALEC	RTT055102FTP	RD-AP1511207BC		0.000000
2014					762739	30-S914F4SA-HF	R.MF 910K 1/4W F 1206	TA-I	RM12FTN9103	RD-AP0905085A	R003	1.000000
2015					781128	30-S470F8SA-HF	R.MF 47 1/8W F 0805	TA-I	RM10FTN47R0	RD-AP0905085A	R106	1.000000
2016					718902	30-S102F8SA-HF	R.MF 1.00K 1/8W F 0805	KOA	RK73H2ATQTD1001F	RD-AP1208499N	R104,R105,R205	3.000000
2017					750720	30-S114F8SA8-HF	R.MF 118K 1/8W F 0805	KOA	RK73H2ATQTD1183F	RD-AP1208499N	R063	1.000000
2018					720388	30-S783F8SA7-HF	R.MF 78.70K 1/8W F 0805	KOA	RK73H2ATQTD7872F	RD-AP1208499N	R109	1.000000
2019					794143	30-SV135F4E07-HF	R.HV 1.3M 1/4W F RV500V1206YAGEO	YAGEO	RV1206FR-071M3L	RD-AP1510084M	R001,R002	2.000000
2019-A					814651	30-SV135F4E011-HF	R.HV 1.3M 1/4W F HV500V1206ROYAL	UNIOHM	HV06W4F1304T5E	RD-AP1507136A		0.000000
2020					914140	30-S6204F4SA2-HF	R.MF 6.2M 1/4W F 1206 RC YAGEO	YAGEO	RC1206FR-076M2L	RD-AP1511337AU	R054,R055	2.000000
2020-A					914141	30-S6204F4SA6-HF	R.MF 6.2M 1/4W F 1206 RTT RALEC	RALEC	RTT066204FTP	RD-AP1511207BC		0.000000
2021					762577	30-S913F4SA-HF	R.MF 91K 1/4W F 1206	TA-I	RM12FTN9102	RD-AP0803033A	R108,R050,R051,R052,R053	5.000000
2022					739889	30-S142F10SA7-HF	R.MF 1.47K 1/10W F 0603	KOA	RK73H1JTQTD1471F	RD-AP1208499N	R209	1.000000
2023					727787	30-S104F10SA-HF	R.MF 100.0K 1/10W F 0603	KOA	RK73H1JTQTD1003F	RD-AP1208499N	R208	1.000000
2024					713455	30-S471J4SA-HF	R.CF 470 1/4W J 1206	KOA	RK73B2BTQTD471J	RD-AP1208499N	R216	1.000000
2025					713568	30-S330J8SA-HF	R.CF 33 1/8W J 0805	KOA	RK73B2ATQTD330J	RD-AP1208499N	R217	1.000000
2026					719985	30-S510J8SA-HF	R.CF 51 1/8W J 0805	KOA	RK73B2ATQTD510J	RD-AP1208499N	R215	1.000000
2027					727963	30-S163F10SA2-HF	R.MF 16.20K 1/10W F 0603	KOA	RK73H1JTQTD1622F	RD-AP1208499N	R202	1.000000
2028					728330	30-S763F10SA8-HF	R.MF 76.80K 1/10W F 0603	KOA	RK73H1JTQTD7682F	RD-AP1208499N	R210	1.000000
2029					730152	30-S193F10SA1-HF	R.MF 19.10K 1/10W F 0603	KOA	RK73H1JTQTD1912F	RD-AP1208499N	R211	1.000000
2030					751342	30-S242D10SA-HF	R.MF 2.40K 1/10W D 0603	KOA	RK73H1JTQTD2401D	RD-AP1208499N	R214	1.000000

ITEM	U	F	R	C	PARTNO	OLDPARTNO	DESCRIPTION	MAKER	MAKERPN	FILENO	LOCATION	QTY
2031					712818	30-S103J8SA-HF	R.CF 10K 1/8W J 0805	KOA	RK73B2ATQTD103J	RD-AP1208499N	R218	1.000000
2032					727661	30-S612F10SA9-HF	R.MF 6.19K 1/10W F 0603	KOA	RK73H1JTQTD6191F	RD-AP1208499N	R207	1.000000
2033					727846	30-S512F10SA1-HF	R.MF 5.11K 1/10W F 0603	KOA	RK73H1JTQTD5111F	RD-AP1208499N	R213	1.000000
2034					713309	30-S105J4SA-HF	R.CF 1M 1/4W J 1206	KOA	RK73B2BTQTD105J	RD-AP1208499N	R203	1.000000
2035					713312	30-S36AJ4SA-HF	R.CF 3.6 1/4W J 1206	KOA	RK73B2BTQTD3R6J	RD-AP1208499N	R062	1.000000
2036					713769	30-S000J4SA-HF	R.CF 0 1/4W J 1206	KOA	RK73Z2BTQTD	RD-AP1208499N	R107,R064,J101	3.000000
2037					811390	30-S50DFBSAH-HF	R.MF 0.005 2W F 2512 LRN RALEC	RALEC	LRN2512-22R005F4	RD-AP1509376H	R250	1.000000
2037-A					757326	30-S50DFBSAC-HF	R.MF 0.005 2W F 2512 RLM TAI	TA-I	RLM25FEER005	RD-AP1211149D		0.000000
2038					733173	30-S601F10SA4-HF	R.MF 604.0 1/10W F 0603	KOA	RK73H1JTQTD6040F	RD-AP1208499N	R212	1.000000
2039					712336	04-J21D01-HF	JUMPER 0.6D BT RUCH	WEN CHENG	04-J21D01-HF	RD-AP0809130E	J002(15MM),J025(12.5MM),J050(6	0.000448
											MM),J052(15MM),J054(15MM),J05	
											5(15MM),J200(10MM)	
2040					733965	04-J21C02-HF	JUMPER 0.8D BT TAPING	GRAND SHIHHAO	04-J21C02-HF	RD-AP0808335C	J001(7.5MM)	1.000000
2041					727436	30-S000J10SA-HF	R.CF 0 1/10W J 0603	KOA	RK73Z1JTQTD	RD-AP1208499N	J102,J104	2.000000
3001					910472	31-S2331J5065-HF	C.MON 330PF 50V J NPO 0603 0603B	WALSIN	0603N331J500CT	RD-AP14061663U	C103	1.000000
3001-A					902603	31-S2331J5068-HF	C.MON 330PF 50V J NPO 0603GRM188	MURATA	GRM1885C1H331JA01D	RD-AP1501152Y		0.000000
3001-B					910182	31-S2331J5064-HF	C.MON 330PF 50V J NPO 0603CC0603	YAGEO	CC0603JRNPO9BN331	RD-AP1503042AF		0.000000
3002					727981	31-S1221K506-HF	C.MON 220PF 50V K X7R 0603	YAGEO	CC0603KRX7R9BB221	RD-AP1208033O	C101	1.000000
3003					727795	31-S1103K506-HF	C.MON 0.01UF 50V K X7R 0603	YAGEO	CC0603KRX7R9BB103	RD-AP1208033O	C058,C111	2.000000
3004					752529	31-S1473K506-HF	C.MON 0.047UF 50V K X7R 0603	YAGEO	CC0603KRX7R9BB473	RD-AP1208033O	C100	1.000000
3005					736282	31-S1104K506-HF	C.MON 0.1UF 50V K X7R 0603	YAGEO	CC0603KRX7R9BB104	RD-AP1208033O	C109,C106,C105,C215	4.000000
3006					732582	31-S1681K506-HF	C.MON 680PF 50V K X7R 0603	YAGEO	CC0603KRX7R9BB681	RD-AP1208033O	C212	1.000000
3007					910231	31-S2225K25119-HF	C.MON 2.2UF 25V K X7R 0805C08085	HOLYSTONE	C0805X225K025T	RD-AP1510297S	C003	1.000000
3007-A					909907	31-S2225K2515-HF	C.MON 2.2UF 25V K X7R 0805 0805B	WALSIN	0805B225K250CT	RD-AP14061663U		0.000000
3007-B					906613	31-S2225K2518-HF	C.MON 2.2UF 25V K X7R 0805GRM21B	MURATA	GRM21BR71E225KA73L	RD-AP1501152Y		0.000000
3008					786478	31-S1105K501-HF	C.MON 1UF 50V K X7R 0805	YAGEO	CC0805KKX7R9BB105	RD-AP1208033O	C002,C211,C110,C206	4.000000
3009					762558	31-S1221KB01-HF	C.MON 220PF 200V K X7R 0805	YAGEO	CC0805KRX7RABB221	RD-AP1208033O	C104	1.000000
3010					740186	31-S1474K501-HF	C.MON 0.47UF 50V K X7R 0805	YAGEO	CC0805KKX7R9BB474	RD-AP1208033O	C112	1.000000
3011					816916	31-FE474KD551J-ROHS	C.MEF 0.47UF 450V K 10T MFTD	HUA JUNG	MFTD474K0450DT1108- FUSE TYPE	RD-AP1510039P	C051,C052	2.000000
3011-A					817722	31-FE474KD580A-ROHS	C.MEF 0.47UF 450V K 10T MTF	CARLI	TF474K2Y10BT195D8R	RD-AP1511150L		0.000000
3011-B					816199	31-FE474KD5878-ROHS	C.MEF 0.47UF 450V K 10 FMPP(3)					0.000000
3012		*			819384	31-FE334KB580L-HF	C.MEX 0.33UF 275V K 10T MPX-C5H	CARLI	PX334K3IC59T195D8H	RD-AP1506258I	C001	1.000000
3012-A		*			819382	31-FE334KB5875-HF	C.MEX 0.33UF 275V K10T CMPP-T5HF					0.000000

ITEM	U	F	R	C	PARTNO	OLDPARTNO	DESCRIPTION	MAKER	MAKERPN	FILENO	LOCATION	QTY
3013		*			798247	31-F1152MB554B-HF	C.DIS 1500PF 250V M E 10T KX-NS	MURATA	DE1E3KX152MN4AN01F	RD-AP1511515J	C300	1.000000
3013-A		*			814349	31-F1152MB5588-HF	C.DIS 1500PF 250V M E 10T CD	TDK	CD10-E2GA152MYVSA	RD-AP1505095I		0.000000
3014					917175	31-F2332KAK71-ROHS	C.MON 3300PF 1KV K X7R 5T RD21				C054,C055	2.000000
3014-A					917086	31-F2332KAK54-ROHS	C.MON 3300PF 1KV K X7R 5T RDE					0.000000
3015					812529	31-F7222M1658B-HF	C.ELE 2200UF 16V M 12.5*20 ZLH5T	RUBYCON	16 ZLH 2200 M EFC GA 12.5X20	RD-AP1511571W	C201,C202	2.000000
3015-A					812564	31-F7222M1652K-HF	C.ELE 2200UF 16VM12.5*20KZH-HF5T	NCC	EKZH160ETE222MK201	RD-AP1510128M		0.000000
3016					734370	31-F7470M50524-ROHS	C.ELE 47UF 50V M 6.3*11 KY 5T	NCC	EKY-500ETC470MF11D	RD-AP1512054AL	C203	1.000000
3016-A					722142	31-F7470M50581-HF	C.ELE 47UF 50V M 6.3*11 YXF 5T	RUBYCON	50 YXF 47 M EFC TA 6.3x11	RD-AP1301080G		0.000000
3017					765795	31-F7101MD5588-HF	C.ELE 100UF 450V M 18*30 CXW	RUBYCON	450 CXW 100 M LTI 18X30	RD-AP1503119Q	C050	1.000000
3017-A					753233	31-F7101MD5525-ROHS	C.ELE 100UF 450V M 18*35 KXG	NCC	EKXG451ELL101MM35S	RD-AP1509381N		0.000000
3018					752529	31-S1473K506-HF	C.MON 0.047UF 50V K X7R 0603	YAGEO	CC0603KRX7R9BB473	RD-AP1208033O	C102	1.000000
3019					916103	31-S2472JF328-HF	C.MON 4700PF 630V JU2J1206GRM31C	MURATA	GRM31C7U2J472JW32L	RD-AP1501152Y	C056	1.000000
3019-A					916128	31-S2472JF3219-HF	C.MON 4700PF 630V J NPO1206C1206	HOLYSTONE	C1206N472J631T	RD-AP1510297S		0.000000
3020					910578	31-S2102KB0119-HF	C.MON 1000PF 200V K X7R0805C0805	HOLYSTONE	C0805X102K201T	RD-AP1510297S	C200	1.000000
3020-A					909890	31-S2102KB014-HF	C.MON 1000PF 200V KX7R0805CC0805	YAGEO	CC0805KRX7RABB102	RD-AP1503042AF		0.000000
3021					761387	31-S1471KAK2-HF	C.MON 470PF 1KV K X7R 1206	YAGEO	CC1206KKX7RCBB471	RD-AP1208033O	C005,C006	2.000000
3022					910442	31-S2101JAK25-HF	C.MON 100PF 1KV J NPO 12061206N	WALSIN	1206N101J102CT	RD-AP14061663U	C053,C057	2.000000
3022-A					910440	31-S2101JAK28-HF	C.MON 100PF 1KV J NPO 1206GRM31A	MURATA	GRM31A5C3A101JW01D	RD-AP1501152Y		0.000000
3022-B					910441	31-S2101JAK24-HF	C.MON 100PF 1KV J NPO 1206CC1206	YAGEO	CC1206JKNPOCBN101	RD-AP1503042AF		0.000000
3023					734370	31-F7470M50524-ROHS	C.ELE 47UF 50V M 6.3*11 KY 5T	NCC	EKY-500ETC470MF11D	RD-AP1512054AL	C107	1.000000
3023-A					722142	31-F7470M50581-HF	C.ELE 47UF 50V M 6.3*11 YXF 5T	RUBYCON	50 YXF 47 M EFC TA 6.3x11	RD-AP1301080G		0.000000
3024					713924	31-S1102J501-HF	C.MON 1000PF 50V J NPO 0805	YAGEO	CC0805JRNPO9BN102	RD-AP1208033O	C113	1.000000
3025					740186	31-S1474K501-HF	C.MON 0.47UF 50V K X7R 0805	YAGEO	CC0805KKX7R9BB474	RD-AP1208033O	C108	1.000000
3026					712827	31-S1104K501-HF	C.MON 0.1UF 50V K X7R 0805	YAGEO	CC0805KRX7R9BB104	RD-AP1208033O	C216	1.000000
3027					780552	31-S1104KB02-HF	C.MON 0.1UF 200V K X7R 1206	YAGEO	CC1206KKX7RAB104	RD-AP1208033O	C205	1.000000
3028					740061	31-S1101K501-HF	C.MON 100PF 50V K X7R 0805	YAGEO	CC0805KRX7R9BB101	RD-AP1208033O	C207	1.000000
3029					736282	31-S1104K506-HF	C.MON 0.1UF 50V K X7R 0603	YAGEO	CC0603KRX7R9BB104	RD-AP1208033O	C209,C213,C214	3.000000
4001		*			789456	37-C0713A20K2302-ROHS	PFC CHOKE RM-8 PL9 330UH	LITE-ON	37-C0713A20K2302-ROHS	RD-AP1003279B	T051	1.000000
4002		*			766155	37-C14000901-ROHS	CHOKE T8*4*4-C K5B 20UH	LITE-ON	37-C14000901-ROHS	RD-AP14065871B	L001	1.000000
4003		*			821794	37-C18011101-ROHS	CHOKE TR16*12*8C R12K 9MH BASE				L002	1.000000
4004		*			723233	37-C6280101-ROHS	CHOKE DR8*10 2.5UH +-15%	LITE-ON	37-C6280101-ROHS	RD-AP1111807B	L201	1.000000
4005					760602	37-C5321206-HF	BEAD CORE RH3.5*8*0.8-T52	KING CORE	RH3.5*8*0.8-T52	RD-AP0709240A	BC051	1.000000
4006					728787	37-S15000201-HF	CHIP BEAD TI321611U310	WHOLE	T1321611U310	RD-AP1011226D	BC053	1.000000

Lite-On Technology Corporation.
Power SBG.

MODEL: PA-1071-11IL-LF_MB
UPDATE: 2015/12/2
REV: 0D

Parts List

DVT

DATE: 2015/12/3

ITEM	U	F	R	C	PARTNO	OLDPARTNO	DESCRIPTION	MAKER	MAKERPN	FILENO	LOCATION	QTY
4007					822300	37-C10811101-ROHS	BEAD CORE RH 3.5*8*0.8-P-T K5B				BC050,BC200	2.000000
4008		*			821291	42-M108111P01-ROHS	XFMR A1081-11IL PQ3221 JPP95				T050	1.000000
4009		*			789473	37-C0713A20K2301-ROHS	CHOKE CM127125 220UH	LI SHIN	CSP6006FL	RD-AP1005045A	L050	1.000000
5008		*			821412	04-PM10711101-ROHS	DC CORD 1050 PA-1071-11IL				CALBE	1.000000
6001		*			821284	52-M108111HS1-ROHS	HEAT SINK 80*30*22*2 AL				HS1	1.000000
6002		*			821925	52-M108111HS2-ROHS	HEAT SINK 43.4*27*22*2 AL				HS2	1.000000
6003					741996	50-S183008021-HF	SCREW+M CH 3*0.5*8 NI+NL	DURABLE	741996	RD-AP14097029G	Q051,Q050,Q201	3.000000
6004					701101	50-N1243021-HF	NUT 3*0.5*2.4 NI	DURABLE	701101	RD-AP1508321A	Q051,Q050,Q201	3.000000
6005		*			820788	46-M108111CS2-ROHS	CASE-BTM 150*65*17.3 PC				CASE-BTM	1.000000
6006		*			820787	46-M108111CS1-ROHS	CASE-TOP 150*65*17.3 PC				CASE-TOP	1.000000
6007		*			821282	52-M108111SH1-ROHS	SHIELD-TOP 134*59.1*25.8 AL				SHIELD-TOP	1.000000
6008		*			821283	52-M108111SH2-ROHS	SHIELD-BTM 134*58.1*28.5 AL				SHIELD-BTM	1.000000
6009		*			821285	28-M108111PL1-ROHS	ISL-PLT 143*56.9*28.1 FRPP				FRPP	1.000000
6010		*			786028	28-M108101RB1-ROHS	ISL-PAD+T 6*10*3.5 RB	PMP	786028	RD-AP1007144A	C050	1.000000
7001		*			751182	38-T50A0221-HF	FUSE SB 250V 5A MST	CONQUER	MST005	RD-AP0812524C	F001	1.000000
7001-A		*			753942	38-T50A1623-ROHS	FUSE SB 250V 5A 8.5*8.5 2010T					0.000000
7002		*			821288	43-M108111PG1-ROHS	INLET250VTU301SPSRC015P7P9887LTZ				CN001	1.000000
7003		*			821292	01-MA10811116IL-ROHS	PCB A1081-11IL 143*56*1.6 2/0 X6				PCB	1.000000
8001					730048	92-MUC8-HF	OUT-CTN 543*365*215	AMB	OUT-CTN 543*365*215	RD-AP1508117T	OUT-CTN	0.025000
8002					784739	91-M108101PL1-ROHS	PA PLT LAY 543*365*215*7	AMB	784739	RD-AP1205266C	OUT-CTN	0.025000
8003					751696	90-M165002PG1-ROHS	PE BAG 380*125*0.05	HONG SHENG	751696	RD-AP1208532C	BAG	1.000000
8004					729792	55-MPA1-HF	PALLET 1170*1140*119	KAIZHUAM	729792	RD-AP1504084G	PALLET	0.001040
8005		*			604987	93-M107111DL1-ROHS	LBL-ID 98*42 HPA-1071-11IL				LBL-SPS	1.000000
9001		*			819067	44-M190032SR1-ROHS	PCB SUPPORT 3.0*2.3 NY46				RUBBER	4.000000
9002		*			720209	04-T35C15010-HF	TUBE-TEF 0.15*1.07 200C 150V C	GREATHOLDING	TFL	RD-AP1201023D	J002(14MM*1)	0.014000

TOTAL: 5 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.

File No : DQECMTBF20150430002

To : EE: Arvin Hsu; ME: Felix Fan; NPI: Lianzhen Yang; PM: Michael Chen

CC : RD: Koson Lu; Brian TH Lin; NPI: WH Liu; QRA: Caesar Lin

DQE Qualification Report

Component Stress&E-Cap&CMTBF

Model Name: PA-1071-11IL

Customer: ILLO

Stage: DVT

Spec Rev: X01

Part List Rev: 0D

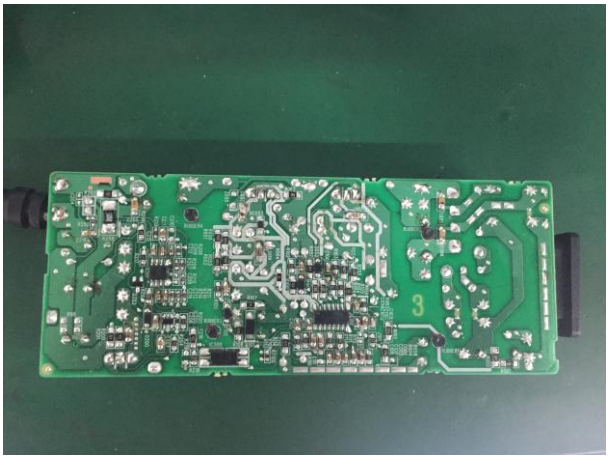
PCB Rev: X06

Report Rev: A

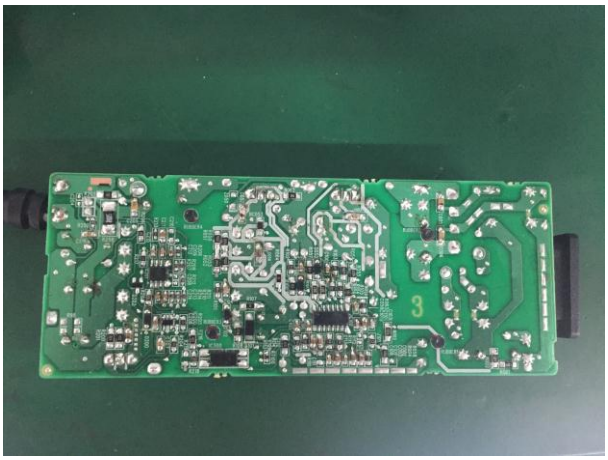
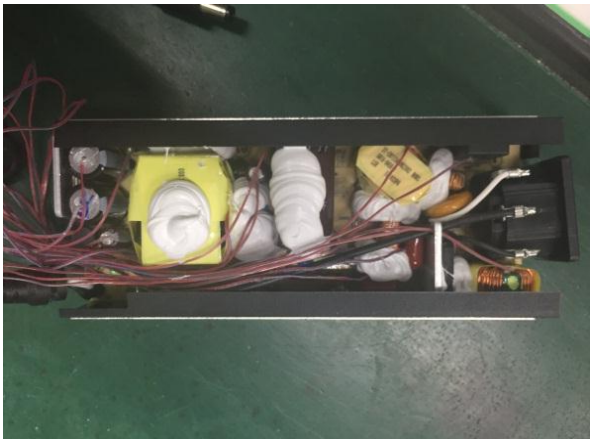
Conclusion: ■ PASS

□ FAIL

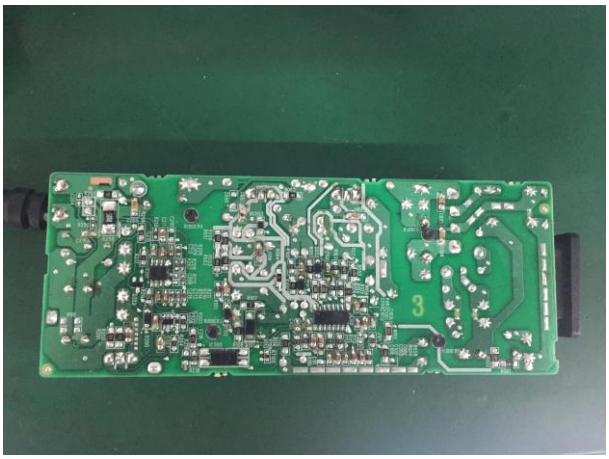
Prepared By: **Checked By:** **Approved By:**

A Source	
	
SMD Side	Component Side
	

Before	1323.4	After	1350.5
Total		27.1	g

B Source	
	
SMD Side	Component Side
	

Before	851.3	After	881.2
Total		29.9	g

C Source	
	
SMD Side	Component Side
	

Before	840	After	868.3
Total		28.3	g

Design Verification Test Issue List

No.	Project Phase (阶段）	Item Name (项目名称)	DFX or Check List对应条款	Issue Priority Level (问题等级）	Issue Description（问题描述）	Picture or Waveform (问题图片/波形)	Temporary Countermeasure (临时对策）	Propositional Countermeasure建议改善对策	Corrective Action (责任部门对策回复)	Person in Charge	Due Date	Confirm Result (对策确认结果)	Responser (对策确认人)	Remark (备注)
1														
2														

Test report summary

Key component stress test report	Test Date: 1/7/16	Engineer: Joe Zou
Quantity: 6pcs	Ser. No.: 1#,2#,3#,4#,5#,6#	

1. Conditions:

Input: 90Vac/47HZ&264Vac/63HZ

Output: 12Vdc/5.83A (100% Load)

Ambient: 40℃

2. Equipment:

1) .DC electronic load :Chroma 6334

2).Oscilloscope: Tektronix DPO7104

3).AC Source: PACIFIC 120-ASX

4) Multimeter: FLUKE 189

5)Open chamber: OTC-2D

6)Thermal recorder: Agilent 34970A

3. Criteria:

The power supply component derating is below the derating that is specified by our customer's design guideline with all output at 100% of maximum load
and at ambient temperature of 12Vdc/5.83A (100% Load)

4. Record

The test result meets customer spec. and refer to test data as follows:

Conclusion: ☑ Pass ☐ Fail

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Ambient temperature: 40℃

Major Resistor				Component Spec.					Worse Case Stress in Test Data									
Location	Part No.	Type	Maker	Value	Power	Vmax	Temp	K	V			Power			Temp			
				Ohm	W	V	^{0}C		Input(V)	Vrms(V)	Ratio	P_{actual}(w)	P'_{spec}(w)	Ratio	Input(V)	^{0}C	Ratio	Judge
R060(AC)	904703	R.MO	FUTABA	0.1	2	350	170	0.80	264	0.0151	4.31E-05	0.00228	1.60648	0.00	90	89.676	0.53	Pass
R060(B)	917886	R.MO	QUEEN MAO	0.1	2	350	170	0.81	264	0.0148	4.23E-05	0.00219	1.62610	0.00	90	88.695	0.52	Pass
R061(AC)	904703	R.MO	FUTABA	0.1	2	350	170	0.80	264	0.0668	0.000191	0.04462	1.59258	0.03	90	90.371	0.53	Pass
R061(B)	917886	R.MO	QUEEN MAO	0.1	2	350	170	0.80	264	0.0671	0.000192	0.04502	1.60424	0.03	90	89.788	0.53	Pass
R059	713311	R.CF	KOA	10	0.25	200	155	0.83	264	0.0203	0.000102	0.00004	0.20641	0.00	90	84.819	0.55	Pass
R101	713311	R.CF	KOA	10	0.25	200	155	0.83	264	0.0435	0.000218	0.00019	0.20749	0.00	90	84.452	0.54	Pass
R057	713678	R.CF	KOA	47	0.25	200	155	0.83	264	0.2237	0.001119	0.00106	0.20873	0.01	90	84.032	0.54	Pass
R100	713678	R.CF	KOA	47	0.25	200	155	0.83	264	0.2015	0.001008	0.00086	0.20763	0.00	90	84.407	0.54	Pass
R200	713678	R.CF	KOA	47	0.25	200	155	0.81	264	0.5083	0.002542	0.00550	0.20258	0.03	90	86.124	0.56	Pass
R201	713678	R.CF	KOA	47	0.25	200	155	0.81	264	0.5083	0.002542	0.00550	0.20291	0.03	90	86.009	0.55	Pass
R056	725094	R.CF	KOA	5600000	0.25	200	155	0.83	264	82.23	0.41115	0.00121	0.20704	0.01	90	84.606	0.55	Pass
R103	758301	R.MF	KOA	12000	0.125	150	155	0.84	264	0.0143	9.53E-05	0.00000	0.10488	0.00	90	83.68	0.54	Pass
R113	716172	R.MF	KOA	12100	0.25	200	125	0.77	264	0.2195	0.001098	0.00000	0.19252	0.00	90	82.646	0.66	Pass
R102	754881	R.MF	KOA	22100	0.125	150	155	0.82	264	0.0493	0.000329	0.00000	0.10293	0.00	90	85.009	0.55	Pass
R112	736521	R.MF	KOA	33000	0.125	150	155	0.82	264	0.0128	8.53E-05	0.00000	0.10310	0.00	90	84.895	0.55	Pass
R114	736521	R.MF	KOA	33000	0.125	150	155	0.84	264	0.0791	0.000527	0.00000	0.10501	0.00	90	83.59	0.54	Pass

LITEON

Ambient temperature: 40℃

Major Resistor				Component Spec.					Worse Case Stress in Test Data									
Location	**Part No.**	**Type**	**Maker**	**Value**	**Power**	**Vmax**	**Temp**	**K**	**V**			**Power**			**Temp**			
				Ohm	W	V	^{0}C		Input(V)	Vrms(V)	Ratio	P_{actual}(w)	P'_{spec}(w)	Ratio	Input(V)	^{0}C	Ratio	Judge
R204	714238	R.CF	KOA	15	0.125	150	125	0.72	264	0.3726	0.002484	0.00926	0.09020	0.10	90	85.312	0.68	Pass
R058	760634	R.MF	TA-I	4700	0.25	200	125	0.77	264	0.8308	0.004154	0.00015	0.19217	0.00	90	82.723	0.66	Pass
R004(AC)	909740	R.MF	YAGEO	51000	0.125	150	155	0.85	264	3.9936	0.026624	0.00031	0.10635	0.00	90	82.685	0.53	Pass
R004(B)	911921	R.MF	RALEC	51000	0.125	150	155	0.86	264	4.0065	0.02671	0.00031	0.10786	0.00	90	81.654	0.53	Pass
R003	762739	R.MF	TA-I	910000	0.25	200	155	0.86	264	73.52	0.3676	0.00594	0.21446	0.03	90	82.083	0.53	Pass
R106	781128	R.MF	TA-I	47	0.125	150	125	0.73	264	0.1626	0.001084	0.00056	0.09099	0.01	90	84.963	0.68	Pass
R104	718902	R.MF	KOA	1000	0.125	150	125	0.73	264	0.0196	0.000131	0.00000	0.09091	0.00	90	85.001	0.68	Pass
R105	718902	R.MF	KOA	1000	0.125	150	125	0.75	264	0.0162	0.000108	0.00000	0.09434	0.00	90	83.489	0.67	Pass
R205	718902	R.MF	KOA	1000	0.125	150	125	0.69	264	0.0586	0.000391	0.00000	0.08633	0.00	90	87.013	0.70	Pass
R063	750720	R.MF	KOA	118000	0.125	150	155	0.83	264	2.4968	0.016645	0.00005	0.10327	0.00	90	84.774	0.55	Pass
R109	720388	R.MF	KOA	78700	0.125	150	155	0.84	264	19.356	0.12904	0.00476	0.10508	0.05	90	83.549	0.54	Pass
R001(AC)	794143	R.HV	YAGEO	1300000	0.25	500	155	0.86	264	137.76	0.27552	0.01460	0.21481	0.07	90	81.964	0.53	Pass
R001(B)	814651	R.HV	UNIOHM	1300000	0.25	500	155	0.88	264	137.58	0.27516	0.01456	0.21934	0.07	90	80.425	0.52	Pass
R002(AC)	794143	R.HV	YAGEO	1300000	0.25	500	155	0.87	264	137.61	0.27522	0.01457	0.21864	0.07	90	80.664	0.52	Pass
R002(AC)	794143	R.HV	YAGEO	1300000	0.25	500	155	0.87	264	137.61	0.27522	0.01457	0.21871	0.07	90	80.638	0.52	Pass
R054(AC)	914140	R.MF	YAGEO	6200000	0.25	200	155	0.82	264	89.11	0.44555	0.00128	0.20589	0.01	90	84.997	0.55	Pass

LITEON

Ambient temperature: 40℃

Major Resistor				Component Spec.					Worse Case Stress in Test Data									
Location	Part No.	Type	Maker	Value	Power	Vmax	Temp	K	V			Power			Temp			
				Ohm	W	V	^{0}C		Input(V)	Vrms(V)	Ratio	P_{actual}(w)	P'_{spec}(w)	Ratio	Input(V)	^{0}C	Ratio	Judge
R054(B)	914141	R.MF	RALEC	6200000	0.25	200	155	0.83	264	89.17	0.44585	0.00128	0.20823	0.01	90	84.201	0.54	Pass
R055(AC)	914140	R.MF	YAGEO	6200000	0.25	200	155	0.83	264	89.26	0.4463	0.00129	0.20748	0.01	90	84.457	0.54	Pass
R055(B)	914141	R.MF	RALEC	6200000	0.25	200	155	0.83	264	89.26	0.4463	0.00129	0.20787	0.01	90	84.323	0.54	Pass
R050	762577	R.MF	TA-I	91000	0.25	200	125	0.70	264	37.386	0.18693	0.01536	0.17436	0.09	90	86.64	0.69	Pass
R051	762577	R.MF	TA-I	91000	0.25	200	125	0.71	264	37.382	0.18691	0.01536	0.17782	0.09	90	85.879	0.69	Pass
R052	762577	R.MF	TA-I	91000	0.25	200	125	0.71	264	37.535	0.187675	0.01548	0.17769	0.09	90	85.908	0.69	Pass
R053	762577	R.MF	TA-I	91000	0.25	200	125	0.71	264	37.524	0.18762	0.01547	0.17768	0.09	90	85.911	0.69	Pass
R108	762577	R.MF	TA-I	91000	0.25	200	125	0.69	264	20.363	0.101815	0.00456	0.17209	0.03	90	87.14	0.70	Pass
R209	739889	R.MF	KOA	1470	0.1	50	155	0.84	264	0.0365	0.00073	0.00000	0.08443	0.00	90	83.238	0.54	Pass
R208	727787	R.MF	TA-I	100000	0.1	50	125	0.74	264	2.4622	0.049244	0.00006	0.07404	0.00	90	84.28	0.67	Pass
R216	713455	R.CF	KOA	470	0.25	200	125	0.75	264	0.3536	0.001768	0.00027	0.18642	0.00	90	83.988	0.67	Pass
R217	713568	R.CF	KOA	33	0.125	150	125	0.74	264	0.0076	5.07E-05	0.00000	0.09254	0.00	90	84.281	0.67	Pass
R215	719985	R.CF	KOA	51	0.125	150	125	0.75	264	0.0367	0.000245	0.00003	0.09415	0.00	90	83.572	0.67	Pass
R202	727963	R.MF	TA-I	16200	0.1	50	125	0.75	264	10.326	0.20652	0.00658	0.07511	0.09	90	83.688	0.67	Pass
R210	728330	R.MF	TA-I	76800	0.1	50	125	0.78	264	9.563	0.19126	0.00119	0.07762	0.02	90	82.307	0.66	Pass
R211	730152	R.MF	KOA	19100	0.1	50	155	0.84	264	2.3728	0.047456	0.00029	0.08360	0.00	90	83.937	0.54	Pass

LITEON

Ambient temperature: 40℃

Major Resistor				Component Spec.					Worse Case Stress in Test Data									
Location	Part No.	Type	Maker	Value	Power	Vmax	Temp	K	V			Power			Temp			
				Ohm	W	V	^{0}C		Input(V)	Vrms(V)	Ratio	P_{actual}(w)	P'_{spec}(w)	Ratio	Input(V)	^{0}C	Ratio	Judge
R214	751342	R.MF	KOA	2400	0.1	50	155	0.85	264	0.0076	0.000152	0.00000	0.08531	0.00	90	82.483	0.53	Pass
R218	712818	R.CF	KOA	10000	0.125	150	125	0.74	264	1.0199	0.006799	0.00010	0.09289	0.00	90	84.128	0.67	Pass
R207	727661	R.MF	TAI	6190	0.1	50	125	0.74	264	9.621	0.19242	0.01495	0.07431	0.20	90	84.129	0.67	Pass
R213	727846	R.MF	TA-I	5110	0.1	50	125	0.78	264	0.0077	0.000154	0.00000	0.07753	0.00	90	82.358	0.66	Pass
R203	713309	R.CF	KOA	1000000	0.25	200	125	0.75	264	0.0172	0.000086	0.00000	0.18861	0.00	90	83.505	0.67	Pass
R062	713312	R.CF	KOA	3.6	0.25	200	155	0.82	264	0.0692	0.000346	0.00133	0.20545	0.01	90	85.146	0.55	Pass
R250(AC)	811390	R.MF	RALEC	0.005	2	0.1	170	0.89	264	0.0313	0.313	0.19594	1.78926	0.11	90	80.537	0.47	Pass
R250(B)	757326	R.MF	TAI	0.005	2	0.1	170	0.93	264	0.0307	0.307	0.18850	1.86988	0.10	90	76.506	0.45	Pass
R212	733173	R.MF	TA-I	604	0.1	50	125	0.74	264	0.0762	0.001524	0.00001	0.07370	0.00	90	84.464	0.68	Pass

LITEON

Ambient temperature: 40℃

Capacitor				Component Spec.			Worse Case Stress in Test Data						
Location	Part No.	Type	Maker	CAP	Volt	Temp	V (Peak)			Temp			
				uF	V	^{0}C	Input(V)	V	Ratio	Input(V)	^{0}C	Ratio	Judge
C103(A)	910472	C.MON	WALSIN	0.00033	50	125	264	0.744	0.01	90	82.156	0.66	Pass
C103(B)	902603	C.MON	MURATA	0.00033	50	125	264	0.968	0.02	90	83.412	0.67	Pass
C103(C)	910182	C.MON	YAGEO	0.00033	50	125	264	0.66	0.01	90	82.635	0.66	Pass
C101	727981	C.MON	MURATA	0.00022	50	125	264	1.548	0.03	90	82.501	0.66	Pass
C058	727795	C.MON	MURATA	0.01	50	125	264	2.964	0.06	90	81.629	0.65	Pass
C111	727795	C.MON	MURATA	0.01	50	125	264	2.04	0.04	90	82.833	0.66	Pass
C100	752529	C.MON	TDK	0.047	50	125	264	0.28	0.01	90	83.907	0.67	Pass
C105	736282	C.MON	MURATA	0.1	50	125	264	21.12	0.42	90	81.244	0.65	Pass
C106	736282	C.MON	MURATA	0.1	50	125	264	21.12	0.42	90	82.753	0.66	Pass
C109	736282	C.MON	MURATA	0.1	50	125	264	3.856	0.08	90	82.422	0.66	Pass
C215	736282	C.MON	MURATA	0.1	50	125	264	12.32	0.25	90	82.57	0.66	Pass
C212	732582	C.MON	MURATA	0.00068	50	125	264	12.88	0.26	90	81.671	0.65	Pass
C003(A)	910231	C.MON	HOLYSTONE	2.2	25	125	264	4.3	0.17	90	83.058	0.66	Pass
C003(B)	909907	C.MON	WALSIN	2.2	25	125	264	4.22	0.17	90	84.365	0.67	Pass
C003(C)	906613	C.MON	MURATA	2.2	25	125	264	4.42	0.18	90	83.479	0.67	Pass
C002	786478	C.MON	TDK	1	50	125	264	4.34	0.09	90	82.532	0.66	Pass
C110	786478	C.MON	TDK	1	50	125	264	1.304	0.03	90	81.721	0.65	Pass
C206	786478	C.MON	TDK	1	50	125	264	21	0.42	90	85.733	0.69	Pass
C211	786478	C.MON	TDK	1	50	125	264	0.104	0.00	90	82.875	0.66	Pass
C104	762558	C.MON	MURATA	0.00022	200	125	264	128.8	0.64	90	84.07	0.67	Pass

LITEON

Ambient temperature: 40℃

Capacitor				Component Spec.			Worse Case Stress in Test Data						
Location	Part No.	Type	Maker	CAP	Volt	Temp	V (Peak)			Temp			
				uF	V	^{0}C	Input(V)	V	Ratio	Input(V)	^{0}C	Ratio	Judge
C112	740186	C.MON	TDK	0.47	50	125	264	4.32	0.09	90	83.271	0.67	Pass
C051(A)	816916	C.MEF	HUA JUNG	0.47	450	125	264	380.8	0.85	90	88.038	0.70	Pass
C051(B)	817722	C.MEF	CARLI	0.47	450	125	264	380.8	0.85	90	87.593	0.70	Pass
C051(C)	816199	C.MEF	SUNGHO	0.47	450	125	264	380.8	0.85	90	86.288	0.69	Pass
C052(A)	816916	C.MEF	HUA JUNG	0.47	450	125	264	387.2	0.86	90	89.552	0.72	Pass
C052(B)	817722	C.MEF	CARLI	0.47	450	125	264	385.6	0.86	90	89.789	0.72	Pass
C052(C)	816199	C.MEF	SUNGHO	0.47	450	125	264	387.2	0.86	90	88.434	0.71	Pass
C001(AC)	819384	C.MEX	CARLI	0.33	275	125	264	260.8	0.95	90	71.361	0.57	Pass
C001(B)	819382	C.MEX	SUNGHO	0.33	275	125	264	261.1	0.95	90	74.038	0.59	Pass
C300(AC)	798247	C.DIS	MURATA	0.0015	250	125	264	129.6	0.52	90	80.43	0.64	Pass
C300(B)	814349	C.DIS	TDK	0.0015	250	125	264	128	0.51	90	78.505	0.63	Pass
C054(AC)	917175	C.MON	WALSIN	0.0033	1000	125	264	390.4	0.39	90	85.836	0.69	Pass
C054(B)	917086	C.MON	MURATA	0.0033	1000	125	264	387.2	0.39	90	85.527	0.68	Pass
C055(AC)	917175	C.MON	WALSIN	0.0033	1000	125	264	390.4	0.39	90	88.211	0.71	Pass
C055(B)	917086	C.MON	MURATA	0.0033	1000	125	264	387.2	0.39	90	88.458	0.71	Pass
C102	752529	C.MON	TDK	0.047	50	125	264	0.2952	0.01	90	83.689	0.67	Pass
C056(AC)	916103	C.MON	MURATA	0.0047	630	125	264	112.8	0.18	90	87.529	0.70	Pass
C056(B)	916128	C.MON	HOLYSTONE	0.0047	630	125	264	111.2	0.18	90	90.562	0.72	Pass
C200(AC)	910578	C.MON	HOLYSTONE	0.001	200	125	264	83.16	0.42	90	84.082	0.67	Pass
C200(B)	909890	C.MON	YAGEO	0.001	200	125	264	82.44	0.41	90	85.417	0.68	Pass

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Ambient temperature: 40℃

Capacitor				Component Spec.			Worse Case Stress in Test Data						
Location	**Part No.**	**Type**	**Maker**	**CAP**	**Volt**	**Temp**	**V (Peak)**			**Temp**			
				uF	V	^{0}C	Input(V)	V	Ratio	Input(V)	^{0}C	Ratio	Judge
C005	761387	C.MON	YAGEO	0.00047	1000	125	264	382	0.38	90	83.045	0.66	Pass
C006	761387	C.MON	YAGEO	0.00047	1000	125	264	382.4	0.38	90	83.121	0.66	Pass
C053(A)	910442	C.MON	WALSIN	0.0001	1000	125	264	440	0.44	90	87.246	0.70	Pass
C053(B)	910440	C.MON	MURATA	0.0001	1000	125	264	434	0.43	90	88.012	0.70	Pass
C053(C)	910441	C.MON	YAGEO	0.0001	1000	125	264	434	0.43	90	87.654	0.70	Pass
C057(A)	910442	C.MON	WALSIN	0.0001	1000	125	264	528	0.53	90	87.805	0.70	Pass
C057(B)	910440	C.MON	MURATA	0.0001	1000	125	264	535.2	0.54	90	88.101	0.70	Pass
C057(C)	910441	C.MON	YAGEO	0.0001	1000	125	264	542.4	0.54	90	87.669	0.70	Pass
C113	713682	C.MON	TDK	0.00047	50	125	264	4.36	0.09	90	83.168	0.67	Pass
C108	740186	C.MON	TDK	0.47	50	125	264	3.216	0.06	90	81.251	0.65	Pass
C216	712827	C.MON	TDK	0.1	50	125	264	12.08	0.24	90	82.421	0.66	Pass
C205	780552	C.MON	HOLYSTONE	0.1	200	125	264	1.32	0.01	90	82.052	0.66	Pass
C207	740061	C.MON	TDK	0.0001	50	125	264	11.68	0.23	90	85.374	0.68	Pass
C209	736282	C.MON	MURATA	0.1	50	125	264	0.288	0.01	90	83.105	0.66	Pass
C213	736282	C.MON	MURATA	0.1	50	125	264	2.752	0.06	90	82.772	0.66	Pass
C214	736282	C.MON	MURATA	0.1	50	125	264	8.388	0.17	90	82.691	0.66	Pass

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Ambient temperature: 40℃

Ele-CAPACITOR					Component Spec.						Worse Case Stress in Test Data													
Location	Part No.	Type	Maker	series	CAP	Volt	Ripple	F	Temp	T	V (Peak)					I(rms)				Temp				
					uF	V	A		^{0}C		Input(V)	Vpeak(V)	Ratio	V_{RMS}(V)	Ratio	Input(V)	A	Ir'	Ratio	Input(V)	^{0}C	Ratio	Judge
C201(AB)	812529	C.ELE	RUBYCON	ZLH	2200	16	2.48	1	105	1.7	264	12.4	0.775	11.86	0.74	90	1.861	1.095	0.441	90	87.647	0.83473	Pass
C201(C)	812564	C.ELE	NCC	KZH	2200	16	2.48	1	105	1.73	264	12.4	0.775	11.69	0.73	90	1.752	1.013	0.408	90	85.491	0.8142	Pass
C202(AB)	812529	C.ELE	RUBYCON	ZLH	2200	16	2.48	1	105	1.7	264	12.4	0.775	11.86	0.74	90	1.801	1.059	0.427	90	85.347	0.81283	Pass
C202(C)	812564	C.ELE	NCC	KZH	2200	16	2.48	1	105	1.73	264	12.4	0.775	11.69	0.73	90	1.739	1.005	0.405	90	82.688	0.7875	Pass
C203(AB)	734370	C.ELE	NCC	KY	47	50	0.295	1	105	1.73	264	12.4	0.248	11.86	0.24	90	0.037	0.022	0.073	90	81.054	0.77194	Pass
C203(C)	722142	C.ELE	RUBYCON	YXF	47	50	0.25	1	105	1.7	264	12.4	0.248	11.69	0.23	90	0.038	0.022	0.090	90	77.637	0.7394	Pass
C050(AC)	765795	C.ELE	RUBYCON	CXW	100	450	0.74	1.5	105	1.7	264	390.4	0.8676	380.1	0.84	90	0.419	0.164	0.222	90	76.621	0.72972	Pass
C050(B)	753233	C.ELE	NCC	KXG	100	450	0.8	2.25	105	2	264	387.2	0.8604	377.5	0.84	90	0.428	0.095	0.119	90	76.484	0.72842	Pass
C107(AB)	734370	C.ELE	NCC	KY	47	50	0.295	1	105	1.73	264	21.12	0.4224	20.58	0.41	90	0.087	0.050	0.170	90	85.354	0.8129	Pass
C107(C)	722142	C.ELE	RUBYCON	YXF	47	50	0.25	1	105	1.7	264	21	0.42	20.4	0.41	90	0.101	0.059	0.237	90	81.556	0.77672	Pass

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Ambient temperature: 40℃

Switch,General,Bridge Diodes					Component Spec.						Worse Case Stress in Test Data											
Location	Part No.	Type	Maker P/N	Maker	Vr	If(av)	Vf	Rth(j-c/a)	Tj	K	V_r (Peak)			I(av)				Temp				
					V	A	V	°C/W	^{0}C		Input(V)	V	Ratio	Input(V)	I_{actual}(A)	I'_{spec}(A)	Ratio	Input(V)	Ta(^{0}C)	Tj(^{0}C)	Ratio	Judge
BD001(AC)	729075	BRG	GBU408	LITON	800	4	1	2.2	150	0.483	264	393.6	0.49	90	0.00782	1.9317	0.00	90	89.634	89.7	0.60	Pass
BD001(B)	717485	BRG	GBU4K	VISHY	800	4	1	4.2	150	0.479	264	396.8	0.50	90	0.0076	1.9155	0.00	90	90.142	90.2	0.60	Pass
D101(AC)	741719	General	S1M	VISHAY	1000	1	1.1	30	150	0.535	264	142.4	0.14	90	0.00346	0.5348	0.01	90	83.153	83.3	0.56	Pass
D101(B)	771586	DIO	S1M	TS	1000	1	1.1	30	175	0.604	264	145.6	0.15	90	0.00338	0.6043	0.01	90	84.362	84.5	0.48	Pass
D050(AC)	768731	DIO	MUR460_HF	LITE-ON SEMI	600	4	1.28	11	175	0.542	264	394	0.66	90	0.3616	2.1663	0.17	90	93.762	98.9	0.56	Pass
D050(B)	768096	DIO	MUR460-G	TS	600	4	1.28	28	150	0.447	264	390	0.65	90	0.3524	1.7868	0.20	90	94.163	106.8	0.71	Pass
D202(AC)	724526	FR	BAW56	PHILIPS	70	0.25	1	360	150	0.509	264	0.824	0.01	90	0.00072	0.1271	0.01	90	86.427	86.7	0.58	Pass
D202(B)	734579	FR	BAW56	DII	70	0.2	1.25	357	150	0.503	264	0.844	0.01	90	0.00068	0.1006	0.01	90	87.104	87.4	0.58	Pass
D052(A)	811490	DIO	1N4148W-G	TS	100	0.15	1.25	357	150	0.525	264	4.192	0.04	90	0.0002	0.0788	0.00	90	84.374	84.5	0.56	Pass
D052(B)	753893	FR	1N4148W-7-F	DII	100	0.15	1.25	312.5	150	0.516	264	5.832	0.06	90	0.00021	0.0774	0.00	90	85.475	85.6	0.57	Pass
D052(C)	810955	DIO	1N4148W-HF	LITE-ON SEMI	100	0.15	1.25	357	125	0.4	264	4.62	0.05	90	0.0002	0.0600	0.00	90	84.967	85.1	0.68	Pass
D100(A)	811490	DIO	1N4148W-G	TS	100	0.15	1.25	357	150	0.528	264	3.872	0.04	90	0.00044	0.0792	0.01	90	84.012	84.2	0.56	Pass
D100(B)	753893	FR	1N4148W-7-F	DII	100	0.15	1.25	312.5	150	0.518	264	5.04	0.05	90	0.00052	0.0777	0.01	90	85.214	85.4	0.57	Pass
D100(C)	810955	DIO	1N4148W-HF	LITE-ON SEMI	100	0.15	1.25	357	125	0.406	264	4.672	0.05	90	0.00049	0.0609	0.01	90	84.426	84.6	0.68	Pass
D102(A)	811490	DIO	1N4148W-G	TS	100	0.15	1.25	357	150	0.541	264	62.72	0.63	90	0.00024	0.0811	0.00	90	82.436	82.5	0.55	Pass
D102(B)	753893	FR	1N4148W-7-F	DII	100	0.15	1.25	312.5	150	0.532	264	63	0.63	90	0.00032	0.0799	0.00	90	83.441	83.6	0.56	Pass
D102(C)	810955	DIO	1N4148W-HF	LITE-ON SEMI	100	0.15	1.25	357	125	0.449	264	62.88	0.63	90	0.00027	0.0673	0.00	90	80.142	80.3	0.64	Pass
D200(A)	750846	FR	BAV21W-7-F	DII	200	0.2	1.25	500	150	0.516	264	111.2	0.56	90	0.00036	0.1033	0.00	90	85.465	85.7	0.57	Pass

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Ambient temperature: 40℃

Switch,General,Bridge Diodes					Component Spec.						Worse Case Stress in Test Data										
Location	**Part No.**	**Type**	**Maker P/N**	**Maker**	**Vr**	**If(av)**	**Vf**	**Rth(j-c/a)**	**Tj**	**K**	**V_r (Peak)**			**I(av)**				**Temp**				
					V	A	V	°C/W	^{0}C		Input(V)	V	Ratio	Input(V)	I_{actual}(A)	I'_{spec}(A)	Ratio	Input(V)	Ta(^{0}C)	Tj(^{0}C)	Ratio	Judge
D200(B)	768645	FR	BAV21W	VISHAY	200	0.25	1.25	375	150	0.51	264	111.2	0.56	90	0.00042	0.1276	0.00	90	86.201	86.4	0.58	Pass
D200(C)	811604	DIO	BAV21W-G	TS	250	0.2	1.25	357	150	0.514	264	108	0.43	90	0.00045	0.1028	0.00	90	85.747	85.9	0.57	Pass
D051(AC)	763775	General	1N4007-HF	LITON	1000	1	1	26	125	0.305	264	464.8	0.46	90	0.01142	0.3048	0.04	90	94.521	94.8	0.76	Pass
D051(B)	793152	DIO	IN4007	TS	1000	1	1	6	150	0.433	264	465.6	0.47	90	0.01123	0.4325	0.03	90	95.935	96.0	0.64	Pass

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Ambient temperature: 40℃

IC				Component Spec.					Worse Case Stress in Test Data										
Location	**Part No.**	**Make PN**	**Maker**	**Pin no.**	**Vcc**	**Ic**	**Rth(j-c/a)**	**Tj**	**Vcc**			**Ii(rms)**			**Temp**				
					V	A	^{0}C/W	^{0}C	Input(V)	Vpeak(V)	Ratio	Input(V)	A	Ratio	Input(V)	Ta(^{0}C)	Tj(^{0}C)	Ratio	Judge
IC200	796689	LTA1205N	NXP	6	38	0.0004	152	150	264	21	0.552632	90	0.000058	0.15	90	85.923	86.1	0.6	Pass
IC100	795877	LTA1201R	NXP	16	38	0.01	36	155	264	21.12	0.555789	90	0.00046	0.05	90	84.934	85.3	0.6	Pass
IC201	758079	AP4310	BCD	8	36	0.0003	180	105	264	12.32	0.342222	90	0.000037	0.12	90	86.762	86.8	0.8	Pass

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Ambient temperature: 40℃

MOS-Power					Component Spec.							Worse Case Stress in Test Data														
Location	**Part No.**	**Type**	**Make PN**	**Maker**	**P_d**	**Vds**	**Id**	**Vgs**	**Rds**	**Rth(j-c/a)**	**Tj**	**V_{ds}**			**Vgs**		**I_z(rms)**			**Pd**		**Temp**				
					W	V	A	V	ohm	^{0}C/W	^{0}C	Input(V)	V	Ratio	V	Ratio	Input(V)	A	Ratio	W	Ratio	Input	Tc(^{0}C)	Tj(^{0}C)	Ratio	Judge
Q050(A)	786671	M	TK10A60DR	TOSHIBA	45	600	10	30	0.62	2.78	150	264	542.4	0.90	9.76	0.33	90	0.7589	0.08	0.35708	0.01	90	88.414	89.4	0.6	Pass
Q050(B)	787181	M	AOTF10N60L	ALPHA & OMEGA	50	600	10	30	0.75	2.5	150	264	547.2	0.91	9.92	0.33	90	0.7966	0.08	0.47593	0.01	90	86.264	87.5	0.6	Pass
Q050(C)	732612	M	STP10NK60ZFP	STM	35	600	10	30	0.65	3.6	150	264	556.8	0.93	9.6	0.32	90	0.8014	0.08	0.41746	0.01	90	88.395	89.9	0.6	Pass
Q051(A)	786672	M	TK12A50DR	TOSHB	45	500	12	30	0.45	2.78	150	264	450	0.90	9.28	0.31	90	0.7942	0.07	0.28384	0.01	90	88.748	89.5	0.6	Pass
Q051(B)	786581	M	AOTF12N50L	ALPHA & OMEGA	50	500	12	30	0.52	2.5	150	264	446	0.89	9.52	0.32	90	0.7805	0.07	0.31677	0.01	90	86.523	87.3	0.6	Pass
Q051(C)	786622	M	FDPF12N50NZ	FAIRCHILD	42	500	11.5	25	0.52	3	150	264	448	0.90	9.6	0.38	90	0.7748	0.07	0.31216	0.01	90	86.99	87.9	0.6	Pass
Q201(AC)	796110	M	TK22E10N1	TOSHIBA	72	105	52	20	0.0138	1.72	150	264	82.8	0.79	9.92	0.50	90	7.97	0.15	0.87659	0.01	90	86.341	87.8	0.6	Pass
Q201(B)	786331	M	PSMN013-100PS	PHILIPS	170	100	67	20	0.0139	0.9	175	264	83.6	0.84	9.84	0.49	90	7.945	0.12	0.87741	0.01	90	86.35	87.1	0.5	Pass

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Ambient temperature: 40℃

Component description				Component specifications														Stress
Ref. Desig.	Part No.	Maker P/N	Maker	In,Vz	In, If	In, Pd	Out, Vceo	Out, Ic	Out, Pd	Tc/Tj	Input(V)	In, Vz	Out, Vceo	Input(V)	Out, Ic	In,If	Tc/Tj	**Judge**
IC300(AC)	798049	798049	LITE-ON	6	0.06	0.25	70	0.05	0.15	125	264	1.152	4.28	90	0.00042	0.00065	79.6	Pass
IC300(B)	793918	TCLT1017	VISHAY	6	0.06	0.25	70	0.05	0.15	125	264	1.136	4.24	90	0.00046	0.00068	81.037	Pass

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Ambient temperature: 40℃

					Component Spec.		Worse case Stress in Test Data						
Location	**Part No.**	**Type**	**Maker P/N**	**Maker**	**I**	**T**	**I(rms)**			**Temp**			
					A	℃	Input(V)	Apply	Ratio	Input(V)	Apply(℃)	Ratio	Judge
RT100	790956	R.TH	NCP18WF104F12RB	MURATA	0.0001	125	90	1.814E-05	0.18	90	81.631	0.65	Pass

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Ambient temperature: 40℃

Choke			Component Spec.	Worse Case Stress in Test Data		
Location	**Part No.**	**Type**	**T(core)**	**Temp**		
			℃	Input(V)	Apply(℃)	Judge
L001	766155	C	130	90	82.124	Pass
L002	821794	C	130	90	76.894	Pass
L201	723233	C	130	90	78.855	Pass
T050	821291	X	130	90	88.396	Pass
T051	789456	X	130	90	86.643	Pass
L050	789473	C	130	90	88.412	Pass

SUMMARY TEST REPORT

ELECTROLYTICAL CAPACITOR LIFE TEST REPORT	Operator: Joe Zou	Test Date: 2016/1/7
Quantity: 6pcs	Ser. No.: #1,#2,#3,#4,#5,#6	

1. Conditions:

Input: 115Vac/60Hz
Output: 12Vdc/5.83A (100% load)
Ambient: 25℃

2. Equipment:

1) .DC electronic load :Chroma 6334
2).Oscilloscope: Tektronix DPO7104
3).AC Source: PACIFIC 120-ASX
4) Multimeter: FLUKE 189
5)Open chamber: OTC-2D
6)Thermal recorder: Agilent 34970A

3. Criteria:

The electrolytical capacitor life is greater than 12000 hours.

4. Result:

The test result meets customer spec. and refer to test data as below:

Conclusion: ☑ OK ☐ NG

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Equation:

$$L = Lb \cdot 2^{\left(\frac{Tmax - Ta}{10}\right)} \cdot 2^{\left(C - \frac{\Delta Tj}{A}\right)}$$

α The ratio of internal temperature rise to surface temperature rise

Diameter	5 to 8	10, 12.5	16, 18	20, 22	25	30	35
α	1.0	1.1	1.2	1.3	1.4	1.5	1.6

A: Ripple acceleration coefficient

$$A = 10 - (0.004 \cdot Ta - 0.17) \cdot \Delta Tj$$

Note: When Ta is lower than 65 °C, ripple acceleration coefficient is calculated as Ta = 65 °C

Internal temperature rise wh

$$\Delta Tj = \Delta Tj_0 \times \left(\frac{I/F}{Io}\right)^2$$

NOTE: For ripple current coefficient, if TA <65, then TA = 65 (per Rubycon specification)

RUBYCON ALUMINUM ELECTROLYTIC LIFE ESTIMATION CALCULATION (STANDARD SERIES)

Ref Designator	Load Condition	Part number	Voltage (V)	Series	uF	size D*L (mm)	Base lifetime of capacitor, (**Lo**)	Maximum rated category temperature of capacitor,	Actual Ambient temperature of Capacitor, deg C,	Actual Surface temperature of Capacitor, deg C,	Rated Ripple Current, (**Io**)	Freq. Coeff (**F**),	Applied Ripple Current, (**I**)	Ripple Coefficient (**A**)	**ΔTj**	**ΔTj o**	**α**	**C**	Estimated Lifetime, hrs	Estimated Lifetime, yrs	Judge (PASS or FAIL)
Equation																					
C201(AB)	12Vdc/5.83A (100% load)	812529	16	ZLH	2200	12.5*20	10000	105	68.27	70.62	2.48	1	1.78	9.7336	2.584	5	1.1	0.5710	131400.00	15	Pass
C202(AB)	12Vdc/5.83A (100% load)	812529	16	ZLH	2200	12.5*20	10000	105	66.18	68.41	2.48	1	1.74	9.7682	2.447	5	1.1	0.5710	131400.00	15	Pass
C203(C)	12Vdc/5.83A (100% load)	722142	50	YXF	47	6.3*11	5000	105	61.93	62.02	0.25	1	0.0334	9.9920	0.089	5	1.0	0.5710	131400.00	15	Pass
C050(AC)	12Vdc/5.83A (100% load)	765795	450	CXW	100	18*30	5000	105	61.32	61.80	0.74	1.5	0.3769	9.9481	0.576	5	1.2	0.5710	131400.00	15	Pass
C107(C)	12Vdc/5.83A (100% load)	722142	50	YXF	47	6.3*11	5000	105	64.36	65.20	0.25	1	0.1025	9.9244	0.841	5	1.0	0.5710	117172.28	13	Pass

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Equation:

$$Lx = Lo * 2^{\left(\frac{To-Tx}{10}\right)} * 2^{\left(\frac{\Delta To-\Delta Tx}{5}\right)}$$

KC Coefficient

Diameter(mm	5 ~ 8	10	12.5	16	18	22	25	30	35	40
α	1.1	1.15	1.2	1.25	1.3	1.35	1.4	1.5	1.65	1.75

	Series	
Delta To:	LXV,LXY,LXZ,LBG	3
	,KZE,KZH,KZM,PAG,SN	5
	GXE,GL & other 125C	5

NIPPON CHEMI-CON ALUMINUM ELECTROLYTIC LIFE ESTIMATION CALCULATIONS (<=100V)

Ref Designator	Load Condition	Part number	Rated Voltage	Series	uF	size D*L (mm)	Base lifetime of capacitor, Lo	Maximum rated category temperature of capacitor, deg C, (To)	Actual Ambient temperature of Capacitor, deg C, (Tx)	Actual Surface temperature of Capacitor, deg C, (Ts)	Delta To	α	Rated Ripple Current, (A)	Applied Ripple Current, (A)	Freq. Coeff.	Equivalent Applied Ripple Current (A)	Delta Tx	Estimated Lifetime, hrs	Estimated Lifetime, yrs	Judge (PASS or FAIL)
Equation																				
C201(C)	12Vdc/5.83A (100% load)	812564	16	KZH	2200	12.5*20	6000	105	67.71	69.796	5	1.2	2.48	1.753	1	1.753	2.498219	112509.55	13	Pass
C202(C)	12Vdc/5.83A (100% load)	812564	16	KZH	2200	12.5*20	6000	105	65.37	67.258	5	1.2	2.48	1.67	1	1.67	2.267251	131400.00	15	Pass
C203(AB)	12Vdc/5.83A (100% load)	734370	50	KY	47	6.3*11	5000	105	64.19	64.249	5	1.1	0.295	0.03471	1	0.03471	0.069221	131400.00	15	Pass
C107(AB)	12Vdc/5.83A (100% load)	734370	50	KY	47	6.3*11	5000	105	67.78	68.177	5	1.1	0.295	0.08678	1	0.08678	0.432678	124243.52	14	Pass

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$$Lx = Lo \times \alpha \times 2^{(To - Tx)/10} \times 2^{(\Delta To - \Delta Tx)/5}$$

Where:
- Lx = Lifetime (hours) of the capacitor to be estimated
- Lo = Base (Assured) lifetime (hours) of the capacitor
- To = Maximum rated operating temperature (°C)
- Tx = Actual ambient temperature (°C) of the capacitor within device (This is not the environment temperature of the device, but the environment temperature of the capacitor that has been placed within the device.)
- ΔTo = Rise (°C) in core temperature of the capacitor due to rated (permissible) maximum ripple current.
- ΔTx = Actual rise (°C) in the core temperature of the capacitor due to actual ripple current at device operating conditions. To calculate the ΔTx from the surface temperature of the capacitors, refer to the appendix 1. Also, to simply estimate the ΔTx from the actual rms ripple current, use the following equation: **ΔTx = ΔTo** x [**(actual rms ripple) / (rated rms ripple)]^2** The actual and rated maximum rms ripple current shall be equaled in frequency by using frequency multipliers prescribed for each product series in the catalog.
- α = Please see Attachment 5 **Coefficient** This factor applicable for **KMQ(lead type) ,KMG,CLA,KXJ,KXG,KMX,PAG series** only. *detail shows table on next page

Radial Type: KHE,KMQ,KMG,CLA,KZM,KZH,KZE,KY,LXZ,LXY,LXV,KXJ,KXG,SMH,KMH,PAG,KLJ,KLG,FL,LBG,CST,H
KZN, LE, KYA, KYB-series
Snap-in Type: SMQ,SMM,SMH,KMH,SLM,KLM,LXM,LXG,CHA,LXH-series

NIPPON CHEMI-CON ALUMINUM ELECTROLYTIC LIFE ESTIMATION CALCULATIONS (>160V)

Ref Designator	Load Condition	Part number	Rated Voltage, Vo	Series	uF	size D*L (mm)	Base lifetime of capacitor, Lo	Maximum rated category temperature of capacitor, deg C, (To)	Actual Ambient temperature of Capacitor, deg C, (Tx)	Actual Surface temperature of Capacitor, deg C, (Ts)	Delta To	Kc	α	Rated Ripple Current, (A)	Applied Ripple Current, (A)	Freq. Coeff.	Equivalent Applied Ripple Current (A)	Delta Tx	Estimated Lifetime, hrs	Estimated Lifetime, yrs	Judge (PASS or FAIL)
Equation (160V or higher, deltaTx < 20 or Tx>20) - NOTE: If Vx <80% of Vo then Vx=80% of Vo																					
C050(B)	12Vdc/5.83A (100% load)	753233	450	KXG	100	18*35	10000	105	59.055517	59.155	3	1.3	1.2	0.8	0.37373	2.25	0.1661022	0.129328	131400	15.00	Pass

SUMMARY TEST REPORT

ELECTROLYTICAL CAPACITOR LIFE TEST REPORT	Operator: Joe Zou	Test Date: 2016/1/7
Quantity: 6pcs	Ser. No.: #1,#2,#3,#4,#5,#6	

1. Conditions:

Input: 230Vac/50Hz
Output: 12Vdc/5.83A (100% load)
Ambient: 25℃

2. Equipment:

1) .DC electronic load :Chroma 6334
2).Oscilloscope: Tektronix DPO7104
3).AC Source: PACIFIC 120-ASX
4) Multimeter: FLUKE 189
5)Open chamber: OTC-2D
6)Thermal recorder: Agilent 34970A

3. Criteria:

The electrolytical capacitor life is greater than 12000 hours.

4. Result:

The test result meets customer spec. and refer to test data as below:

Conclusion: ☑ OK ☐ NG

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Equation:

$$L = Lb \cdot 2^{\left(\frac{Tmax - Ta}{10}\right)} \cdot 2^{\left(C - \frac{\Delta Tj}{A}\right)}$$

α The ratio of internal temperature rise to surface temperature rise

Diameter	5 to 8	10, 12.5	16, 18	20, 22	25	30	35
α	1.0	1.1	1.2	1.3	1.4	1.5	1.6

A: Ripple acceleration coefficient

$$A = 10 - (0.004 \cdot Ta - 0.17) \cdot \Delta Tj$$

Note: When Ta is lower than 65 °C, ripple acceleration coefficient is calculated as Ta = 65 °C

Internal temperature rise wh

$$\Delta Tj = \Delta Tj_0 \times \left(\frac{I/F}{Io}\right)^2$$

NOTE: For ripple current coefficient, if TA <65, then TA = 65 (per Rubycon specification)

RUBYCON ALUMINUM ELECTROLYTIC LIFE ESTIMATION CALCULATION (STANDARD SERIES)

Ref Designator	Load Condition	Part number	Voltage (V)	Series	uF	size D*L (mm)	Base lifetime of capacitor, (**Lo**)	Maximum rated category temperature of capacitor,	Actual Ambient temperature of Capacitor, deg C,	Actual Surface temperature of Capacitor, deg C,	Rated Ripple Current, (**Io**)	Freq. Coeff (**F**),	Applied Ripple Current, (**I**)	Ripple Coefficient (**A**)	**ΔTj**	**ΔTj o**	**α**	**C**	Estimated Lifetime, hrs	Estimated Lifetime, yrs	Judge (PASS or FAIL)
Equation																					
C201(AB)	12Vdc/5.83A (100% load)	812529	16	ZLH	2200	12.5*20	10000	105	68.56	70.41	2.48	1	1.58	9.7884	2.029	5	1.1	0.5710	131400.00	15	Pass
C202(AB)	12Vdc/5.83A (100% load)	812529	16	ZLH	2200	12.5*20	10000	105	66.43	68.20	2.48	1	1.55	9.8138	1.946	5	1.1	0.5710	131400.00	15	Pass
C203(C)	12Vdc/5.83A (100% load)	722142	50	YXF	47	6.3*11	5000	105	60.89	60.95	0.25	1	0.0274	9.9946	0.060	5	1.0	0.5710	131400.00	15	Pass
C050(AC)	12Vdc/5.83A (100% load)	765795	450	CXW	100	18*30	5000	105	59.86	60.08	0.74	1.5	0.2537	9.9765	0.261	5	1.2	0.5710	131400.00	15	Pass
C107(C)	12Vdc/5.83A (100% load)	722142	50	YXF	47	6.3*11	5000	105	62.88	63.72	0.25	1	0.1021	9.9249	0.834	5	1.0	0.5710	129858.57	15	Pass

LITEON

Equation:

$$Lx = Lo * 2^{\left(\frac{To-Tx}{10}\right)} * 2^{\left(\frac{\Delta To-\Delta Tx}{5}\right)}$$

KC Coefficient

Diameter(mm	5 ~ 8	10	12.5	16	18	22	25	30	35	40
α	1.1	1.15	1.2	1.25	1.3	1.35	1.4	1.5	1.65	1.75

	Series	
Delta To:	LXV,LXY,LXZ,LBG	3
	,KZE,KZH,KZM,PAG,SN	5
	GXE,GL & other 125C	5

NIPPON CHEMI-CON ALUMINUM ELECTROLYTIC LIFE ESTIMATION CALCULATIONS (<=100V)

Ref Designator	Load Condition	Part number	Rated Voltage	Series	uF	size D*L (mm)	Base lifetime of capacitor, Lo	Maximum rated category temperature of capacitor, deg C, (To)	Actual Ambient temperature of Capacitor, deg C, (Tx)	Actual Surface temperature of Capacitor, deg C, (Ts)	Delta To	α	Rated Ripple Current, (A)	Applied Ripple Current, (A)	Freq. Coeff.	Equivalent Applied Ripple Current (A)	Delta Tx	Estimated Lifetime, hrs	Estimated Lifetime, yrs	Judge (PASS or FAIL)
Equation																				
C201(C)	12Vdc/5.83A (100% load)	812564	16	KZH	2200	12.5*20	6000	105	66.85	68.469	5	1.2	2.48	1.545	1	1.545	1.940545	129039.20	15	Pass
C202(C)	12Vdc/5.83A (100% load)	812564	16	KZH	2200	12.5*20	6000	105	64.51	65.948	5	1.2	2.48	1.457	1	1.457	1.725781	131400.00	15	Pass
C203(AB)	12Vdc/5.83A (100% load)	734370	50	KY	47	6.3*11	5000	105	64.13	64.172	5	1.1	0.295	0.02865	1	0.02865	0.04716	131400.00	15	Pass
C107(AB)	12Vdc/5.83A (100% load)	734370	50	KY	47	6.3*11	5000	105	68.14	68.524	5	1.1	0.295	0.08537	1	0.08537	0.418732	121418.82	14	Pass

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$$Lx = Lo \times \alpha \times 2^{(To - Tx)/10} \times 2^{(\Delta To - \Delta Tx)/5}$$

Where:
- Lx = Lifetime (hours) of the capacitor to be estimated
- Lo = Base (Assured) lifetime (hours) of the capacitor
- To = Maximum rated operating temperature (°C)
- Tx = Actual ambient temperature (°C) of the capacitor within device (This is not the environment temperature of the device, but the environment temperature of the capacitor that has been placed within the device.)
- ΔTo = Rise (°C) in core temperature of the capacitor due to rated (permissible) maximum ripple current.
- ΔTx = Actual rise (°C) in the core temperature of the capacitor due to actual ripple current at device operating conditions. To calculate the ΔTx from the surface temperature of the capacitors, refer to the appendix 1. Also, to simply estimate the ΔTx from the actual rms ripple current, use the following equation: **ΔTx = ΔTo** x [**(actual rms ripple) / (rated rms ripple)]^2** The actual and rated maximum rms ripple current shall be equaled in frequency by using frequency multipliers prescribed for each product series in the catalog.
- α = Please see Attachment 5 **Coefficient** This factor applicable for **KMQ(lead type) ,KMG,CLA,KXJ,KXG,KMX,PAG series** only. *detail shows table on next page

Radial Type: KHE,KMQ,KMG,CLA,KZM,KZH,KZE,KY,LXZ,LXY,LXV,KXJ,KXG,SMH,KMH,PAG,KLJ,KLG,FL,LBG,CST,H
KZN, LE, KYA, KYB-series
Snap-in Type: SMQ,SMM,SMH,KMH,SLM,KLM,LXM,LXG,CHA,LXH-series

NIPPON CHEMI-CON ALUMINUM ELECTROLYTIC LIFE ESTIMATION CALCULATIONS (>160V)

Ref Designator	Load Condition	Part number	Rated Voltage, Vo	Series	uF	size D*L (mm)	Base lifetime of capacitor, Lo	Maximum rated category temperature of capacitor, deg C, (To)	Actual Ambient temperature of Capacitor, deg C, (Tx)	Actual Surface temperature of Capacitor, deg C, (Ts)	Delta To	Kc	α	Rated Ripple Current, (A)	Applied Ripple Current, (A)	Freq. Coeff.	Equivalent Applied Ripple Current (A)	Delta Tx	Estimated Lifetime, hrs	Estimated Lifetime, yrs	Judge (PASS or FAIL)
Equation (160V or higher, deltaTx < 20 or Tx>20) - NOTE: If Vx <80% of Vo then Vx=80% of Vo																					
C050(B)	12Vdc/5.83A (100% load)	753233	450	KXG	100	18*35	10000	105	58.259138	58.311	3	1.3	1.2	0.8	0.26984	2.25	0.1199289	0.06742	131400	15.00	Pass

SUMMARY TEST REPORT

CMTBF test report A	Test Date: 2016/1/7	Engineer: Joe Zou
Quantity: 2pcs	Ser. No.: 1#,2#	

1. Conditions:

Input: 115Vac/60Hz

Output: 12Vdc/5.83A (100% Load)

Ambient: 25℃

2. Equipment:

1) .DC electronic load :Chroma 6334

2).Oscilloscope: Tektronix DPO7104

3).AC Source: PACIFIC 120-ASX

4) Multimeter: FLUKE 189

5)Open chamber: OTC-2D

6)Thermal recorder: Agilent 34970A

3. Criteria:

The power supply reliability, when calculated by SR332 exceed 50000 hours with all output at 100% of maximum load and at ambient temperature of 12Vdc/5.83A (100% Load)

4. Result:

The test result meets customer spec., so that test result pass.

5. Record:

Conclusion: ☑ Pass ☐ Fail

Reference Document : Telcordia Reliability Prediction
Technical reference : SR-332 Issue1, May 2001
Test condition Input voltage : 115Vac/60Hz
Load condition : 12Vdc/5.83A (100% Load)
Temperature : 25℃

Item 1 : Resistors

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

= 34.626 Failures/10^9 hours

Item 2 : Capacitors (except aluminum electrolytic)

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

= 9.595 Failures/10^9 hours

Item 3 : Aluminum electrolytic capacitors

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

= 354.998 Failures/10^9 hours

Item 4 : Diodes

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

= 72.260 Failures/10^9 hours

Item 5 : Microelectronic devices (ic)

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

= 315.781 Failures/10^9 hours

Item6 : Mosfet

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

$$= \boxed{38.161} \text{ Failures/}10^9 \text{ hours}$$

Item 9 : Opto-electronic devices

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

$$= \boxed{56.532} \text{ Failures/}10^9 \text{ hours}$$

Item 10 : Inductive devices (inductive)

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

$$= \boxed{102.344} \text{ Failures/}10^9 \text{ hours}$$

Total	**984.298**	Failures/10^9 hours
MTBF	**1015952.74**	**hours**

Remark :

$\lambda_{SSi} = \lambda_{Gi}\pi_{Qi}\pi_{Si}\pi_{Ti}$

λ_{SSi} unit steady - state failure rate

λ_{Gi} : base failure rate for device

π_{Qi} : quality factor

π_{Si} : electrical stress factor

π_{Ti} : thermal acceleration factor

$$\lambda_{SS} = \pi_E \sum_{i=1} N_i \lambda_{SSi}$$

λ_{SS} : failure rate for unit

π_E : unit environment factor

N_i : quantity or device type

n : number of different device types in the unit

LITEON

Resistors

Ambient temperature 25℃

Desc.	Part No.	Type	Maker	Value(Ω)	P (rated)	V (operate)	λ_G	π_Q	π_S	T_C	π_T	π_E	λ_{SSi}
R060(AC)	904703	R.MO	FUTABA	0.1	2	0.0581	3	1	0.74836	71.05	1.18205	1	2.654
R061(AC)	904703	R.MO	FUTABA	0.1	2	0.0769	3	1	0.75408	72.941	1.19299	1	2.699
R059	713311	R.CF	KOA	10	0.25	0.047	0.5	1	0.52265	66.146	1.53512	1	0.401
R101	713311	R.CF	KOA	10	0.25	0.0429	0.5	1	0.52255	66.129	1.53472	1	0.401
R057	713678	R.CF	KOA	47	0.25	0.2506	0.5	1	0.52569	66.47	1.54265	1	0.405
R100	713678	R.CF	KOA	47	0.25	0.1906	0.5	1	0.52415	65.879	1.52892	1	0.401
R200	713678	R.CF	KOA	47	0.25	0.3513	0.5	1	0.52922	70.42	1.63634	1	0.433
R201	713678	R.CF	KOA	47	0.25	0.3515	0.5	1	0.52923	70.33	1.63417	1	0.432
R056	725094	R.CF	KOA	5600000	0.25	51.332	3	1	0.52332	66.704	1.54811	1	2.430
R103	758301	R.MF	KOA	12000	0.125	0.011	0.5	1	0.52205	66.498	1.54330	1	0.403
R113	716172	R.MF	KOA	12100	0.25	0.2438	0.5	1	0.52206	64.28	1.49215	1	0.389
R102	754881	R.MF	KOA	22100	0.125	0.0465	0.5	1	0.52205	65.658	1.52381	1	0.398
R112	736521	R.MF	KOA	33000	0.125	0.0154	0.5	1	0.52205	65.974	1.53112	1	0.400
R114	736521	R.MF	KOA	33000	0.125	0.0761	0.5	1	0.52205	64.867	1.50559	1	0.393
R204	714238	R.CF	KOA	15	0.125	0.2889	0.5	1	0.55315	68.132	1.58166	1	0.437
R058	760634	R.MF	TA-I	4700	0.25	0.6784	0.5	1	0.52231	64.13	1.48873	1	0.389
R004(AC)	909740	R.MF	YAGEO	51000	0.125	1.6166	0.5	1	0.52232	64.494	1.49704	1	0.391
R003	762739	R.MF	TA-I	910000	0.25	30.904	0.5	1	0.52490	64.057	1.48707	1	0.390
R106	781128	R.MF	TA-I	47	0.125	0.1073	0.5	1	0.52338	66.355	1.53997	1	0.403
R104	718902	R.MF	KOA	1000	0.125	0.0187	0.5	1	0.52205	66.35	1.53986	1	0.402
R105	718902	R.MF	KOA	1000	0.125	0.0147	0.5	1	0.52205	66.377	1.54049	1	0.402
R205	718902	R.MF	KOA	1000	0.125	0.0531	0.5	1	0.52206	68.373	1.58737	1	0.414
R063	750720	R.MF	KOA	118000	0.125	2.5018	0.5	1	0.52233	65.953	1.53064	1	0.400
R109	720388	R.MF	KOA	78700	0.125	19.242	0.5	1	0.54822	65.291	1.51534	1	0.415
R001(AC)	794143	R.HV	YAGEO	1300000	0.25	59.32	3	1	0.52945	63.129	1.46602	1	2.329
R002(AC)	794143	R.HV	YAGEO	1300000	0.25	59.31	3	1	0.52944	63.095	1.46525	1	2.327

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Resistors

Ambient temperature 25℃

Desc.	Part No.	Type	Maker	Value(Ω)	P (rated)	V (operate)	λ_G	π_Q	π_S	T_C	π_T	π_E	λ_{SSi}
R054(AC)	914140	R.MF	YAGEO	6200000	0.25	54.619	3	1	0.52335	67.425	1.56500	1	2.457
R055(AC)	914140	R.MF	YAGEO	6200000	0.25	54.556	3	1	0.52335	67.556	1.56808	1	2.462
R050	762577	R.MF	TA-I	91000	0.25	37.989	0.5	1	0.56692	68.603	1.59283	1	0.452
R051	762577	R.MF	TA-I	91000	0.25	37.975	0.5	1	0.56689	68.536	1.59124	1	0.451
R052	762577	R.MF	TA-I	91000	0.25	38.131	0.5	1	0.56727	68.677	1.59459	1	0.452
R053	762577	R.MF	TA-I	91000	0.25	38.107	0.5	1	0.56721	68.305	1.58576	1	0.450
R108	762577	R.MF	TA-I	91000	0.25	17.037	0.5	1	0.53078	68.626	1.59337	1	0.423
R209	739889	R.MF	KOA	1470	0.1	0.0361	0.5	1	0.52205	65.966	1.53094	1	0.400
R208	727787	R.MF	TA-I	100000	0.1	2.4628	0.5	1	0.52246	65.826	1.52770	1	0.399
R216	713455	R.CF	KOA	470	0.25	0.3406	0.5	1	0.52272	66.038	1.53261	1	0.401
R217	713568	R.CF	KOA	33	0.125	0.0074	0.5	1	0.52205	65.764	1.52626	1	0.398
R215	719985	R.CF	KOA	51	0.125	0.0355	0.5	1	0.52218	65.314	1.51587	1	0.396
R202	727963	R.MF	TA-I	16200	0.1	10.378	0.5	1	0.56917	64.746	1.50281	1	0.428
R210	728330	R.MF	TA-I	76800	0.1	9.587	0.5	1	0.53023	64.785	1.50371	1	0.399
R211	730152	R.MF	KOA	19100	0.1	2.3833	0.5	1	0.52407	65.191	1.51303	1	0.396
R214	751342	R.MF	KOA	2400	0.1	0.0067	0.5	1	0.52205	64.674	1.50116	1	0.392
R218	712818	R.CF	KOA	10000	0.125	1.0252	0.5	1	0.52262	65.641	1.52341	1	0.398
R207	727661	R.MF	TAI	6190	0.1	9.675	0.5	1	0.63546	66.168	1.53563	1	0.488
R213	727846	R.MF	TA-I	5110	0.1	0.0071	0.5	1	0.52205	64.993	1.50848	1	0.394
R203	713309	R.CF	KOA	1000000	0.25	0.0098	0.5	1	0.52205	65.215	1.51359	1	0.395
R062	713312	R.CF	KOA	3.6	0.25	0.0778	0.5	1	0.52663	67.143	1.55838	1	0.410
R250(AC)	811390	R.MF	RALEC	0.005	2	0.0309	0.5	1	0.59104	64.839	1.50494	1	0.445
R212	733173	R.MF	TA-I	604	0.1	0.0759	0.5	1	0.52211	66.301	1.53872	1	0.402

TOTAL λ_{SSi}	34.626

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Capacitors (Except Aluminum Electrolytic Capacitors)

Ambient temperature 25℃

Desc.	Part No.	Type	Maker	Value(u)	V (rated)	V (operate)	λ_G	π_Q	π_S	T_C	π_T	π_E	λ_{SSi}
C103(A)	910472	C.MON	WALSIN	0.00033	50	0.09913	1	1	0.05296	64.1	1.48805	1	0.079
C101	727981	C.MON	MURATA	0.00022	50	0.3214	1	1	0.05436	63.731	1.47965	1	0.080
C058	727795	C.MON	MURATA	0.01	50	2.488	1	1	0.07020	64.11	1.48827	1	0.104
C111	727795	C.MON	MURATA	0.01	50	1.588	1	1	0.06313	63.828	1.48186	1	0.094
C100	752529	C.MON	TDK	0.047	50	0.01132	1	1	0.05241	64.91	1.50657	1	0.079
C105	736282	C.MON	MURATA	0.1	50	20.69	1	1	0.60135	64.178	1.48982	1	0.896
C106	736282	C.MON	MURATA	0.1	50	20.69	1	1	0.60135	64.045	1.48679	1	0.894
C109	736282	C.MON	MURATA	0.1	50	2.611	1	1	0.07123	64.553	1.49839	1	0.107
C215	736282	C.MON	MURATA	0.1	50	11.88	1	1	0.21264	64.427	1.49551	1	0.318
C212	732582	C.MON	MURATA	0.00068	50	11.33	1	1	0.19928	64.238	1.49119	1	0.297
C003(A)	910231	C.MON	HOLYSTONE	2.2	25	1.373	1	1	0.07237	64.659	1.50082	1	0.109
C002	786478	C.MON	TDK	1	50	1.372	1	1	0.06154	64.374	1.49430	1	0.092
C110	786478	C.MON	TDK	1	50	0.2407	1	1	0.05385	64.228	1.49096	1	0.080
C206	786478	C.MON	TDK	1	50	21.35	1	1	0.65005	68.086	1.58058	1	1.027
C211	786478	C.MON	TDK	1	50	0.03027	1	1	0.05253	64.096	1.48796	1	0.078
C104	762558	C.MON	MURATA	0.00022	200	40.63	1	1	0.17353	65.76	1.52617	1	0.265

LITEON

Capacitors (Except Aluminum Electrolytic Capacitors)

Ambient temperature 25℃

Desc.	Part No.	Type	Maker	Value(u)	V (rated)	V (operate)	λ_G	π_Q	π_S	T_C	π_T	π_E	λ_{SSi}
C112	740186	C.MON	TDK	0.47	50	3.742	1	1	0.08139	64.518	1.49759	1	0.122
C051(A)	816916	C.MEF	HUA JUNG	0.47	450	110.7	1	1	0.22344	68.891	1.59968	1	0.357
C052(A)	816916	C.MEF	HUA JUNG	0.47	450	110.6	1	1	0.22315	70.438	1.63678	1	0.365
C001(AC)	819384	C.MEX	CARLI	0.33	275	114.3	1	1	0.60790	54.556	1.28025	1	0.778
C300(AC)	798247	C.DIS	MURATA	0.0015	250	32.63	1	1	0.11305	64.971	1.50797	1	0.170
C054(AC)	917175	C.MON	WALSIN	0.0033	1000	256.3	1	1	0.23744	68.379	1.58751	1	0.377
C055(AC)	917175	C.MON	WALSIN	0.0033	1000	256.3	1	1	0.23744	72.3	1.68211	1	0.399
C102	752529	C.MON	TDK	0.047	50	0.04752	1	1	0.05263	65.008	1.50882	1	0.079
C056(AC)	916103	C.MON	MURATA	0.0047	630	77.32	1	1	0.10797	70.98	1.64990	1	0.178
C200(AC)	910578	C.MON	HOLYSTONE	0.001	200	26.01	1	1	0.11274	65.076	1.51039	1	0.170
C005	761387	C.MON	YAGEO	0.00047	1000	78.86	1	1	0.08335	64.752	1.50295	1	0.125
C006	761387	C.MON	YAGEO	0.00047	1000	78.85	1	1	0.08334	64.569	1.49876	1	0.125
C053(A)	910442	C.MON	WALSIN	0.0001	1000	156.5	1	1	0.13178	69.593	1.61645	1	0.213
C057(A)	910442	C.MON	WALSIN	0.0001	1000	286.7	1	1	0.28409	66.748	1.54914	1	0.440
C113	713682	C.MON	TDK	0.00047	50	3.734	1	1	0.08132	64.089	1.48780	1	0.121
C108	740186	C.MON	TDK	0.47	50	2.536	1	1	0.07060	63.77	1.48054	1	0.105

LITEON

Capacitors (Except Aluminum Electrolytic Capacitors)

Ambient temperature 25℃

Desc.	Part No.	Type	Maker	Value(u)	V (rated)	V (operate)	λ_G	π_Q	π_S	T_C	π_T	π_E	λ_{SSi}
C216	712827	C.MON	TDK	0.1	50	11.81	1	1	0.21089	63.621	1.47716	1	0.312
C205	780552	C.MON	HOLYSTONE	0.1	200	0.7124	1	1	0.05345	62.631	1.45480	1	0.078
C207	740061	C.MON	TDK	0.0001	50	2.906	1	1	0.07375	67.339	1.56298	1	0.115
C209	736282	C.MON	MURATA	0.1	50	0.04959	1	1	0.05265	64.186	1.49001	1	0.078
C213	736282	C.MON	MURATA	0.1	50	2.22	1	1	0.06801	63.98	1.48531	1	0.101
C214	736282	C.MON	MURATA	0.1	50	7.3	1	1	0.12386	64.351	1.49377	1	0.185

TOTAL λ_{SSi}	9.595

LITEON

Aluminum Electrolytic Capacitors

Ambient temperature 25℃

Desc.	Part No.	Type	Maker	Value (uF)	V (rated)	V (operate)	λ_G	π_Q	πs	T_C	πT	π_E	λSSi
C201(AB)	812529	C.ELE	RUBYCON	2200	16	11.9	15	1	1.79499	68.335	3.42361	1	92.180
C202(AB)	812529	C.ELE	RUBYCON	2200	16	11.9	15	1	1.79499	66.125	3.13335	1	84.365
C203(AB)	734370	C.ELE	NCC	47	50	11.9	25	1	0.53323	64.078	2.88350	1	38.439
C050(AC)	765795	C.ELE	RUBYCON	100	450	256.3	25	1	1.18168	60.281	2.46494	1	72.819
C107(AB)	734370	C.ELE	NCC	47	50	20.69	25	1	0.81312	67.456	3.30553	1	67.195

TOTAL λ_{SSi}	354.998

LITEON

Diodes

Ambient temperature 25℃

Desc.	Part No.	Type	Maker P/N	Maker	Vr (rated)	I (rated)	Vr (operate)	λ_G	π_Q	π_S	T_C	π_T	π_E	λ_{SSi}
BD001(AC)	729075	BRG	GBU408	LITON	800	4	114.5	6	1	0.89847	69.474	2.01728	1	10.875
D101(AC)	741719	DIO	S1M	VISHAY	1000	1	44.34	6	1	0.87223	67.223	1.92023	1	10.049
D050(AC)	768731	General	MUR460_HF	LITE-ON SEMI	600	4	186.9	6	1	0.94502	74.995	2.27046	1	12.874
D202(AC)	724526	FR	BAW56	PHILIPS	70	0.25	0.3332	3	1	0.86194	68.417	1.97127	1	5.097
D052(A)	811490	DIO	1N4148W-G	TS	100	0.15	0.5178	3	1	0.86205	67.817	1.94550	1	5.031
D100(A)	811490	DIO	1N4148W-G	TS	100	0.15	0.3963	3	1	0.86173	66.483	1.88908	1	4.884
D102(A)	811490	DIO	1N4148W-G	TS	100	0.15	17.56	3	1	0.90727	65.105	1.83208	1	4.987
D200(A)	750846	FR	BAV21W-7-F	DII	200	0.2	35.31	3	1	0.90752	70.246	2.05138	1	5.585
D051(AC)	763775	General	1N4007-HF	LITON	1000	1	144	6	1	0.89871	77.413	2.38832	1	12.878

TOTAL λ_{SSi}	72.260

LITEON

Microelectronic Devices

Ambient temperature 25℃

Desc.	Part No.	Maker P/N	Maker	λ_G	π_Q	T_C	π_T	π_E	λ_{SSi}
IC200	796689	LTA1205N	NXP	19	1	69.852	6.09328	1	115.772
IC100	795877	LTA1201R	NXP	19	1	66.683	5.10598	1	97.014
IC201	758079	AP4310	BCD	19	1	67.749	5.42080	1	102.995

TOTAL λ_{SSi}	315.781

LITEON

Mosfet

Ambient temperature 25℃

Desc.	Part No.	Type	Maker P/N	Maker	Rds(on)	P_D (rated)	P_D (Actual)	λ_G	π_Q	π_S	T_C	π_T	π_E	λ_{SSi}
Q050(A)	786671	M	TK10A60DR	TOSHIBA	0.62	45	1.220179	20	1	0.32145	70.226	2.05049	1	13.182
Q051(A)	786672	M	TK12A50DR	TOSHB	0.45	45	1.116518	20	1	0.31967	69.706	2.02748	1	12.963
Q201(AC)	796110	M	TK22E10N1	TOSHIBA	0.0138	72	0.890200	20	1	0.31027	67.605	1.93645	1	12.016

TOTAL λ_{SSi}	38.161

LITEON

OPTO-Electronic Devices

Ambient temperature 25℃

Desc.	Part No.	Maker P/N	Maker	λ_G	π_Q	T_C	π_T	π_E	λ_{SSi}
IC300(AC)	798049	798049.00000	LITE-ON	10	1	62.393	5.65323	1	56.532

TOTAL λ_{SSi}	56.532

LITEON

Inductive Devices

Ambient temperature 25℃

Desc.	Part No.	Type	λ_G	π_Q	T_C	π_T	π_E	λ_{SSi}
L001	766155	C	7	1	63.421	1.47262	1	10.308
L002	821794	C	7	1	57.842	1.34962	1	9.447
L201	723233	C	7	1	62.622	1.45460	1	10.182
T050	821291	X	19	1	71.089	1.65254	1	31.398
T051	789456	X	19	1	67.632	1.56986	1	29.827
L050	789473	C	7	1	68.789	1.59725	1	11.181

TOTAL λ_{SSi}	102.344

SUMMARY TEST REPORT

CMTBF test report A	Test Date: 2016/1/7	Engineer: Joe Zou
Quantity: 2pcs	Ser. No.: 1#,2#	

1. Conditions:

Input: 230V/50Hz

Output: 12Vdc/5.83A (100% Load)

Ambient: 25℃

2. Equipment:

1) .DC electronic load :Chroma 6334

2).Oscilloscope: Tektronix DPO7104

3).AC Source: PACIFIC 120-ASX

4) Multimeter: FLUKE 189

5)Open chamber: OTC-2D

6)Thermal recorder: Agilent 34970A

3. Criteria:

The power supply reliability, when calculated by SR332 exceed 50000 hours with all output at 100% of maximum load and at ambient temperature of 12Vdc/5.83A (100% Load)

4. Result:

The test result meets customer spec., so that test result pass.

5. Record:

Conclusion: ☑ Pass ☐ Fail

Reference Document : Telcordia Reliability Prediction
Technical reference : SR-332 Issue1, May 2001
Test condition Input voltage : 230V/50Hz
Load condition : 12Vdc/5.83A (100% Load)
Temperature : 25℃

Item 1 : Resistors

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

= 34.390 Failures/10^9 hours

Item 2 : Capacitors (except aluminum electrolytic)

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

= 22.120 Failures/10^9 hours

Item 3 : Aluminum electrolytic capacitors

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

= 413.400 Failures/10^9 hours

Item 4 : Diodes

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

= 70.212 Failures/10^9 hours

Item 5 : Microelectronic devices (ic)

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

= 313.785 Failures/10^9 hours

Item6 : Mosfet

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

= 37.734 Failures/10^9 hours

Item 9 : Opto-electronic devices

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

= 55.532 Failures/10^9 hours

Item 10 : Inductive devices (inductive)

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

= 99.128 Failures/10^9 hours

Total	**1046.302**	Failures/10^9 hours
MTBF	**955746.76**	**hours**

Remark :

$\lambda_{SSi} = \lambda_{Gi}\pi_{Qi}\pi_{Si}\pi_{Ti}$

λ_{SSi} unit steady - state failure rate

λ_{Gi} : base failure rate for device

π_{Qi} : quality factor

π_{Si} : electrical stress factor

π_{Ti} : thermal acceleration factor

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

λ_{SS} : failure rate for unit

π_E : unit environment factor

N_i : quantity or device type

n : number of different device types in the unit

LITEON

Resistors

Ambient temperature 25℃

Desc.	Part No.	Type	Maker	Value(Ω)	P (rated)	V (operate)	λ_G	π_Q	π_S	T_C	π_T	π_E	λ_{SSi}
R060(AC)	904703	R.MO	FUTABA	0.1	2	0.0191	3	1	0.74163	69.309	1.17195	1	2.607
R061(AC)	904703	R.MO	FUTABA	0.1	2	0.067	3	1	0.75086	71.905	1.18700	1	2.674
R059	713311	R.CF	KOA	10	0.25	0.0326	0.5	1	0.52233	65.558	1.52150	1	0.397
R101	713311	R.CF	KOA	10	0.25	0.0448	0.5	1	0.52259	65.104	1.51103	1	0.395
R057	713678	R.CF	KOA	47	0.25	0.2573	0.5	1	0.52588	65.339	1.51644	1	0.399
R100	713678	R.CF	KOA	47	0.25	0.2025	0.5	1	0.52442	65.103	1.51101	1	0.396
R200	713678	R.CF	KOA	47	0.25	0.4906	0.5	1	0.53613	71.869	1.67155	1	0.448
R201	713678	R.CF	KOA	47	0.25	0.4908	0.5	1	0.53615	71.955	1.67366	1	0.449
R056	725094	R.CF	KOA	5600000	0.25	75.42	3	1	0.52481	65.624	1.52302	1	2.398
R103	758301	R.MF	KOA	12000	0.125	0.0147	0.5	1	0.52205	65.349	1.51667	1	0.396
R113	716172	R.MF	KOA	12100	0.25	0.3104	0.5	1	0.52207	63.458	1.47346	1	0.385
R102	754881	R.MF	KOA	22100	0.125	0.0484	0.5	1	0.52205	65.042	1.50961	1	0.394
R112	736521	R.MF	KOA	33000	0.125	0.0158	0.5	1	0.52205	65.039	1.50954	1	0.394
R114	736521	R.MF	KOA	33000	0.125	0.0807	0.5	1	0.52205	64.105	1.48816	1	0.388
R204	714238	R.CF	KOA	15	0.125	0.398	0.5	1	0.58265	67.224	1.56028	1	0.455
R058	760634	R.MF	TA-I	4700	0.25	1.0179	0.5	1	0.52264	63.148	1.46645	1	0.383
R004(AC)	909740	R.MF	YAGEO	51000	0.125	3.3861	0.5	1	0.52327	63.415	1.47249	1	0.385
R003	762739	R.MF	TA-I	910000	0.25	63.29	0.5	1	0.53413	63.447	1.47321	1	0.393
R106	781128	R.MF	TA-I	47	0.125	0.1746	0.5	1	0.52558	65.421	1.51833	1	0.399
R104	718902	R.MF	KOA	1000	0.125	0.0217	0.5	1	0.52205	65.418	1.51827	1	0.396
R105	718902	R.MF	KOA	1000	0.125	0.0162	0.5	1	0.52205	65.396	1.51776	1	0.396
R205	718902	R.MF	KOA	1000	0.125	0.0606	0.5	1	0.52207	67.364	1.56356	1	0.408
R063	750720	R.MF	KOA	118000	0.125	2.5028	0.5	1	0.52233	65.112	1.51122	1	0.395
R109	720388	R.MF	KOA	78700	0.125	19.409	0.5	1	0.54869	64.332	1.49334	1	0.410
R001(AC)	794143	R.HV	YAGEO	1300000	0.25	119.76	3	1	0.55287	62.146	1.44393	1	2.395
R002(AC)	794143	R.HV	YAGEO	1300000	0.25	119.65	3	1	0.55281	62.355	1.44861	1	2.402

LITEON

Resistors

Ambient temperature 25℃

Desc.	Part No.	Type	Maker	Value(Ω)	P (rated)	V (operate)	λ_G	π_Q	π_S	T_C	π_T	π_E	λ_{SSi}
R054(AC)	914140	R.MF	YAGEO	6200000	0.25	80.92	3	1	0.52492	65.728	1.52543	1	2.402
R055(AC)	914140	R.MF	YAGEO	6200000	0.25	80.91	3	1	0.52492	65.894	1.52927	1	2.408
R050	762577	R.MF	TA-I	91000	0.25	37.023	0.5	1	0.56458	67.426	1.56502	1	0.442
R051	762577	R.MF	TA-I	91000	0.25	37.027	0.5	1	0.56459	67.338	1.56295	1	0.441
R052	762577	R.MF	TA-I	91000	0.25	37.191	0.5	1	0.56498	67.596	1.56902	1	0.443
R053	762577	R.MF	TA-I	91000	0.25	37.182	0.5	1	0.56496	67.721	1.57196	1	0.444
R108	762577	R.MF	TA-I	91000	0.25	19.695	0.5	1	0.53375	67.458	1.56577	1	0.418
R209	739889	R.MF	KOA	1470	0.1	0.0369	0.5	1	0.52205	65.142	1.51191	1	0.395
R208	727787	R.MF	TA-I	100000	0.1	2.4621	0.5	1	0.52246	65.207	1.51340	1	0.395
R216	713455	R.CF	KOA	470	0.25	0.3568	0.5	1	0.52278	65.448	1.51896	1	0.397
R217	713568	R.CF	KOA	33	0.125	0.0068	0.5	1	0.52205	64.662	1.50089	1	0.392
R215	719985	R.CF	KOA	51	0.125	0.0373	0.5	1	0.52219	64.524	1.49773	1	0.391
R202	727963	R.MF	TA-I	16200	0.1	10.323	0.5	1	0.56865	64.105	1.48816	1	0.423
R210	728330	R.MF	TA-I	76800	0.1	9.549	0.5	1	0.53017	64.036	1.48659	1	0.394
R211	730152	R.MF	KOA	19100	0.1	2.3739	0.5	1	0.52405	64.045	1.48679	1	0.390
R214	751342	R.MF	KOA	2400	0.1	0.0072	0.5	1	0.52205	64.118	1.48846	1	0.389
R218	712818	R.CF	KOA	10000	0.125	1.0147	0.5	1	0.52261	64.534	1.49796	1	0.391
R207	727661	R.MF	TAI	6190	0.1	9.621	0.5	1	0.63407	65.333	1.51631	1	0.481
R213	727846	R.MF	TA-I	5110	0.1	0.0073	0.5	1	0.52205	64.014	1.48609	1	0.388
R203	713309	R.CF	KOA	1000000	0.25	0.0156	0.5	1	0.52205	64.102	1.48809	1	0.388
R062	713312	R.CF	KOA	3.6	0.25	0.0668	0.5	1	0.52542	66.142	1.53502	1	0.403
R250(AC)	811390	R.MF	RALEC	0.005	2	0.0307	0.5	1	0.59009	64.633	1.50022	1	0.443
R212	733173	R.MF	TA-I	604	0.1	0.0753	0.5	1	0.52211	65.107	1.51110	1	0.394

TOTAL λ_{SSi}	34.390

LITEON

Capacitors (Except Aluminum Electrolytic Capacitors)

Ambient temperature 25℃

Desc.	Part No.	Type	Maker	Value(u)	V (rated)	V (operate)	λ_G	π_Q	π_S	T_C	π_T	π_E	λ_{SSi}
C103(A)	910472	C.MON	WALSIN	0.00033	50	0.08365	1	1	0.05286	63.234	1.46839	1	0.078
C101	727981	C.MON	MURATA	0.00022	50	0.3385	1	1	0.05447	63.042	1.46406	1	0.080
C058	727795	C.MON	MURATA	0.01	50	2.489	1	1	0.07021	63.446	1.47319	1	0.103
C111	727795	C.MON	MURATA	0.01	50	1.588	1	1	0.06313	63.304	1.46998	1	0.093
C100	752529	C.MON	TDK	0.047	50	0.01135	1	1	0.05241	64.121	1.48852	1	0.078
C105	736282	C.MON	MURATA	0.1	50	20.57	1	1	0.59289	63.102	1.46541	1	0.869
C106	736282	C.MON	MURATA	0.1	50	20.57	1	1	0.59289	63.211	1.46787	1	0.870
C109	736282	C.MON	MURATA	0.1	50	2.504	1	1	0.07033	63.472	1.47378	1	0.104
C215	736282	C.MON	MURATA	0.1	50	11.84	1	1	0.21164	63.424	1.47269	1	0.312
C212	732582	C.MON	MURATA	0.00068	50	11.31	1	1	0.19881	63.512	1.47468	1	0.293
C003(A)	910231	C.MON	HOLYSTONE	2.2	25	3.168	1	1	0.11054	63.759	1.48029	1	0.164
C002	786478	C.MON	TDK	1	50	3.166	1	1	0.07605	63.685	1.47861	1	0.112
C110	786478	C.MON	TDK	1	50	0.2404	1	1	0.05385	63.501	1.47444	1	0.079
C206	786478	C.MON	TDK	1	50	20.45	1	1	0.58456	67.549	1.56791	1	0.917
C211	786478	C.MON	TDK	1	50	0.03018	1	1	0.05253	63.085	1.46503	1	0.077
C104	762558	C.MON	MURATA	0.00022	200	48.48	1	1	0.21875	64.576	1.49892	1	0.328

LITEON

Capacitors (Except Aluminum Electrolytic Capacitors)

Ambient temperature 25℃

Desc.	Part No.	Type	Maker	Value(u)	V (rated)	V (operate)	λ_G	π_Q	π_S	T_C	π_T	π_E	λ_{SSi}
C112	740186	C.MON	TDK	0.47	50	3.667	1	1	0.08068	63.412	1.47242	1	0.119
C051(A)	816916	C.MEF	HUA JUNG	0.47	450	229.4	1	1	1.05939	65.331	1.51626	1	1.606
C052(A)	816916	C.MEF	HUA JUNG	0.47	450	229.5	1	1	1.06078	66.718	1.54844	1	1.643
C001(AC)	819384	C.MEX	CARLI	0.33	275	229.8	1	1	7.24459	53.019	1.24859	1	9.045
C300(AC)	798247	C.DIS	MURATA	0.0015	250	64.42	1	1	0.23938	63.884	1.48313	1	0.355
C054(AC)	917175	C.MON	WALSIN	0.0033	1000	380	1	1	0.49263	66.915	1.55304	1	0.765
C055(AC)	917175	C.MON	WALSIN	0.0033	1000	380	1	1	0.49263	71.692	1.66723	1	0.821
C102	752529	C.MON	TDK	0.047	50	0.04751	1	1	0.05263	63.968	1.48504	1	0.078
C056(AC)	916103	C.MON	MURATA	0.0047	630	75.86	1	1	0.10650	70.369	1.63511	1	0.174
C200(AC)	910578	C.MON	HOLYSTONE	0.001	200	30.26	1	1	0.12779	64.108	1.48823	1	0.190
C005	761387	C.MON	YAGEO	0.00047	1000	161.3	1	1	0.13556	61.791	1.43600	1	0.195
C006	761387	C.MON	YAGEO	0.00047	1000	161.9	1	1	0.13604	61.824	1.43674	1	0.195
C053(A)	910442	C.MON	WALSIN	0.0001	1000	269.1	1	1	0.25607	67.253	1.56096	1	0.400
C057(A)	910442	C.MON	WALSIN	0.0001	1000	409.5	1	1	0.58628	66.173	1.53574	1	0.900
C113	713682	C.MON	TDK	0.00047	50	3.652	1	1	0.08053	63.278	1.46939	1	0.118
C108	740186	C.MON	TDK	0.47	50	2.43	1	1	0.06972	63.234	1.46839	1	0.102

LITEON

Capacitors (Except Aluminum Electrolytic Capacitors)

Ambient temperature 25℃

Desc.	Part No.	Type	Maker	Value(u)	V (rated)	V (operate)	λ_G	π_Q	π_S	T_C	π_T	π_E	λ_{SSi}
C216	712827	C.MON	TDK	0.1	50	11.77	1	1	0.20990	63.104	1.46546	1	0.308
C205	780552	C.MON	HOLYSTONE	0.1	200	0.706	1	1	0.05344	62.117	1.44328	1	0.077
C207	740061	C.MON	TDK	0.0001	50	2.805	1	1	0.07287	66.427	1.54165	1	0.112
C209	736282	C.MON	MURATA	0.1	50	0.04891	1	1	0.05264	63.142	1.46631	1	0.077
C213	736282	C.MON	MURATA	0.1	50	2.213	1	1	0.06796	63.447	1.47321	1	0.100
C214	736282	C.MON	MURATA	0.1	50	7.256	1	1	0.12322	63.583	1.47629	1	0.182

TOTAL λ_{SSi}	22.120

LITEON

Aluminum Electrolytic Capacitors

Ambient temperature 25℃

Desc.	Part No.	Type	Maker	Value (uF)	V (rated)	V (operate)	λ_G	π_Q	πs	T_C	πT	π_E	λSSi
C201(AB)	812529	C.ELE	RUBYCON	2200	16	11.86	15	1	1.78425	67.997	3.37779	1	90.402
C202(AB)	812529	C.ELE	RUBYCON	2200	16	11.86	15	1	1.78425	65.821	3.09511	1	82.837
C203(AB)	734370	C.ELE	NCC	47	50	11.86	25	1	0.53221	63.896	2.86214	1	38.081
C050(AC)	765795	C.ELE	RUBYCON	100	450	380	25	1	2.28569	59.307	2.36637	1	135.220
C107(AB)	734370	C.ELE	NCC	47	50	20.57	25	1	0.80845	67.475	3.30804	1	66.859

TOTAL λ_{SSi}	413.400

LITEON

Diodes

Ambient temperature 25℃

Desc.	Part No.	Type	Maker P/N	Maker	Vr (rated)	I (rated)	Vr (operate)	λ_G	π_Q	π_S	T_C	π_T	π_E	λ_{SSi}
BD001(AC)	729075	BRG	GBU408	LITON	800	4	230.3	6	1	0.93835	63.753	1.77739	1	10.007
D101(AC)	741719	DIO	S1M	VISHAY	1000	1	51.15	6	1	0.87402	68.078	1.95668	1	10.261
D050(AC)	768731	General	MUR460_HF	LITE-ON SEMI	600	4	222.4	6	1	0.96194	70.729	2.07292	1	11.964
D202(AC)	724526	FR	BAW56	PHILIPS	70	0.25	0.3316	3	1	0.86193	67.114	1.91562	1	4.953
D052(A)	811490	DIO	1N4148W-G	TS	100	0.15	0.5689	3	1	0.86218	66.981	1.91000	1	4.940
D100(A)	811490	DIO	1N4148W-G	TS	100	0.15	0.4123	3	1	0.86177	65.421	1.84504	1	4.770
D102(A)	811490	DIO	1N4148W-G	TS	100	0.15	21.12	3	1	0.91701	66.335	1.88290	1	5.180
D200(A)	750846	FR	BAV21W-7-F	DII	200	0.2	39.87	3	1	0.91375	68.146	1.95960	1	5.372
D051(AC)	763775	General	1N4007-HF	LITON	1000	1	167.2	6	1	0.90498	76.654	2.35086	1	12.765

TOTAL λ_{SSi}	70.212

LITEON

Microelectronic Devices

Ambient temperature 25℃

Desc.	Part No.	Maker P/N	Maker	λ_G	π_Q	T_C	π_T	π_E	λ_{SSi}
IC200	796689	LTA1205N	NXP	19	1	69.937	6.12197	1	116.317
IC100	795877	LTA1201R	NXP	19	1	66.25	4.98285	1	94.674
IC201	758079	AP4310	BCD	19	1	67.714	5.41019	1	102.794

TOTAL λ_{SSi}	313.785

LITEON

Mosfet

Ambient temperature 25℃

Desc.	Part No.	Type	Maker P/N	Maker	Rds(on)	P_D (rated)	P_D (Actual)	λ_G	π_Q	π_S	T_C	π_T	π_E	λ_{SSi}
Q050(A)	786671	M	TK10A60DR	TOSHIBA	0.62	45	1.806096	20	1	0.33165	70.511	2.06318	1	13.685
Q051(A)	786672	M	TK12A50DR	TOSHB	0.45	45	0.162132	20	1	0.30381	68.976	1.99551	1	12.125
Q201(AC)	796110	M	TK22E10N1	TOSHIBA	0.0138	72	0.873992	20	1	0.31010	67.279	1.92260	1	11.924

TOTAL λ_{SSi}	37.734

LITEON

OPTO-Electronic Devices

Ambient temperature 25℃

Desc.	Part No.	Maker P/N	Maker	λ_G	π_Q	T_C	π_T	π_E	λ_{SSi}
IC300(AC)	798049	798049.00000	LITE-ON	10	1	62.146	5.55324	1	55.532

TOTAL λ_{SSi}	55.532

LITEON

Inductive Devices

Ambient temperature 25℃

Desc.	Part No.	Type	λ_G	π_Q	T_C	π_T	π_E	λ_{SSi}
L001	766155	C	7	1	60.142	1.39953	1	9.797
L002	821794	C	7	1	53.59	1.26029	1	8.822
L201	723233	C	7	1	62.617	1.45449	1	10.181
T050	821291	X	19	1	70.992	1.65019	1	31.354
T051	789456	X	19	1	64.334	1.49338	1	28.374
L050	789473	C	7	1	65.243	1.51423	1	10.600

TOTAL λ_{SSi}	99.128

SUMMARY TEST REPORT

CMTBF test report B	Test Date: 2016/1/7	Engineer: Joe Zou
Quantity: 2pcs	Ser. No.: 3#,4#	

1. Conditions:

Input: 115Vac/60Hz

Output: 12Vdc/5.83A (100% Load)

Ambient: 25℃

2. Equipment:

1) .DC electronic load :Chroma 6334

2).Oscilloscope: Tektronix DPO7104

3).AC Source: PACIFIC 120-ASX

4) Multimeter: FLUKE 189

5)Open chamber: OTC-2D

6)Thermal recorder: Agilent 34970A

3. Criteria:

The power supply reliability, when calculated by SR332 exceed 50000 hours with all output at 100% of maximum load and at ambient temperature of 12Vdc/5.83A (100% Load)

4. Result:

The test result meets customer spec., so that test result pass.

5. Record:

Conclusion: ☑ Pass ☐ Fail

Reference Document : Telcordia Reliability Prediction
Technical reference : SR-332 Issue1, May 2001
Test condition Input voltage : 115Vac/60Hz
Load condition : 12Vdc/5.83A (100% Load)
Temperature : 25℃

Item 1 : Resistors

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

= 33.777 Failures/10^9 hours

Item 2 : Capacitors (except aluminum electrolytic)

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

= 9.365 Failures/10^9 hours

Item 3 : Aluminum electrolytic capacitors

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

= 367.881 Failures/10^9 hours

Item 4 : Diodes

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

= 71.350 Failures/10^9 hours

Item 5 : Microelectronic devices (ic)

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

= 333.007 Failures/10^9 hours

Item6 : Mosfet

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

$$= \boxed{37.217} \text{ Failures/}10^9 \text{ hours}$$

Item 9 : Opto-electronic devices

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

$$= \boxed{62.972} \text{ Failures/}10^9 \text{ hours}$$

Item 10 : Inductive devices (inductive)

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

$$= \boxed{100.375} \text{ Failures/}10^9 \text{ hours}$$

Total	**1015.943**	Failures/10^9 hours
MTBF	**984307.32**	**hours**

Remark :

$\lambda_{SSi} = \lambda_{Gi}\pi_{Qi}\pi_{Si}\pi_{Ti}$

λ_{SSi} unit steady - state failure rate

λ_{Gi} : base failure rate for device

π_{Qi} : quality factor

π_{Si} : electrical stress factor

π_{Ti} : thermal acceleration factor

$$\lambda_{SS} = \pi_E \sum_{i=1} N_i \lambda_{SSi}$$

λ_{SS} : failure rate for unit

π_E : unit environment factor

N_i : quantity or device type

n : number of different device types in the unit

LITEON

Resistors

Ambient temperature 25℃

Desc.	Part No.	Type	Maker	Value(Ω)	P (rated)	V (operate)	λ_G	π_Q	π_S	T_C	π_T	π_E	λ_{SSi}
R060(B)	917886	R.MO	QUEEN MAO	0.1	2	0.0572	3	1	0.74813	68.806	1.16904	1	2.624
R061(B)	917886	R.MO	QUEEN MAO	0.1	2	0.0781	3	1	0.75450	71.165	1.18271	1	2.677
R059	713311	R.CF	KOA	10	0.25	0.047	0.5	1	0.52265	64.096	1.48796	1	0.389
R101	713311	R.CF	KOA	10	0.25	0.0429	0.5	1	0.52255	65.238	1.51412	1	0.396
R057	713678	R.CF	KOA	47	0.25	0.2506	0.5	1	0.52569	65.606	1.52261	1	0.400
R100	713678	R.CF	KOA	47	0.25	0.1906	0.5	1	0.52415	65.073	1.51032	1	0.396
R200	713678	R.CF	KOA	47	0.25	0.3513	0.5	1	0.52922	70.562	1.63977	1	0.434
R201	713678	R.CF	KOA	47	0.25	0.3515	0.5	1	0.52923	70.632	1.64146	1	0.434
R056	725094	R.CF	KOA	5600000	0.25	51.332	3	1	0.52332	65.842	1.52807	1	2.399
R103	758301	R.MF	KOA	12000	0.125	0.011	0.5	1	0.52205	63.914	1.48381	1	0.387
R113	716172	R.MF	KOA	12100	0.25	0.2438	0.5	1	0.52206	61.618	1.43215	1	0.374
R102	754881	R.MF	KOA	22100	0.125	0.0465	0.5	1	0.52205	64.994	1.50850	1	0.394
R112	736521	R.MF	KOA	33000	0.125	0.0154	0.5	1	0.52205	64.681	1.50132	1	0.392
R114	736521	R.MF	KOA	33000	0.125	0.0761	0.5	1	0.52205	64.042	1.48673	1	0.388
R204	714238	R.CF	KOA	15	0.125	0.2889	0.5	1	0.55315	65.671	1.52411	1	0.422
R058	760634	R.MF	TA-I	4700	0.25	0.6784	0.5	1	0.52231	61.536	1.43032	1	0.374
R004(B)	911921	R.MF	RALEC	51000	0.125	1.6251	0.5	1	0.52233	61.888	1.43816	1	0.376
R003	762739	R.MF	TA-I	910000	0.25	30.904	0.5	1	0.52490	63.436	1.47296	1	0.387
R106	781128	R.MF	TA-I	47	0.125	0.1073	0.5	1	0.52338	65.435	1.51866	1	0.397
R104	718902	R.MF	KOA	1000	0.125	0.0187	0.5	1	0.52205	64.006	1.48591	1	0.388
R105	718902	R.MF	KOA	1000	0.125	0.0147	0.5	1	0.52205	63.922	1.48399	1	0.387
R205	718902	R.MF	KOA	1000	0.125	0.0531	0.5	1	0.52206	65.776	1.52654	1	0.398
R063	750720	R.MF	KOA	118000	0.125	2.5018	0.5	1	0.52233	64.82	1.50451	1	0.393
R109	720388	R.MF	KOA	78700	0.125	19.242	0.5	1	0.54822	64.393	1.49473	1	0.410
R001(B)	814651	R.HV	UNIOHM	1300000	0.25	59.26	3	1	0.52943	62.325	1.44794	1	2.300
R002(B)	814651	R.HV	UNIOHM	1300000	0.25	59.44	3	1	0.52948	62.686	1.45604	1	2.313

LITEON

Resistors

Ambient temperature 25℃

Desc.	Part No.	Type	Maker	Value(Ω)	P (rated)	V (operate)	λ_G	π_Q	π_S	T_C	π_T	π_E	λ_{SSi}
R054(B)	914141	R.MF	RALEC	6200000	0.25	53.954	3	1	0.52332	64.142	1.48900	1	2.338
R055(B)	914141	R.MF	RALEC	6200000	0.25	53.829	3	1	0.52332	64.086	1.48773	1	2.336
R050	762577	R.MF	TA-I	91000	0.25	37.989	0.5	1	0.56692	66.941	1.55365	1	0.440
R051	762577	R.MF	TA-I	91000	0.25	37.975	0.5	1	0.56689	65.643	1.52346	1	0.432
R052	762577	R.MF	TA-I	91000	0.25	38.131	0.5	1	0.56727	65.947	1.53050	1	0.434
R053	762577	R.MF	TA-I	91000	0.25	38.107	0.5	1	0.56721	67.621	1.56961	1	0.445
R108	762577	R.MF	TA-I	91000	0.25	17.037	0.5	1	0.53078	65.987	1.53143	1	0.406
R209	739889	R.MF	KOA	1470	0.1	0.0361	0.5	1	0.52205	63.742	1.47990	1	0.386
R208	727787	R.MF	TA-I	100000	0.1	2.4628	0.5	1	0.52246	63.881	1.48306	1	0.387
R216	713455	R.CF	KOA	470	0.25	0.3406	0.5	1	0.52272	63.66	1.47804	1	0.386
R217	713568	R.CF	KOA	33	0.125	0.0074	0.5	1	0.52205	64.337	1.49345	1	0.390
R215	719985	R.CF	KOA	51	0.125	0.0355	0.5	1	0.52218	64.651	1.50063	1	0.392
R202	727963	R.MF	TA-I	16200	0.1	10.378	0.5	1	0.56917	63.804	1.48131	1	0.422
R210	728330	R.MF	TA-I	76800	0.1	9.587	0.5	1	0.53023	62.833	1.45935	1	0.387
R211	730152	R.MF	KOA	19100	0.1	2.3833	0.5	1	0.52407	62.137	1.44373	1	0.378
R214	751342	R.MF	KOA	2400	0.1	0.0067	0.5	1	0.52205	62.25	1.44626	1	0.378
R218	712818	R.CF	KOA	10000	0.125	1.0252	0.5	1	0.52262	64.641	1.50041	1	0.392
R207	727661	R.MF	TAI	6190	0.1	9.675	0.5	1	0.63546	64.144	1.48905	1	0.473
R213	727846	R.MF	TA-I	5110	0.1	0.0071	0.5	1	0.52205	64.453	1.49610	1	0.391
R203	713309	R.CF	KOA	1000000	0.25	0.0098	0.5	1	0.52205	58.505	1.36389	1	0.356
R062	713312	R.CF	KOA	3.6	0.25	0.0778	0.5	1	0.52663	64.296	1.49252	1	0.393
R250(B)	757326	R.MF	TAI	0.005	2	0.0309	0.5	1	0.59104	59.905	1.39433	1	0.412
R212	733173	R.MF	TA-I	604	0.1	0.0759	0.5	1	0.52211	65.316	1.51591	1	0.396

TOTAL λ_{SSi}	33.777

LITEON

Capacitors (Except Aluminum Electrolytic Capacitors)

Ambient temperature 25℃

Desc.	Part No.	Type	Maker	Value(u)	V (rated)	V (operate)	λ_G	π_Q	π_S	T_C	π_T	π_E	λ_{SSi}
C103(B)	902603	C.MON	MURATA	0.00033	50	0.1009	1	1	0.05297	63.125	1.46593	1	0.078
C101	727981	C.MON	MURATA	0.00022	50	0.3214	1	1	0.05436	61.653	1.43293	1	0.078
C058	727795	C.MON	MURATA	0.01	50	2.488	1	1	0.07020	61.516	1.42988	1	0.100
C111	727795	C.MON	MURATA	0.01	50	1.588	1	1	0.06313	63.193	1.46747	1	0.093
C100	752529	C.MON	TDK	0.047	50	0.01132	1	1	0.05241	63.871	1.48283	1	0.078
C105	736282	C.MON	MURATA	0.1	50	20.69	1	1	0.60135	62.812	1.45887	1	0.877
C106	736282	C.MON	MURATA	0.1	50	20.69	1	1	0.60135	61.341	1.42599	1	0.858
C109	736282	C.MON	MURATA	0.1	50	2.611	1	1	0.07123	61.949	1.43953	1	0.103
C215	736282	C.MON	MURATA	0.1	50	11.88	1	1	0.21264	63.645	1.47770	1	0.314
C212	732582	C.MON	MURATA	0.00068	50	11.33	1	1	0.19928	62.287	1.44708	1	0.288
C003(B)	909907	C.MON	WALSIN	2.2	25	1.389	1	1	0.07264	62.619	1.45453	1	0.106
C002	786478	C.MON	TDK	1	50	1.372	1	1	0.06154	63.502	1.47446	1	0.091
C110	786478	C.MON	TDK	1	50	0.2407	1	1	0.05385	63.872	1.48286	1	0.080
C206	786478	C.MON	TDK	1	50	21.35	1	1	0.65005	67.463	1.56589	1	1.018
C211	786478	C.MON	TDK	1	50	0.03027	1	1	0.05253	61.472	1.42890	1	0.075
C104	762558	C.MON	MURATA	0.00022	200	40.63	1	1	0.17353	63.154	1.46659	1	0.254

LITEON

Capacitors (Except Aluminum Electrolytic Capacitors)

Ambient temperature 25℃

Desc.	Part No.	Type	Maker	Value(u)	V (rated)	V (operate)	λ_G	π_Q	π_S	T_C	π_T	π_E	λ_{SSi}
C112	740186	C.MON	TDK	0.47	50	3.742	1	1	0.08139	61.914	1.43874	1	0.117
C051(B)	817722	C.MEF	CARLI	0.47	450	111	1	1	0.22432	67.346	1.56314	1	0.351
C052(B)	817722	C.MEF	CARLI	0.47	450	110.9	1	1	0.22403	69.683	1.61861	1	0.363
C001(B)	819382	C.MEX	SUNGHO	0.33	275	114.6	1	1	0.61182	56.013	1.31073	1	0.802
C300(B)	814349	C.DIS	TDK	0.0015	250	32.74	1	1	0.11334	60.334	1.40374	1	0.159
C054(B)	917086	C.MON	MURATA	0.0033	1000	248.6	1	1	0.22690	66.94	1.55362	1	0.353
C055(B)	917086	C.MON	MURATA	0.0033	1000	248.6	1	1	0.22690	72.494	1.68688	1	0.383
C102	752529	C.MON	TDK	0.047	50	0.04752	1	1	0.05263	64.359	1.49396	1	0.079
C056(B)	916128	C.MON	HOLYSTONE	0.0047	630	74.48	1	1	0.10514	72.639	1.69045	1	0.178
C200(B)	909890	C.MON	YAGEO	0.001	200	25.72	1	1	0.11178	64.322	1.49311	1	0.167
C005	761387	C.MON	YAGEO	0.00047	1000	78.86	1	1	0.08335	60.478	1.40691	1	0.117
C006	761387	C.MON	YAGEO	0.00047	1000	78.85	1	1	0.08334	60.518	1.40779	1	0.117
C053(B)	910440	C.MON	MURATA	0.0001	1000	155.9	1	1	0.13131	67.303	1.56213	1	0.205
C057(B)	910440	C.MON	MURATA	0.0001	1000	283.3	1	1	0.27845	65.076	1.51039	1	0.421
C113	713682	C.MON	TDK	0.00047	50	3.734	1	1	0.08132	61.773	1.43560	1	0.117
C108	740186	C.MON	TDK	0.47	50	2.536	1	1	0.07060	63.07	1.46469	1	0.103

LITEON

Capacitors (Except Aluminum Electrolytic Capacitors)

Ambient temperature 25℃

Desc.	Part No.	Type	Maker	Value(u)	V (rated)	V (operate)	λ_G	π_Q	π_S	T_C	π_T	π_E	λ_{SSi}
C216	712827	C.MON	TDK	0.1	50	11.81	1	1	0.21089	61.387	1.42701	1	0.301
C205	780552	C.MON	HOLYSTONE	0.1	200	0.7124	1	1	0.05345	60.35	1.40410	1	0.075
C207	740061	C.MON	TDK	0.0001	50	2.906	1	1	0.07375	64.76	1.50313	1	0.111
C209	736282	C.MON	MURATA	0.1	50	0.04959	1	1	0.05265	61.581	1.43132	1	0.075
C213	736282	C.MON	MURATA	0.1	50	2.22	1	1	0.06801	63.371	1.47149	1	0.100
C214	736282	C.MON	MURATA	0.1	50	7.3	1	1	0.12386	63.482	1.47400	1	0.183

TOTAL λ_{SSi}	9.365

LITEON

Aluminum Electrolytic Capacitors

Ambient temperature 25℃

Desc.	Part No.	Type	Maker	Value (uF)	V (rated)	V (operate)	λ_G	π_Q	πs	T_C	πT	π_E	λSSi
C201(AB)	812529	C.ELE	RUBYCON	2200	16	11.9	15	1	1.79499	70.62	3.74754	1	100.902
C202(AB)	812529	C.ELE	RUBYCON	2200	16	11.9	15	1	1.79499	68.407	3.43344	1	92.445
C203(AB)	734370	C.ELE	NCC	47	50	11.9	25	1	0.53323	64.249	2.90370	1	38.709
C050(B)	753233	C.ELE	NCC	100	450	248.6	25	1	1.13413	59.155	2.35130	1	66.667
C107(AB)	734370	C.ELE	NCC	47	50	20.69	25	1	0.81312	68.177	3.40212	1	69.158

TOTAL λ_{SSi}	367.881

LITEON

Diodes

Ambient temperature 25℃

Desc.	Part No.	Type	Maker P/N	Maker	Vr (rated)	I (rated)	Vr (operate)	λ_G	π_Q	π_S	T_C	π_T	π_E	λ_{SSi}
BD001(B)	717485	BRG	GBU4K	VISHY	800	4	114.8	6	1	0.89857	64.235	1.79675	1	9.687
D101(B)	771586	DIO	S1M	TS	1000	1	44.95	6	1	0.87239	69.412	2.01456	1	10.545
D050(B)	768096	DIO	MUR460-G	TS	600	4	192	6	1	0.94743	73.877	2.21742	1	12.605
D202(B)	734579	FR	BAW56	DII	70	0.2	0.4081	3	1	0.86221	68.412	1.97106	1	5.098
D052(B)	753893	DIO	1N4148W-7-F	DII	100	0.15	0.6741	3	1	0.86245	67.414	1.92833	1	4.989
D100(B)	753893	DIO	1N4148W-7-F	DII	100	0.15	0.4794	3	1	0.86195	66.352	1.88361	1	4.871
D102(B)	753893	DIO	1N4148W-7-F	DII	100	0.15	17.39	3	1	0.90680	67.408	1.92807	1	5.245
D200(B)	768645	FR	BAV21W	VISHAY	200	0.25	35.21	3	1	0.90739	68.969	1.99520	1	5.431
D051(B)	793152	DIO	IN4007	TS	1000	1	144.4	6	1	0.89881	77.405	2.38792	1	12.878

TOTAL λ_{SSi}	71.350

LITEON

Microelectronic Devices

Ambient temperature 25℃

Desc.	Part No.	Maker P/N	Maker	λ_G	π_Q	T_C	π_T	π_E	λ_{SSi}
IC200	796689	LTA1205N	NXP	19	1	70.144	6.19233	1	117.654
IC100	795877	LTA1201R	NXP	19	1	67.611	5.37909	1	102.203
IC201	758079	AP4310	BCD	19	1	69.438	5.95528	1	113.150

TOTAL λ_{SSi}	333.007

LITEON

Mosfet

Ambient temperature 25℃

Desc.	Part No.	Type	Maker P/N	Maker	Rds(on)	P_D (rated)	P_D (Actual)	λ_G	π_Q	π_S	T_C	π_T	π_E	λ_{SSi}
Q050(B)	787181	M	AOTF10N60L	ALPHA & OMEGA	0.6	50	1.177911	20	1	0.31871	66.909	1.90697	1	12.156
Q051(B)	786581	M	AOTF12N50L	ALPHA & OMEGA	0.52	50	1.549941	20	1	0.32446	66.448	1.88762	1	12.249
Q201(B)	786331	M	PSMN013-100PS	PHILIPS	0.0139	170	0.938635	20	1	0.30521	71.308	2.09897	1	12.813

TOTAL λ_{SSi}	37.217

LITEON

OPTO-Electronic Devices

Ambient temperature 25℃

Desc.	Part No.	Maker P/N	Maker	λ_G	π_Q	T_C	π_T	π_E	λ_{SSi}
IC300(B)	793918	TCLT1017	VISHAY	10	1	63.894	6.29718	1	62.972

TOTAL λ_{SSi}	62.972

LITEON

Inductive Devices

Ambient temperature 25℃

Desc.	Part No.	Type	λ_G	π_Q	T_C	π_T	π_E	λ_{SSi}
L001	766155	C	7	1	61.142	1.42158	1	9.951
L002	821794	C	7	1	56.939	1.33033	1	9.312
L201	723233	C	7	1	60.101	1.39863	1	9.790
T050	821291	X	19	1	70.729	1.64381	1	31.232
T051	789456	X	19	1	65.88	1.52895	1	29.050
L050	789473	C	7	1	67.931	1.57691	1	11.038

TOTAL λ_{SSi}	100.375

SUMMARY TEST REPORT

CMTBF test report B	Test Date: 2016/1/7	Engineer: Joe Zou
Quantity: 2pcs	Ser. No.: 3#,4#	

1. Conditions:

Input: 230V/50Hz

Output: 12Vdc/5.83A (100% Load)

Ambient: 25℃

2. Equipment:

1) .DC electronic load :Chroma 6334

2).Oscilloscope: Tektronix DPO7104

3).AC Source: PACIFIC 120-ASX

4) Multimeter: FLUKE 189

5)Open chamber: OTC-2D

6)Thermal recorder: Agilent 34970A

3. Criteria:

The power supply reliability, when calculated by SR332 exceed 50000 hours with all output at 100% of maximum load and at ambient temperature of 12Vdc/5.83A (100% Load)

4. Result:

The test result meets customer spec., so that test result pass.

5. Record:

Conclusion: ☑ Pass ☐ Fail

Reference Document : Telcordia Reliability Prediction
Technical reference : SR-332 Issue1, May 2001
Test condition Input voltage : 230V/50Hz
Load condition : 12Vdc/5.83A (100% Load)
Temperature : 25℃

Item 1 : Resistors

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

= 34.290 Failures/10^9 hours

Item 2 : Capacitors (except aluminum electrolytic)

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

= 22.279 Failures/10^9 hours

Item 3 : Aluminum electrolytic capacitors

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

= 425.342 Failures/10^9 hours

Item 4 : Diodes

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

= 69.326 Failures/10^9 hours

Item 5 : Microelectronic devices (ic)

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

= 338.481 Failures/10^9 hours

Item6 : Mosfet

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

= 37.206 Failures/10^9 hours

Item 9 : Opto-electronic devices

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

= 62.949 Failures/10^9 hours

Item 10 : Inductive devices (inductive)

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

= 97.484 Failures/10^9 hours

Total	**1087.356**	Failures/10^9 hours
MTBF	**919661.65**	**hours**

Remark :

$\lambda_{SSi} = \lambda_{Gi}\pi_{Qi}\pi_{Si}\pi_{Ti}$

λ_{SSi} unit steady - state failure rate

λ_{Gi} : base failure rate for device

π_{Qi} : quality factor

π_{Si} : electrical stress factor

π_{Ti} : thermal acceleration factor

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

λ_{SS} : failure rate for unit

π_E : unit environment factor

N_i : quantity or device type

n : number of different device types in the unit

LITEON

Resistors

Ambient temperature 25℃

Desc.	Part No.	Type	Maker	Value(Ω)	P (rated)	V (operate)	λ_G	π_Q	π_S	T_C	π_T	π_E	λ_{SSi}
R060(B)	917886	R.MO	QUEEN MAO	0.1	2	0.0185	3	1	0.74158	67.147	1.15940	1	2.579
R061(B)	917886	R.MO	QUEEN MAO	0.1	2	0.0664	3	1	0.75068	70.18	1.17700	1	2.651
R059	713311	R.CF	KOA	10	0.25	0.0326	0.5	1	0.52233	64.798	1.50400	1	0.393
R101	713311	R.CF	KOA	10	0.25	0.0448	0.5	1	0.52259	65.903	1.52948	1	0.400
R057	713678	R.CF	KOA	47	0.25	0.2573	0.5	1	0.52588	66.259	1.53774	1	0.404
R100	713678	R.CF	KOA	47	0.25	0.2025	0.5	1	0.52442	65.912	1.52969	1	0.401
R200	713678	R.CF	KOA	47	0.25	0.4906	0.5	1	0.53613	71.29	1.65743	1	0.444
R201	713678	R.CF	KOA	47	0.25	0.4908	0.5	1	0.53615	71.132	1.65359	1	0.443
R056	725094	R.CF	KOA	5600000	0.25	75.42	3	1	0.52481	66.481	1.54291	1	2.429
R103	758301	R.MF	KOA	12000	0.125	0.0147	0.5	1	0.52205	64.712	1.50203	1	0.392
R113	716172	R.MF	KOA	12100	0.25	0.3104	0.5	1	0.52207	62.583	1.45372	1	0.379
R102	754881	R.MF	KOA	22100	0.125	0.0484	0.5	1	0.52205	65.892	1.52922	1	0.399
R112	736521	R.MF	KOA	33000	0.125	0.0158	0.5	1	0.52205	65.632	1.52321	1	0.398
R114	736521	R.MF	KOA	33000	0.125	0.0807	0.5	1	0.52205	64.981	1.50820	1	0.394
R204	714238	R.CF	KOA	15	0.125	0.398	0.5	1	0.58265	66.577	1.54515	1	0.450
R058	760634	R.MF	TA-I	4700	0.25	1.0179	0.5	1	0.52264	62.521	1.45233	1	0.380
R004(B)	911921	R.MF	RALEC	51000	0.125	3.4083	0.5	1	0.52328	62.567	1.45337	1	0.380
R003	762739	R.MF	TA-I	910000	0.25	63.29	0.5	1	0.53413	64.228	1.49096	1	0.398
R106	781128	R.MF	TA-I	47	0.125	0.1746	0.5	1	0.52558	65.939	1.53031	1	0.402
R104	718902	R.MF	KOA	1000	0.125	0.0217	0.5	1	0.52205	64.884	1.50598	1	0.393
R105	718902	R.MF	KOA	1000	0.125	0.0162	0.5	1	0.52205	64.834	1.50483	1	0.393
R205	718902	R.MF	KOA	1000	0.125	0.0606	0.5	1	0.52207	66.655	1.54697	1	0.404
R063	750720	R.MF	KOA	118000	0.125	2.5028	0.5	1	0.52233	65.678	1.52427	1	0.398
R109	720388	R.MF	KOA	78700	0.125	19.409	0.5	1	0.54869	65.185	1.51290	1	0.415
R001(B)	814651	R.HV	UNIOHM	1300000	0.25	119.63	3	1	0.55280	63.064	1.46455	1	2.429
R002(B)	814651	R.HV	UNIOHM	1300000	0.25	119.87	3	1	0.55293	63.244	1.46862	1	2.436

LITEON

Resistors

Ambient temperature 25℃

Desc.	Part No.	Type	Maker	Value(Ω)	P (rated)	V (operate)	λ_G	π_Q	π_S	T_C	π_T	π_E	λ_{SSi}
R054(B)	914141	R.MF	RALEC	6200000	0.25	80.66	3	1	0.52490	64.783	1.50366	1	2.368
R055(B)	914141	R.MF	RALEC	6200000	0.25	80.57	3	1	0.52490	65.006	1.50878	1	2.376
R050	762577	R.MF	TA-I	91000	0.25	37.023	0.5	1	0.56458	67.928	1.57684	1	0.445
R051	762577	R.MF	TA-I	91000	0.25	37.027	0.5	1	0.56459	66.486	1.54302	1	0.436
R052	762577	R.MF	TA-I	91000	0.25	37.191	0.5	1	0.56498	66.608	1.54587	1	0.437
R053	762577	R.MF	TA-I	91000	0.25	37.182	0.5	1	0.56496	68.44	1.58896	1	0.449
R108	762577	R.MF	TA-I	91000	0.25	19.695	0.5	1	0.53375	66.847	1.55145	1	0.414
R209	739889	R.MF	KOA	1470	0.1	0.0369	0.5	1	0.52205	64.279	1.49213	1	0.389
R208	727787	R.MF	TA-I	100000	0.1	2.4621	0.5	1	0.52246	64.465	1.49638	1	0.391
R216	713455	R.CF	KOA	470	0.25	0.3568	0.5	1	0.52278	64.629	1.50013	1	0.392
R217	713568	R.CF	KOA	33	0.125	0.0068	0.5	1	0.52205	65.25	1.51439	1	0.395
R215	719985	R.CF	KOA	51	0.125	0.0373	0.5	1	0.52219	65.404	1.51794	1	0.396
R202	727963	R.MF	TA-I	16200	0.1	10.323	0.5	1	0.56865	64.737	1.50260	1	0.427
R210	728330	R.MF	TA-I	76800	0.1	9.549	0.5	1	0.53017	63.339	1.47077	1	0.390
R211	730152	R.MF	KOA	19100	0.1	2.3739	0.5	1	0.52405	63.081	1.46494	1	0.384
R214	751342	R.MF	KOA	2400	0.1	0.0072	0.5	1	0.52205	63.156	1.46663	1	0.383
R218	712818	R.CF	KOA	10000	0.125	1.0147	0.5	1	0.52261	65.301	1.51557	1	0.396
R207	727661	R.MF	TAI	6190	0.1	9.621	0.5	1	0.63407	64.656	1.50075	1	0.476
R213	727846	R.MF	TA-I	5110	0.1	0.0073	0.5	1	0.52205	64.968	1.50791	1	0.394
R203	713309	R.CF	KOA	1000000	0.25	0.0156	0.5	1	0.52205	59.124	1.37730	1	0.360
R062	713312	R.CF	KOA	3.6	0.25	0.0668	0.5	1	0.52542	65.16	1.51232	1	0.397
R250(B)	757326	R.MF	TAI	0.005	2	0.0309	0.5	1	0.59104	59.82	1.39247	1	0.412
R212	733173	R.MF	TA-I	604	0.1	0.0753	0.5	1	0.52211	65.982	1.53131	1	0.400

TOTAL λ_{SSi}	34.290

LITEON

Capacitors (Except Aluminum Electrolytic Capacitors)

Ambient temperature 25℃

Desc.	Part No.	Type	Maker	Value(u)	V (rated)	V (operate)	λ_G	π_Q	π_S	T_C	π_T	π_E	λ_{SSi}
C103(B)	902603	C.MON	MURATA	0.00033	50	0.0852	1	1	0.05287	63.875	1.48292	1	0.078
C101	727981	C.MON	MURATA	0.00022	50	0.3385	1	1	0.05447	62.54	1.45276	1	0.079
C058	727795	C.MON	MURATA	0.01	50	2.489	1	1	0.07021	62.478	1.45137	1	0.102
C111	727795	C.MON	MURATA	0.01	50	1.588	1	1	0.06313	64.077	1.48752	1	0.094
C100	752529	C.MON	TDK	0.047	50	0.01135	1	1	0.05241	64.645	1.50050	1	0.079
C105	736282	C.MON	MURATA	0.1	50	20.57	1	1	0.59289	63.74	1.47986	1	0.877
C106	736282	C.MON	MURATA	0.1	50	20.57	1	1	0.59289	62.261	1.44650	1	0.858
C109	736282	C.MON	MURATA	0.1	50	2.504	1	1	0.07033	62.861	1.45998	1	0.103
C215	736282	C.MON	MURATA	0.1	50	11.84	1	1	0.21164	64.169	1.48962	1	0.315
C212	732582	C.MON	MURATA	0.00068	50	11.31	1	1	0.19881	62.912	1.46113	1	0.290
C003(B)	909907	C.MON	WALSIN	2.2	25	3.196	1	1	0.11128	63.201	1.46765	1	0.163
C002	786478	C.MON	TDK	1	50	3.166	1	1	0.07605	64.258	1.49165	1	0.113
C110	786478	C.MON	TDK	1	50	0.2404	1	1	0.05385	64.406	1.49503	1	0.081
C206	786478	C.MON	TDK	1	50	20.45	1	1	0.58456	68.226	1.58389	1	0.926
C211	786478	C.MON	TDK	1	50	0.03018	1	1	0.05253	62.43	1.45029	1	0.076
C104	762558	C.MON	MURATA	0.00022	200	48.48	1	1	0.21875	63.957	1.48479	1	0.325

LITEON

Capacitors (Except Aluminum Electrolytic Capacitors)

Ambient temperature 25℃

Desc.	Part No.	Type	Maker	Value(u)	V (rated)	V (operate)	λ_G	π_Q	π_S	T_C	π_T	π_E	λ_{SSi}
C112	740186	C.MON	TDK	0.47	50	3.667	1	1	0.08068	62.546	1.45289	1	0.117
C051(B)	817722	C.MEF	CARLI	0.47	450	229.8	1	1	1.06496	63.753	1.48015	1	1.576
C052(B)	817722	C.MEF	CARLI	0.47	450	229.8	1	1	1.06496	65.846	1.52816	1	1.627
C001(B)	819382	C.MEX	SUNGHO	0.33	275	230.1	1	1	7.29137	54.485	1.27878	1	9.324
C300(B)	814349	C.DIS	TDK	0.0015	250	64.76	1	1	0.24131	60.935	1.41700	1	0.342
C054(B)	917086	C.MON	MURATA	0.0033	1000	375.4	1	1	0.47944	65.848	1.52820	1	0.733
C055(B)	917086	C.MON	MURATA	0.0033	1000	375.4	1	1	0.47944	72.564	1.68860	1	0.810
C102	752529	C.MON	TDK	0.047	50	0.04751	1	1	0.05263	64.954	1.50758	1	0.079
C056(B)	916128	C.MON	HOLYSTONE	0.0047	630	73.83	1	1	0.10450	72.171	1.67895	1	0.175
C200(B)	909890	C.MON	YAGEO	0.001	200	30.02	1	1	0.12689	64.879	1.50586	1	0.191
C005	761387	C.MON	YAGEO	0.00047	1000	161.3	1	1	0.13556	61.188	1.42260	1	0.193
C006	761387	C.MON	YAGEO	0.00047	1000	161.9	1	1	0.13604	61.236	1.42366	1	0.194
C053(B)	910440	C.MON	MURATA	0.0001	1000	269.6	1	1	0.25683	67.845	1.57488	1	0.404
C057(B)	910440	C.MON	MURATA	0.0001	1000	407.4	1	1	0.57907	65.665	1.52397	1	0.882
C113	713682	C.MON	TDK	0.00047	50	3.652	1	1	0.08053	62.657	1.45539	1	0.117
C108	740186	C.MON	TDK	0.47	50	2.43	1	1	0.06972	63.87	1.48281	1	0.103

LITEON

Capacitors (Except Aluminum Electrolytic Capacitors)

Ambient temperature 25℃

Desc.	Part No.	Type	Maker	Value(u)	V (rated)	V (operate)	λ_G	π_Q	π_S	T_C	π_T	π_E	λ_{SSi}
C216	712827	C.MON	TDK	0.1	50	11.77	1	1	0.20990	62.125	1.44346	1	0.303
C205	780552	C.MON	HOLYSTONE	0.1	200	0.706	1	1	0.05344	61.121	1.42111	1	0.076
C207	740061	C.MON	TDK	0.0001	50	2.805	1	1	0.07287	65.59	1.52224	1	0.111
C209	736282	C.MON	MURATA	0.1	50	0.04891	1	1	0.05264	62.238	1.44599	1	0.076
C213	736282	C.MON	MURATA	0.1	50	2.213	1	1	0.06796	64.087	1.48775	1	0.101
C214	736282	C.MON	MURATA	0.1	50	7.256	1	1	0.12322	64.103	1.48811	1	0.183

TOTAL λ_{SSi}	22.279

LITEON

Aluminum Electrolytic Capacitors

Ambient temperature 25℃

Desc.	Part No.	Type	Maker	Value (uF)	V (rated)	V (operate)	λ_G	π_Q	πs	T_C	πT	π_E	λSSi
C201(AB)	812529	C.ELE	RUBYCON	2200	16	11.86	15	1	1.78425	70.409	3.71657	1	99.470
C202(AB)	812529	C.ELE	RUBYCON	2200	16	11.86	15	1	1.78425	68.196	3.40470	1	91.123
C203(AB)	734370	C.ELE	NCC	47	50	11.86	25	1	0.53221	64.172	2.89459	1	38.513
C050(B)	753233	C.ELE	NCC	100	450	375.4	25	1	2.23029	58.311	2.26909	1	126.518
C107(AB)	734370	C.ELE	NCC	47	50	20.57	25	1	0.80845	68.524	3.44947	1	69.718

TOTAL λ_{SSi}	425.342

LITEON

Diodes

Ambient temperature 25℃

Desc.	Part No.	Type	Maker P/N	Maker	Vr (rated)	I (rated)	Vr (operate)	λ_G	π_Q	π_S	T_C	π_T	π_E	λ_{SSi}
BD001(B)	717485	BRG	GBU4K	VISHY	800	4	230.8	6	1	0.93852	62.856	1.74177	1	9.808
D101(B)	771586	DIO	S1M	TS	1000	1	51.94	6	1	0.87422	67.696	1.94033	1	10.178
D050(B)	768096	DIO	MUR460-G	TS	600	4	227.8	6	1	0.96454	69.005	1.99677	1	11.556
D202(B)	734579	FR	BAW56	DII	70	0.2	0.4094	3	1	0.86222	67.412	1.92824	1	4.988
D052(B)	753893	DIO	1N4148W-7-F	DII	100	0.15	0.7427	3	1	0.86263	65.748	1.85852	1	4.810
D100(B)	753893	DIO	1N4148W-7-F	DII	100	0.15	0.5023	3	1	0.86201	65.395	1.84397	1	4.769
D102(B)	753893	DIO	1N4148W-7-F	DII	100	0.15	20.98	3	1	0.91662	66.042	1.87070	1	5.144
D200(B)	768645	FR	BAV21W	VISHAY	200	0.25	39.72	3	1	0.91355	67.596	1.93607	1	5.306
D051(B)	793152	DIO	IN4007	TS	1000	1	167.4	6	1	0.90504	76.664	2.35135	1	12.768

TOTAL λ_{SSi}	69.326

LITEON

Microelectronic Devices

Ambient temperature 25℃

Desc.	Part No.	Maker P/N	Maker	λ_G	π_Q	T_C	π_T	π_E	λ_{SSi}
IC200	796689	LTA1205N	NXP	19	1	70.856	6.43990	1	122.358
IC100	795877	LTA1201R	NXP	19	1	67.618	5.38120	1	102.243
IC201	758079	AP4310	BCD	19	1	69.554	5.99367	1	113.880

TOTAL λ_{SSi}	338.481

LITEON

Mosfet

Ambient temperature 25℃

Desc.	Part No.	Type	Maker P/N	Maker	Rds(on)	P_D (rated)	P_D (Actual)	λ_G	π_Q	π_S	T_C	π_T	π_E	λ_{SSi}
Q050(B)	787181	M	AOTF10N60L	ALPHA & OMEGA	0.6	50	1.480172	20	1	0.32337	67.252	1.92146	1	12.427
Q051(B)	786581	M	AOTF12N50L	ALPHA & OMEGA	0.52	50	1.319586	20	1	0.32089	66.052	1.87112	1	12.008
Q201(B)	786331	M	PSMN013-100PS	PHILIPS	0.0139	170	0.939601	20	1	0.30522	71.154	2.09202	1	12.770

TOTAL λ_{SSi}	37.206

LITEON

OPTO-Electronic Devices

Ambient temperature 25℃

Desc.	Part No.	Maker P/N	Maker	λ_G	π_Q	T_C	π_T	π_E	λ_{SSi}
IC300(B)	793918	TCLT1017	VISHAY	10	1	63.889	6.29493	1	62.949

TOTAL λ_{SSi}	62.949

LITEON

Inductive Devices

Ambient temperature 25℃

Desc.	Part No.	Type	λ_G	π_Q	T_C	π_T	π_E	λ_{SSi}
L001	766155	C	7	1	58.463	1.36298	1	9.541
L002	821794	C	7	1	52.866	1.24546	1	8.718
L201	723233	C	7	1	60.081	1.39819	1	9.787
T050	821291	X	19	1	70.794	1.64539	1	31.262
T051	789456	X	19	1	62.959	1.46219	1	27.782
L050	789473	C	7	1	63.958	1.48481	1	10.394

TOTAL λ_{SSi}	97.484

SUMMARY TEST REPORT

CMTBF test report C	Test Date: 2016/1/7	Engineer: Joe Zou
Quantity: 2pcs	Ser. No.: 5#,6#	

1. Conditions:

Input: 115Vac/60Hz

Output: 12Vdc/5.83A (100% Load)

Ambient: 25℃

2. Equipment:

1) .DC electronic load :Chroma 6334

2).Oscilloscope: Tektronix DPO7104

3).AC Source: PACIFIC 120-ASX

4) Multimeter: FLUKE 189

5)Open chamber: OTC-2D

6)Thermal recorder: Agilent 34970A

3. Criteria:

The power supply reliability, when calculated by SR332 exceed 50000 hours with all output at 100% of maximum load and at ambient temperature of 12Vdc/5.83A (100% Load)

4. Result:

The test result meets customer spec., so that test result pass.

5. Record:

Conclusion: ☑ Pass ☐ Fail

Reference Document : Telcordia Reliability Prediction
Technical reference : SR-332 Issue1, May 2001
Test condition Input voltage : 115Vac/60Hz
Load condition : 12Vdc/5.83A (100% Load)
Temperature : 25℃

Item 1 : Resistors

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

= 33.712 Failures/10^9 hours

Item 2 : Capacitors (except aluminum electrolytic)

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

= 9.290 Failures/10^9 hours

Item 3 : Aluminum electrolytic capacitors

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

= 355.361 Failures/10^9 hours

Item 4 : Diodes

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

= 67.513 Failures/10^9 hours

Item 5 : Microelectronic devices (ic)

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

= 341.727 Failures/10^9 hours

Item6 : Mosfet

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

$$= \boxed{38.893} \text{ Failures/}10^9 \text{ hours}$$

Item 9 : Opto-electronic devices

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

$$= \boxed{60.603} \text{ Failures/}10^9 \text{ hours}$$

Item 10 : Inductive devices (inductive)

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

$$= \boxed{101.602} \text{ Failures/}10^9 \text{ hours}$$

Total	**1008.701**	Failures/10^9 hours
MTBF	**991373.97**	**hours**

Remark :

$\lambda_{SSi} = \lambda_{Gi}\pi_{Qi}\pi_{Si}\pi_{Ti}$

λ_{SSi} unit steady - state failure rate

λ_{Gi} : base failure rate for device

π_{Qi} : quality factor

π_{Si} : electrical stress factor

π_{Ti} : thermal acceleration factor

$$\lambda_{SS} = \pi_E \sum_{i=1} N_i \lambda_{SSi}$$

λ_{SS} : failure rate for unit

π_E : unit environment factor

N_i : quantity or device type

n : number of different device types in the unit

LITEON

Resistors

Ambient temperature 25℃

Desc.	Part No.	Type	Maker	Value(Ω)	P (rated)	V (operate)	λ_G	π_Q	π_S	T_C	π_T	π_E	λ_{SSi}
R060(AC)	904703	R.MO	FUTABA	0.1	2	0.0581	3	1	0.74836	69.351	1.17220	1	2.632
R061(AC)	904703	R.MO	FUTABA	0.1	2	0.0769	3	1	0.75408	70.804	1.18062	1	2.671
R059	713311	R.CF	KOA	10	0.25	0.047	0.5	1	0.52265	64.847	1.50513	1	0.393
R101	713311	R.CF	KOA	10	0.25	0.0429	0.5	1	0.52255	64.467	1.49642	1	0.391
R057	713678	R.CF	KOA	47	0.25	0.2506	0.5	1	0.52569	64.66	1.50084	1	0.394
R100	713678	R.CF	KOA	47	0.25	0.1906	0.5	1	0.52415	64.547	1.49825	1	0.393
R200	713678	R.CF	KOA	47	0.25	0.3513	0.5	1	0.52922	71.204	1.65534	1	0.438
R201	713678	R.CF	KOA	47	0.25	0.3515	0.5	1	0.52923	71.316	1.65806	1	0.439
R056	725094	R.CF	KOA	5600000	0.25	51.332	3	1	0.52332	64.373	1.49428	1	2.346
R103	758301	R.MF	KOA	12000	0.125	0.011	0.5	1	0.52205	64.384	1.49453	1	0.390
R113	716172	R.MF	KOA	12100	0.25	0.2438	0.5	1	0.52206	62.296	1.44729	1	0.378
R102	754881	R.MF	KOA	22100	0.125	0.0465	0.5	1	0.52205	64.293	1.49245	1	0.390
R112	736521	R.MF	KOA	33000	0.125	0.0154	0.5	1	0.52205	64.001	1.48579	1	0.388
R114	736521	R.MF	KOA	33000	0.125	0.0761	0.5	1	0.52205	63.328	1.47052	1	0.384
R204	714238	R.CF	KOA	15	0.125	0.2889	0.5	1	0.55315	66.149	1.53519	1	0.425
R058	760634	R.MF	TA-I	4700	0.25	0.6784	0.5	1	0.52231	62.457	1.45090	1	0.379
R004(AC)	909740	R.MF	YAGEO	51000	0.125	1.6166	0.5	1	0.52232	62.169	1.44444	1	0.377
R003	762739	R.MF	TA-I	910000	0.25	30.904	0.5	1	0.52490	62.279	1.44691	1	0.380
R106	781128	R.MF	TA-I	47	0.125	0.1073	0.5	1	0.52338	64.417	1.49528	1	0.391
R104	718902	R.MF	KOA	1000	0.125	0.0187	0.5	1	0.52205	64.252	1.49151	1	0.389
R105	718902	R.MF	KOA	1000	0.125	0.0147	0.5	1	0.52205	64.214	1.49065	1	0.389
R205	718902	R.MF	KOA	1000	0.125	0.0531	0.5	1	0.52206	66.118	1.53447	1	0.401
R063	750720	R.MF	KOA	118000	0.125	2.5018	0.5	1	0.52233	64.605	1.49958	1	0.392
R109	720388	R.MF	KOA	78700	0.125	19.242	0.5	1	0.54822	63.571	1.47602	1	0.405
R001(AC)	794143	R.HV	YAGEO	1300000	0.25	59.32	3	1	0.52945	61.285	1.42475	1	2.263
R002(AC)	794143	R.HV	YAGEO	1300000	0.25	59.31	3	1	0.52944	61.566	1.43099	1	2.273

LITEON

Resistors

Ambient temperature 25℃

Desc.	Part No.	Type	Maker	Value(Ω)	P (rated)	V (operate)	λ_G	π_Q	π_S	T_C	π_T	π_E	λ_{SSi}
R054(AC)	914140	R.MF	YAGEO	6200000	0.25	54.619	3	1	0.52335	64.699	1.50173	1	2.358
R055(AC)	914140	R.MF	YAGEO	6200000	0.25	54.556	3	1	0.52335	64.623	1.49999	1	2.355
R050	762577	R.MF	TA-I	91000	0.25	37.989	0.5	1	0.56692	66.271	1.53802	1	0.436
R051	762577	R.MF	TA-I	91000	0.25	37.975	0.5	1	0.56689	66.367	1.54025	1	0.437
R052	762577	R.MF	TA-I	91000	0.25	38.131	0.5	1	0.56727	66.543	1.54435	1	0.438
R053	762577	R.MF	TA-I	91000	0.25	38.107	0.5	1	0.56721	66.441	1.54198	1	0.437
R108	762577	R.MF	TA-I	91000	0.25	17.037	0.5	1	0.53078	66.421	1.54151	1	0.409
R209	739889	R.MF	KOA	1470	0.1	0.0361	0.5	1	0.52205	64.198	1.49028	1	0.389
R208	727787	R.MF	TA-I	100000	0.1	2.4628	0.5	1	0.52246	64.307	1.49277	1	0.390
R216	713455	R.CF	KOA	470	0.25	0.3406	0.5	1	0.52272	64.503	1.49725	1	0.391
R217	713568	R.CF	KOA	33	0.125	0.0074	0.5	1	0.52205	63.376	1.47160	1	0.384
R215	719985	R.CF	KOA	51	0.125	0.0355	0.5	1	0.52218	63.241	1.46855	1	0.383
R202	727963	R.MF	TA-I	16200	0.1	10.378	0.5	1	0.56917	62.962	1.46225	1	0.416
R210	728330	R.MF	TA-I	76800	0.1	9.587	0.5	1	0.53023	63.241	1.46855	1	0.389
R211	730152	R.MF	KOA	19100	0.1	2.3833	0.5	1	0.52407	62.583	1.45372	1	0.381
R214	751342	R.MF	KOA	2400	0.1	0.0067	0.5	1	0.52205	63.027	1.46372	1	0.382
R218	712818	R.CF	KOA	10000	0.125	1.0252	0.5	1	0.52262	63.397	1.47208	1	0.385
R207	727661	R.MF	TAI	6190	0.1	9.675	0.5	1	0.63546	64.278	1.49211	1	0.474
R213	727846	R.MF	TA-I	5110	0.1	0.0071	0.5	1	0.52205	63.252	1.46880	1	0.383
R203	713309	R.CF	KOA	1000000	0.25	0.0098	0.5	1	0.52205	62.778	1.45811	1	0.381
R062	713312	R.CF	KOA	3.6	0.25	0.0778	0.5	1	0.52663	65.403	1.51792	1	0.400
R250(AC)	811390	R.MF	RALEC	0.005	2	0.0309	0.5	1	0.59104	63.832	1.48195	1	0.438
R212	733173	R.MF	TA-I	604	0.1	0.0759	0.5	1	0.52211	63.818	1.48163	1	0.387

TOTAL λ_{SSi}	33.712

LITEON

Capacitors (Except Aluminum Electrolytic Capacitors)

Ambient temperature 25℃

Desc.	Part No.	Type	Maker	Value(u)	V (rated)	V (operate)	λ_G	π_Q	π_S	T_C	π_T	π_E	λ_{SSi}
C103(C)	910182	C.MON	YAGEO	0.00033	50	0.1077	1	1	0.05301	62.514	1.45218	1	0.077
C101	727981	C.MON	MURATA	0.00022	50	0.3214	1	1	0.05436	60.797	1.41395	1	0.077
C058	727795	C.MON	MURATA	0.01	50	2.488	1	1	0.07020	61.029	1.41907	1	0.100
C111	727795	C.MON	MURATA	0.01	50	1.588	1	1	0.06313	62.42	1.45007	1	0.092
C100	752529	C.MON	TDK	0.047	50	0.01132	1	1	0.05241	63.232	1.46835	1	0.077
C105	736282	C.MON	MURATA	0.1	50	20.69	1	1	0.60135	62.107	1.44306	1	0.868
C106	736282	C.MON	MURATA	0.1	50	20.69	1	1	0.60135	60.889	1.41598	1	0.851
C109	736282	C.MON	MURATA	0.1	50	2.611	1	1	0.07123	60.858	1.41529	1	0.101
C215	736282	C.MON	MURATA	0.1	50	11.88	1	1	0.21264	62.811	1.45885	1	0.310
C212	732582	C.MON	MURATA	0.00068	50	11.33	1	1	0.19928	60.815	1.41434	1	0.282
C003(C)	906613	C.MON	MURATA	2.2	25	1.382	1	1	0.07252	61.096	1.42056	1	0.103
C002	786478	C.MON	TDK	1	50	1.372	1	1	0.06154	62.293	1.44722	1	0.089
C110	786478	C.MON	TDK	1	50	0.2407	1	1	0.05385	62.773	1.45800	1	0.079
C206	786478	C.MON	TDK	1	50	21.35	1	1	0.65005	66.409	1.54123	1	1.002
C211	786478	C.MON	TDK	1	50	0.03027	1	1	0.05253	60.831	1.41470	1	0.074
C104	762558	C.MON	MURATA	0.00022	200	40.63	1	1	0.17353	61.957	1.43970	1	0.250

LITEON

Capacitors (Except Aluminum Electrolytic Capacitors)

Ambient temperature 25℃

Desc.	Part No.	Type	Maker	Value(u)	V (rated)	V (operate)	λ_G	π_Q	π_S	T_C	π_T	π_E	λ_{SSi}
C112	740186	C.MON	TDK	0.47	50	3.742	1	1	0.08139	60.643	1.41055	1	0.115
C051(C)	816199	C.MEF	SUNGHO	0.47	450	110.6	1	1	0.22315	67.453	1.56565	1	0.349
C052(C)	816199	C.MEF	SUNGHO	0.47	450	110.5	1	1	0.22286	69.49	1.61398	1	0.360
C001(AC)	819384	C.MEX	CARLI	0.33	275	114.3	1	1	0.60790	58.359	1.36074	1	0.827
C300(AC)	798247	C.DIS	MURATA	0.0015	250	32.63	1	1	0.11305	64.053	1.48698	1	0.168
C054(AC)	917175	C.MON	WALSIN	0.0033	1000	256.3	1	1	0.23744	67.203	1.55978	1	0.370
C055(AC)	917175	C.MON	WALSIN	0.0033	1000	256.3	1	1	0.23744	68.257	1.58462	1	0.376
C102	752529	C.MON	TDK	0.047	50	0.04752	1	1	0.05263	62.7	1.45635	1	0.077
C056(AC)	916103	C.MON	MURATA	0.0047	630	77.32	1	1	0.10797	69.353	1.61070	1	0.174
C200(AC)	910578	C.MON	HOLYSTONE	0.001	200	26.01	1	1	0.11274	63.372	1.47151	1	0.166
C005	761387	C.MON	YAGEO	0.00047	1000	78.86	1	1	0.08335	59.669	1.38917	1	0.116
C006	761387	C.MON	YAGEO	0.00047	1000	78.85	1	1	0.08334	59.445	1.38428	1	0.115
C053(C)	910441	C.MON	YAGEO	0.0001	1000	154.3	1	1	0.13008	66.165	1.53556	1	0.200
C057(C)	910441	C.MON	YAGEO	0.0001	1000	277.9	1	1	0.26971	63.476	1.47387	1	0.398
C113	713682	C.MON	TDK	0.00047	50	3.734	1	1	0.08132	60.617	1.40997	1	0.115
C108	740186	C.MON	TDK	0.47	50	2.536	1	1	0.07060	62.236	1.44594	1	0.102

LITEON

Capacitors (Except Aluminum Electrolytic Capacitors)

Ambient temperature 25℃

Desc.	Part No.	Type	Maker	Value(u)	V (rated)	V (operate)	λ_G	π_Q	π_S	T_C	π_T	π_E	λ_{SSi}
C216	712827	C.MON	TDK	0.1	50	11.81	1	1	0.21089	60.908	1.41640	1	0.299
C205	780552	C.MON	HOLYSTONE	0.1	200	0.7124	1	1	0.05345	59.787	1.39175	1	0.074
C207	740061	C.MON	TDK	0.0001	50	2.906	1	1	0.07375	63.749	1.48006	1	0.109
C209	736282	C.MON	MURATA	0.1	50	0.04959	1	1	0.05265	60.513	1.40768	1	0.074
C213	736282	C.MON	MURATA	0.1	50	2.22	1	1	0.06801	62.41	1.44984	1	0.099
C214	736282	C.MON	MURATA	0.1	50	7.3	1	1	0.12386	61.427	1.42790	1	0.177

TOTAL λ_{SSi}	9.290

LITEON

Aluminum Electrolytic Capacitors

Ambient temperature 25℃

Desc.	Part No.	Type	Maker	Value (uF)	V (rated)	V (operate)	λ_G	π_Q	πs	T_C	πT	π_E	λSSi
C201(C)	812564	C.ELE	NCC	2200	16	11.75	15	1	1.75505	69.796	3.62784	1	95.506
C202(C)	812564	C.ELE	NCC	2200	16	11.75	15	1	1.75505	67.258	3.27942	1	86.333
C203(C)	722142	C.ELE	RUBYCON	47	50	11.75	25	1	0.52941	62.017	2.64935	1	35.065
C050(AC)	765795	C.ELE	RUBYCON	100	450	256.3	25	1	1.18168	61.803	2.62600	1	77.577
C107(C)	722142	C.ELE	RUBYCON	47	50	20.53	25	1	0.80690	65.198	3.01800	1	60.880

TOTAL λ_{SSi}	355.361

LITEON

Diodes

Ambient temperature 25℃

Desc.	Part No.	Type	Maker P/N	Maker	Vr (rated)	I (rated)	Vr (operate)	λ_G	π_Q	π_S	T_C	π_T	π_E	λ_{SSi}
BD001(AC)	729075	BRG	GBU408	LITON	800	4	114.5	6	1	0.89847	60.107	1.63590	1	8.819
D101(AC)	741719	DIO	S1M	VISHAY	1000	1	44.34	6	1	0.87223	64.782	1.81890	1	9.519
D050(AC)	768731	General	MUR460_HF	LITE-ON SEMI	600	4	186.9	6	1	0.94502	72.906	2.17209	1	12.316
D202(AC)	724526	FR	BAW56	PHILIPS	70	0.25	0.3332	3	1	0.86194	66.427	1.88674	1	4.879
D052(C)	810955	DIO	1N4148W-HF	LITE-ON SEMI	100	0.15	0.4531	3	1	0.86188	66.335	1.88290	1	4.868
D100(C)	810955	DIO	1N4148W-HF	LITE-ON SEMI	100	0.15	0.4784	3	1	0.86194	65.417	1.84487	1	4.771
D102(C)	810955	DIO	1N4148W-HF	LITE-ON SEMI	100	0.15	17.48	3	1	0.90705	64.569	1.81025	1	4.926
D200(C)	811604	DIO	BAV21W-G	TS	250	0.2	35.23	3	1	0.89788	68.457	1.97300	1	5.315
D051(AC)	763775	General	1N4007-HF	LITON	1000	1	144	6	1	0.89871	74.442	2.24411	1	12.101

TOTAL λ_{SSi}	67.513

LITEON

Microelectronic Devices

Ambient temperature 25℃

Desc.	Part No.	Maker P/N	Maker	λ_G	π_Q	T_C	π_T	π_E	λ_{SSi}
IC200	796689	LTA1205N	NXP	19	1	70.421	6.28762	1	119.465
IC100	795877	LTA1201R	NXP	19	1	68.67	5.70667	1	108.427
IC201	758079	AP4310	BCD	19	1	69.547	5.99134	1	113.836

TOTAL λ_{SSi}	341.727

LITEON

Mosfet

Ambient temperature 25℃

Desc.	Part No.	Type	Maker P/N	Maker	Rds(on)	P_D (rated)	P_D (Actual)	λ_G	π_Q	π_S	T_C	π_T	π_E	λ_{SSi}
Q050(C)	732612	M	STP10NK60ZFP	STM	0.65	35	1.509723	20	1	0.33405	69.923	2.03706	1	13.609
Q051(C)	786622	M	FDPF12N50NZ	FAIRCHILD	0.52	42	1.192589	20	1	0.32244	67.936	1.95059	1	12.579
Q201(AC)	796110	M	TK22E10N1	TOSHIBA	0.0138	72	0.890200	20	1	0.31027	70.157	2.04742	1	12.705

TOTAL λ_{SSi}	38.893

LITEON

OPTO-Electronic Devices

Ambient temperature 25℃

Desc.	Part No.	Maker P/N	Maker	λ_G	π_Q	T_C	π_T	π_E	λ_{SSi}
IC300(AC)	798049	798049.00000	LITE-ON	10	1	63.359	6.06032	1	60.603

TOTAL λ_{SSi}	60.603

LITEON

Inductive Devices

Ambient temperature 25℃

Desc.	Part No.	Type	λ_G	π_Q	T_C	π_T	π_E	λ_{SSi}
L001	766155	C	7	1	63.823	1.48174	1	10.372
L002	821794	C	7	1	57.774	1.34816	1	9.437
L201	723233	C	7	1	63.249	1.46873	1	10.281
T050	821291	X	19	1	69.72	1.61949	1	30.770
T051	789456	X	19	1	67.018	1.55545	1	29.554
L050	789473	C	7	1	68.829	1.59820	1	11.187

TOTAL λ_{SSi}	101.602

SUMMARY TEST REPORT

CMTBF test report C	Test Date: 2016/1/7	Engineer: Joe Zou
Quantity: 2pcs	Ser. No.: 5#,6#	

1. Conditions:

Input: 230V/50Hz

Output: 12Vdc/5.83A (100% Load)

Ambient: 25℃

2. Equipment:

1) .DC electronic load :Chroma 6334

2).Oscilloscope: Tektronix DPO7104

3).AC Source: PACIFIC 120-ASX

4) Multimeter: FLUKE 189

5)Open chamber: OTC-2D

6)Thermal recorder: Agilent 34970A

3. Criteria:

The power supply reliability, when calculated by SR332 exceed 50000 hours with all output at 100% of maximum load and at ambient temperature of 12Vdc/5.83A (100% Load)

4. Result:

The test result meets customer spec., so that test result pass.

5. Record:

Conclusion: ☑ Pass ☐ Fail

Reference Document : Telcordia Reliability Prediction
Technical reference : SR-332 Issue1, May 2001
Test condition Input voltage : 230V/50Hz
Load condition : 12Vdc/5.83A (100% Load)
Temperature : 25℃

Item 1 : Resistors

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

= 33.548 Failures/10^9 hours

Item 2 : Capacitors (except aluminum electrolytic)

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

= 22.025 Failures/10^9 hours

Item 3 : Aluminum electrolytic capacitors

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

= 401.025 Failures/10^9 hours

Item 4 : Diodes

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

= 64.436 Failures/10^9 hours

Item 5 : Microelectronic devices (ic)

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

= 324.398 Failures/10^9 hours

Item6 : Mosfet

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

= 38.670 Failures/10^9 hours

Item 9 : Opto-electronic devices

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

= 55.790 Failures/10^9 hours

Item 10 : Inductive devices (inductive)

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

= 97.249 Failures/10^9 hours

Total	**1037.140**	Failures/10^9 hours
MTBF	**964190.29**	**hours**

Remark :

$\lambda_{SSi} = \lambda_{Gi}\pi_{Qi}\pi_{Si}\pi_{Ti}$

λ_{SSi} unit steady - state failure rate

λ_{Gi} : base failure rate for device

π_{Qi} : quality factor

π_{Si} : electrical stress factor

π_{Ti} : thermal acceleration factor

$$\lambda_{SS} = \pi_E \sum_{i=1}^{n} N_i \lambda_{SSi}$$

λ_{SS} : failure rate for unit

π_E : unit environment factor

N_i : quantity or device type

n : number of different device types in the unit

LITEON

Resistors

Ambient temperature 25℃

Desc.	Part No.	Type	Maker	Value(Ω)	P (rated)	V (operate)	λ_G	π_Q	π_S	T_C	π_T	π_E	λ_{SSi}
R060(AC)	904703	R.MO	FUTABA	0.1	2	0.0191	3	1	0.74163	66.595	1.15619	1	2.572
R061(AC)	904703	R.MO	FUTABA	0.1	2	0.067	3	1	0.75086	68.645	1.16810	1	2.631
R059	713311	R.CF	KOA	10	0.25	0.0326	0.5	1	0.52233	63.866	1.48272	1	0.387
R101	713311	R.CF	KOA	10	0.25	0.0448	0.5	1	0.52259	63.512	1.47468	1	0.385
R057	713678	R.CF	KOA	47	0.25	0.2573	0.5	1	0.52588	63.81	1.48145	1	0.390
R100	713678	R.CF	KOA	47	0.25	0.2025	0.5	1	0.52442	63.594	1.47654	1	0.387
R200	713678	R.CF	KOA	47	0.25	0.4906	0.5	1	0.53613	70.264	1.63258	1	0.438
R201	713678	R.CF	KOA	47	0.25	0.4908	0.5	1	0.53615	70.412	1.63615	1	0.439
R056	725094	R.CF	KOA	5600000	0.25	75.42	3	1	0.52481	63.812	1.48149	1	2.333
R103	758301	R.MF	KOA	12000	0.125	0.0147	0.5	1	0.52205	63.445	1.47317	1	0.385
R113	716172	R.MF	KOA	12100	0.25	0.3104	0.5	1	0.52207	61.783	1.43582	1	0.375
R102	754881	R.MF	KOA	22100	0.125	0.0484	0.5	1	0.52205	63.352	1.47106	1	0.384
R112	736521	R.MF	KOA	33000	0.125	0.0158	0.5	1	0.52205	63.128	1.46600	1	0.383
R114	736521	R.MF	KOA	33000	0.125	0.0807	0.5	1	0.52205	62.538	1.45271	1	0.379
R204	714238	R.CF	KOA	15	0.125	0.398	0.5	1	0.58265	65.502	1.52020	1	0.443
R058	760634	R.MF	TA-I	4700	0.25	1.0179	0.5	1	0.52264	61.49	1.42930	1	0.374
R004(AC)	909740	R.MF	YAGEO	51000	0.125	3.3861	0.5	1	0.52327	61.432	1.42801	1	0.374
R003	762739	R.MF	TA-I	910000	0.25	63.29	0.5	1	0.53413	61.455	1.42852	1	0.382
R106	781128	R.MF	TA-I	47	0.125	0.1746	0.5	1	0.52558	63.674	1.47836	1	0.388
R104	718902	R.MF	KOA	1000	0.125	0.0217	0.5	1	0.52205	63.498	1.47437	1	0.385
R105	718902	R.MF	KOA	1000	0.125	0.0162	0.5	1	0.52205	63.645	1.47770	1	0.386
R205	718902	R.MF	KOA	1000	0.125	0.0606	0.5	1	0.52207	65.438	1.51873	1	0.396
R063	750720	R.MF	KOA	118000	0.125	2.5028	0.5	1	0.52233	63.606	1.47682	1	0.386
R109	720388	R.MF	KOA	78700	0.125	19.409	0.5	1	0.54869	62.763	1.45777	1	0.400
R001(AC)	794143	R.HV	YAGEO	1300000	0.25	119.76	3	1	0.55287	60.474	1.40682	1	2.333
R002(AC)	794143	R.HV	YAGEO	1300000	0.25	119.65	3	1	0.55281	60.678	1.41132	1	2.341

LITEON

Resistors

Ambient temperature 25℃

Desc.	Part No.	Type	Maker	Value(Ω)	P (rated)	V (operate)	λ_G	π_Q	π_S	T_C	π_T	π_E	λ_{SSi}
R054(AC)	914140	R.MF	YAGEO	6200000	0.25	80.92	3	1	0.52492	64.11	1.48827	1	2.344
R055(AC)	914140	R.MF	YAGEO	6200000	0.25	80.91	3	1	0.52492	64.115	1.48839	1	2.344
R050	762577	R.MF	TA-I	91000	0.25	37.023	0.5	1	0.56458	65.701	1.52480	1	0.430
R051	762577	R.MF	TA-I	91000	0.25	37.027	0.5	1	0.56459	65.527	1.52078	1	0.429
R052	762577	R.MF	TA-I	91000	0.25	37.191	0.5	1	0.56498	65.945	1.53045	1	0.432
R053	762577	R.MF	TA-I	91000	0.25	37.182	0.5	1	0.56496	65.845	1.52814	1	0.432
R108	762577	R.MF	TA-I	91000	0.25	19.695	0.5	1	0.53375	65.908	1.52959	1	0.408
R209	739889	R.MF	KOA	1470	0.1	0.0369	0.5	1	0.52205	63.413	1.47244	1	0.384
R208	727787	R.MF	TA-I	100000	0.1	2.4621	0.5	1	0.52246	63.338	1.47074	1	0.384
R216	713455	R.CF	KOA	470	0.25	0.3568	0.5	1	0.52278	63.552	1.47559	1	0.386
R217	713568	R.CF	KOA	33	0.125	0.0068	0.5	1	0.52205	62.719	1.45678	1	0.380
R215	719985	R.CF	KOA	51	0.125	0.0373	0.5	1	0.52219	62.61	1.45433	1	0.380
R202	727963	R.MF	TA-I	16200	0.1	10.323	0.5	1	0.56865	62.225	1.44570	1	0.411
R210	728330	R.MF	TA-I	76800	0.1	9.549	0.5	1	0.53017	62.481	1.45143	1	0.385
R211	730152	R.MF	KOA	19100	0.1	2.3739	0.5	1	0.52405	62.077	1.44239	1	0.378
R214	751342	R.MF	KOA	2400	0.1	0.0072	0.5	1	0.52205	62.134	1.44366	1	0.377
R218	712818	R.CF	KOA	10000	0.125	1.0147	0.5	1	0.52261	62.735	1.45714	1	0.381
R207	727661	R.MF	TAI	6190	0.1	9.621	0.5	1	0.63407	63.417	1.47253	1	0.467
R213	727846	R.MF	TA-I	5110	0.1	0.0073	0.5	1	0.52205	62.447	1.45067	1	0.379
R203	713309	R.CF	KOA	1000000	0.25	0.0156	0.5	1	0.52205	62.174	1.44456	1	0.377
R062	713312	R.CF	KOA	3.6	0.25	0.0668	0.5	1	0.52542	64.502	1.49722	1	0.393
R250(AC)	811390	R.MF	RALEC	0.005	2	0.0307	0.5	1	0.59009	62.887	1.46056	1	0.431
R212	733173	R.MF	TA-I	604	0.1	0.0753	0.5	1	0.52211	63.142	1.46631	1	0.383

TOTAL λ_{SSi}	33.548

LITEON

Capacitors (Except Aluminum Electrolytic Capacitors)

Ambient temperature 25℃

Desc.	Part No.	Type	Maker	Value(u)	V (rated)	V (operate)	λ_G	π_Q	π_S	T_C	π_T	π_E	λ_{SSi}
C103(C)	910182	C.MON	YAGEO	0.00033	50	0.0927	1	1	0.05292	61.679	1.43351	1	0.076
C101	727981	C.MON	MURATA	0.00022	50	0.3385	1	1	0.05447	61.539	1.43039	1	0.078
C058	727795	C.MON	MURATA	0.01	50	2.489	1	1	0.07021	61.631	1.43244	1	0.101
C111	727795	C.MON	MURATA	0.01	50	1.588	1	1	0.06313	61.454	1.42850	1	0.090
C100	752529	C.MON	TDK	0.047	50	0.01135	1	1	0.05241	62.339	1.44825	1	0.076
C105	736282	C.MON	MURATA	0.1	50	20.57	1	1	0.59289	61.47	1.42886	1	0.847
C106	736282	C.MON	MURATA	0.1	50	20.57	1	1	0.59289	61.477	1.42901	1	0.847
C109	736282	C.MON	MURATA	0.1	50	2.504	1	1	0.07033	61.792	1.43602	1	0.101
C215	736282	C.MON	MURATA	0.1	50	11.84	1	1	0.21164	61.841	1.43712	1	0.304
C212	732582	C.MON	MURATA	0.00068	50	11.31	1	1	0.19881	61.583	1.43137	1	0.285
C003(C)	906613	C.MON	MURATA	2.2	25	3.16	1	1	0.11033	61.809	1.43640	1	0.158
C002	786478	C.MON	TDK	1	50	3.166	1	1	0.07605	61.769	1.43551	1	0.109
C110	786478	C.MON	TDK	1	50	0.2404	1	1	0.05385	61.792	1.43602	1	0.077
C206	786478	C.MON	TDK	1	50	20.45	1	1	0.58456	65.603	1.52254	1	0.890
C211	786478	C.MON	TDK	1	50	0.03018	1	1	0.05253	61.421	1.42777	1	0.075
C104	762558	C.MON	MURATA	0.00022	200	48.48	1	1	0.21875	62.642	1.45505	1	0.318

LITEON

Capacitors (Except Aluminum Electrolytic Capacitors)

Ambient temperature 25℃

Desc.	Part No.	Type	Maker	Value(u)	V (rated)	V (operate)	λ_G	π_Q	π_S	T_C	π_T	π_E	λ_{SSi}
C112	740186	C.MON	TDK	0.47	50	3.667	1	1	0.08068	61.61	1.43197	1	0.116
C051(C)	816199	C.MEF	SUNGHO	0.47	450	229.3	1	1	1.05800	63.023	1.46363	1	1.549
C052(C)	816199	C.MEF	SUNGHO	0.47	450	229.4	1	1	1.05939	64.984	1.50827	1	1.598
C001(AC)	819384	C.MEX	CARLI	0.33	275	229.8	1	1	7.24459	55.306	1.29588	1	9.388
C300(AC)	798247	C.DIS	MURATA	0.0015	250	64.42	1	1	0.23938	62.984	1.46275	1	0.350
C054(AC)	917175	C.MON	WALSIN	0.0033	1000	380	1	1	0.49263	64.748	1.50286	1	0.740
C055(AC)	917175	C.MON	WALSIN	0.0033	1000	380	1	1	0.49263	66.613	1.54599	1	0.762
C102	752529	C.MON	TDK	0.047	50	0.04751	1	1	0.05263	61.992	1.44049	1	0.076
C056(AC)	916103	C.MON	MURATA	0.0047	630	75.86	1	1	0.10650	68.673	1.59449	1	0.170
C200(AC)	910578	C.MON	HOLYSTONE	0.001	200	30.26	1	1	0.12779	62.559	1.45319	1	0.186
C005	761387	C.MON	YAGEO	0.00047	1000	161.3	1	1	0.13556	60.282	1.40260	1	0.190
C006	761387	C.MON	YAGEO	0.00047	1000	161.9	1	1	0.13604	60.276	1.40247	1	0.191
C053(C)	910441	C.MON	YAGEO	0.0001	1000	267.1	1	1	0.25306	65.331	1.51626	1	0.384
C057(C)	910441	C.MON	YAGEO	0.0001	1000	403.9	1	1	0.56723	64.268	1.49188	1	0.846
C113	713682	C.MON	TDK	0.00047	50	3.652	1	1	0.08053	61.32	1.42552	1	0.115
C108	740186	C.MON	TDK	0.47	50	2.43	1	1	0.06972	61.481	1.42910	1	0.100

LITEON

Capacitors (Except Aluminum Electrolytic Capacitors)

Ambient temperature 25℃

Desc.	Part No.	Type	Maker	Value(u)	V (rated)	V (operate)	λ_G	π_Q	π_S	T_C	π_T	π_E	λ_{SSi}
C216	712827	C.MON	TDK	0.1	50	11.77	1	1	0.20990	61.441	1.42821	1	0.300
C205	780552	C.MON	HOLYSTONE	0.1	200	0.706	1	1	0.05344	60.306	1.40313	1	0.075
C207	740061	C.MON	TDK	0.0001	50	2.805	1	1	0.07287	64.622	1.49997	1	0.109
C209	736282	C.MON	MURATA	0.1	50	0.04891	1	1	0.05264	61.2	1.42286	1	0.075
C213	736282	C.MON	MURATA	0.1	50	2.213	1	1	0.06796	61.563	1.43092	1	0.097
C214	736282	C.MON	MURATA	0.1	50	7.256	1	1	0.12322	61.737	1.43480	1	0.177

TOTAL λ_{SSi}	22.025

LITEON

Aluminum Electrolytic Capacitors

Ambient temperature 25℃

Desc.	Part No.	Type	Maker	Value (uF)	V (rated)	V (operate)	λ_G	π_Q	πs	T_C	πT	π_E	λSSi
C201(C)	812564	C.ELE	NCC	2200	16	11.69	15	1	1.73933	68.469	3.44192	1	89.800
C202(C)	812564	C.ELE	NCC	2200	16	11.69	15	1	1.73933	65.948	3.11104	1	81.167
C203(C)	722142	C.ELE	RUBYCON	47	50	11.69	25	1	0.52788	60.953	2.53498	1	33.454
C050(AC)	765795	C.ELE	RUBYCON	100	450	380	25	1	2.28569	60.076	2.44391	1	139.650
C107(C)	722142	C.ELE	RUBYCON	47	50	20.4	25	1	0.80188	63.715	2.84102	1	56.954

TOTAL λ_{SSi}	401.025

LITEON

Diodes

Ambient temperature 25℃

Desc.	Part No.	Type	Maker P/N	Maker	Vr (rated)	I (rated)	Vr (operate)	λ_G	π_Q	π_S	T_C	π_T	π_E	λ_{SSi}
BD001(AC)	729075	BRG	GBU408	LITON	800	4	230.3	6	1	0.93835	60.012	1.63233	1	9.190
D101(AC)	741719	DIO	S1M	VISHAY	1000	1	51.15	6	1	0.87402	63.76	1.77767	1	9.322
D050(AC)	768731	General	MUR460_HF	LITE-ON SEMI	600	4	222.4	6	1	0.96194	67.788	1.94426	1	11.222
D202(AC)	724526	FR	BAW56	PHILIPS	70	0.25	0.3316	3	1	0.86193	63.447	1.76518	1	4.564
D052(C)	810955	DIO	1N4148W-HF	LITE-ON SEMI	100	0.15	0.494	3	1	0.86198	62.485	1.72720	1	4.466
D100(C)	810955	DIO	1N4148W-HF	LITE-ON SEMI	100	0.15	0.5066	3	1	0.86202	61.368	1.68386	1	4.355
D102(C)	810955	DIO	1N4148W-HF	LITE-ON SEMI	100	0.15	21.08	3	1	0.91690	62.485	1.72720	1	4.751
D200(C)	811604	DIO	BAV21W-G	TS	250	0.2	39.56	3	1	0.90255	64.238	1.79687	1	4.865
D051(AC)	763775	General	1N4007-HF	LITON	1000	1	167.2	6	1	0.90498	72.53	2.15472	1	11.700

TOTAL λ_{SSi}	64.436

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Microelectronic Devices

Ambient temperature 25℃

Desc.	Part No.	Maker P/N	Maker	λ_G	π_Q	T_C	π_T	π_E	λ_{SSi}
IC200	796689	LTA1205N	NXP	19	1	69.944	6.12434	1	116.362
IC100	795877	LTA1201R	NXP	19	1	67.263	5.27517	1	100.228
IC201	758079	AP4310	BCD	19	1	68.567	5.67404	1	107.807

TOTAL λ_{SSi}	324.398

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Mosfet

Ambient temperature 25℃

Desc.	Part No.	Type	Maker P/N	Maker	Rds(on)	P_D (rated)	P_D (Actual)	λ_G	π_Q	π_S	T_C	π_T	π_E	λ_{SSi}
Q050(C)	732612	M	STP10NK60ZFP	STM	0.65	35	2.127712	20	1	0.34851	69.516	2.01912	1	14.074
Q051(C)	786622	M	FDPF12N50NZ	FAIRCHILD	0.52	42	1.377055	20	1	0.32585	66.243	1.87906	1	12.246
Q201(AC)	796110	M	TK22E10N1	TOSHIBA	0.0138	72	0.873992	20	1	0.31010	68.883	1.99146	1	12.351

TOTAL λ_{SSi}	38.670

LITEON

OPTO-Electronic Devices

Ambient temperature 25℃

Desc.	Part No.	Maker P/N	Maker	λ_G	π_Q	T_C	π_T	π_E	λ_{SSi}
IC300(AC)	798049	798049.00000	LITE-ON	10	1	62.21	5.57899	1	55.790

TOTAL λ_{SSi}	55.790

LITEON

Inductive Devices

Ambient temperature 25℃

Desc.	Part No.	Type	λ_G	π_Q	T_C	π_T	π_E	λ_{SSi}
L001	766155	C	7	1	59.608	1.38784	1	9.715
L002	821794	C	7	1	53.09	1.25004	1	8.750
L201	723233	C	7	1	62.27	1.44670	1	10.127
T050	821291	X	19	1	68.579	1.59226	1	30.253
T051	789456	X	19	1	63.527	1.47502	1	28.025
L050	789473	C	7	1	63.861	1.48261	1	10.378

TOTAL λ_{SSi}	97.249

File No : DQEDVT20160113001

To : EE :Arvin Hsu ; ME: Felix Fan ; NPI: lianzhen yang; PM: Michael Chen

CC :RD: Koson Lu ; Brian TH Lin ; NPI: WH Liu; QRA: Caesar Lin

DQE Qualification Report

☐ **Alpha** ■ **Beta**

Model Name: PA-1071-11IL

Customer: ILLO

Stage: DVT

Spec Rev: A.01

Part List Rev: 0E

PCB Rev: A.01

Report Rev: A

Conclusion: ■ **PASS**

☐ **FAIL**

Prepared By: **Checked By:** **Approved By:**

Test Report Summary

Test Date:	2016/01/13
Quantity:	9pcs(ENV),6pcs(EMC),6pcs(DVT)
Test Engineer:	ENV: Bin Li EMC :Roger Chen DVT: Roger Chen
Serial No.:	ENV: 1#.2#.3#.4#.5#.6#.7#.8#.9#
	EMC:.10#.11#.12#.13#.14#.15#
	DVT: 16#.17#.18#.19#.20#.21#

ATE
Test equipment:

Instrument Name	Mfr / Type	Calibration Date	next Calibration Date:
Power Analyzer Operation	Chroma 66202	2015/6/4	2016/6/3
DC electronic load	Chroma 63610-80-20	2015/6/23	2016/6/22
AC source	Chroma 6530	2015/8/10	2016/8/9
Power Supply Auto Test System	Chroma Model 8000	2015/4/8	2016/4/7
Digital Phosphor Oscilloscope	Tek TPO 7104	2015/7/3	2016/7/2

DVT
Test equipment:

Instrument Name	Mfr / Type	Calibration Date	next Calibration Date:
Power Analyzer Operation	YOKOGAWA WT210	2015/9/7	2016/9/6
DC electronic load	Chroma 63303	2015/2/17	2016/2/16
AC source	Pacific SmartSource 120-ASX	2015/12/17	2016/12/16
Digital Phosphor Oscilloscope	Tek TPO 7104	2015/7/3	2016/7/2
Data Gatherer	Agilent 34970A	2015/5/5	2016/5/4
Open Chamber	TAKAMISAWA OTC-2D	NCR	NCR
Electrical Safety & Functionality Test System	EXTECH SPACE-9170	2015/4/8	2016/4/7

EMC
Test equipment:

Instrument Name	Mfr / Type	Calibration Date	next Calibration Date:
ESCI.EMI Test Receiver	ROHDE & SCHWARZ ESCI,ENV216	2015/7/3	2016/7/4
Symphonie.	Dual channel real-time sound and vibration measurement system:01dB	2015/9/8	2016/9/7
Anechoic Box	OE	NA	NA
Test computer	Type 7439-RK6	NA	NA
Surge	ECAT-E510A & E503	2015/6/26	2016/6/25
ESD	ESS-2000AX	2015/9/20	2016/9/19

EMC	EMCPRO PLUS(S/N 0710277).	2015/3/10	2016/3/09
AC source	Pacific SmartSource 120-ASX	2015/9/21	2016/9/20
DC electronic load	Chroma 63303	2015/11/12	2016/11/11
Power Analyzer	Chroma 6630	2015/6/4	2016/6/3

ENV
Test equipment:

Instrument Name	Mfr / Type	Calibration Date	next Calibration Date:
Vibration tester	SHINKEN G-0210N	NCR	NCR
Electrical safety compliance analyzer	EXTECH-7742	2015/7/4	2016/7/3
Power supply auto test system	Chroma 8000	2015/4/8	2016/4/7
Drop tester	PD-315	NCR	NCR
Close chamber	ESPEC	NCR	NCR
Stress and pull tester	MZ9004	2015/12/3	2016/12/2
Bending Tester	JT-7063	2015/12/3	2016/12/2
Shock	TSK-C4T-150+RAMP	NCR	NCR
Automatic Linker Tester Of Forces & Displacement	Model:1220S MZ9630	2015/7/25	2016/7/24
DC electronic load	Chroma 63303	2015/4/4	2016/4/3

Design Verification Test Tracking File

Rev: 1.0

No.	Project Phase	Project Item	Issue Description		Propositional Solution	Corrective Action	Person in Charge	Open Date	Due Date	Confirm Result	Responser	Status	Remark
1	DVT(B source)	SURGE	1. Input:220Vac/50Hz 2. Output: 12Vdc/5.83A (Full Load) 3. Spec: 4KV A level 4. Test result: 4.4KV B source: D level 4.0KV B source: D level			1、12/30号将Issue机台寄给RD分析，预计1/9号回复 2.1/5号RD回复，删除Bsource，同时将Surge测试时间由18S改为40S测试，验证A Source 10Pcs，预计1/7号提供结果 3.1/7号测试7Pcs均Pass，等待与RD讨论是否tracking此Issue	Arvin Hsu/Felix Fan	2015/12/23	2016/1/8	采用40S间隔测试Pass	ROGER	Tracking	待RD将更改后的规格书上传至 PA-1071-11IL-LF\PA-1071-11IL-LF_SPEC_rev A
2	DVT(C source)	EMI	1. Input: 220Vac/50Hz 2. Output: 12Vdc/5.83A 3. Spec: margin > 6dB 4. Test Data: C:1.4 dB			1.将Fail机台的电感同OK机台的电感交由IQM测试，发现两者电感感量差异较大，已通知IQM让厂商分析。 2.2016/1/4，IQM回复已寄往厂商分析，预计1/9号提供分析报告 2.1/6号厂商回复，电感感量偏低是因为磁芯破裂	Arvin Hsu/Felix Fan	2015/12/23	2016/1/6	两者电感感量差异较大是因为磁芯破裂，厂商分析结果见remark附件。	ROGER	Close	821794异常分析报表.ppt
3	DVT(C source)	EMI and GND	1. Input: 220Vac/50Hz 2. Output: 12Vdc/5.83A 3. Spec: margin > 6dB 4. Test Data: C:0.1 dB			1.将Fail机台的电感同OK机台的电感交由IQM测试，发现两者电感感量差异较大，已通知IQM让厂商分析。 2.2016/1/4，IQM回复已寄往厂商分析，预计1/9号提供分析报告 2.1/6号厂商回复，电感感量偏低是因为磁芯破裂	Arvin Hsu/Felix Fan	2015/12/23	2016/1/6	两者电感感量差异较大是因为磁芯破裂，厂商分析结果见remark附件。	ROGER	Close	821794异常分析报表.ppt
3	DVT(B source)	Key Temperature	1. Input: 264Vac/63Hz 2. Output: 12Vdc/5.83A 3. Spec: do not latch offand shall be limited to derating 4. Test Data: latch off			1、1/13将机台中的温升线去掉在相同条件下空测，未出现Latch off，但还需后续验证 2、另找一机台重新点胶测试Pass	Arvin Hsu/Felix Fan	2016/1/13	2016/1/13	重新点线测试Pass	ROGER	tracking	

LITEON

SUMMARY TEST REPORT

Design Verification Test Report	NO .	Test Item	Result
Electrical Function	1	Efficiency Requirement Test	Pass
	2	Power Saving Requirement Test	Pass
	3	Input Current Test	Pass
	4	Static DC Load Test	Pass
	5	Ripple&Noise Test	Pass
	6	Rise Time Test	Pass
	7	Hold Up Time Test	Pass
	8	Overshoot & Undershoot Test	Pass
	9	SCP Test	Pass
	10	OCP Test	Pass
	11	Turn On Time Test	Pass
	12	Transient Response Test	Pass
	13	OTP Test	Pass
	14	OVP Test	Pass
	15	Inrush Current Test	Pass
Safety Test	16	Hi-pot &IR Test	Pass
	17	Leakage Current Test	Pass
Reliability	18	Bulk Cap C050	Pass
	19	PWM Mosfet Q050	Pass
	20	PFC Mosfet Q051	Pass
	21	Output Mosfet Q201	Pass
	22	Snubber Diode D050	Pass
	23	Snubber Diode D051	Pass
	24	Case Thermal Test	Pass
	25	Key Component Thermal	Pass
	26	AC Cycles	Pass
EMC	27	EMI(Conduction)	Pass
	28	EMI(Conduction)(GND)	Pass
	29	Acoustic noise	Pass
	30	Surge	Pass
	31	EFT	Pass
	32	ESD	Pass
	33	Dips	Pass
ENV	34	Vibration	Pass
	35	Drop	Pass
	36	T&H Storage Test	Pass
	37	T&H CycleTest	Pass
	38	Thermal shock	Pass
	39	DC plug insert out test	Pass
	40	AC inlet insert out test	Pass

EPA Requirement (A)

1.Condition:
1>.Input: 115Vac/60Hz & 230Vac/50Hz
2>.Output: 25%,50%,75%,100%load
3>. Warm up 20 minutes
4>.Ambient:25℃

2.Pass/ Fail Criteria
1>Average efficiency shall be more than 88% at 115Vac/60HZ&230Vac/50HZ

3.TestResult:PASS

Vin(V)	F(Hz)	Loaing(A)	Pin(W)	Vout(V)	Iout(A)	Pout(W)	Eff(%)	PF	THD(%)	Max Spec(%)	Min Spec(%)	Average Eff(%)	Test Result
114.900	60	100%Load	78.852	11.765	5.830	68.588	86.983	0.986	0.116	100.000	88.000	88.521	PASS
114.910		75%Load	58.932	11.881	4.372	51.943	88.140	0.975	0.116				
114.920		50%Load	39.404	12.016	2.915	35.031	88.903	0.482	0.227				
114.930		25%Load	19.638	12.135	1.457	17.686	90.058	0.456	0.158				
114.930		10%Load	7.891	12.210	0.584	7.128	90.328	0.418	0.128				
Vin(V)	F(Hz)	Loaing(A)	Pin(W)	Vout(V)	Iout(A)	Pout(W)	Eff(%)	PF	THD(%)	Max Spec(%)	Min Spec(%)	Average Eff(%)	Test Result
229.850	50	100%Load	78.092	11.729	5.830	68.378	87.560	0.929	0.133	100.000	88.000	88.829	PASS
229.860		75%Load	59.032	11.860	4.372	51.851	87.835	0.906	0.133				
229.860		50%Load	39.076	12.006	2.915	35.002	89.575	0.411	0.153				
229.860		25%Load	19.570	12.131	1.457	17.681	90.347	0.383	0.143				
229.870		10%Load	7.917	12.207	0.584	7.126	90.011	0.342	0.140				

Input Wattage (A)

1.Condition:
1>.Input: 230Vac/50Hz
2>.Output:12Vdc/0A
3>.Ambient:25℃

2.Pass/ Fail Criteria
1>.Pin should be less than 0.21W@Iout=0A at 230Vac/50Hz

3.TestResult:PASS

Vin(V)	F(Hz)	Load(A)	Max-spec(W)	Min-spec(W)	PF	THD(%)	Pin(W)	Test Result
229.870	50	0.000	0.210	*	0.007	0.140	0.092	PASS

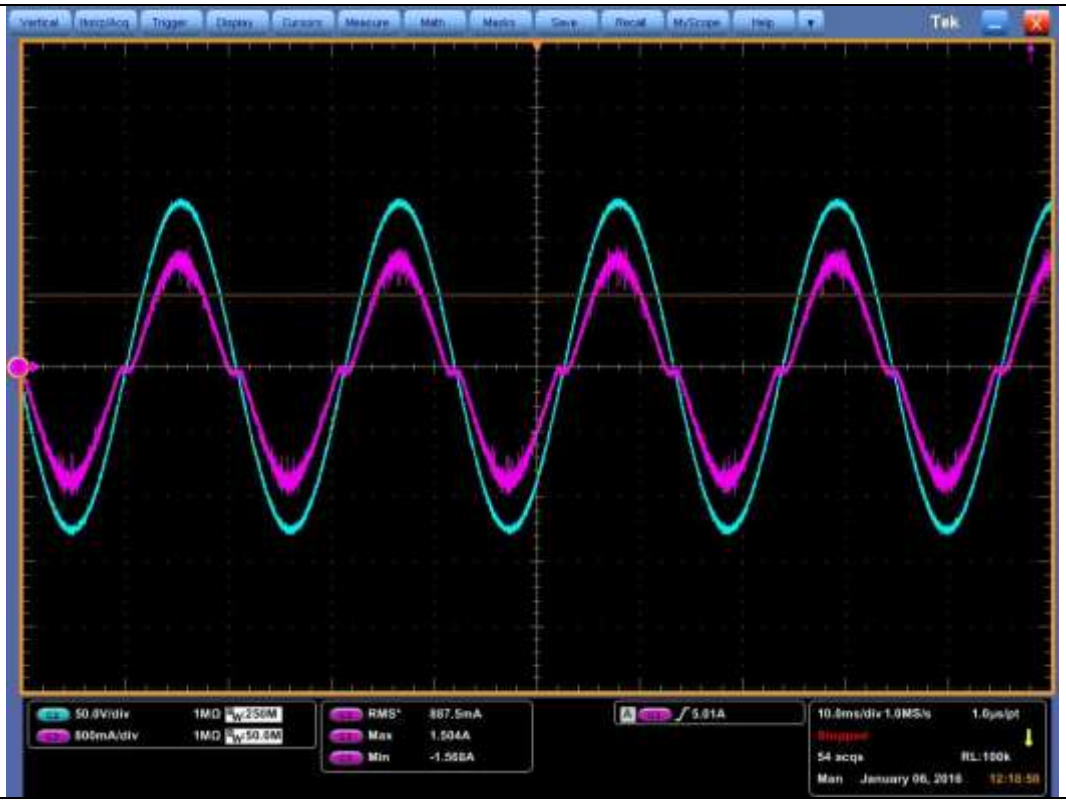
Input Current(A)

1.Condition:
1>.Input:90Vac/47Hz
2>.Output: 12Vdc/5.83A
3>.Ambient:25℃

2.Pass Fail Criteria:
1>. 1 .5Amps maximum at input voltage 90Vac/47Hz

3.TestResult:PASS

Vin(V)	Fre(HZ)	I_Load(A)	Max(A)	Min(A)	Iin(A)	Test Result
90	47	5.83	1.5	*	0.888	PASS



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Var Name = Image

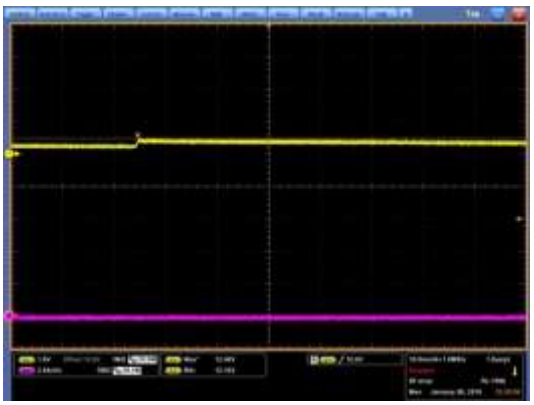
Output Voltage and Current (A)

1.Condition:
1>.Input:90Vac/47Hz, 264Vac/63Hz
2>.Output: 12Vdc/ 0A &5.83A
3>.Ambient:25℃

2.Pass Fail Criteria:
1>.Output voltage must be within the spec 12Vdc: 11.4V~12.6V

3.TestResult:PASS

Vin(V)	F(Hz)	I(A)	Max_spec(V)	Min_spec(V)	Vout_Max(V)	Vout_Min(V)	Test Result
90	47	5.83	12.60	11.40	11.92	11.72	PASS
264	63	5.83	12.60	11.40	11.88	11.68	PASS
90	47	0.00	12.60	11.40	12.48	12.16	PASS
264	63	0.00	12.60	11.40	12.40	12.16	PASS

	
Extended Name = 90V/47Hz/5.83A Var Name = Image	Extended Name = 264V/63Hz/5.83A Var Name = Image
	
Extended Name = 90V/47Hz/0A Var Name = Image	Extended Name = 264V/63Hz/0A Var Name = Image

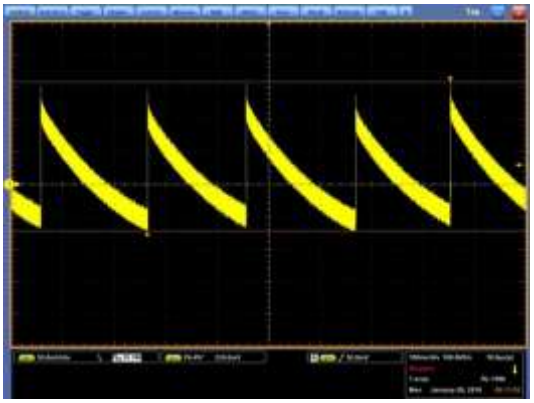
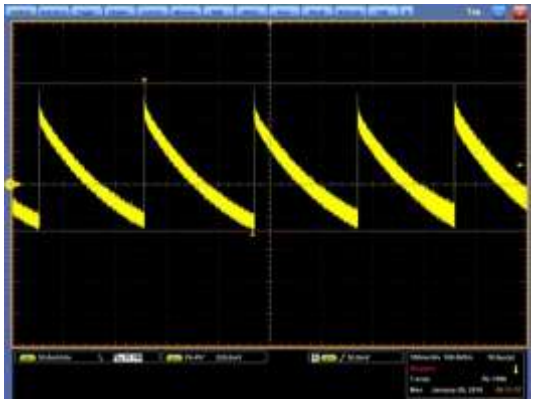
Ripple and Noise (A)

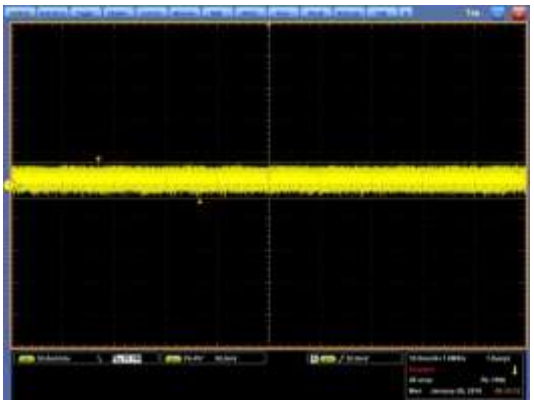
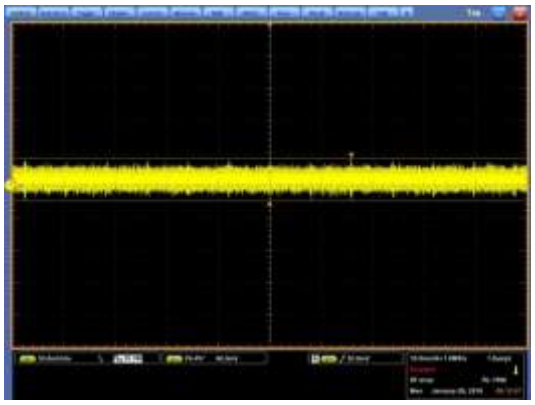
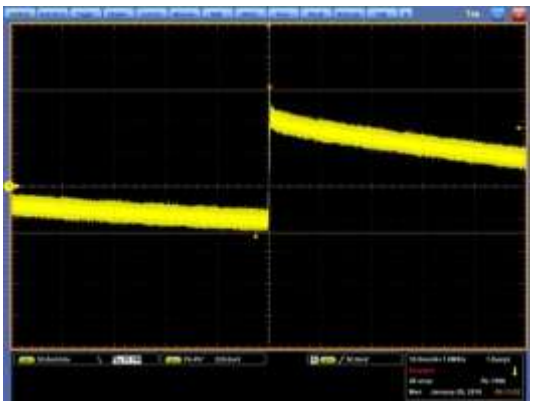
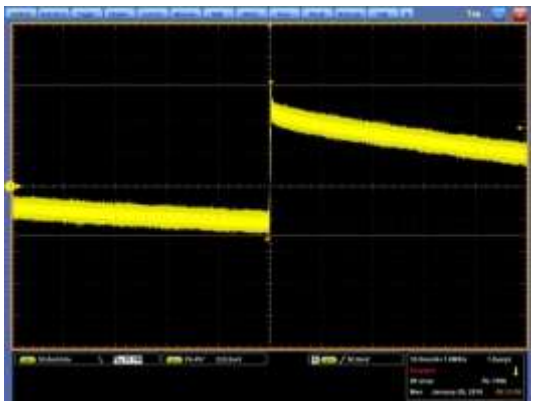
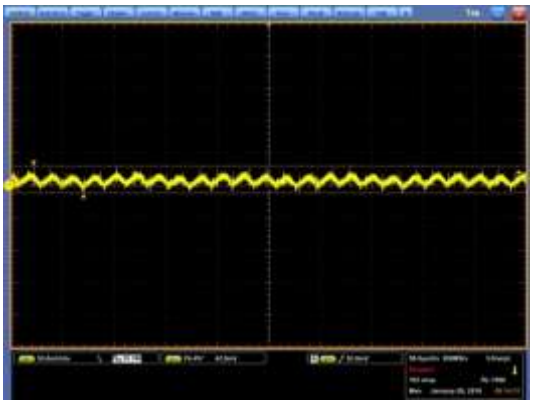
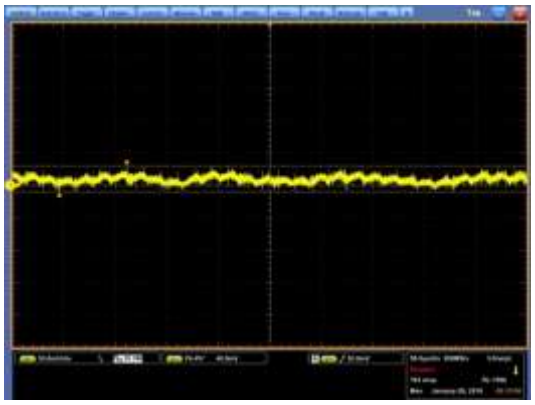
1.Condition:
1>.Input: Vin=90Vac/47Hz, 264Vac/63Hz
2>.Output: 12Vdc/ 0A & 5.83A
3>.Filter capacitors are connected to each pins of the mating output connector.
4>.The capacitors are 10uF ele capacitor and 0.1uF ceramic capacitor.
5>.Bandwidth of oscilloscope is 20 MHz.
6>.Ambient:25℃

2.Pass Fail Criteria:
Ripple voltage shall be less than 240mV (peak to peak)

3.TestResult:PASS

Vin(V)	F(Hz)	I (A)	Max_spec(mV)	Min_spec(mV)	Vpp(mV)	Test Result
90	47	0.00	240	0	230.000	PASS
264	63	0.00	240	0	228.000	PASS
90	47	5.83	240	0	56.000	PASS
264	63	5.83	240	0	66.000	PASS
90	47	0.00	240	0	220.000	PASS
264	63	0.00	240	0	232.000	PASS
90	47	5.83	240	0	42.000	PASS
264	63	5.83	240	0	40.000	PASS

	
Extended Name = 90V/47Hz/0A/Line Var Name = Image	Extended Name = 264V/63Hz/0A/Line Var Name = Image

	
Extended Name = 90V/47Hz/6.67A/Line Var Name = Image	Extended Name = 264V/63Hz/6.67A/Line Var Name = Image
	
Extended Name = 90V/47Hz/0A/Switch Var Name = Image	Extended Name = 264V/63Hz/0A/Switch Var Name = Image
	
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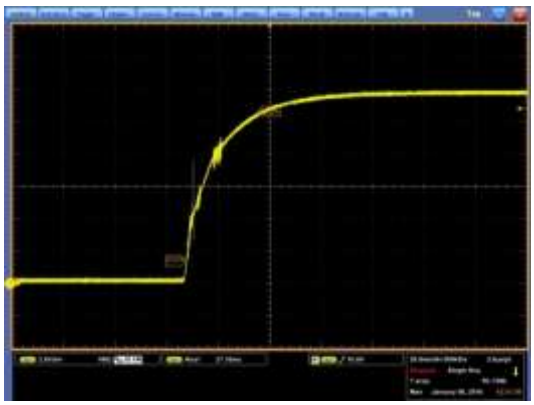
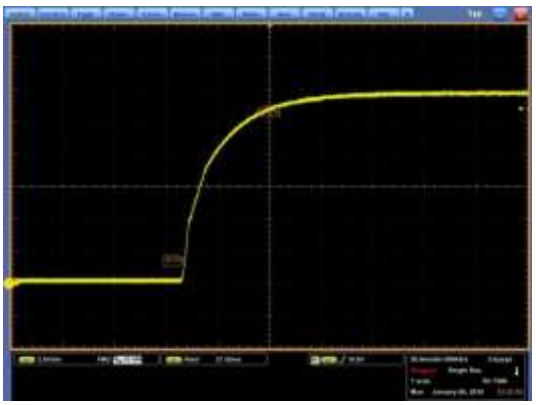
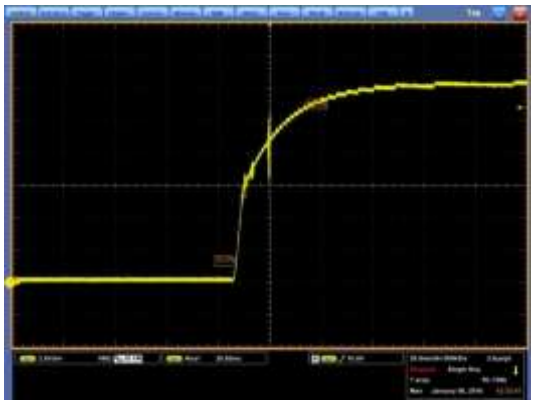
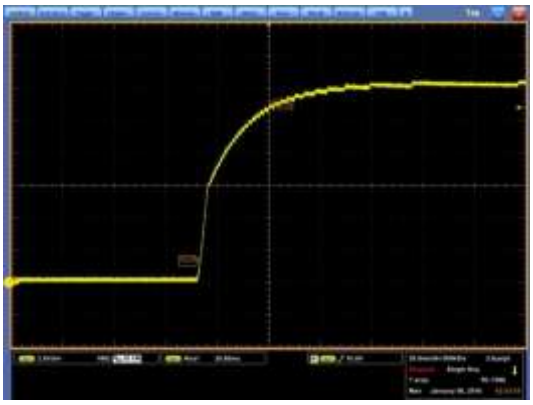
Rise Time (A)

1.Condition:
1>.Input: 90Vac/47Hz &264Vac/63Hz
2>.Output: 12Vdc/ 5.83A&0A
3>.Ambient:25℃

2.Pass Fail Criteria:
1>. The output rise time (the 10% point to the 90%) shall be less than 50 ms
2>. The output waveform shall be monotonic.

3.TestResult:PASS

Vin(V)	F(Hz)	Load (A)	Max(ms)	Min(ms)	Time(ms)	Test Result
90	47	5.83	50	*	27.18	PASS
264	63	5.83	50	*	27.33	PASS
90	47	0.0	50	*	26.05	PASS
264	63	0.0	50	*	26.66	PASS

	
Extended Name = 90V/47Hz/5.83A Var Name = Image	Extended Name = 264V/63Hz/5.83A Var Name = Image
	
Extended Name = 90V/47Hz/0A Var Name = Image	Extended Name = 264V/63Hz/0A Var Name = Image

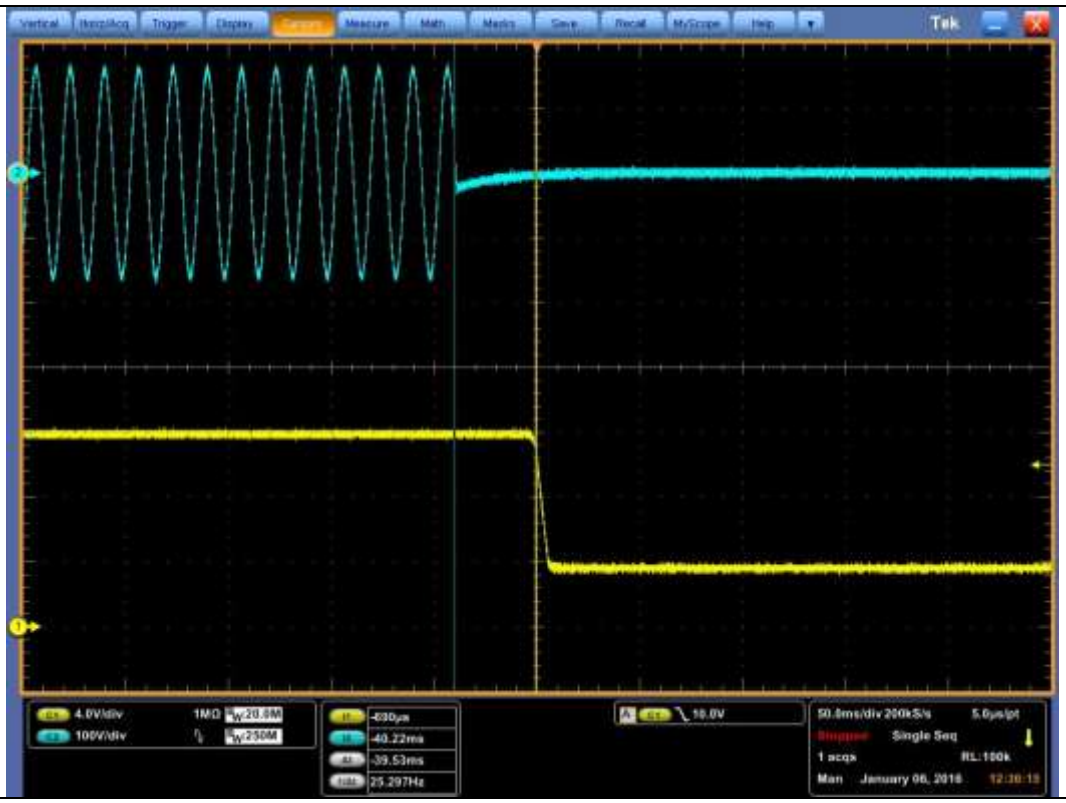
Hold Up Time (A)

1.Condition:
1>.Input: 115Vac/60Hz,
2>.Output: 12Vdc/ 5.83A
3>.Ambient:25℃

2.Pass Fail Criteria:
1>. The power supply shall maintain voltage regulation at least 10 milliseconds
2>.Hold up time: measured from AC off point to the 90% point of the output voltage.

3.TestResult:PASS

Vin(V)	F(Hz)	I (A)	Max_spec(ms)	Min_spec(ms)	Time(ms)	Test Result
115	60	5.83	*	10	39.530	PASS



Extended Name = 115V/60Hz/5.83A
Var Name = Image

Overshoot & Undershoot (A)

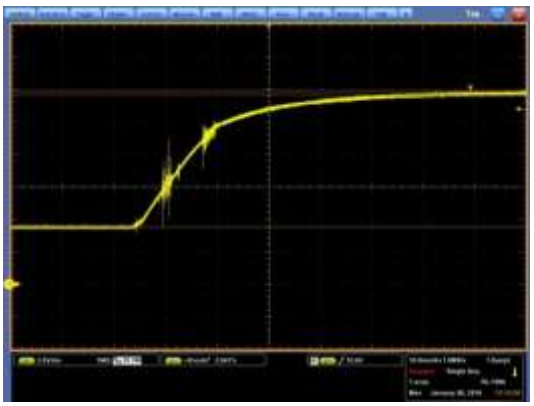
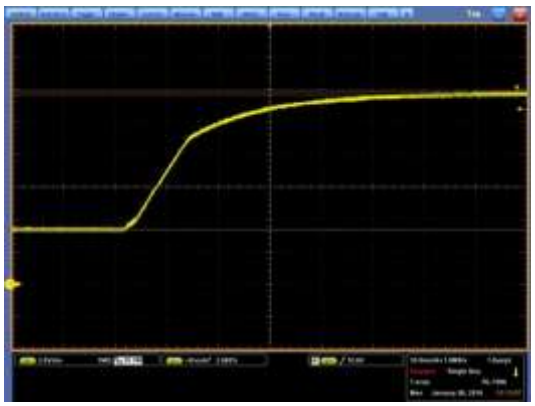
1.Condition:
1>.Input: 100Vac/60Hz, 240Vac/50Hz
2>.Output:12Vdc/5.83A
3>.Ambient:25℃

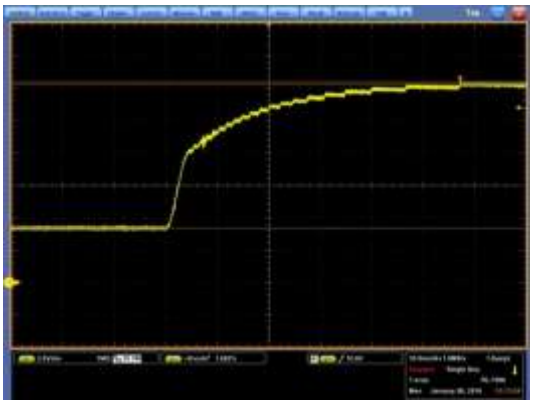
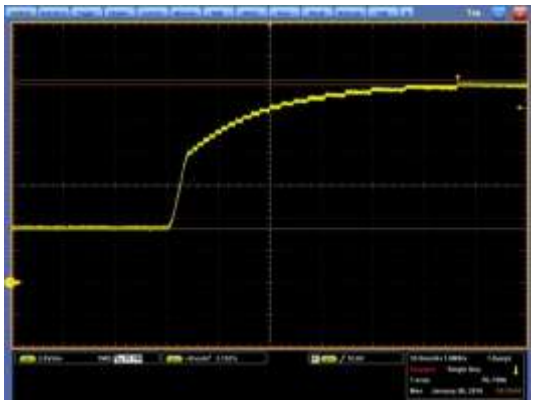
2.Pass/ Fail Criteria
Less than 10% of nominal voltage value.

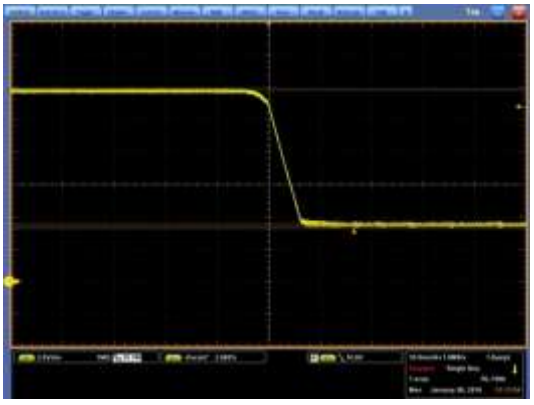
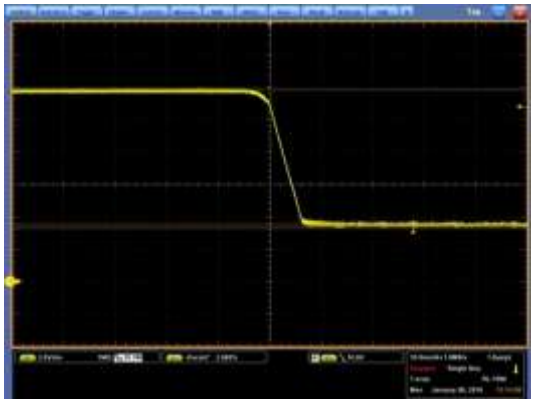
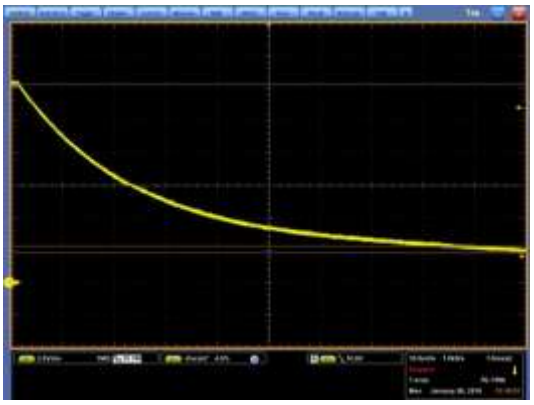
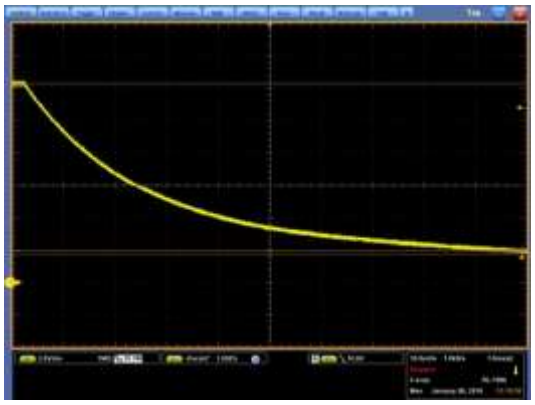
3.TestResult:Pass

Vin(V)	F(Hz)	Loading (A)	Overshoot Max Spec(%)	Overshoot Min Spec(%)	Max Spec(V)	Min Spec(V)	Overshoot(%)	Vout Reading (V)	Test Result
100	60	5.83	10	*	*	*	2.941	*	PASS
240	50	5.83	10	*	*	*	2.885	*	PASS
100	60	0.0	10	*	*	*	1.802	*	PASS
240	50	0.0	10	*	*	*	3.153	*	PASS

Vin(V)	F(Hz)	Loading (A)	Undershoot Max Spec(%)	Undershoot Min Spec(%)	Max Spec(V)	Min Spec(V)	Overshoot(%)	Vout Reading (V)	Test Result
100	60	5.83	10	*	*	*	2.88	*	PASS
240	50	5.83	10	*	*	*	2.88	*	PASS
100	60	0.0	10	*	*	*	4.00	*	PASS
240	50	0.0	10	*	*	*	1.94	*	PASS

	
Extended Name = 100V/60Hz Var Name = Image	Extended Name = 240V/50Hz Var Name = Image

	
Extended Name = 100V/60Hz/0A Var Name = Image	Extended Name = 240V/50Hz/0A Var Name = Image

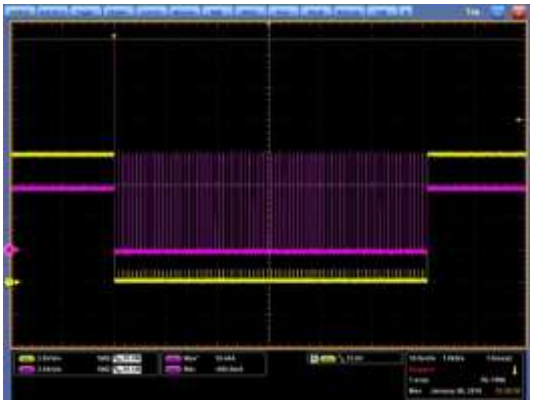
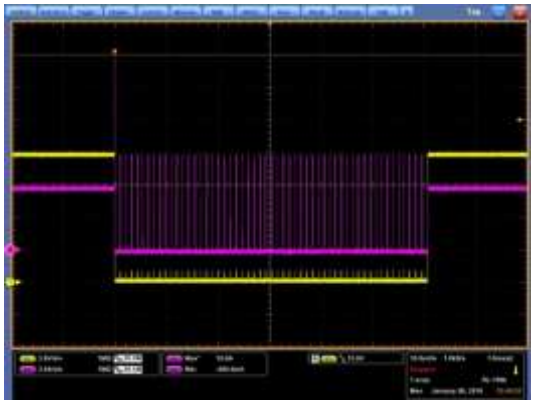
	
Extended Name = 100V/60Hz Var Name = Image	Extended Name = 240V/50Hz Var Name = Image
	
Extended Name = 100V/60Hz/0A Var Name = Image	Extended Name = 240V/50Hz/0A Var Name = Image

SCP (A)

1.Condition:
1>.Input: 90Vac/47Hz &264Vac/63Hz
2>.Output: 12Vdc/short
3>.Ambient:25℃

2.Pass Fail Criteria:
1>.A short circuit placed on DC output shall cause no damage to or shutting down the power supply.
2>.The power supply will be auto-recover
.
3.TestResult:PASS

Vin(V)	F(Hz)	Load (A)	Pin_Short_ Max(W)	Pin_Short_ Min(W)	Pin_Short(W)	Test Result
90	47	5.83	*	*	1.431	PASS
264	63	5.83	*	*	1.190	PASS

	
Extended Name = 90Vac/47Hz Var Name = Image	Extended Name = 264Vac/63Hz Var Name = Image

OCP (A)

1.Condition:
1>.Input: 90Vac/47Hz &264Vac/63Hz
2>.Output: 12Vdc/5.83A
3>.Ambient:25℃

2.Pass Fail Criteria:
1>. Over current protection with be auto-recovey.
2>. Total constant current range of OCP is not exceed 8A.
3>.No damaged

3.TestResult:PASS

Vin (V)	F (Hz)	Max (A)	Min (A)	Measured (A)	Test Result
90	47	8	*	7.28	PASS
264	63	8	*	7.36	PASS

	
Extended Name = 90Vac/47Hz Var Name = Image	Extended Name = 264Vac/63Hz Var Name = Image

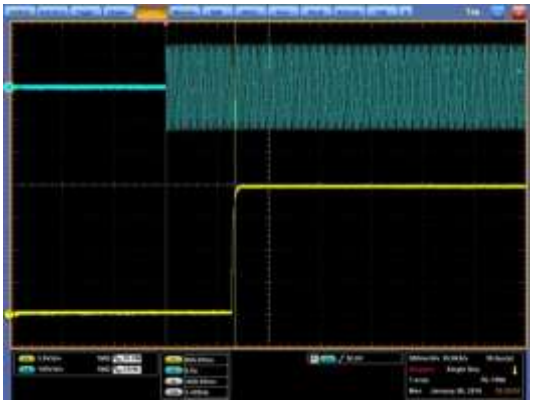
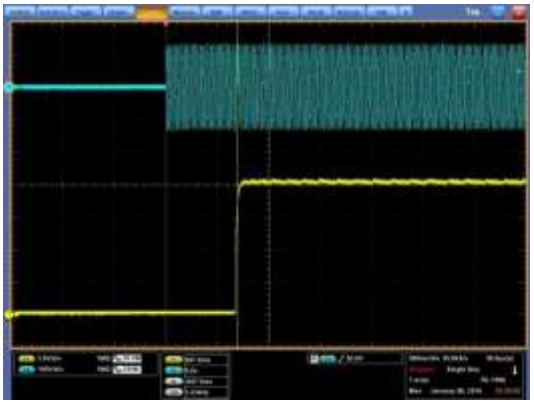
Turn On Time (A)

1.Condition:
1>.Input: 90Vac/47Hz,264Vac/63Hz,
2>.Output: 12Vdc/ 0A &5.83A
3>.Ambient:25℃

2.Pass Fail Criteria:
1>. Turn on time should be less than 3 seconds for all load conditions.
2>.Turn on time: measured from AC on point to the 90% point of the output voltage.

3.TestResult:PASS

Vin (V)	F (Hz)	I_Load (A)	Max (s)	Min (s)	Time (s)	Test Result
90	47	5.83	3	*	0.67	PASS
264	63	5.83	3	*	0.66	PASS
90	47	0.00	3	*	0.70	PASS
264	63	0.00	3	*	0.65	PASS

	
Extended Name = 90V/47Hz/5.83A Var Name = Image	Extended Name = 264V/63Hz/5.83A Var Name = Image
	
Extended Name = 90V/47Hz/0A Var Name = Image	Extended Name = 264V/63Hz/0A Var Name = Image

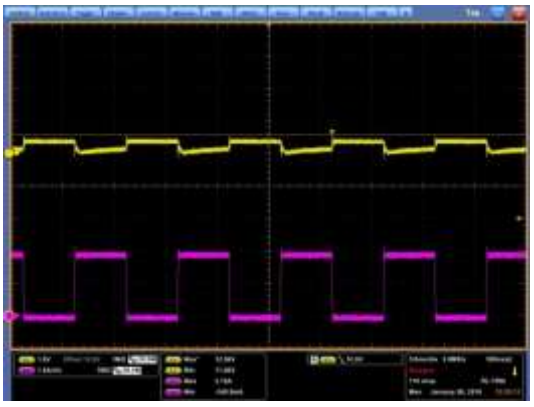
Transient Response (A)

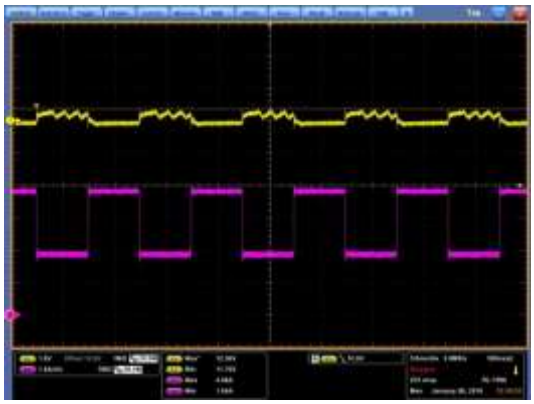
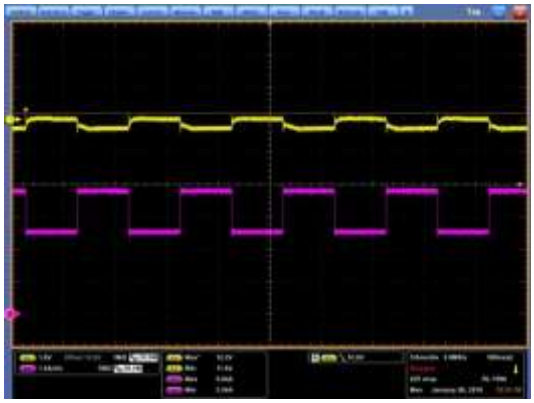
1.Condition:
Input: 90Vac/47Hz,264Vac/63Hz,,
Output:
1>12Vdc/0-1.95A, 1.95-3.9A,3.9-5.8A,
2>.Ton= 5ms , Toff = 5ms ,
3>.Slew Rate: 0.5A/us

2.Pass Fail Criteria:
1>.Dynamic regulation should be meet: 11~13V

3.TestResult:PASS

Vin(V)	F(Hz)	Load_1(A)	Load_2(A)	Tduration_1(ms)	Tduration_2(ms)	Max_Spec(V)	Min_Spec(V)	Vout_Max(V)	Vout_Min(V)	Test Result
90	47	0.00	1.95	5.00	5.00	13.00	11.00	12.56	11.88	PASS
264	63	0.00	1.95	5.00	5.00	13.00	11.00	12.56	11.84	PASS
90	47	1.95	3.90	5.00	5.00	13.00	11.00	12.36	11.80	PASS
264	63	1.95	3.90	5.00	5.00	13.00	11.00	12.36	11.76	PASS
90	47	3.90	5.80	5.00	5.00	13.00	11.00	12.24	11.60	PASS
264	63	3.90	5.80	5.00	5.00	13.00	11.00	12.20	11.60	PASS

	
Extended Name = 90V/47Hz/0--1.95A Var Name = Image	Extended Name = 264V/63Hz/0--1.95A Var Name = Image

	
Extended Name = 90V/47Hz/1.95--3.9A Var Name = Image	Extended Name = 264V/63Hz/1.95--3.9A Var Name = Image
	
Extended Name = 90V/47Hz/3.9--5.8A Var Name = Image	Extended Name = 264V/63Hz/3.9--5.8A Var Name = Image

EPA Requirement (B)

1.Condition:
1>.Input: 115Vac/60Hz & 230Vac/50Hz
2>.Output: 25%,50%,75%,100%load
3>. Warm up 20 minutes
4>.Ambient:25℃

2.Pass/ Fail Criteria
1>Average efficiency shall be more than 88% at 115Vac/60HZ&230Vac/50HZ

3.TestResult:PASS

Vin(V)	F(Hz)	Loaing(A)	Pin(W)	Vout(V)	Iout(A)	Pout(W)	Eff(%)	PF	THD(%)	Max Spec(%)	Min Spec(%)	Average Eff(%)	Test Result
114.900	60	100%Load	77.708	11.675	5.830	68.061	87.585	0.984	0.116	100.000	88.000	88.939	PASS
114.910		75%Load	58.308	11.820	4.372	51.675	88.624	0.974	0.112				
114.920		50%Load	39.126	11.983	2.915	34.934	89.286	0.482	0.230				
114.920		25%Load	19.574	12.122	1.457	17.668	90.262	0.457	0.159				
114.930		10%Load	7.878	12.204	0.584	7.125	90.439	0.416	0.128				
Vin(V)	F(Hz)	Loaing(A)	Pin(W)	Vout(V)	Iout(A)	Pout(W)	Eff(%)	PF	THD(%)	Max Spec(%)	Min Spec(%)	Average Eff(%)	Test Result
229.850	50	100%Load	77.265	11.646	5.830	67.892	87.868	0.928	0.133	100.000	88.000	89.000	PASS
229.850		75%Load	58.644	11.797	4.372	51.574	87.944	0.906	0.134				
229.850		50%Load	38.804	11.960	2.915	34.868	89.857	0.412	0.153				
229.850		25%Load	19.540	12.110	1.457	17.650	90.329	0.385	0.143				
229.860		10%Load	7.923	12.197	0.584	7.121	89.885	0.343	0.140				

Input Wattage (B)

1.Condition:
1>.Input: 230Vac/50Hz
2>.Output:12Vdc/0A
3>.Ambient:25℃

2.Pass/ Fail Criteria
1>.Pin should be less than 0.21W@Iout=0A at 230Vac/50Hz

3.TestResult:PASS

Vin(V)	F(Hz)	Load(A)	Max-spec(W)	Min-spec(W)	PF	THD(%)	Pin(W)	Test Result
229.860	50	0.000	0.210	*	0.008	0.140	0.097	PASS

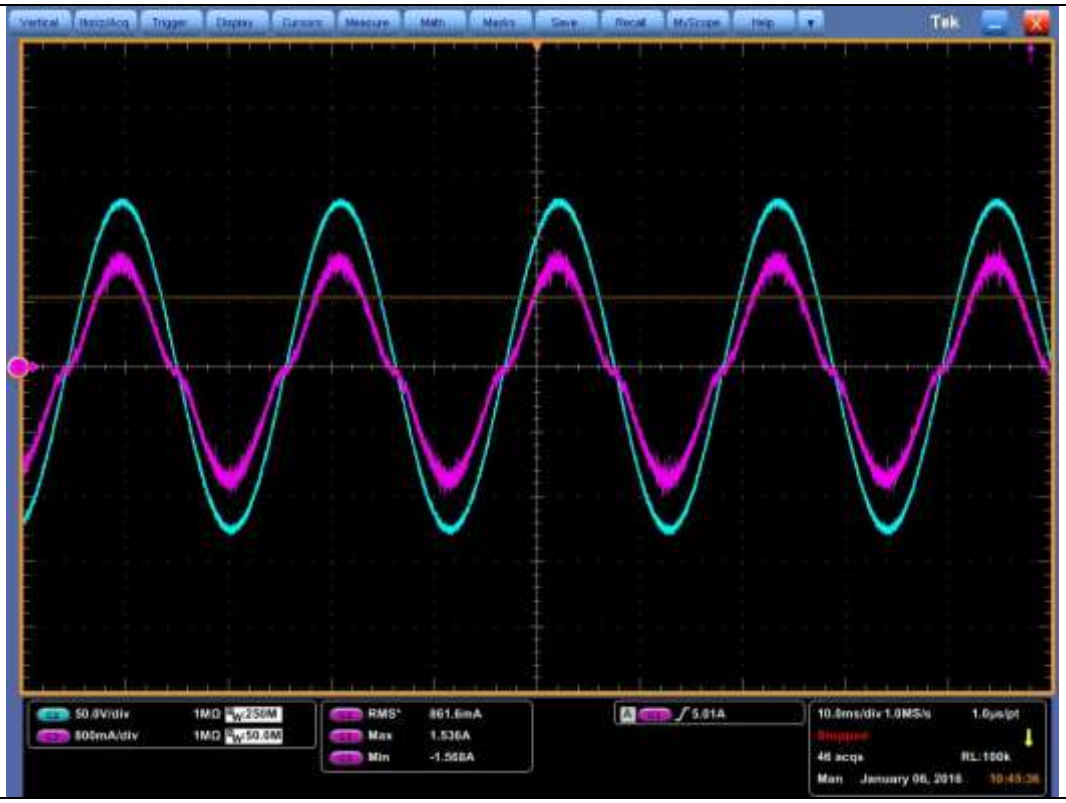
Input Current (B)

1.Condition:
1>.Input:90Vac/47Hz
2>.Output: 12Vdc/5.83A
3>.Ambient:25℃

2.Pass Fail Criteria:
1>. 1 .5Amps maximum at input voltage 90Vac/47Hz

3.TestResult:PASS

Vin(V)	Fre(HZ)	I_Load(A)	Max(A)	Min(A)	Iin(A)	Test Result
90	47	5.83	1.5	*	0.862	PASS



Extended Name = 90V/47Hz/5.83A
Var Name = Image

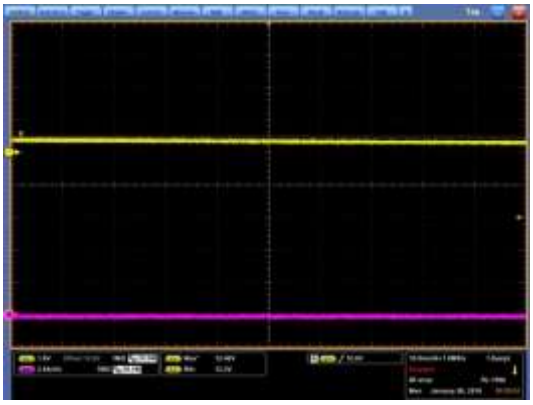
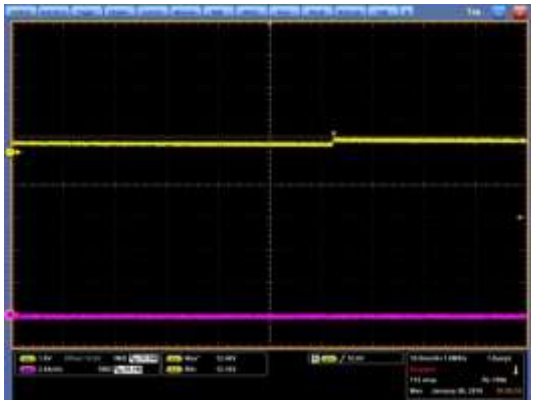
Output Voltage and Current (B)

1.Condition:
1>.Input:90Vac/47Hz, 264Vac/63Hz
2>.Output: 12Vdc/ 0A &5.83A
3>.Ambient:25℃

2.Pass Fail Criteria:
1>.Output voltage must be within the spec 12Vdc: 11.4V~12.6V

3.TestResult:PASS

Vin(V)	F(Hz)	I(A)	Max_spec(V)	Min_spec(V)	Vout_Max(V)	Vout_Min(V)	Test Result
90	47	5.83	12.60	11.40	11.84	11.64	PASS
264	63	5.83	12.60	11.40	11.80	11.60	PASS
90	47	0.00	12.60	11.40	12.48	12.20	PASS
264	63	0.00	12.60	11.40	12.48	12.16	PASS

	
Extended Name = 90V/47Hz/5.83A Var Name = Image	Extended Name = 264V/63Hz/5.83A Var Name = Image
	
Extended Name = 90V/47Hz/0A Var Name = Image	Extended Name = 264V/63Hz/0A Var Name = Image

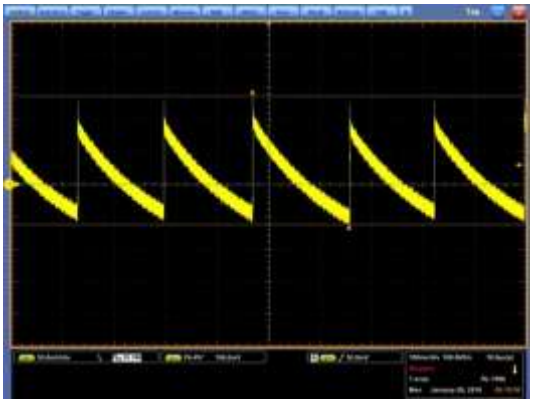
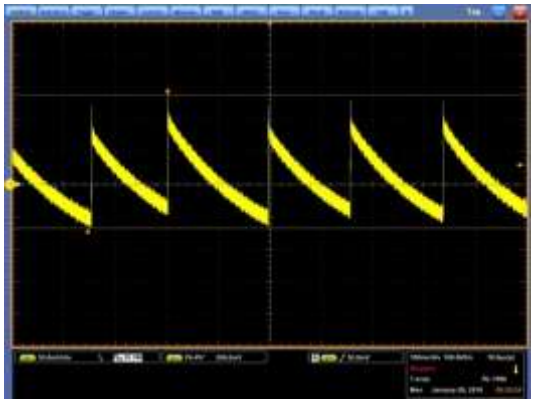
Ripple and Noise (B)

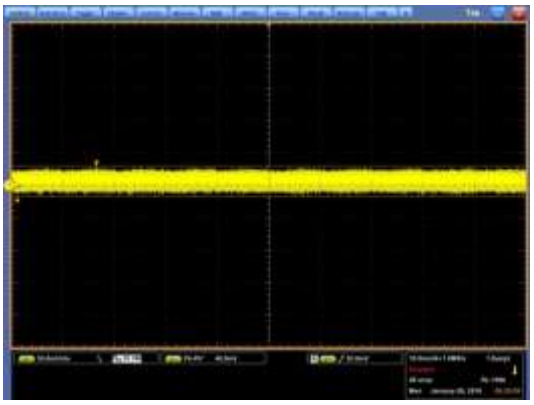
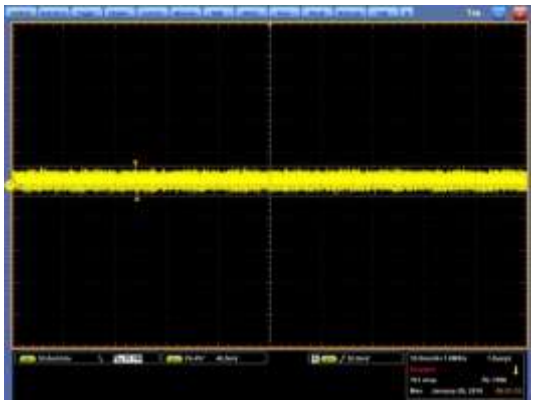
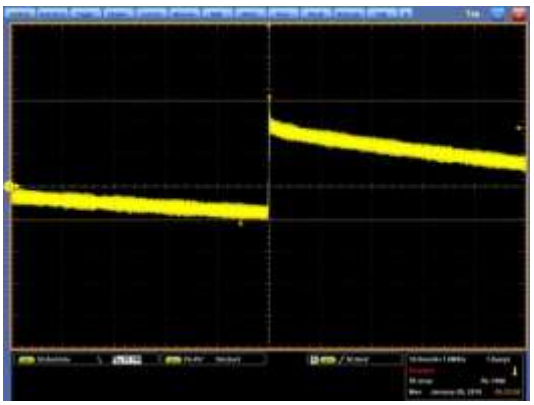
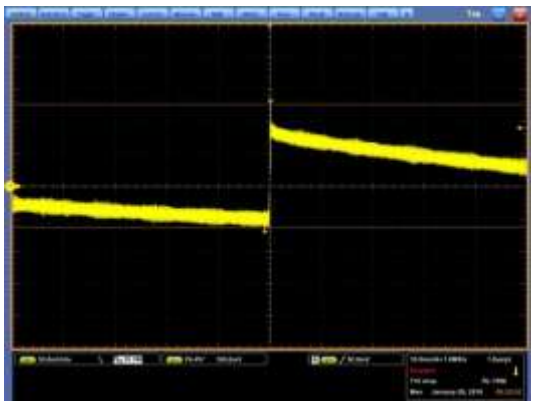
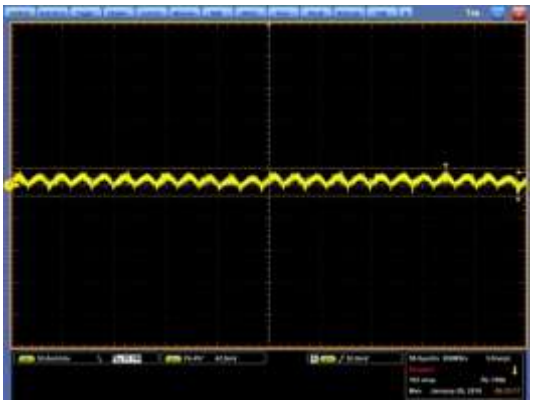
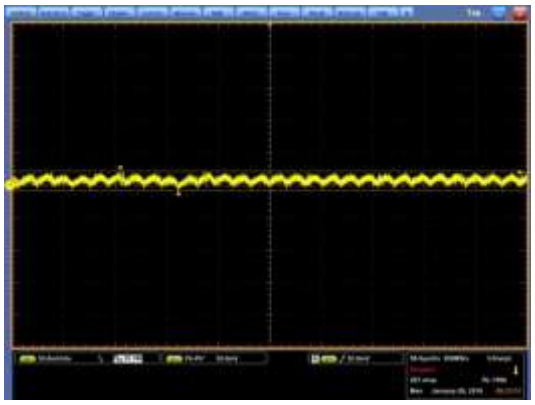
1.Condition:
1>.Input: Vin=90Vac/47Hz, 264Vac/63Hz
2>.Output: 12Vdc/ 0A & 5.83A
3>.Filter capacitors are connected to each pins of the mating output connector.
4>.The capacitors are 10uF ele capacitor and 0.1uF ceramic capacitor.
5>.Bandwidth of oscilloscope is 20 MHz.
6>.Ambient:25℃

2.Pass Fail Criteria:
Ripple voltage shall be less than 240mV (peak to peak)

3.TestResult:PASS

Vin(V)	F(Hz)	I (A)	Max_spec(mV)	Min_spec(mV)	Vpp(mV)	Test Result
90	47	0.00	240	0	198.000	PASS
264	63	0.00	240	0	206.000	PASS
90	47	5.83	240	0	48.000	PASS
264	63	5.83	240	0	46.000	PASS
90	47	0.00	240	0	184.000	PASS
264	63	0.00	240	0	190.000	PASS
90	47	5.83	240	0	42.000	PASS
264	63	5.83	240	0	30.000	PASS

	
Extended Name = 90V/47Hz/0A/Line Var Name = Image	Extended Name = 264V/63Hz/0A/Line Var Name = Image

	
Extended Name = 90V/47Hz/6.67A/Line Var Name = Image	Extended Name = 264V/63Hz/6.67A/Line Var Name = Image
	
Extended Name = 90V/47Hz/0A/Switch Var Name = Image	Extended Name = 264V/63Hz/0A/Switch Var Name = Image
	
Extended Name = 90V/47Hz/6.67A/Switch Var Name = Image	Extended Name = 264V/63H/6.67A/Switch Var Name = Image

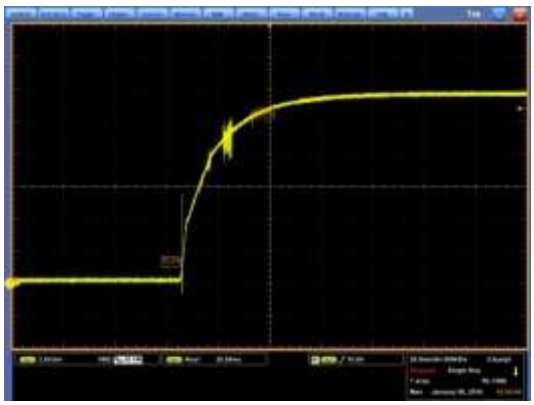
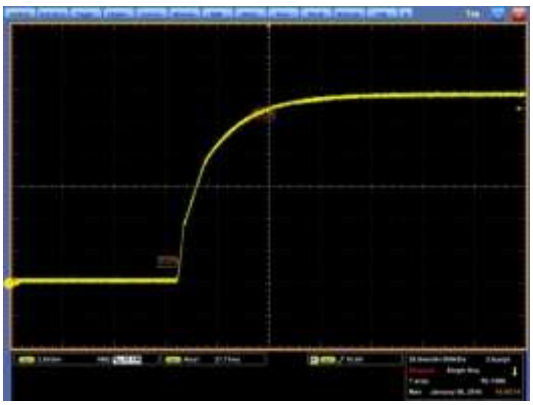
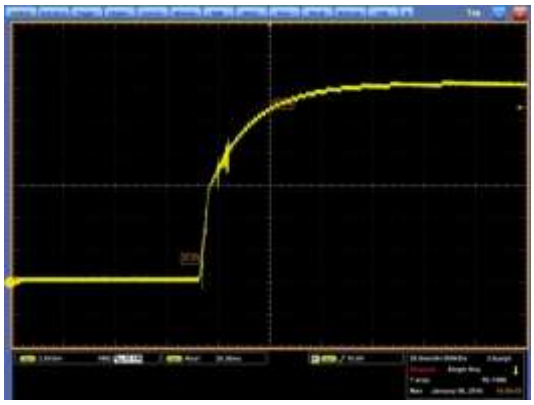
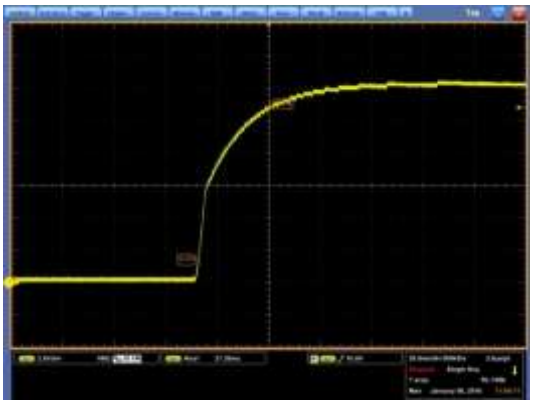
Rise Time (B)

1.Condition:
1>.Input: 90Vac/47Hz &264Vac/63Hz
2>.Output: 12Vdc/ 5.83A&0A
3>.Ambient:25℃

2.Pass Fail Criteria:
1>. The output rise time (the 10% point to the 90%) shall be less than 50 ms
2>. The output waveform shall be monotonic.

3.TestResult:PASS

Vin(V)	F(Hz)	Load (A)	Max(ms)	Min(ms)	Time(ms)	Test Result
90	47	5.83	50	*	26.54	PASS
264	63	5.83	50	*	27.71	PASS
90	47	0.0	50	*	26.36	PASS
264	63	0.0	50	*	27.39	PASS

	
Extended Name = 90V/47Hz/5.83A Var Name = Image	Extended Name = 264V/63Hz/5.83A Var Name = Image
	
Extended Name = 90V/47Hz/0A Var Name = Image	Extended Name = 264V/63Hz/0A Var Name = Image

Hold Up Time (B)

1.Condition:
1>.Input: 115Vac/60Hz,
2>.Output: 12Vdc/ 5.83A
3>.Ambient:25℃

2.Pass Fail Criteria:
1>. The power supply shall maintain voltage regulation at least 10 milliseconds
2>.Hold up time: measured from AC off point to the 90% point of the output voltage.

3.TestResult:PASS

Vin(V)	F(Hz)	I (A)	Max_spec(ms)	Min_spec(ms)	Time(ms)	Test Result
115	60	5.83	*	10	43.065	PASS



Extended Name = 115V/60Hz/5.83A
Var Name = Image

Overshoot & Undershoot (B)

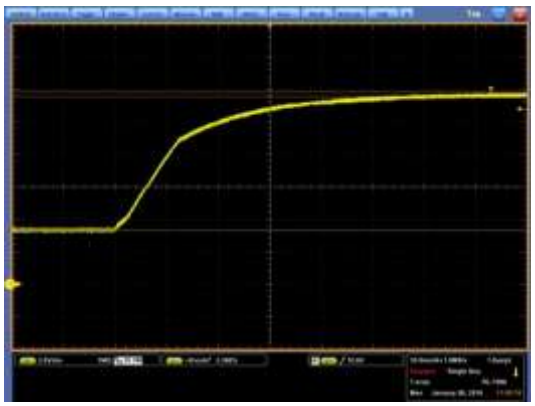
1.Condition:
1>.Input: 100Vac/60Hz, 240Vac/50Hz
2>.Output:12Vdc/5.83A
3>.Ambient:25℃

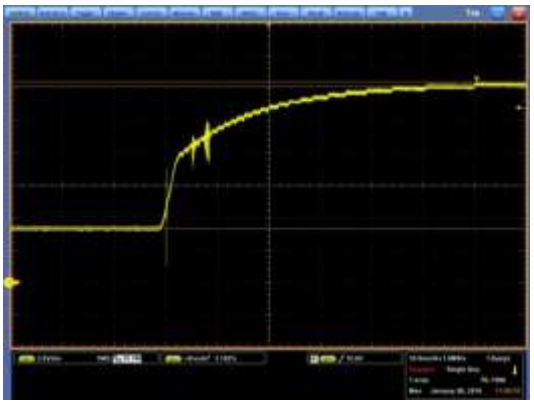
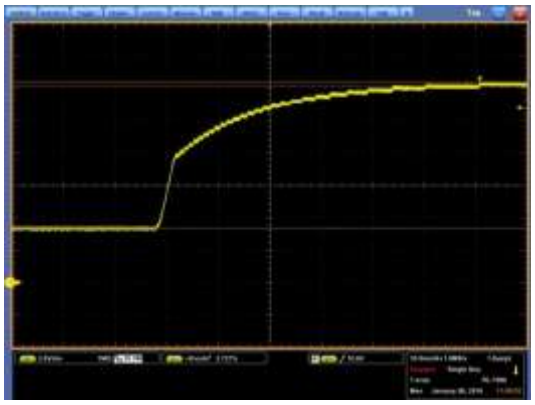
2.Pass/ Fail Criteria
Less than 10% of nominal voltage value.

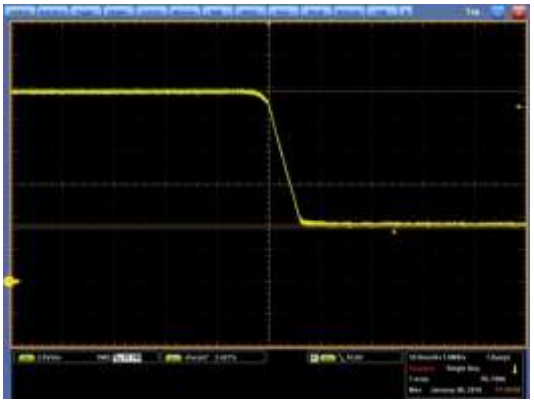
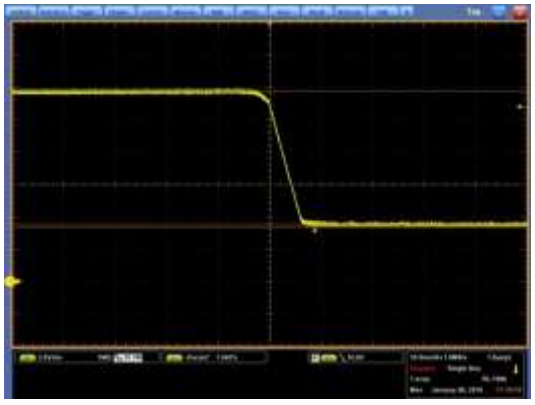
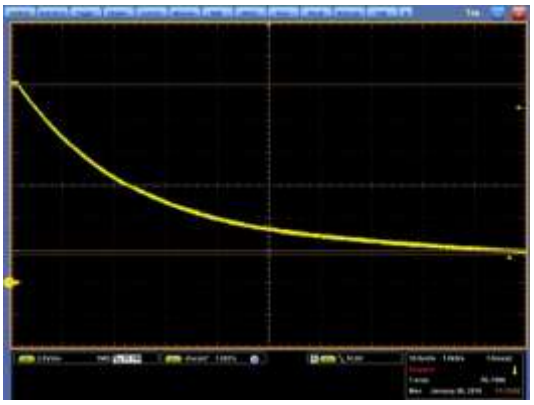
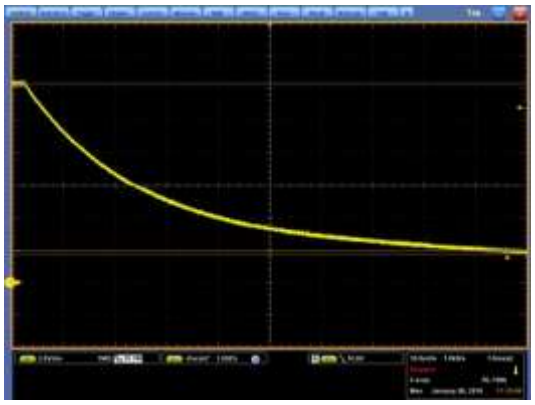
3.TestResult:Pass

Vin(V)	F(Hz)	Loading (A)	Overshoot Max Spec(%)	Overshoot Min Spec(%)	Max Spec(V)	Min Spec(V)	Overshoot(%)	Vout Reading (V)	Test Result
100	60	5.83	10	*	*	*	3.465	*	PASS
240	50	5.83	10	*	*	*	3.398	*	PASS
100	60	0.0	10	*	*	*	3.182	*	PASS
240	50	0.0	10	*	*	*	2.727	*	PASS

Vin(V)	F(Hz)	Loading (A)	Undershoot Max Spec(%)	Undershoot Min Spec(%)	Max Spec(V)	Min Spec(V)	Overshoot(%)	Vout Reading (V)	Test Result
100	60	5.83	10	*	*	*	2.43	*	PASS
240	50	5.83	10	*	*	*	1.94	*	PASS
100	60	0.0	10	*	*	*	1.95	*	PASS
240	50	0.0	10	*	*	*	1.94	*	PASS

	
Extended Name = 100V/60Hz Var Name = Image	Extended Name = 240V/50Hz Var Name = Image

	
Extended Name = 100V/60Hz/0A Var Name = Image	Extended Name = 240V/50Hz/0A Var Name = Image

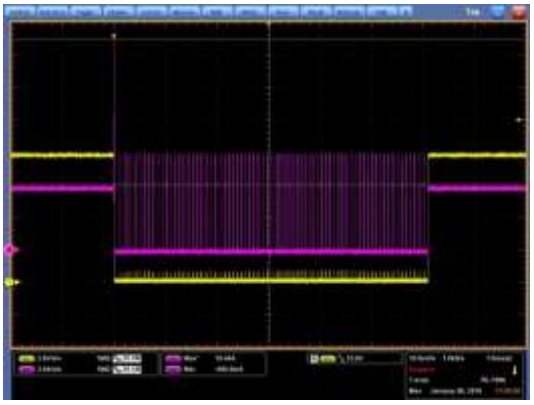
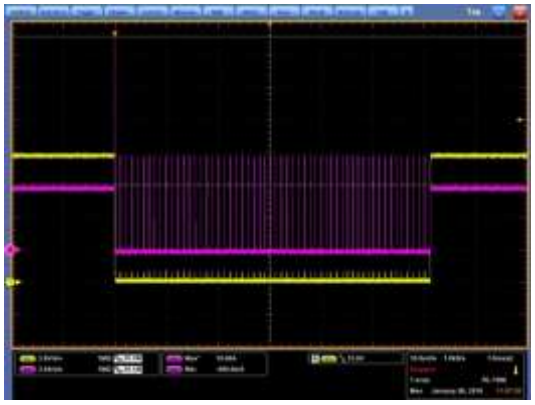
	
Extended Name = 100V/60Hz Var Name = Image	Extended Name = 240V/50Hz Var Name = Image
	
Extended Name = 100V/60Hz/0A Var Name = Image	Extended Name = 240V/50Hz/0A Var Name = Image

SCP (B)

1.Condition:
1>.Input: 90Vac/47Hz &264Vac/63Hz
2>.Output: 12Vdc/short
3>.Ambient:25℃

2.Pass Fail Criteria:
1>.A short circuit placed on DC output shall cause no damage to or shutting down the power supply.
2>.The power supply will be auto-recover
.
3.TestResult:PASS

Vin(V)	F(Hz)	Load (A)	Pin_Short_ Max(W)	Pin_Short_ Min(W)	Pin_Short(W)	Test Result
90	47	5.83	*	*	1.233	PASS
264	63	5.83	*	*	1.113	PASS

	
Extended Name = 90Vac/47Hz Var Name = Image	Extended Name = 264Vac/63Hz Var Name = Image

OCP (B)

1.Condition:
1>.Input: 90Vac/47Hz &264Vac/63Hz
2>.Output: 12Vdc/5.83A
3>.Ambient:25℃

2.Pass Fail Criteria:
1>. Over current protection with be auto-recovey.
2>. Total constant current range of OCP is not exceed 8A.
3>.No damaged

3.TestResult:PASS

Vin (V)	F (Hz)	Max (A)	Min (A)	Measured (A)	Test Result
90	47	8	*	7.08	PASS
264	63	8	*	7.04	PASS

	
Extended Name = 90Vac/47Hz Var Name = Image	Extended Name = 264Vac/63Hz Var Name = Image

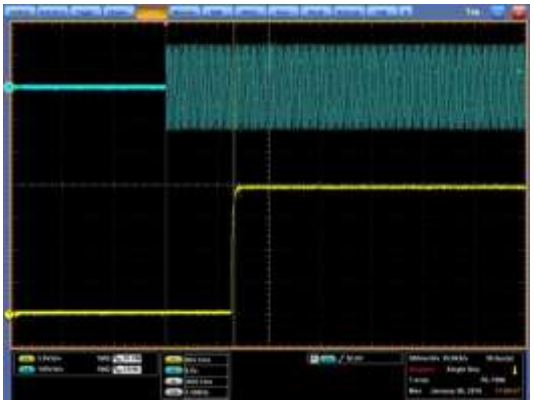
Turn On Time (B)

1.Condition:
1>.Input: 90Vac/47Hz,264Vac/63Hz,
2>.Output: 12Vdc/ 0A &5.83A
3>.Ambient:25℃

2.Pass Fail Criteria:
1>. Turn on time should be less than 3 seconds for all load conditions.
2>.Turn on time: measured from AC on point to the 90% point of the output voltage.

3.TestResult:PASS

Vin (V)	F (Hz)	I_Load (A)	Max (s)	Min (s)	Time (s)	Test Result
90	47	5.83	3	*	0.66	PASS
264	63	5.83	3	*	0.65	PASS
90	47	0.00	3	*	0.69	PASS
264	63	0.00	3	*	0.64	PASS

	
Extended Name = 90V/47Hz/5.83A Var Name = Image	Extended Name = 264V/63Hz/5.83A Var Name = Image
	
Extended Name = 90V/47Hz/0A Var Name = Image	Extended Name = 264V/63Hz/0A Var Name = Image

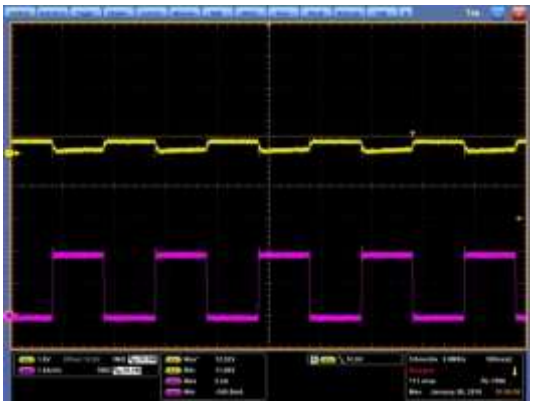
Transient Response (B)

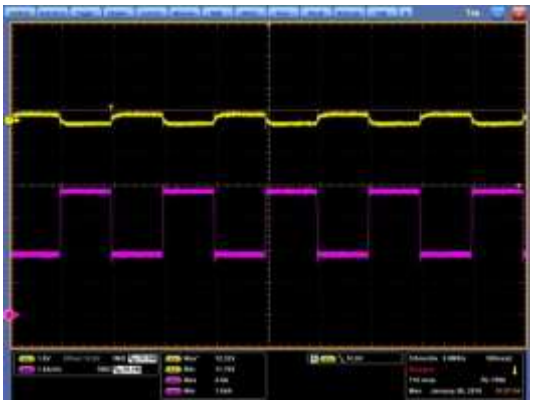
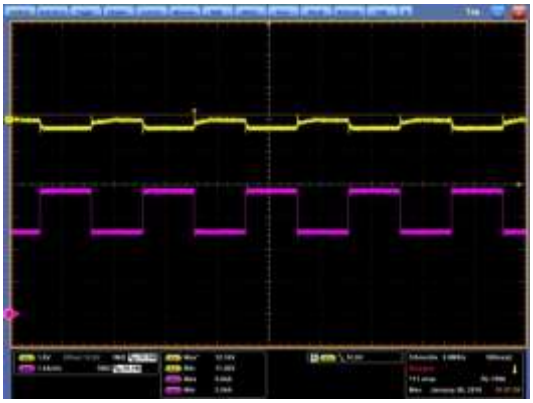
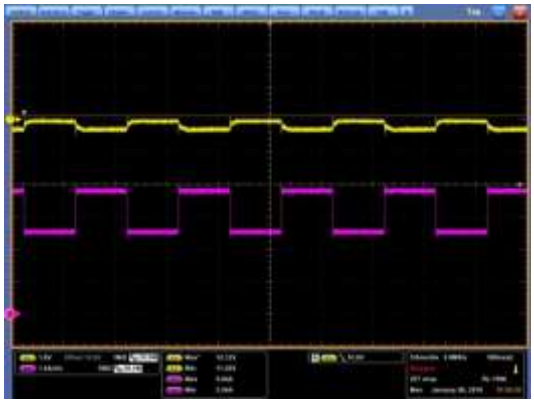
1.Condition:
Input: 90Vac/47Hz,264Vac/63Hz,,
Output:
1>12Vdc/0-1.95A, 1.95-3.9A,3.9-5.8A,
2>.Ton= 5ms , Toff = 5ms ,
3>.Slew Rate: 0.5A/us

2.Pass Fail Criteria:
1>.Dynamic regulation should be meet: 11~13V

3.TestResult:PASS

Vin(V)	F(Hz)	Load_1(A)	Load_2(A)	Tduration_1(ms)	Tduration_2(ms)	Max_Spec(V)	Min_Spec(V)	Vout_Max(V)	Vout_Min(V)	Test Result
90	47	0.00	1.95	5.00	5.00	13.00	11.00	12.52	11.88	PASS
264	63	0.00	1.95	5.00	5.00	13.00	11.00	12.52	11.84	PASS
90	47	1.95	3.90	5.00	5.00	13.00	11.00	12.32	11.76	PASS
264	63	1.95	3.90	5.00	5.00	13.00	11.00	12.32	11.72	PASS
90	47	3.90	5.80	5.00	5.00	13.00	11.00	12.16	11.56	PASS
264	63	3.90	5.80	5.00	5.00	13.00	11.00	12.12	11.52	PASS

	
Extended Name = 90V/47Hz/0--1.95A Var Name = Image	Extended Name = 264V/63Hz/0--1.95A Var Name = Image

	
Extended Name = 90V/47Hz/1.95--3.9A Var Name = Image	Extended Name = 264V/63Hz/1.95--3.9A Var Name = Image
	
Extended Name = 90V/47Hz/3.9--5.8A Var Name = Image	Extended Name = 264V/63Hz/3.9--5.8A Var Name = Image

EPA Requirement (C)

1.Condition:
1>.Input: 115Vac/60Hz & 230Vac/50Hz
2>.Output: 25%,50%,75%,100%load
3>. Warm up 20 minutes
4>.Ambient:25℃

2.Pass/ Fail Criteria
1>Average efficiency shall be more than 88% at 115Vac/60HZ&230Vac/50HZ

3.TestResult:PASS

Vin(V)	F(Hz)	Loaing(A)	Pin(W)	Vout(V)	Iout(A)	Pout(W)	Eff(%)	PF	THD(%)	Max Spec(%)	Min Spec(%)	Average Eff(%)	Test Result
114.900	60	100%Load	78.351	11.667	5.830	68.015	86.808	0.987	0.113	100.000	88.000	88.337	PASS
114.910		75%Load	58.419	11.774	4.372	51.475	88.113	0.977	0.112				
114.920		50%Load	39.179	11.946	2.915	34.826	88.890	0.488	0.211				
114.930		25%Load	19.690	12.097	1.457	17.630	89.539	0.469	0.147				
114.930		10%Load	7.880	12.179	0.584	7.109	90.223	0.431	0.128				
Vin(V)	F(Hz)	Loaing(A)	Pin(W)	Vout(V)	Iout(A)	Pout(W)	Eff(%)	PF	THD(%)	Max Spec(%)	Min Spec(%)	Average Eff(%)	Test Result
229.850	50	100%Load	77.317	11.621	5.830	67.747	87.622	0.929	0.133	100.000	88.000	88.703	PASS
229.860		75%Load	58.442	11.754	4.372	51.387	87.929	0.907	0.133				
229.860		50%Load	38.867	11.922	2.915	34.757	89.427	0.419	0.150				
229.870		25%Load	19.598	12.080	1.457	17.605	89.833	0.393	0.143				
229.870		10%Load	7.932	12.173	0.584	7.106	89.584	0.353	0.140				

Input Wattage (C)

1.Condition:
1>.Input: 230Vac/50Hz
2>.Output:12Vdc/0A
3>.Ambient:25℃

2.Pass/ Fail Criteria
1>.Pin should be less than 0.21W@Iout=0A at 230Vac/50Hz

3.TestResult:PASS

Vin(V)	F(Hz)	Load(A)	Max-spec(W)	Min-spec(W)	PF	THD(%)	Pin(W)	Test Result
229.870	50	0.000	0.210	*	0.007	0.138	0.097	PASS

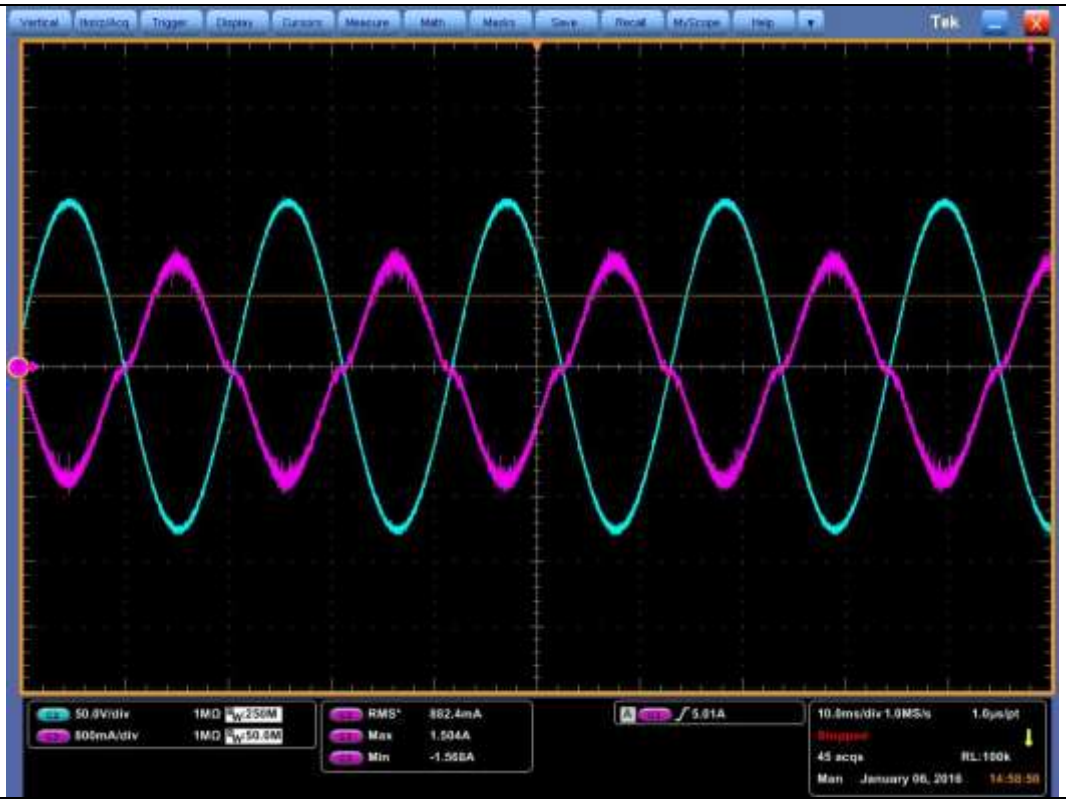
Input Current (C)

1.Condition:
1>.Input:90Vac/47Hz
2>.Output: 12Vdc/5.83A
3>.Ambient:25℃

2.Pass Fail Criteria:
1>. 1 .5Amps maximum at input voltage 90Vac/47Hz

3.TestResult:PASS

Vin(V)	Fre(HZ)	I_Load(A)	Max(A)	Min(A)	Iin(A)	Test Result
90	47	5.83	1.5	*	0.882	PASS



Extended Name = 90V/47Hz/5.83A
Var Name = Image

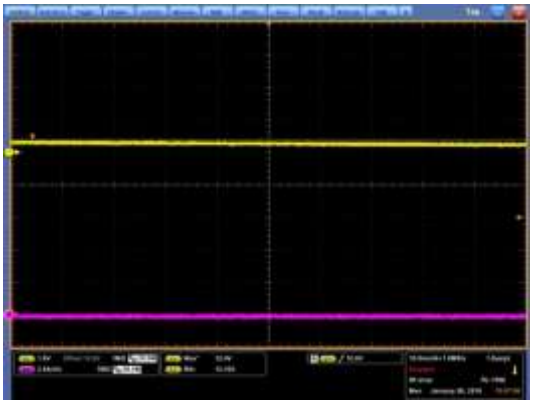
Output Voltage and Current (C)

1.Condition:
1>.Input:90Vac/47Hz, 264Vac/63Hz
2>.Output: 12Vdc/ 0A &5.83A
3>.Ambient:25℃

2.Pass Fail Criteria:
1>.Output voltage must be within the spec 12Vdc: 11.4V~12.6V

3.TestResult:PASS

Vin(V)	F(Hz)	I(A)	Max_spec(V)	Min_spec(V)	Vout_Max(V)	Vout_Min(V)	Test Result
90	47	5.83	12.60	11.40	11.80	11.60	PASS
264	63	5.83	12.60	11.40	11.76	11.56	PASS
90	47	0.00	12.60	11.40	12.40	12.16	PASS
264	63	0.00	12.60	11.40	12.40	12.16	PASS

	
Extended Name = 90V/47Hz/5.83A Var Name = Image	Extended Name = 264V/63Hz/5.83A Var Name = Image
	
Extended Name = 90V/47Hz/0A Var Name = Image	Extended Name = 264V/63Hz/0A Var Name = Image

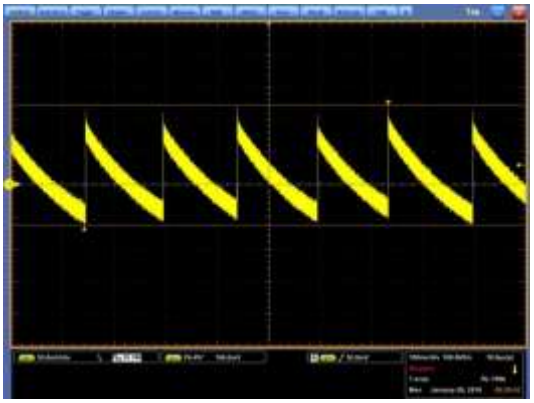
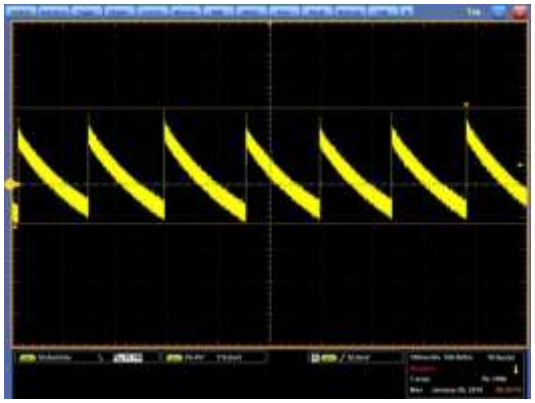
Ripple and Noise (C)

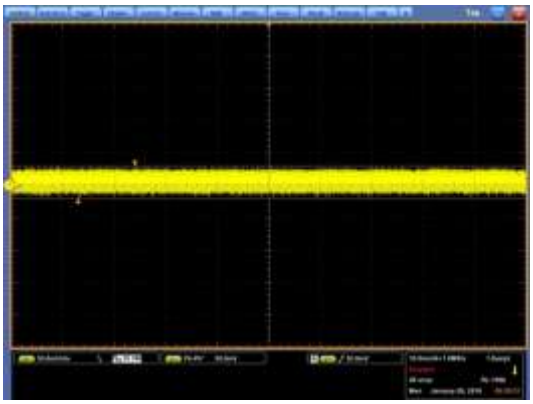
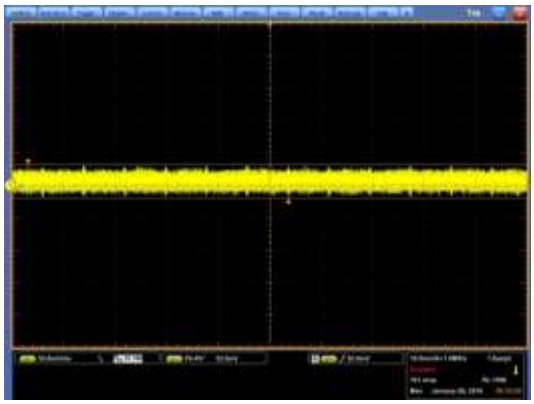
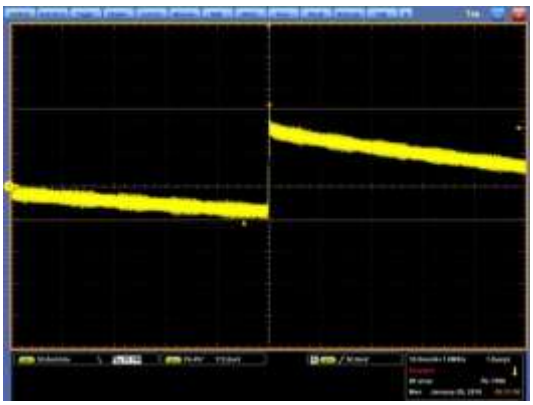
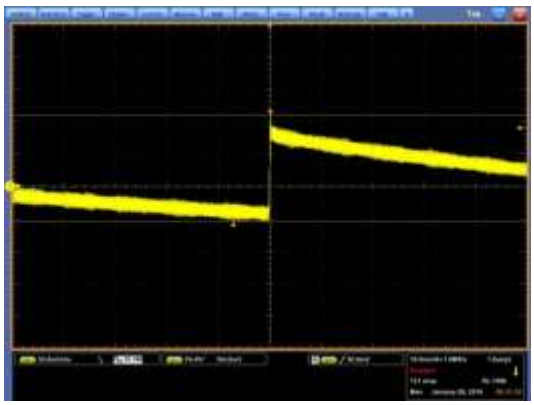
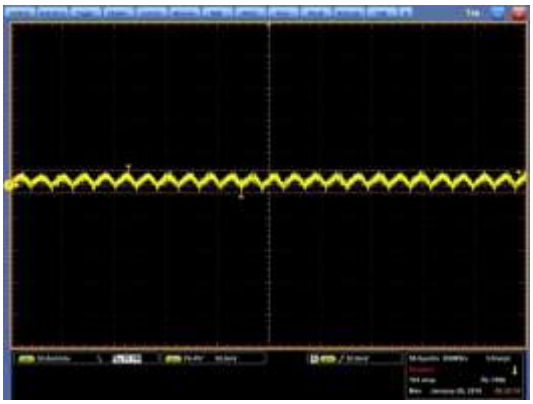
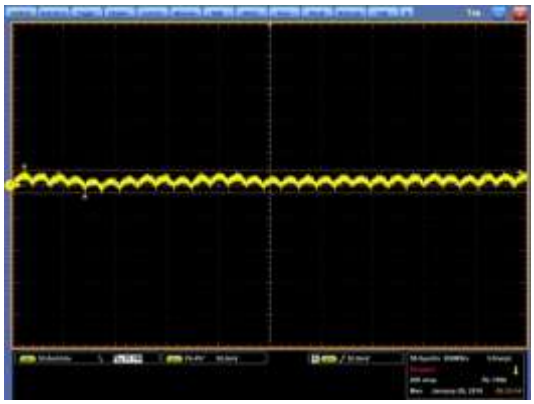
1.Condition:
1>.Input: Vin=90Vac/47Hz, 264Vac/63Hz
2>.Output: 12Vdc/ 0A & 5.83A
3>.Filter capacitors are connected to each pins of the mating output connector.
4>.The capacitors are 10uF ele capacitor and 0.1uF ceramic capacitor.
5>.Bandwidth of oscilloscope is 20 MHz.
6>.Ambient:25℃

2.Pass Fail Criteria:
Ripple voltage shall be less than 240mV (peak to peak)

3.TestResult:PASS

Vin(V)	F(Hz)	I (A)	Max_spec(mV)	Min_spec(mV)	Vpp(mV)	Test Result
90	47	0.00	240	0	186.000	PASS
264	63	0.00	240	0	178.000	PASS
90	47	5.83	240	0	50.000	PASS
264	63	5.83	240	0	52.000	PASS
90	47	0.00	240	0	172.000	PASS
264	63	0.00	240	0	164.000	PASS
90	47	5.83	240	0	36.000	PASS
264	63	5.83	240	0	36.000	PASS

	
Extended Name = 90V/47Hz/0A/Line Var Name = Image	Extended Name = 264V/63Hz/0A/Line Var Name = Image

	
Extended Name = 90V/47Hz/6.67A/Line Var Name = Image	Extended Name = 264V/63Hz/6.67A/Line Var Name = Image
	
Extended Name = 90V/47Hz/0A/Switch Var Name = Image	Extended Name = 264V/63Hz/0A/Switch Var Name = Image
	
Extended Name = 90V/47Hz/6.67A/Switch Var Name = Image	Extended Name = 264V/63H/6.67A/Switch Var Name = Image

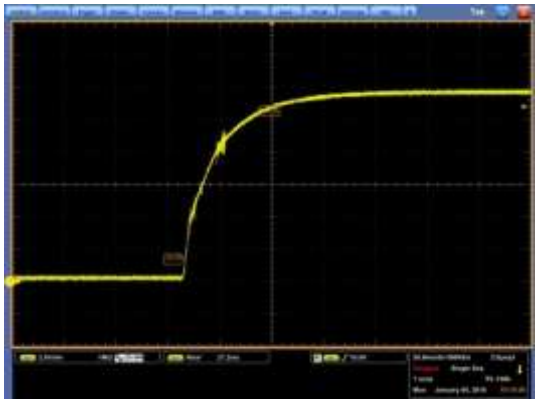
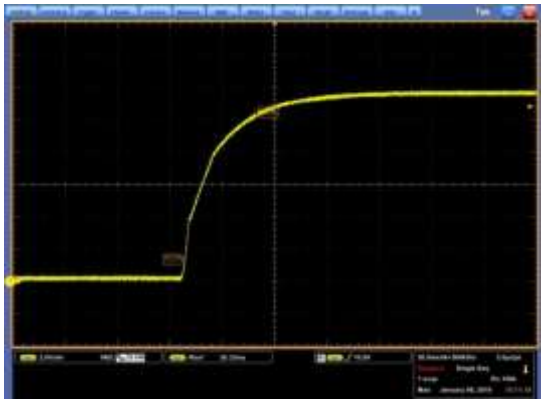
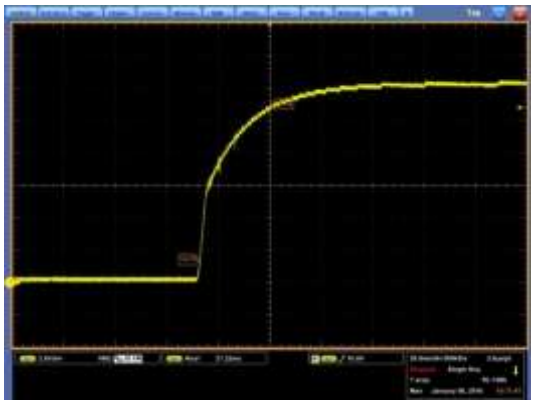
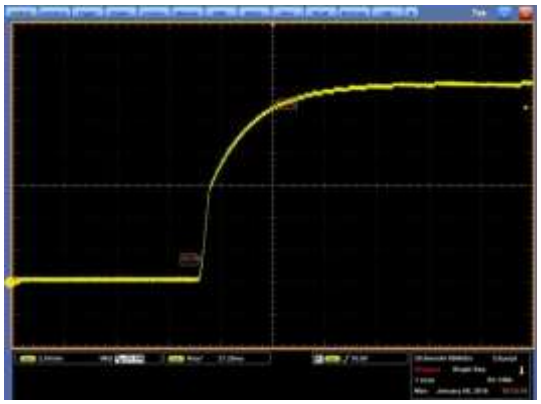
Rise Time (C)

1.Condition:
1>.Input: 90Vac/47Hz &264Vac/63Hz
2>.Output: 12Vdc/ 5.83A&0A
3>.Ambient:25℃

2.Pass Fail Criteria:
1>. The output rise time (the 10% point to the 90%) shall be less than 50 ms
2>. The output waveform shall be monotonic.

3.TestResult:PASS

Vin(V)	F(Hz)	Load (A)	Max(ms)	Min(ms)	Time(ms)	Test Result
90	47	5.83	50	*	27.20	PASS
264	63	5.83	50	*	26.33	PASS
90	47	0.0	50	*	27.22	PASS
264	63	0.0	50	*	27.29	PASS

	
Extended Name = 90V/47Hz/5.83A Var Name = Image	Extended Name = 264V/63Hz/5.83A Var Name = Image
	
Extended Name = 90V/47Hz/0A Var Name = Image	Extended Name = 264V/63Hz/0A Var Name = Image

Hold Up Time (C)

1.Condition:
1>.Input: 115Vac/60Hz,
2>.Output: 12Vdc/ 5.83A
3>.Ambient:25℃

2.Pass Fail Criteria:
1>. The power supply shall maintain voltage regulation at least 10 milliseconds
2>.Hold up time: measured from AC off point to the 90% point of the output voltage.

3.TestResult:PASS

Vin(V)	F(Hz)	I (A)	Max_spec(ms)	Min_spec(ms)	Time(ms)	Test Result
115	60	5.83	*	10	38.460	PASS



Extended Name = 115V/60Hz/5.83A
Var Name = Image

Overshoot & Undershoot (C)

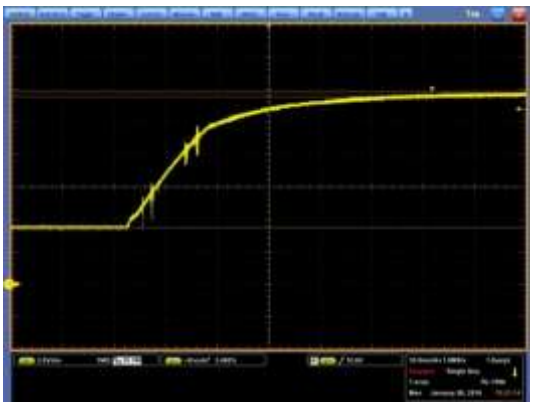
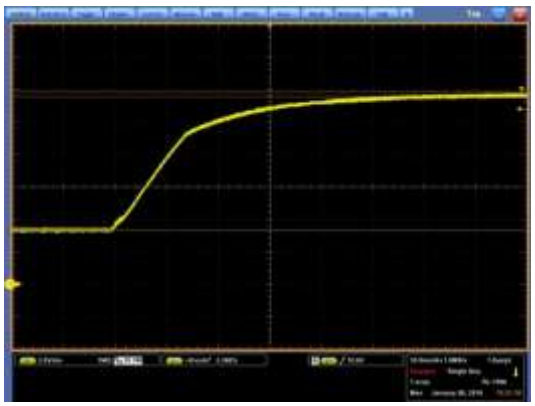
1.Condition:
1>.Input: 100Vac/60Hz, 240Vac/50Hz
2>.Output:12Vdc/5.83A
3>.Ambient:25℃

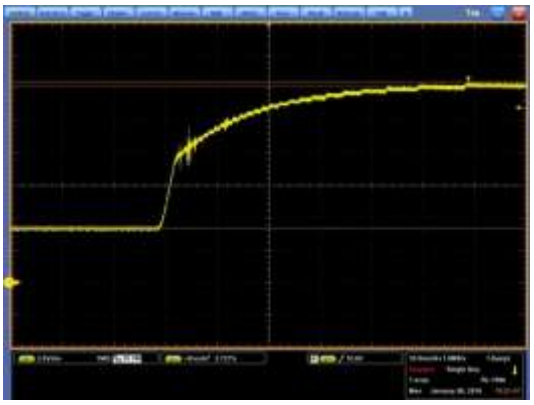
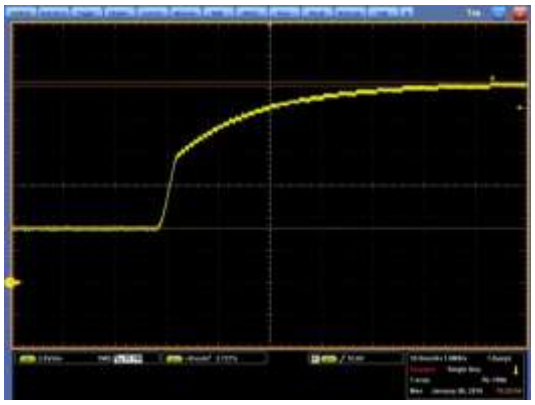
2.Pass/ Fail Criteria
Less than 10% of nominal voltage value.

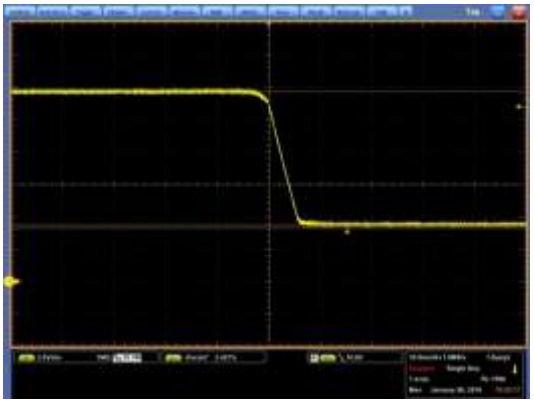
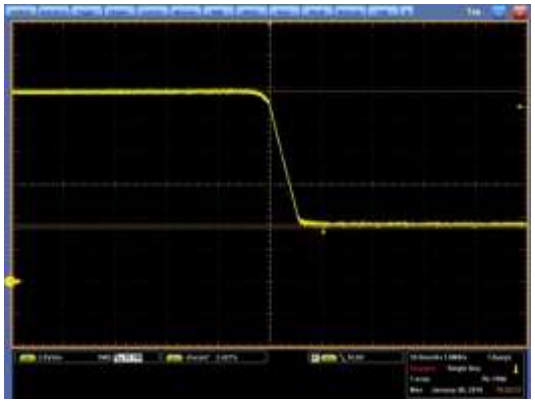
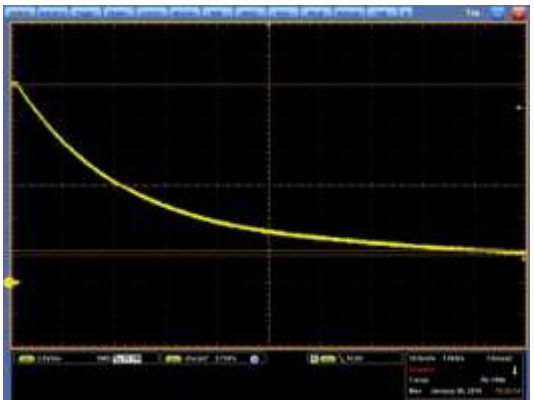
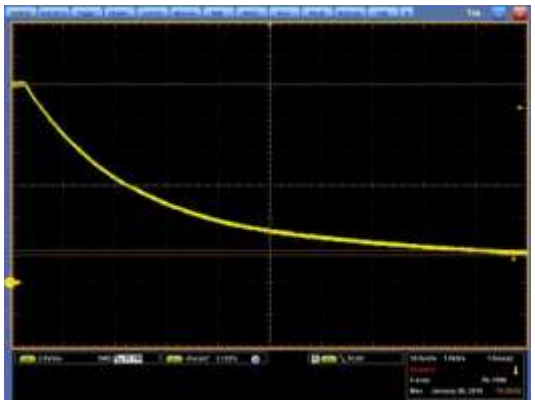
3.TestResult:Pass

Vin(V)	F(Hz)	Loading (A)	Overshoot Max Spec(%)	Overshoot Min Spec(%)	Max Spec(V)	Min Spec(V)	Overshoot(%)	Vout Reading (V)	Test Result
100	60	5.83	10	*	*	*	3.465	*	PASS
240	50	5.83	10	*	*	*	3.398	*	PASS
100	60	0.0	10	*	*	*	2.727	*	PASS
240	50	0.0	10	*	*	*	2.727	*	PASS

Vin(V)	F(Hz)	Loading (A)	Undershoot Max Spec(%)	Undershoot Min Spec(%)	Max Spec(V)	Min Spec(V)	Overshoot(%)	Vout Reading (V)	Test Result
100	60	5.83	10	*	*	*	2.43	*	PASS
240	50	5.83	10	*	*	*	2.43	*	PASS
100	60	0.0	10	*	*	*	2.73	*	PASS
240	50	0.0	10	*	*	*	3.13	*	PASS

	
Extended Name = 100V/60Hz Var Name = Image	Extended Name = 240V/50Hz Var Name = Image

	
Extended Name = 100V/60Hz/0A Var Name = Image	Extended Name = 240V/50Hz/0A Var Name = Image

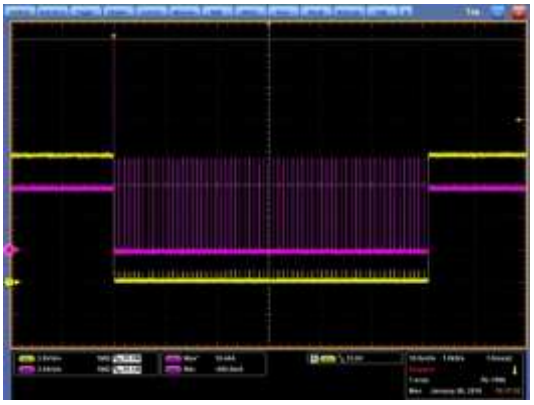
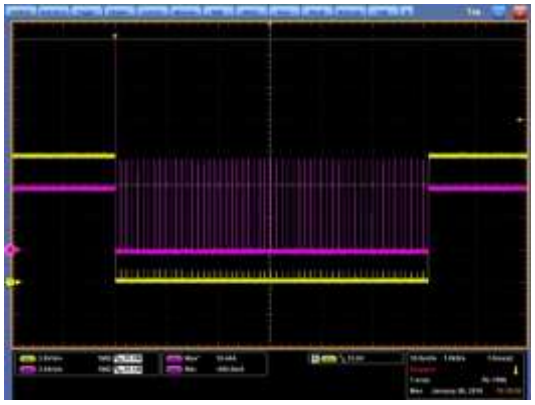
	
Extended Name = 100V/60Hz Var Name = Image	Extended Name = 240V/50Hz Var Name = Image
	
Extended Name = 100V/60Hz/0A Var Name = Image	Extended Name = 240V/50Hz/0A Var Name = Image

SCP (C)

1.Condition:
1>.Input: 90Vac/47Hz &264Vac/63Hz
2>.Output: 12Vdc/short
3>.Ambient:25℃

2.Pass Fail Criteria:
1>.A short circuit placed on DC output shall cause no damage to or shutting down the power supply.
2>.The power supply will be auto-recover
.
3.TestResult:PASS

Vin(V)	F(Hz)	Load (A)	Pin_Short_ Max(W)	Pin_Short_ Min(W)	Pin_Short(W)	Test Result
90	47	5.83	*	*	1.105	PASS
264	63	5.83	*	*	1.148	PASS

	
Extended Name = 90Vac/47Hz Var Name = Image	Extended Name = 264Vac/63Hz Var Name = Image

OCP (C)

1.Condition:
1>.Input: 90Vac/47Hz &264Vac/63Hz
2>.Output: 12Vdc/5.83A
3>.Ambient:25℃

2.Pass Fail Criteria:
1>. Over current protection with be auto-recovey.
2>. Total constant current range of OCP is not exceed 8A.
3>.No damaged

3.TestResult:PASS

Vin (V)	F (Hz)	Max (A)	Min (A)	Measured (A)	Test Result
90	47	8	*	7.24	PASS
264	63	8	*	7.36	PASS

	
Extended Name = 90Vac/47Hz Var Name = Image	Extended Name = 264Vac/63Hz Var Name = Image

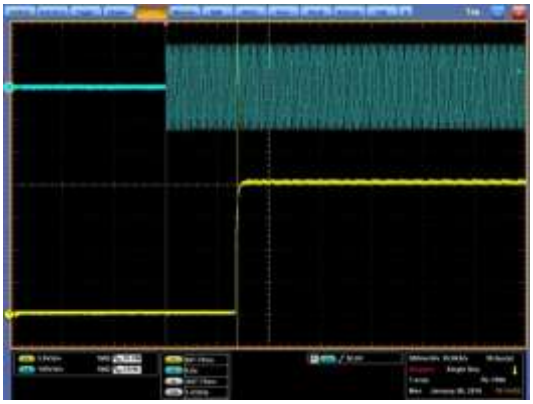
Turn On Time (C)

1.Condition:
1>.Input: 90Vac/47Hz,264Vac/63Hz,
2>.Output: 12Vdc/ 0A &5.83A
3>.Ambient:25℃

2.Pass Fail Criteria:
1>. Turn on time should be less than 3 seconds for all load conditions.
2>.Turn on time: measured from AC on point to the 90% point of the output voltage.

3.TestResult:PASS

Vin (V)	F (Hz)	I_Load (A)	Max (s)	Min (s)	Time (s)	Test Result
90	47	5.83	3	*	0.67	PASS
264	63	5.83	3	*	0.65	PASS
90	47	0.00	3	*	0.70	PASS
264	63	0.00	3	*	0.64	PASS

	
Extended Name = 90V/47Hz/5.83A Var Name = Image	Extended Name = 264V/63Hz/5.83A Var Name = Image
	
Extended Name = 90V/47Hz/0A Var Name = Image	Extended Name = 264V/63Hz/0A Var Name = Image

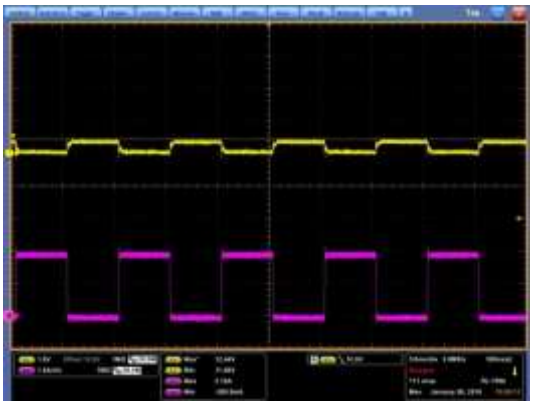
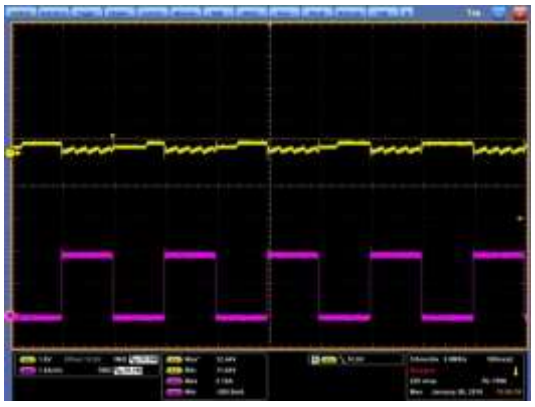
Transient Response (C)

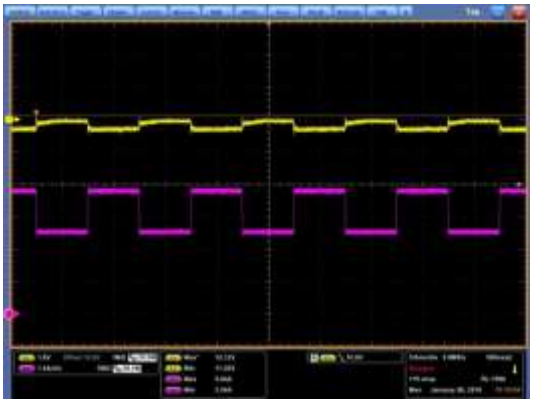
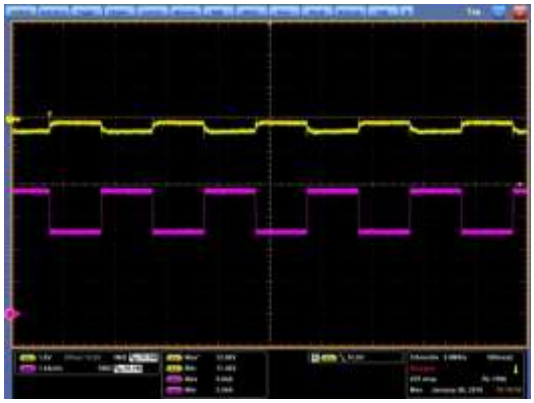
1.Condition:
Input: 90Vac/47Hz,264Vac/63Hz,,
Output:
1>12Vdc/0-1.95A, 1.95-3.9A,3.9-5.8A,
2>.Ton= 5ms , Toff = 5ms ,
3>.Slew Rate: 0.5A/us

2.Pass Fail Criteria:
1>.Dynamic regulation should be meet: 11~13V

3.TestResult:PASS

Vin(V)	F(Hz)	Load_1(A)	Load_2(A)	Tduration_1(ms)	Tduration_2(ms)	Max_Spec(V)	Min_Spec(V)	Vout_Max(V)	Vout_Min(V)	Test Result
90	47	0.00	1.95	5.00	5.00	13.00	11.00	12.44	11.88	PASS
264	63	0.00	1.95	5.00	5.00	13.00	11.00	12.44	11.84	PASS
90	47	1.95	3.90	5.00	5.00	13.00	11.00	12.32	11.72	PASS
264	63	1.95	3.90	5.00	5.00	13.00	11.00	12.28	11.72	PASS
90	47	3.90	5.80	5.00	5.00	13.00	11.00	12.12	11.52	PASS
264	63	3.90	5.80	5.00	5.00	13.00	11.00	12.08	11.48	PASS

	
Extended Name = 90V/47Hz/0--1.95A Var Name = Image	Extended Name = 264V/63Hz/0--1.95A Var Name = Image

	
Extended Name = 90V/47Hz/1.95--3.9A Var Name = Image	Extended Name = 264V/63Hz/1.95--3.9A Var Name = Image
	
Extended Name = 90V/47Hz/3.9--5.8A Var Name = Image	Extended Name = 264V/63Hz/3.9--5.8A Var Name = Image

Over Temperature Protection(Key Component)(A)

1.Condition:

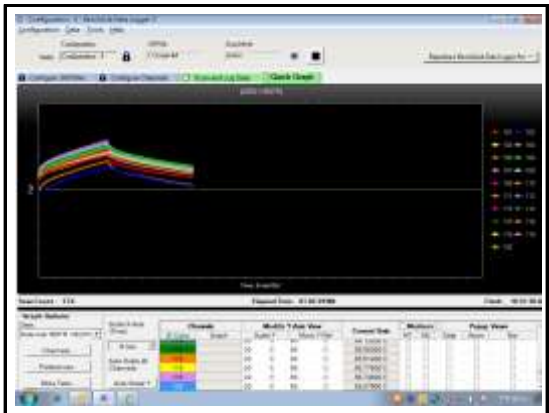
Input: 90Vac/47Hz, 264Vac/63Hz
Output: 12Vdc/5.83A
Ambient: 40 degree C

2.Pass and Fail Criteria:

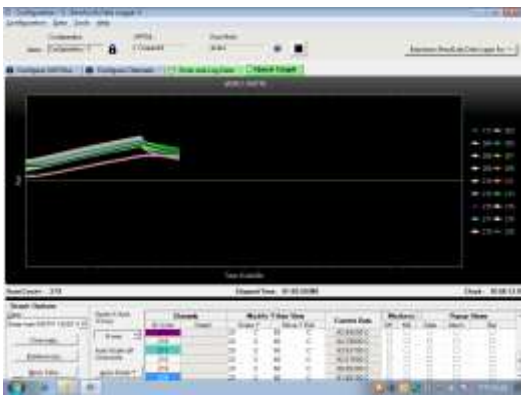
The Adaptor shall provide Over Temperature Protection,and if the temperature rises to set temperature point, the PSU shall be latch-off.

3.Result:

The test result can meet the above criteria, so the result is **PASS.**



90Vac/47Hz



264Vac/63Hz

Component	90V	264V
	(℃)	(℃)
RT100	103.367	103.568
Q050	113.862	111
Q051	114.067	108.815
BD001	112.737	101.624
D051	116.995	115.48
C051	109.616	103.026
IC100	105.494	105.239

Over Temperature Protection(Key Component)(B)

1.Condition:

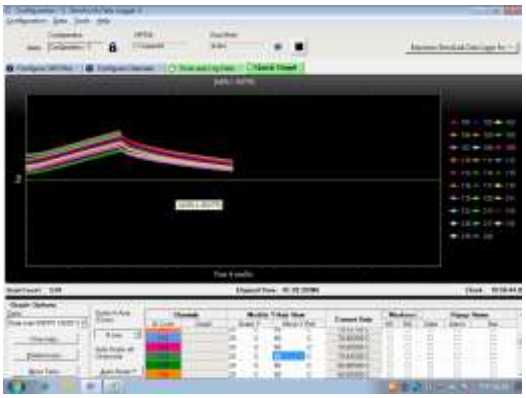
Input: 90Vac/47Hz, 264Vac/63Hz
Output: 12Vdc/5.83A
Ambient: 40 degree C

2.Pass and Fail Criteria:

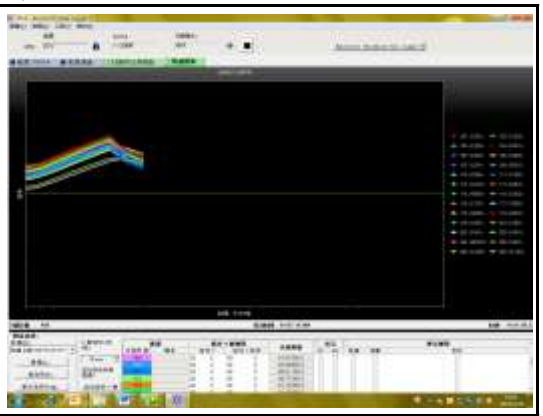
The Adaptor shall provide Over Temperature Protection,and if the temperature rises to set temperature point, the PSU shall be latch-off.

3.Result:

The test result can meet the above criteria, so the result is **PASS.**



90Vac/47Hz



264Vac/63Hz

Component	90V	264V
	(℃)	(℃)
RT100	103.678	103.417
Q050	109.64	107.525
Q051	109.764	105.815
BD001	111.359	110.348
D051	116.172	112.534
C051	107.353	101.888
IC100	106.008	105.011

Over Temperature Protection(Key Component)(C)

1.Condition:

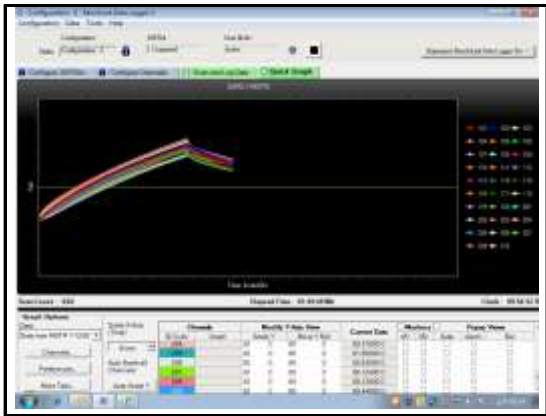
Input: 90Vac/47Hz, 264Vac/63Hz
Output: 12Vdc/5.83A
Ambient: 40 degree C

2.Pass and Fail Criteria:

The Adaptor shall provide Over Temperature Protection,and if the temperature rises to set temperature point, the PSU shall be latch-off.

3.Result:

The test result can meet the above criteria, so the result is **PASS.**

	
90Vac/47Hz	264Vac/63Hz

Component	90V	264V
	(℃)	(℃)
RT100	103.886	103.95
Q050	114.127	112.602
Q051	111.894	108.428
BD001	111.548	110.954
D051	115.046	113.486
C051	108.005	102.84
IC100	107.893	107.571

Over Temperature Protection(CASE) (A)

1.Condition:

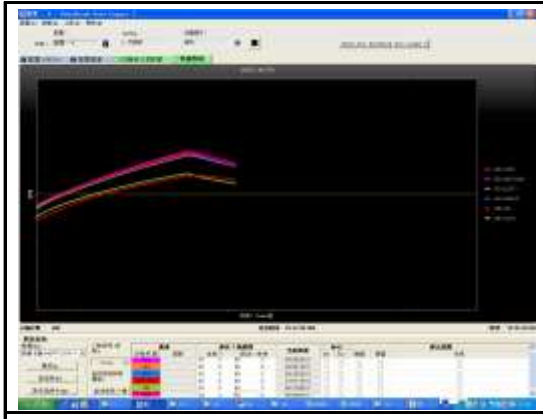
Input: 90Vac/47Hz, 264Vac/63Hz
Output: 12Vdc/5.83A
Ambient: 40 degree C

2.Pass and Fail Criteria:

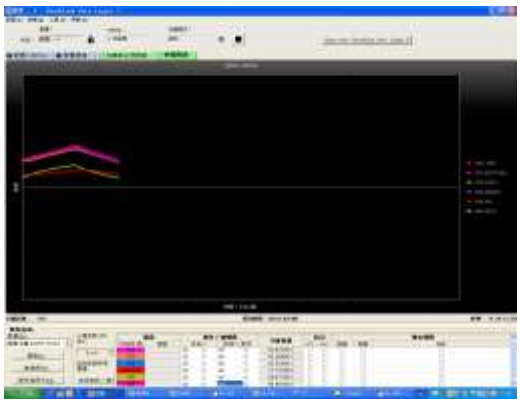
The Adaptor shall provide Over Temperature Protection,and if the temperature rises to set temperature point, the PSU shall be latch-off.

3.Result:

The test result can meet the above criteria, so the result is **PASS.**



90Vac/47Hz



264Vac/63Hz

Component	90V/47Hz (℃)	264V/63Hz (℃)
IN	76.199	75.654
OUT	78.047	79.909
TOP	97.346	96.858
BOTTOM	95.707	95.865
LEFT	93.526	94.024
RIGHT	93.782	93.816
Amb	41.127	41.959

Over Temperature Protection(CASE)(B)

1.Condition:

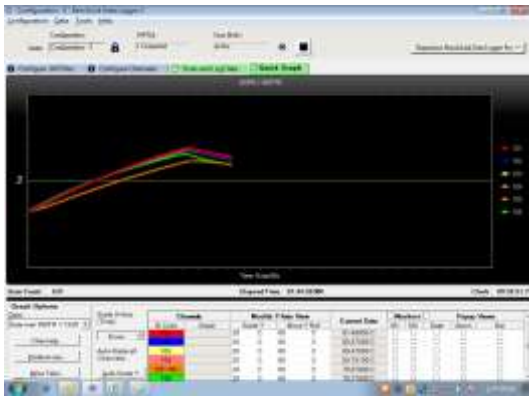
Input: 90Vac/47Hz, 264Vac/63Hz
Output: 12Vdc/5.83A
Ambient: 40 degree C

2.Pass and Fail Criteria:

The Adaptor shall provide Over Temperature Protection,and if the temperature rises to set temperature point, the PSU shall be latch-off.

3.Result:

The test result can meet the above criteria, so the result is **PASS.**



90Vac/47Hz



264Vac/63Hz

Component	90V/47Hz (℃)	264V/63Hz (℃)
IN	82.587	82.524
OUT	91.237	88.001
TOP	97.374	96.707
BOTTOM	96.703	95.974
LEFT	97.038	96.794
RIGHT	95.199	94.905
Amb	41.055	40.976

Over Temperature Protection(CASAE)(C)

1.Condition:

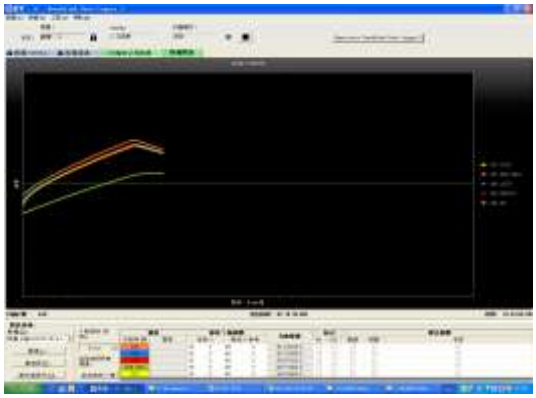
Input: 90Vac/47Hz, 264Vac/63Hz
Output: 12Vdc/5.83A
Ambient: 40 degree C

2.Pass and Fail Criteria:

The Adaptor shall provide Over Temperature Protection,and if the temperature rises to set temperature point, the PSU shall be latch-off.

3.Result:

The test result can meet the above criteria, so the result is **PASS.**



90Vac/47Hz



264Vac/63Hz

Component	90V/47Hz (℃)	264V/63Hz (℃)
IN	69.802	71.731
OUT	91.237	88.001
TOP	94.571	94.955
BOTTOM	99.315	99.511
LEFT	94.055	94.184
RIGHT	95.643	96.275
Amb	41.606	41.215

Over Voltage Protection(A)

1.Condition:

Input: 90Vac/47Hz, 264Vac/63Hz
Output: 12Vdc/0A&5.83A
Ambient: 25 degree C

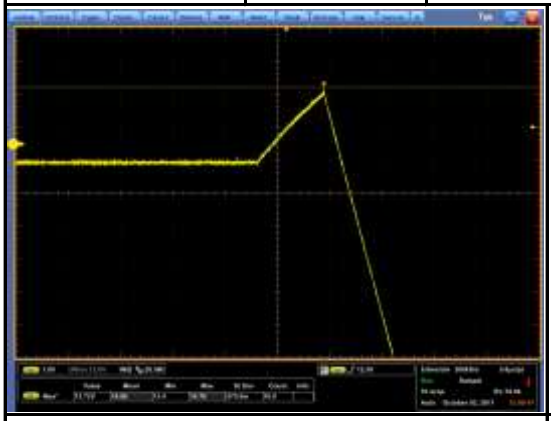
2.Pass and Fail Criteria:

The power supply should shutdown for any cause of over voltage conditions before any output exceeds **18V.**

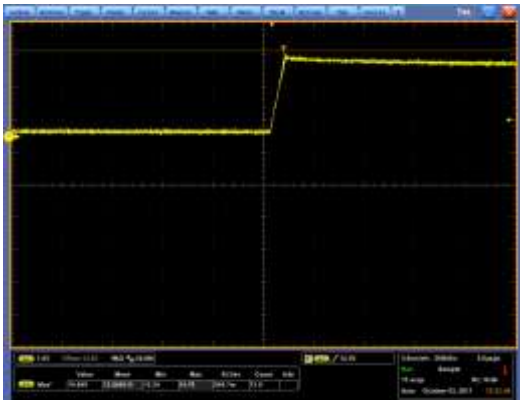
3.Result:

The test result can meet the above criteria, so the result is **PASS.**

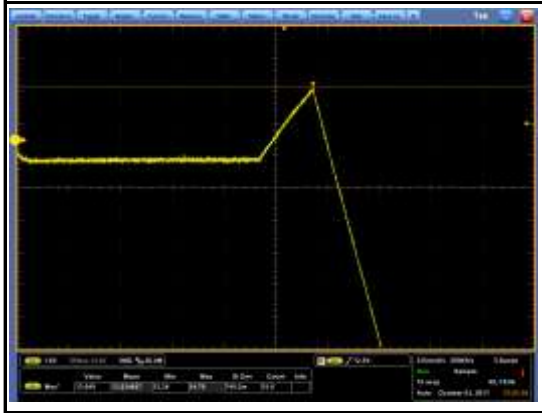
Input voltage	Tripped voltage(V)		Spec(V)	Result
	Full Load	No Load		
90V/47Hz	13.72	14.64	18	Pass
264V/63Hz	13.64	14.52		Pass



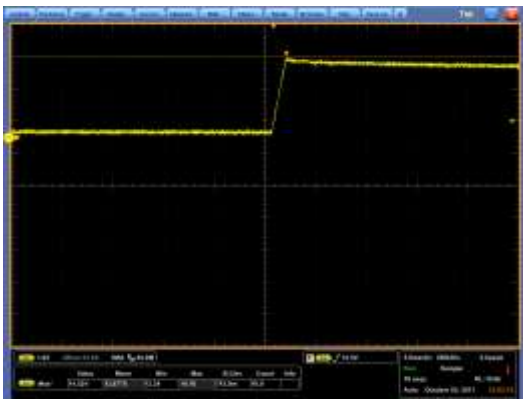
Input 90Vac/47Hz, Full Load



Input 90Vac/47Hz, No Load



Input 264Vac/63Hz, Full Load



Input 264Vac/63Hz, No Load

Over Voltage Protection(B)

1.Condition:

Input: 90Vac/47Hz, 264Vac/63Hz
Output: 12Vdc/0A&5.83A
Ambient: 25 degree C

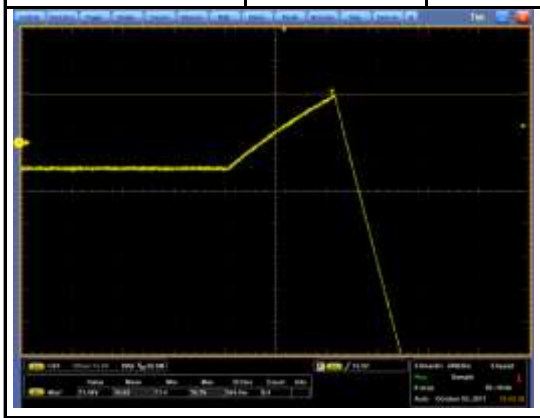
2.Pass and Fail Criteria:

The power supply should shutdown for any cause of over voltage conditions before any output exceeds **18V.**

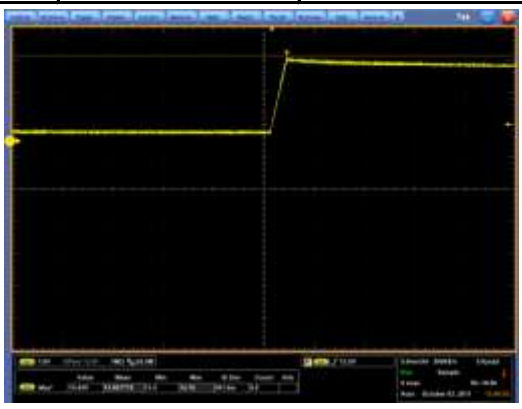
3.Result:

The test result can meet the above criteria, so the result is **PASS.**

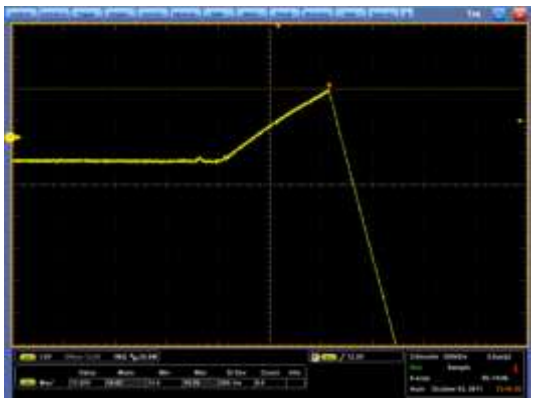
Input voltage	Tripped voltage(V)		Spec(V)	Result
	Full Load	No Load		
90V/47Hz	13.48	14.64	18	Pass
264V/63Hz	13.52	14.64		Pass



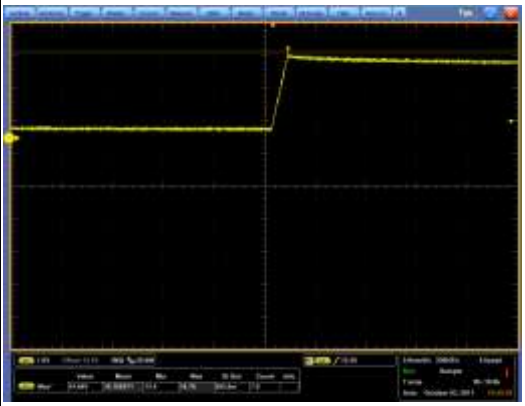
Input 90Vac/47Hz, Full Load



Input 90Vac/47Hz, No Load



Input 264Vac/63Hz, Full Load



Input 264Vac/63Hz, No Load

Over Voltage Protection（C）

1.Condition:

Input: 90Vac/47Hz, 264Vac/63Hz
Output: 12Vdc/0A&5.83A
Ambient: 25 degree C

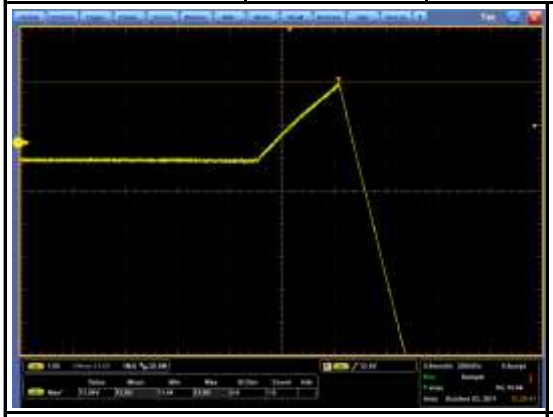
2.Pass and Fail Criteria:

The power supply should shutdown for any cause of over voltage conditions before any output exceeds **18V.**

3.Result:

The test result can meet the above criteria, so the result is **PASS.**

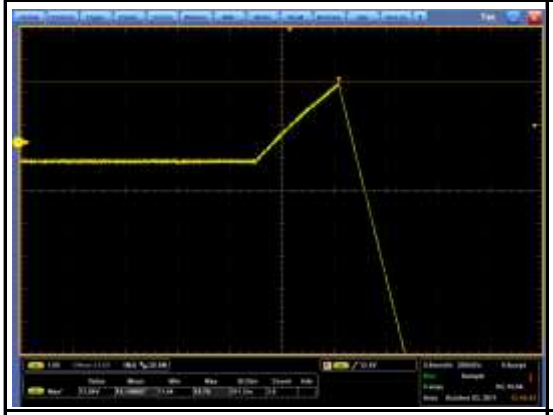
Input voltage	Tripped voltage(V)		Spec(V)	Result
	Full Load	No Load		
90V/47Hz	13.84	14.76	18	Pass
264V/63Hz	13.84	14.76		Pass



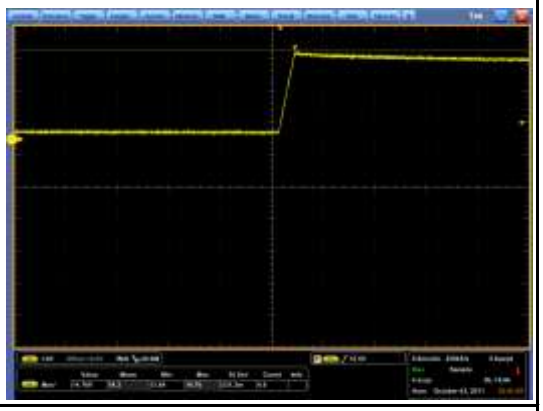
Input 90Vac/47Hz, Full Load



Input 90Vac/47Hz, No Load



Input 264Vac/63Hz, Full Load



Input 264Vac/63Hz, No Load

Inrush Current(A)

1.Condition:

Input: 220Vac/50Hz
Output: 12Vdc/5.83A
Ambient: 25 degree C

2.Pass and Fail Criteria:

Inrush peak current and Joule integral will be measured at 220Vac and 25℃. Peak current is within specified limit well below Ifsm of Bridge Diode at cold start.

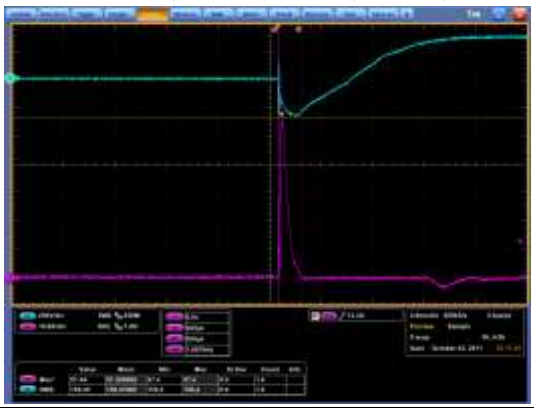
I^2T: Fuse **100** A^2S, derating **25%** , Bridge **93** A^2S,derating **80%**

3.Result:

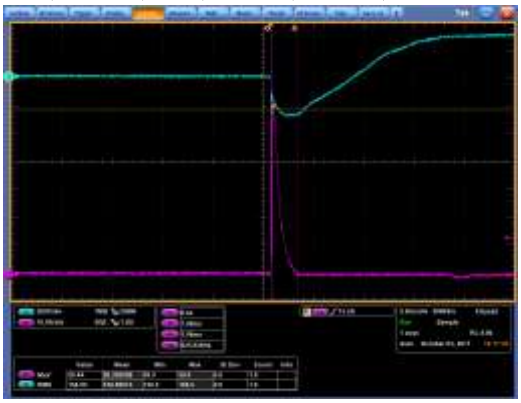
The test result can meet the above criteria, so the result is **PASS.**

Multiple=264/231=1.142857 Inrush test Imp =Ip*1.142857

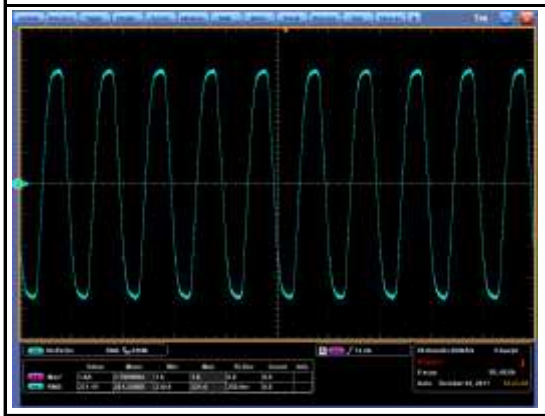
Input voltage (264Vac)	Ip (A)		t (mS)	$(I^2*t)/3$	Fuse	Bridge	Fuse	Bridge	Result
	Ip (A)	Imp			(A^2 sec)		Derating		
Cold start	57.4	65.6	0.92	1.320	100	93	25	74.4	Pass
Warm start	59.4	67.886	1.08	1.659					Pass



231Vac Cold Start



231Vac Warm Start



231Vac

Inrush Current(B)

1.Condition:

Input: 220Vac/50Hz
Output: 12Vdc/5.83A
Ambient: 25 degree C

2.Pass and Fail Criteria:

Inrush peak current and Joule integral will be measured at 220Vac and 25℃. Peak current is within specified limit well below Ifsm of Bridge Diode at cold start.

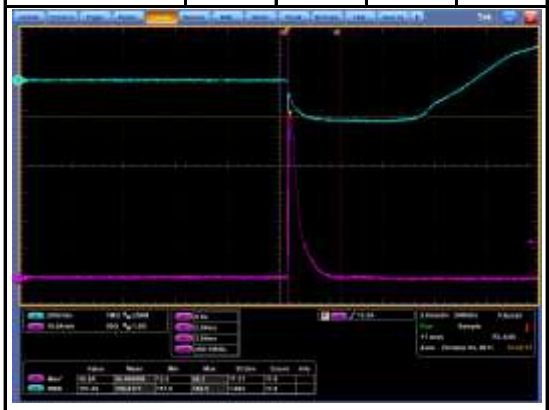
I^2T: Fuse **100** A^2S, derating **25%** , Bridge **93** A^2S,derating **80%**

3.Result:

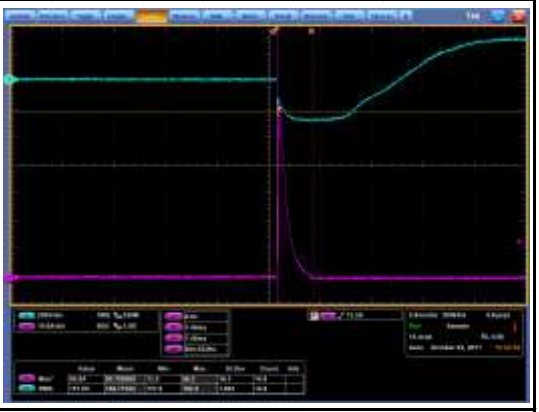
The test result can meet the above criteria, so the result is **PASS.**

Multiple=264/231=1.142857 Inrush test Imp =Ip*1.142857

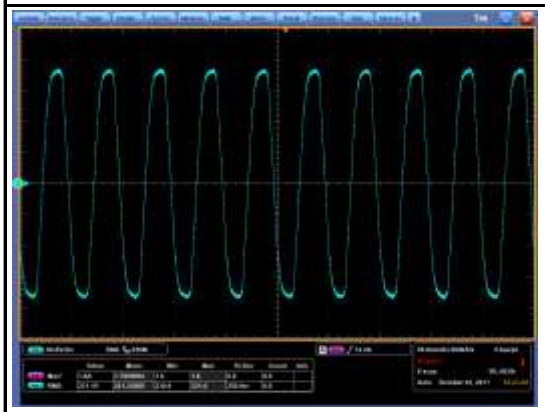
Input voltage (264Vac)	Ip (A)		t (mS)	$(I^2*t)/3$	Fuse	Bridge	Fuse	Bridge	Result
	Ip (A)	Imp			(A^2 sec)		Derating		
Cold start	58.6	66.971	2.04	3.050	100	93	25	74.4	Pass
Warm start	59.8	68.343	1.46	2.273					Pass



231Vac Cold Start



231Vac Warm Start



231Vac

Inrush Current(C)

1.Condition:

Input: 220Vac/50Hz
Output: 12Vdc/5.83A
Ambient: 25 degree C

2.Pass and Fail Criteria:

Inrush peak current and Joule integral will be measured at 220Vac and 25℃. Peak current is within specified limit well below Ifsm of Bridge Diode at cold start.

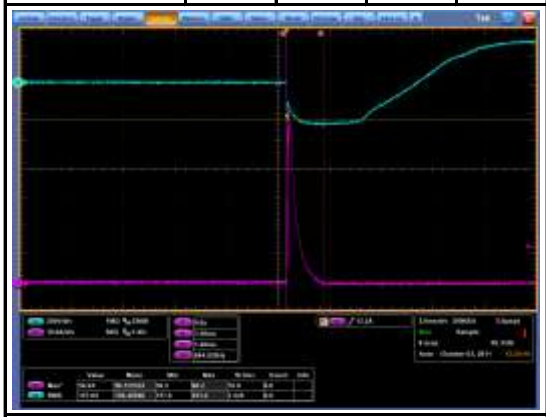
I^2T: Fuse **100** A^2S, derating **25%** , Bridge **93** A^2S,derating **80%**

3.Result:

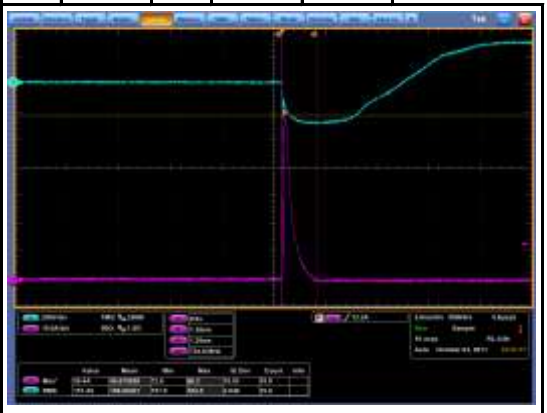
The test result can meet the above criteria, so the result is **PASS.**

Multiple=264/231=1.142857 Inrush test Imp =Ip*1.142857

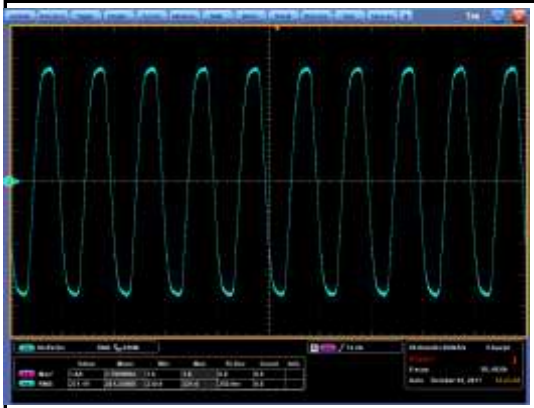
Input voltage (264Vac)	Ip (A)		t (mS)	$(I^2*t)/3$	Fuse	Bridge	Fuse	Bridge	Result
	Ip (A)	Imp			(A^2 sec)		Derating		
Cold start	58.2	66.514	1.481	1.460	100	93	25	74.4	Pass
Warm start	59.4	67.886	1.481	1.380					Pass



231Vac Cold Start



231Vac Warm Start



231Vac

Hi-pot

1.Condition:

HI-POT: DC 4242V or AC 3000V,10mA 1--3sec
between Primary to Secondary all.

2.Pass and Fail Criteria:

HI-POT should be less than **10** mA

3.Result:

The test result can meet the above criteria, so the result is **PASS.**

AC	Hi-pot	Input voltage	Current(mA)	Spec(mA)	Result
A	Pri to Sec	3000Vac	1.035	<10	PASS
B	Pri to Sec	3000Vac	1.124	<10	PASS
C	Pri to Sec	3000Vac	1.047	<10	PASS
A	Pri to Sec	4242Vdc	0.0007	<10	PASS
B	Pri to Sec	4242Vdc	0.0008	<10	PASS
C	Pri to Sec	4242Vdc	0.0007	<10	PASS

IR

1.Condition:

IR: 500Vdc 1sec IR shall ≧20MΩ.

Dielectric withstand voltage: Between primary and secondary circuit.

Ambient: 25 degree C

2.Pass and Fail Criteria:

The power has no ignition,smoke,damage,arcing or break down.

Insulation resistance should be greater than **20** MΩ.

3.Result:

The test result can meet the above criteria, so the result is **PASS.**

1sec	Input voltage	IR (MΩ)	Spec(MΩ)	Result
A	500Vdc	7184	>20	PASS
B	500Vdc	7235	>20	PASS
C	500Vdc	7216	>20	PASS

Leakage Current

1.Condition:

Input: 254Vac/50 Hz; L to G and N to G

Output: 12Vdc

Ambient: 25 degree C

2.Pass and Fail Criteria:

Leakage currnt less than **250** at 254Vac/50Hz Input.

3.Result:

The test result can meet the above criteria, so the result is **PASS.**

No.		Input voltage	Leakage current		Spec(max)		Result
A	**L-G**	**254Vac/50 Hz**	98.7	μA	250	μA	Pass
	N-G		98.5	μA	250	μA	Pass
B	**L-G**	**254Vac/50 Hz**	96	μA	250	μA	Pass
	N-G		94	μA	250	μA	Pass
C	**L-G**	**254Vac/50 Hz**	96.6	μA	250	μA	Pass
	N-G		98.8	μA	250	μA	Pass

Bulk Cap C050 (A)

1.Condition:

Input: 90Vac/60Hz, 264Vac/63Hz
Output: 12Vdc/5.83A
Ambient: 25 degree C

2.Pass and Fail Criteria:

Bulk cap C050: V_c= **450** V,voltage derating **100.0%** at continuous operation and **102.50%** at turn on.

I_{ripple}= **740** mA.

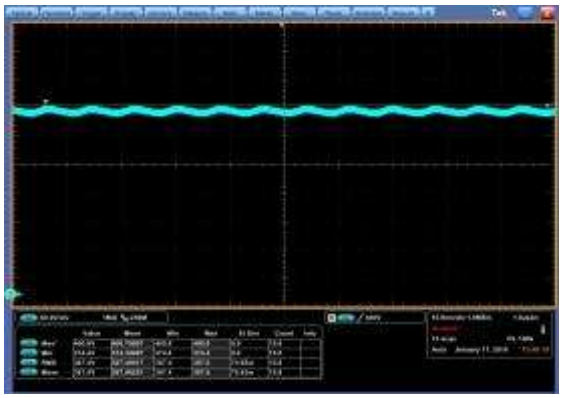
3.Result:

The test result can meet the above criteria, so the result is **PASS.**

PN: **765795** Maker: **RUBYCON**

Input voltage	Voltage Actual (V)		Derating (V)		Reslult
	Continuous	Turn on	Continuous	Turn on	
264Vac/63Hz	400.8	417.6	450	461.25	Pass

Input voltage	Current Actual (mA)		I_{ripple} Actual (mA)	I_{ripple} (mA)		Reslult
	High	Low		Spec(max)	Derating	
90Vac/60Hz	402.636	NA	402.64	740	740	Pass



Input 264Vac/63Hz, Continuous



Input 264Vac/63Hz, Turn on



Input 90Vac/60Hz, High

Input 90Vac/60Hz, Low

Bulk Cap C050 (B)

1.Condition:

Input: 90Vac/60Hz, 264Vac/63Hz
Output: 12Vdc/5.83A
Ambient: 25 degree C

2.Pass and Fail Criteria:

Bulk cap C050: V_c= **450** V,voltage derating **100.0%** at continuous operation and **102.50%** at turn on.

I_{ripple}= **800** mA.

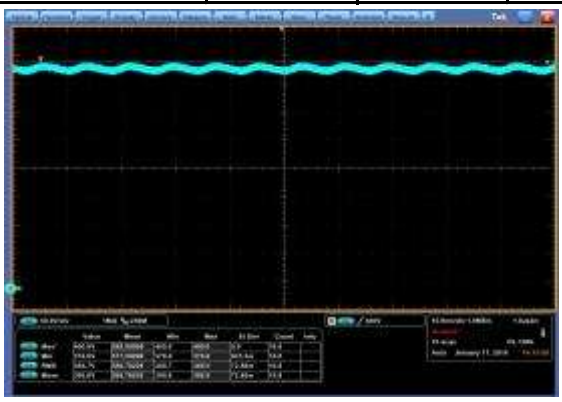
3.Result:

The test result can meet the above criteria, so the result is **PASS.**

PN: **753233** Maker: **NCC**

Input voltage	Voltage Actual (V)		Derating (V)		Reslult
	Continuous	Turn on	Continuous	Turn on	
264Vac/63Hz	400	420	450	461.25	Pass

Input voltage	Current Actual (mA)		I_{ripple} Actual (mA)	I_{ripple} (mA)		Reslult
	High	Low		Spec(max)	Derating	
90Vac/60Hz	424.176	NA	424.18	800	800	Pass



Input 264Vac/63Hz, Continuous



Input 264Vac/63Hz, Turn on



Input 90Vac/60Hz, High

Input 90Vac/60Hz, Low

Bulk Cap C050 (C)

1.Condition:

Input: 90Vac/60Hz, 264Vac/63Hz
Output: 12Vdc/5.83A
Ambient: 25 degree C

2.Pass and Fail Criteria:

Bulk cap C050: V_c= **450** V,voltage derating **100.0%** at continuous operation and **102.50%** at turn on.

I_{ripple}= **740** mA.

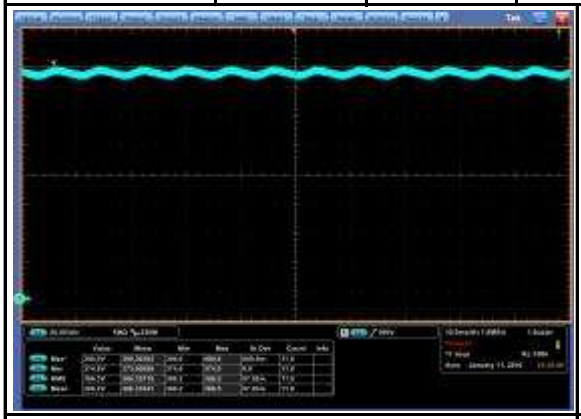
3.Result:

The test result can meet the above criteria, so the result is **PASS.**

PN: **765795** Maker: **RUBYCON**

Input voltage	Voltage Actual (V)		Derating (V)		Reslult
	Continuous	Turn on	Continuous	Turn on	
264Vac/63Hz	398	416	450	461.25	Pass

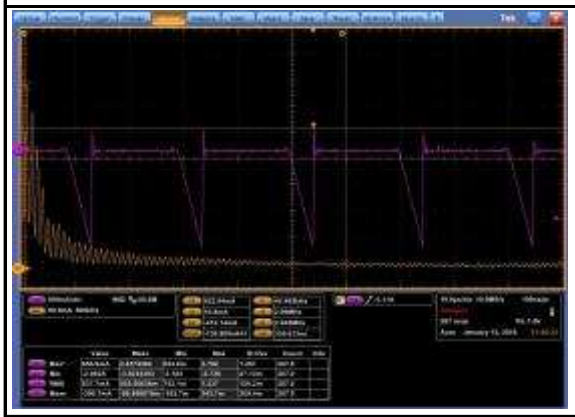
Input voltage	Current Actual (mA)		I_{ripple} Actual (mA)	I_{ripple} (mA)		Reslult
	High	Low		Spec(max)	Derating	
90Vac/60Hz	422.94	NA	422.94	740	740	Pass



Input 264Vac/63Hz, Continuous



Input 264Vac/63Hz, Turn on



Input 90Vac/60Hz, High

Input 90Vac/60Hz, Low

PWM Mosfet Q050(A)

1.Condition:

Input: 90Vac/47Hz, 264Vac/63Hz
Output: 12Vdc/5.83A
Ambient: 25 degree C

2.Pass and Fail Criteria:

PWM mosfet Q050: V_{ds}= **600** V,voltage derating **100%** at continuous operation and **110%** at turn on.

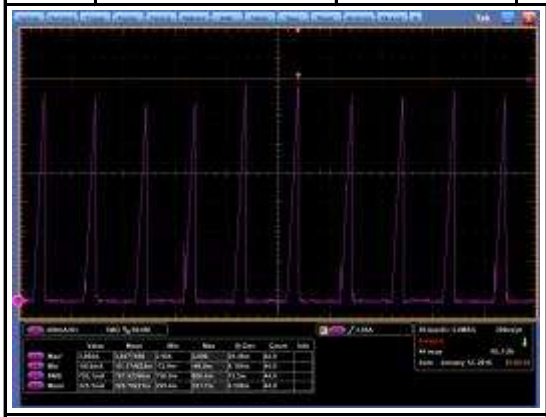
I_{ds} = **10** A, derating **80%**

3.Result:

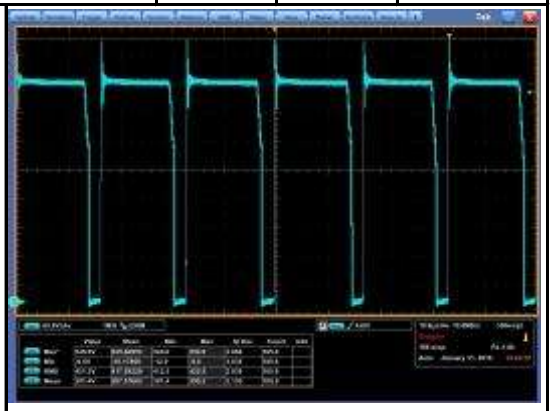
The test result can meet the above criteria, so the result is **PASS.**

PN: **786671** Maker: **TOSHIBA**

Item	Condition	90V/47Hz	264Vac/63Hz	Derating		Result
		I_{ds}(A)	V_{ds}(V)	I_{ds}(A)	V_{ds}(V)	
Q050	Continuous	3.064	549.6	8	600	Pass
	Turn on	3.612	562.8	8	660	Pass
	Short & GND	3.828	568.4	8	660	Pass



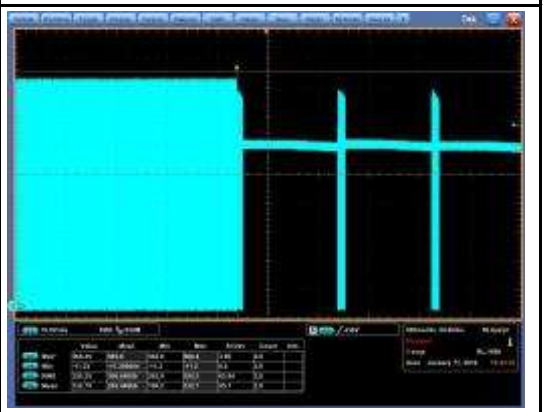
Input 90Vac/47Hz, Continuous



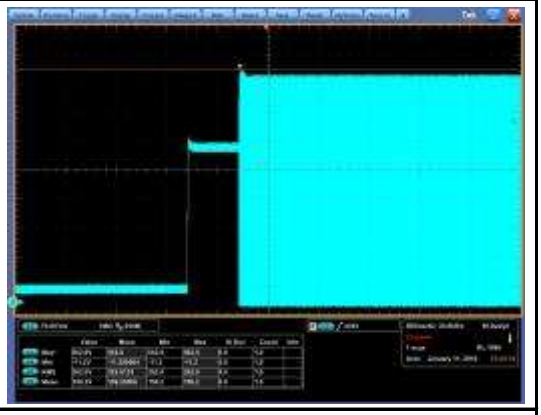
Input 264Vac/63Hz, Continuous



Input 90Vac/47Hz, Short



Input 264Vac/63Hz, Short

	
Input 90Vac/47Hz, Turn on	Input 264Vac/63Hz, Turn on

PWM Mosfet Q050(B)

1.Condition:

Input: 90Vac/47Hz, 264Vac/63Hz
Output: 12Vdc/5.83A
Ambient: 25 degree C

2.Pass and Fail Criteria:

PWM mosfet Q050: V_{ds}= **600** V,voltage derating **100%** at continuous operation and **110%** at turn on.

I_{ds} = **10** A, derating **80%**

3.Result:

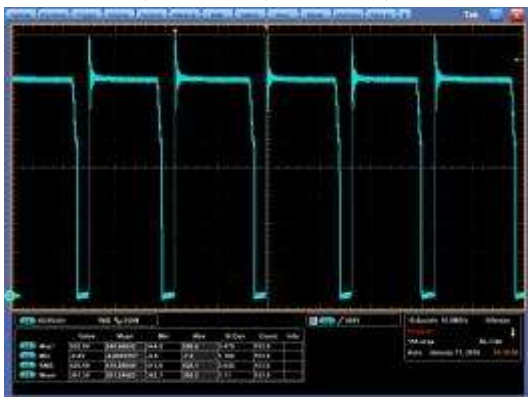
The test result can meet the above criteria, so the result is **PASS.**

PN: **787181** Maker: **ALPHA & OMEGA**

Item	Condition	90V/47Hz	264Vac/63Hz	Derating		Result
		I_{ds}(A)	V_{ds}(V)	I_{ds}(A)	V_{ds}(V)	
Q050	Continuous	3.104	522	8	600	Pass
	Turn on	3.6	564	8	660	Pass
	Short & GND	3.528	565.6	8	660	Pass



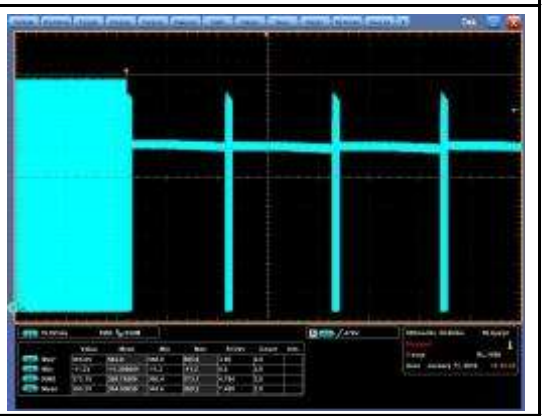
Input 90Vac/47Hz, Continuous



Input 264Vac/63Hz, Continuous



Input 90Vac/47Hz, Short



Input 264Vac/63Hz, Short

	
Input 90Vac/47Hz, Turn on	Input 264Vac/63Hz, Turn on

PWM Mosfet Q050(C)

1.Condition:

Input: 90Vac/47Hz, 264Vac/63Hz
Output: 12Vdc/5.83A
Ambient: 25 degree C

2.Pass and Fail Criteria:

PWM mosfet Q050: V_{ds}= **600** V,voltage derating **100%** at continuous operation and **110%** at turn on.

I_{ds} = **10** A, derating **80%**

3.Result:

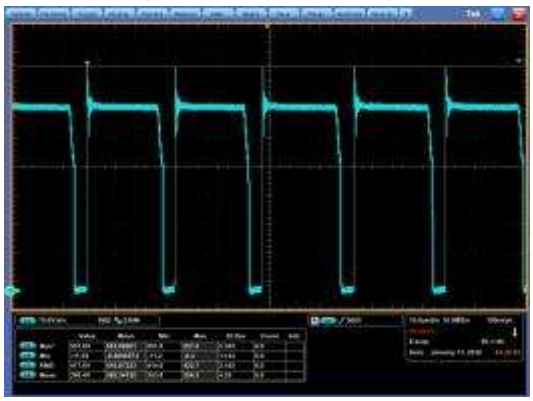
The test result can meet the above criteria, so the result is **PASS.**

PN: **732612** Maker: **STM**

Item	Condition	90V/47Hz	264Vac/63Hz	Derating		Result
		I_{ds}(A)	V_{ds}(V)	I_{ds}(A)	V_{ds}(V)	
Q050	Continuous	3.024	551.6	8	600	Pass
	Turn on	3.528	574	8	660	Pass
	Short & GND	3.696	579.6	8	660	Pass



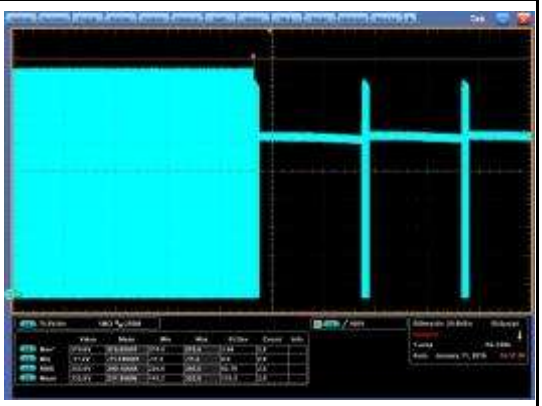
Input 90Vac/47Hz, Continuous



Input 264Vac/63Hz, Continuous



Input 90Vac/47Hz, Short



Input 264Vac/63Hz, Short

	
Input 90Vac/47Hz, Turn on	Input 264Vac/63Hz, Turn on

PFC Mosfet Q051(A)

1.Condition:

Input: 90Vac/47Hz, 264Vac/63Hz
Output: 12Vdc/5.83A
Ambient: 25 degree C

2.Pass and Fail Criteria:

PFC mosfet Q051: V_{ds}= **500** V,voltage derating **100%** at continuous operation and **110%** at turn on.

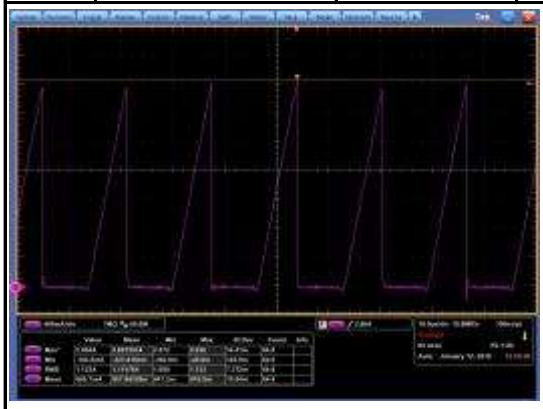
I_{ds} = **12** A, derating **80%**

3.Result:

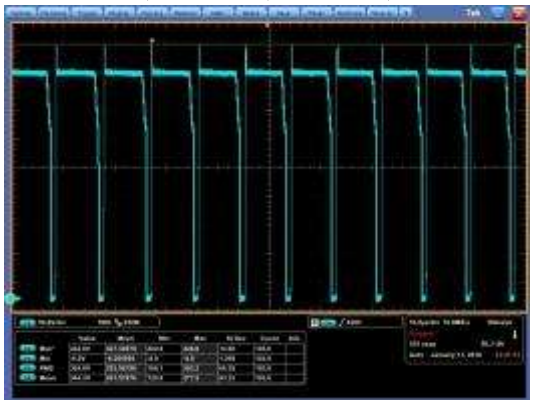
The test result can meet the above criteria, so the result is **PASS.**

PN: **786672** Maker: **TOSHIBA**

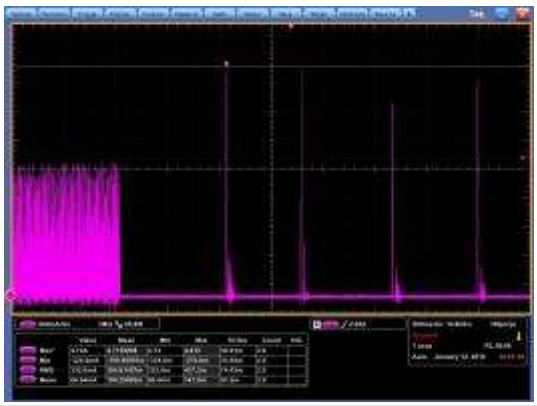
Item	Condition	90V/47Hz	264Vac/63Hz	Derating		Result
		I_{ds}(A)	V_{ds}(V)	I_{ds}(A)	V_{ds}(V)	
Q051	Continuous	2.904	442	9.6	500	Pass
	Turn on	4.812	506.4	9.6	550	Pass
	Short & GND	4.74	494.4	9.6	550	Pass



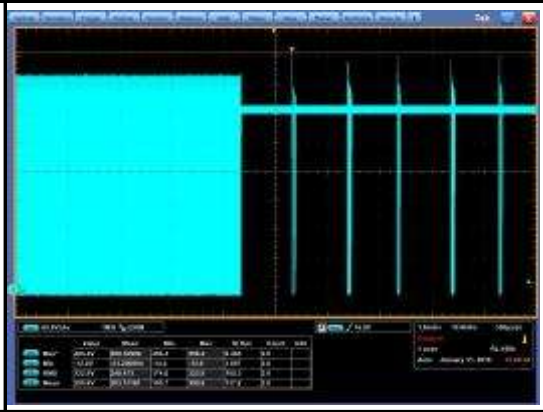
Input 90Vac/47Hz, Continuous



Input 264Vac/63Hz, Continuous



Input 90Vac/47Hz, Short



Input 264Vac/63Hz, Short

	
Input 90Vac/47Hz, Turn on	Input 264Vac/63Hz, Turn on

PFC Mosfet Q051(B)

1.Condition:

Input: 90Vac/47Hz, 264Vac/63Hz
Output: 12Vdc/5.83A
Ambient: 25 degree C

2.Pass and Fail Criteria:

PFC mosfet Q051: V_{ds}= **500** V,voltage derating **100%** at continuous operation and **110%** at turn on.

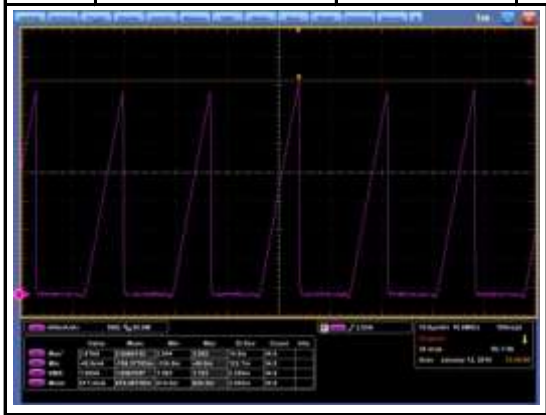
I_{ds} = **12** A, derating **80%**

3.Result:

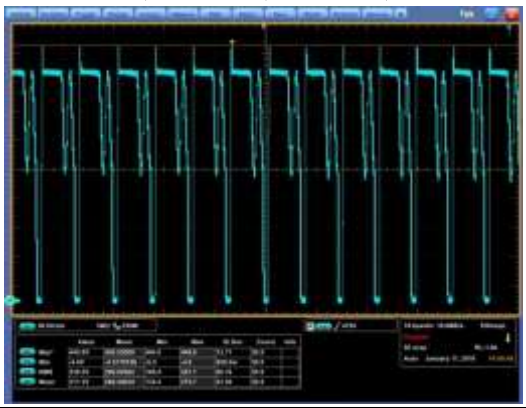
The test result can meet the above criteria, so the result is **PASS.**

PN: **786581** Maker: **ALPHA & OMEGA**

Item	Condition	90V/47Hz	264Vac/63Hz	Derating		Result
		I_{ds}(A)	V_{ds}(V)	I_{ds}(A)	V_{ds}(V)	
Q051	Continuous	2.976	440	9.6	500	Pass
	Turn on	4.944	496.8	9.6	550	Pass
	Short & GND	5.016	501.6	9.6	550	Pass



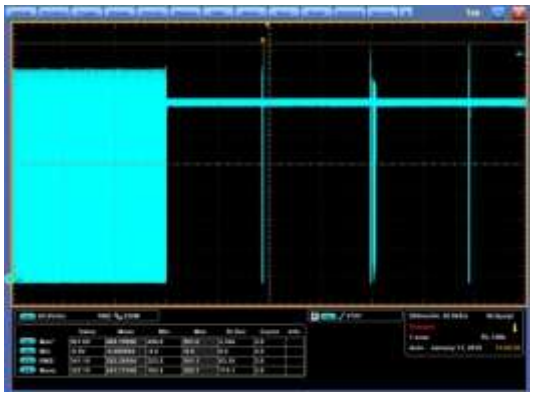
Input 90Vac/47Hz, Continuous



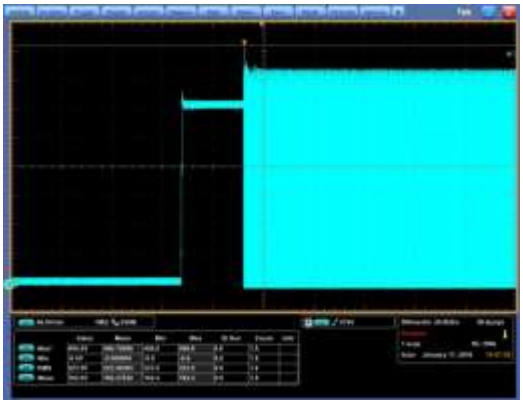
Input 264Vac/63Hz, Continuous



Input 90Vac/47Hz, Short



Input 264Vac/63Hz, Short

	
Input 90Vac/47Hz, Turn on	Input 264Vac/63Hz, Turn on

PFC Mosfet Q051(C)

1.Condition:

Input: 90Vac/47Hz, 264Vac/63Hz
Output: 12Vdc/5.83A
Ambient: 25 degree C

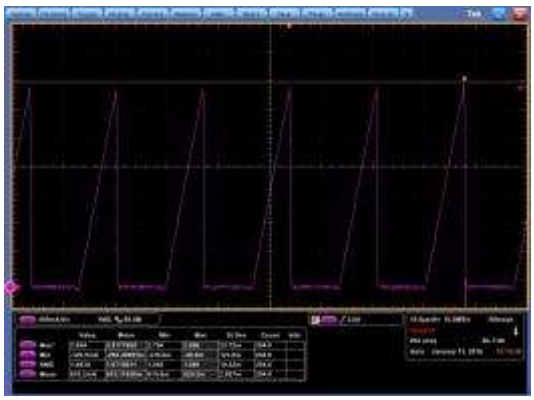
2.Pass and Fail Criteria:

PFC mosfet Q051: V_{ds}= **500** V,voltage derating **100%** at continuous operation and **110%** at turn on.
I_{ds} = **12** A, derating **80%**

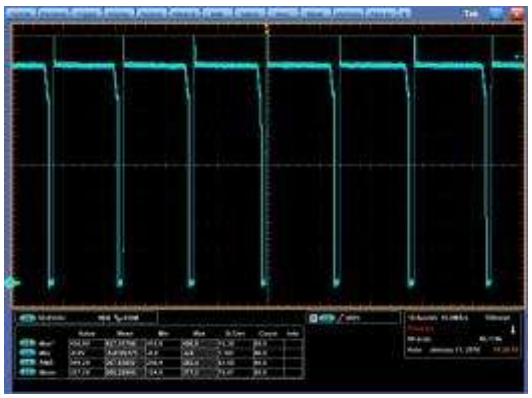
3.Result:

The test result can meet the above criteria, so the result is **PASS.**
PN: **786672** Maker: **FAIRCHILD**

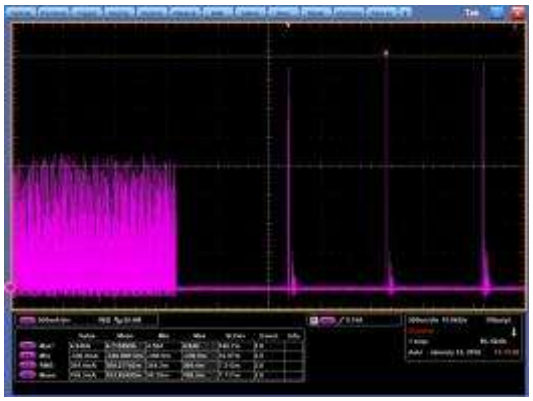
Item	Condition	90V/47Hz	264Vac/63Hz	Derating		Result
		I_{ds}(A)	V_{ds}(V)	I_{ds}(A)	V_{ds}(V)	
Q051	Continuous	2.88	438	9.6	500	Pass
	Turn on	4.584	496.8	9.6	550	Pass
	Short & GND	4.484	501.6	9.6	550	Pass



Input 90Vac/47Hz, Continuous



Input 264Vac/63Hz, Continuous



Input 90Vac/47Hz, Short



Input 264Vac/63Hz, Short

	
Input 90Vac/47Hz, Turn on	Input 264Vac/63Hz, Turn on

Output Diode Q201(A)

1.Condition:

Input: 90Vac/47Hz, 264Vac/63Hz
Output: 12Vdc/5.83A
Ambient: 25 degree C

2.Pass and Fail Criteria:

Output mosfet Q201: V_{ds}= **105** V,voltage derating **100%** at continuous operation and **110%** at turn on.

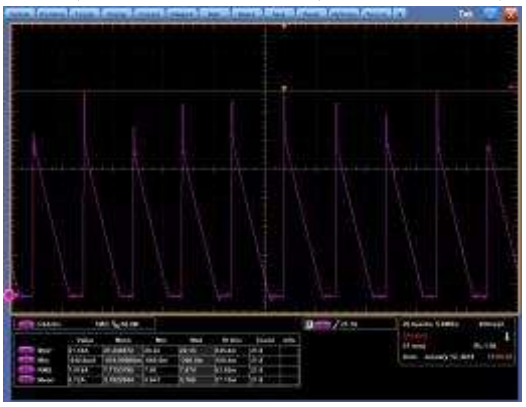
I_{ds} = **52** A, derating **80%**

3.Result:

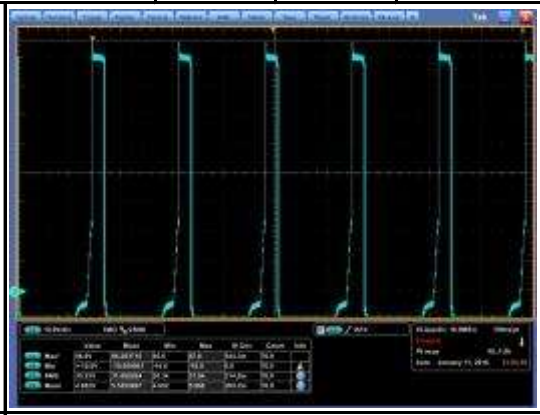
The test result can meet the above criteria, so the result is **PASS.**

PN: **796110** Maker: **TOSHIBA**

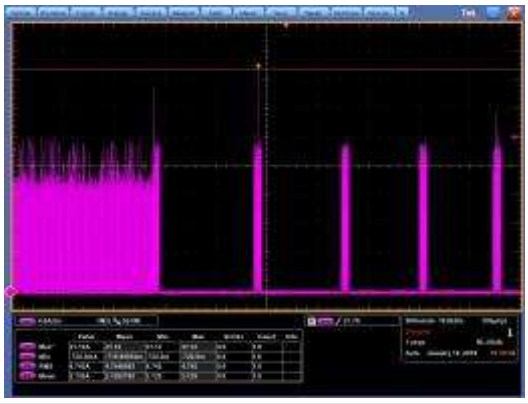
Item	Condition	90V/47Hz	264Vac/63Hz	Derating		Result
		I_{ds}(A)	V_{ds}(V)	I_{ds}(A)	V_{ds}(V)	
Q201	Continuous	21.18	86	41.6	105	Pass
	Turn on	24.4	88.8	41.6	115.5	Pass
	Short & GND	31.12	90.4	41.6	115.5	Pass



Input 90Vac/47Hz, Continuous



Input 264Vac/63Hz, Continuous



Input 90Vac/47Hz, Short



Input 264Vac/63Hz, Short

	
Input 90Vac/47Hz, Turn on	Input 264Vac/63Hz, Turn on

Output Diode Q201(B)

1.Condition:

Input: 90Vac/47Hz, 264Vac/63Hz
Output: 12Vdc/5.83A
Ambient: 25 degree C

2.Pass and Fail Criteria:

Output mosfet Q201: V_{ds}= **100** V,voltage derating **100%** at continuous operation and **110%** at turn on.

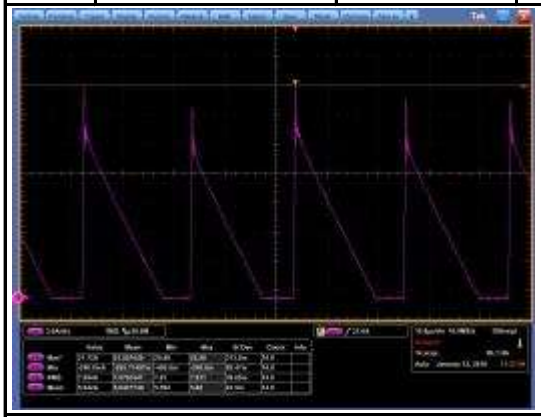
I_{ds} = **67** A, derating **80%**

3.Result:

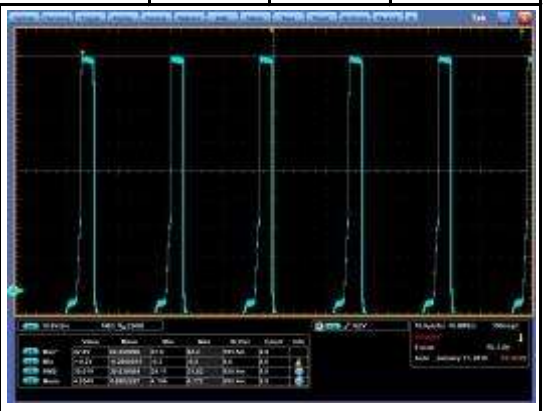
The test result can meet the above criteria, so the result is **PASS.**

PN: **786331** Maker: **PHILIPS**

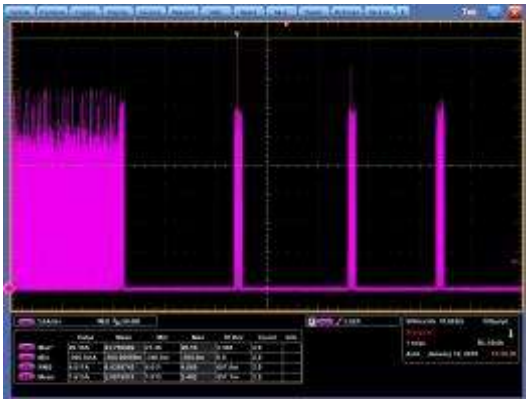
Item	Condition	90V/47Hz	264Vac/63Hz	Derating		Result
		I_{ds}(A)	V_{ds}(V)	I_{ds}(A)	V_{ds}(V)	
Q201	Continuous	21.72	82	53.6	100	Pass
	Turn on	21.36	84	53.6	110	Pass
	Short & GND	26.16	83.2	53.6	110	Pass



Input 90Vac/47Hz, Continuous



Input 264Vac/63Hz, Continuous



Input 90Vac/47Hz, Short



Input 264Vac/63Hz, Short

	
Input 90Vac/47Hz, Turn on	Input 264Vac/63Hz, Turn on

Output Diode Q201(C)

1.Condition:

Input: 90Vac/47Hz, 264Vac/63Hz
Output: 12Vdc/5.83A
Ambient: 25 degree C

2.Pass and Fail Criteria:

Output mosfet Q201: V_{ds}= **105** V,voltage derating **100%** at continuous operation and **110%** at turn on.

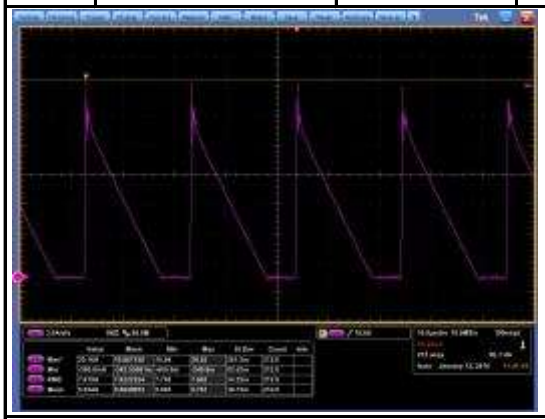
I_{ds} = **52** A, derating **80%**

3.Result:

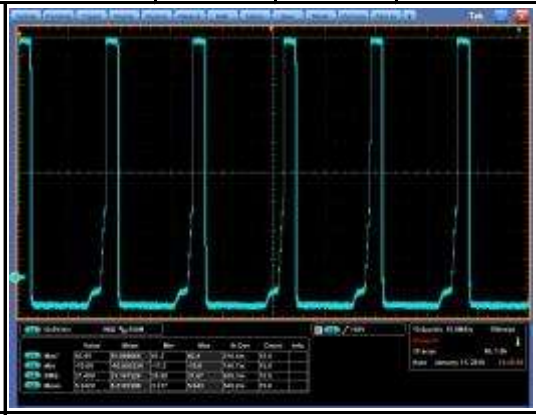
The test result can meet the above criteria, so the result is **PASS.**

PN: **796110** Maker: **TOSHIBA**

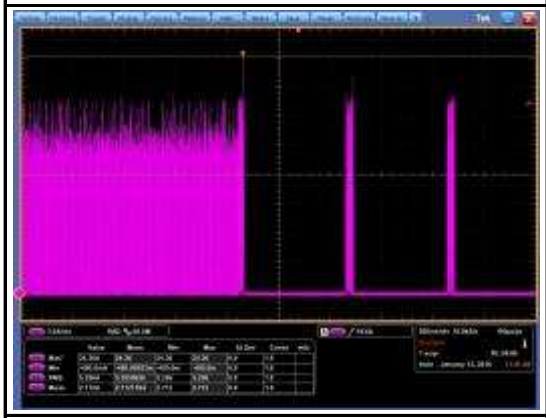
Item	Condition	90V/47Hz	264Vac/63Hz	Derating		Result
		I_{ds}(A)	V_{ds}(V)	I_{ds}(A)	V_{ds}(V)	
Q201	Continuous	20.16	82.4	41.6	105	Pass
	Turn on	21.24	83.6	41.6	115.5	Pass
	Short & GND	24.36	82.8	41.6	115.5	Pass



Input 90Vac/47Hz, Continuous



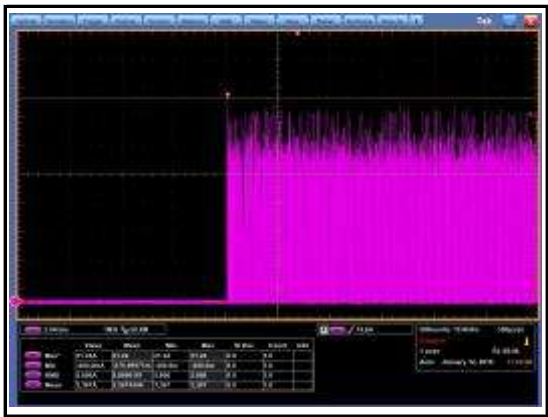
Input 264Vac/63Hz, Continuous



Input 90Vac/47Hz, Short



Input 264Vac/63Hz, Short

	
Input 90Vac/47Hz, Turn on	Input 264Vac/63Hz, Turn on

PFC Diode D050(A)

1.Condition:

Input: 264Vac/63Hz
Output: 12Vdc/5.83A
Ambient: 25 degree C

2.Pass and Fail Criteria:

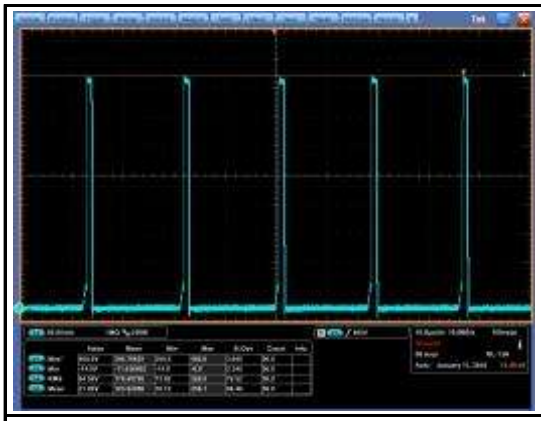
Snubber diode D050:V_{RRM}= **600** V,voltage derating **95%** at continuous operation and **100%** at turn on.

3.Result:

The test result can meet the above criteria, so the result is **PASS.**

PN: **768731** Maker: **LITE-ON SEMI**

Item	Voltage Actual (V)		Derating (V)		Result
	Continuous	Turn on	Continuous	Turn on	
V_{RRM}	400	418	**570**	**600**	Pass



Input 264Vac/63Hz, Continuous



Input 264Vac/63Hz, Turn on

PFC Diode D050(B)

1.Condition:

Input: 264Vac/63Hz
Output: 12Vdc/5.83A
Ambient: 25 degree C

2.Pass and Fail Criteria:

Snubber diode D050:V_{RRM}= **600** V,voltage derating **95%** at continuous operation and **100%** at turn on.

3.Result:

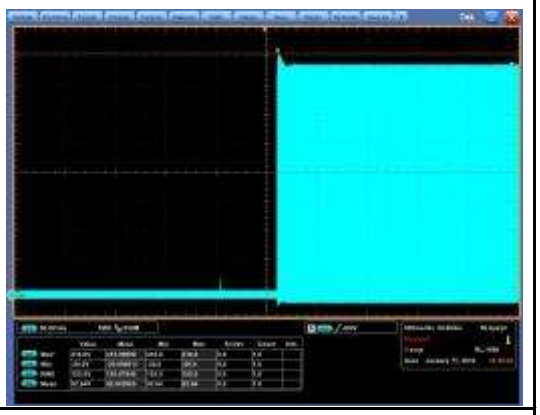
The test result can meet the above criteria, so the result is **PASS.**

PN: **768096** Maker: **TS**

Item	Voltage Actual (V)		Derating (V)		Result
	Continuous	Turn on	Continuous	Turn on	
V_{RRM}	394	416	**570**	**600**	Pass



Input 264Vac/63Hz, Continuous



Input 264Vac/63Hz, Turn on

PFC Diode D050(C)

1.Condition:

Input: 264Vac/63Hz
Output: 12Vdc/5.83A
Ambient: 25 degree C

2.Pass and Fail Criteria:

Snubber diode D050:V_{RRM}= **600** V,voltage derating **95%** at continuous operation and **100%** at turn on.

3.Result:

The test result can meet the above criteria, so the result is **PASS.**

PN: **768731** Maker: **LITE-ON SEMI**

Item	Voltage Actual (V)		Derating (V)		Result
	Continuous	Turn on	Continuous	Turn on	
V_{RRM}	400	424	**570**	**600**	Pass



Input 264Vac/63Hz, Continuous



Input 264Vac/63Hz, Turn on

Snubber Diode D051(A)

1.Condition:

Input: 264Vac/63Hz
Output: 12Vdc/5.83A
Ambient: 25 degree C

2.Pass and Fail Criteria:

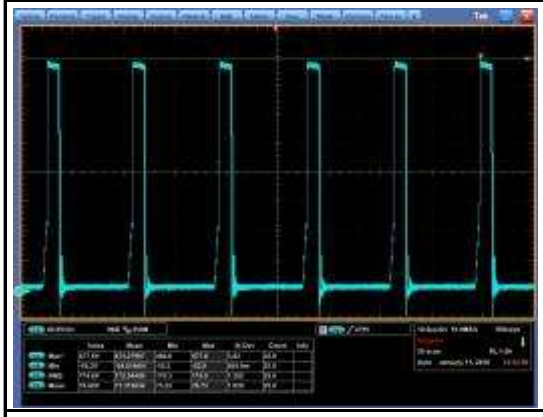
Snubber diode D051:V_{RRM}= **1000** V,voltage derating **95%** at continuous operation and **100%** at turn on.

3.Result:

The test result can meet the above criteria, so the result is **PASS.**

PN: **763775** Maker: **LITE-ON SEMI**

Item	Voltage Actual (V)		Derating (V)		Result
	Continuous	Turn on	Continuous	Turn on	
V_{RRM}	477.6	480	**950**	**1000**	Pass



Input 264Vac/63Hz, Continuous



Input 264Vac/63Hz, Turn on

Snubber Diode D051(B)

1.Condition:

Input: 264Vac/63Hz
Output: 12Vdc/5.83A
Ambient: 25 degree C

2.Pass and Fail Criteria:

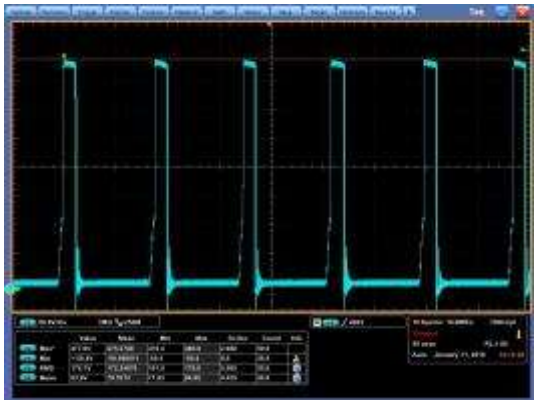
Snubber diode D051:V_{RRM}= **1000** V,voltage derating **95%** at continuous operation and **100%** at turn on.

3.Result:

The test result can meet the above criteria, so the result is **PASS.**

PN: **793152** Maker: **TS**

Item	Voltage Actual (V)		Derating (V)		Result
	Continuous	Turn on	Continuous	Turn on	
V_{RRM}	477.6	487.2	**950**	**1000**	Pass



Input 264Vac/63Hz, Continuous



Input 264Vac/63Hz, Turn on

Snubber Diode D051(C)

1.Condition:

Input: 264Vac/63Hz
Output: 12Vdc/5.83A
Ambient: 25 degree C

2.Pass and Fail Criteria:

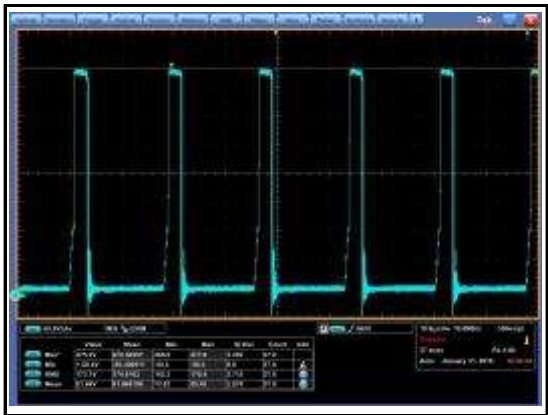
Snubber diode D051:V_{RRM}= **1000** V,voltage derating **95%** at continuous operation and **100%** at turn on.

3.Result:

The test result can meet the above criteria, so the result is **PASS.**

PN: **763775** Maker: **LITE-ON SEMI**

Item	Voltage Actual (V)		Derating (V)		Result
	Continuous	Turn on	Continuous	Turn on	
V_{RRM}	475.2	482.4	**950**	**1000**	Pass



Input 264Vac/63Hz, Continuous



Input 264Vac/63Hz, Turn on

Case Thermal(A)

1.Condition:

Input: 100Vac/60Hz&240Vac/50Hz
Output: 12Vdc/5.83A
Ambient: 25 degree C

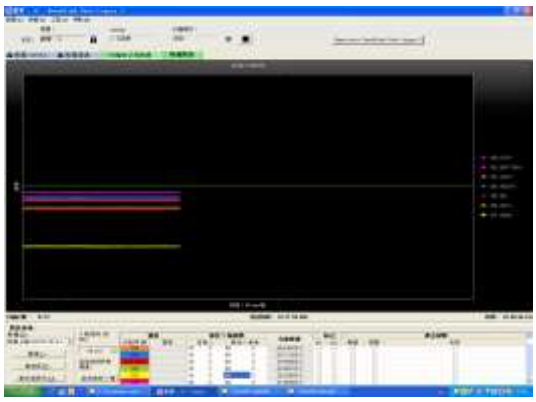
2.Pass and Fail Criteria:

The case temperature of AC adapter shall not exceed (△T) **45** degree C at ambient **25** degree C and 100Vac/60Hz&240Vac/50Hz / full load.

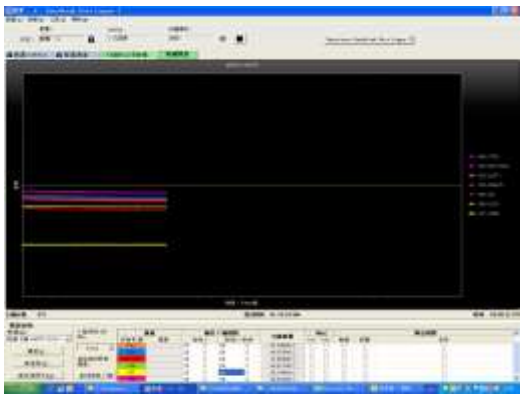
3.Result:

The test result can meet the above criteria, so the result is **PASS.**

100Vac/60Hz	**Temp(℃)**	**Ambient(℃)**	**ΔT(℃)**	**Spec(℃)**	**Result**
Top	47.578	25.414	22.164	45	Pass
Bottom	54.823		29.409		Pass
Left	48.28		22.866		Pass
Right	50.721		25.307		Pass
Inlet	39.746		14.332		Pass
Outlet	40.925		15.511		Pass
240Vac/50Hz	**Temp(℃)**	**Ambient(℃)**	**ΔT(℃)**	**Spec(℃)**	**Result**
Top	45.76	25.255	20.505	45	Pass
Bottom	53.052		27.797		Pass
Left	46.938		21.683		Pass
Right	48.896		23.641		Pass
Inlet	37.759		12.504		Pass
Outlet	40.522		15.267		Pass



100Vac/60Hz



240Vac/50Hz

Case Thermal(B)

1.Condition:

Input: 100Vac/60Hz&240Vac/50Hz
Output: 12Vdc/5.83A
Ambient: 25 degree C

2.Pass and Fail Criteria:

The case temperature of AC adapter shall not exceed (△T) **45** degree C at ambient **25** degree C and 100Vac/60Hz&240Vac/50Hz / full load.

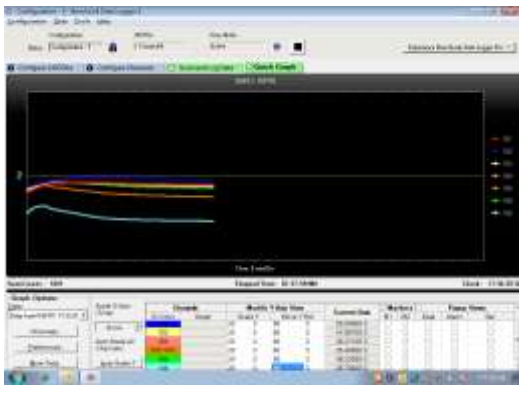
3.Result:

The test result can meet the above criteria, so the result is **PASS.**

100Vac/60Hz	**Temp(℃)**	**Ambient(℃)**	**ΔT(℃)**	**Spec(℃)**	**Result**
Top	51.79	25.204	26.586	45	Pass
Bottom	55.148		29.944		Pass
Left	48.207		23.003		Pass
Right	48.397		23.193		Pass
Inlet	35.998		10.794		Pass
Outlet	45.692		20.488		Pass
240Vac/50Hz	**Temp(℃)**	**Ambient(℃)**	**ΔT(℃)**	**Spec(℃)**	**Result**
Top	50.709	25.551	25.158	45	Pass
Bottom	55.027		29.476		Pass
Left	47.94		22.389		Pass
Right	48.323		22.772		Pass
Inlet	35.421		9.87		Pass
Outlet	46.179		20.628		Pass



100Vac/60Hz



240Vac/50Hz

Case Thermal(C)

1.Condition:

Input: 100Vac/60Hz&240Vac/50Hz
Output: 12Vdc/5.83A
Ambient: 25 degree C

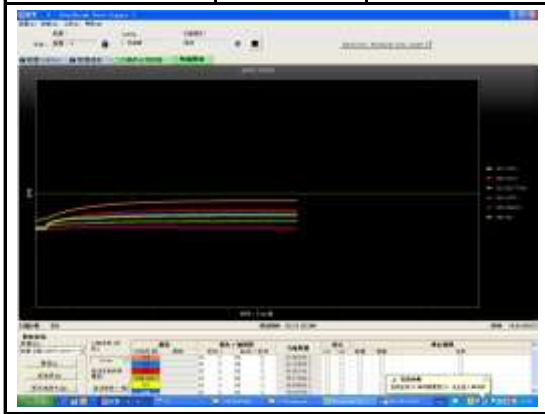
2.Pass and Fail Criteria:

The case temperature of AC adapter shall not exceed (△T) **45** degree C at ambient **25** degree C and 100Vac/60Hz&240Vac/50Hz / full load.

3.Result:

The test result can meet the above criteria, so the result is **PASS.**

100Vac/60Hz	**Temp(℃)**	**Ambient(℃)**	**ΔT(℃)**	**Spec(℃)**	**Result**
Top	40.824	25.325	15.499	45	Pass
Bottom	53.664		28.339		Pass
Left	42.376		17.051		Pass
Right	45.265		19.94		Pass
Inlet	35.374		10.049		Pass
Outlet	40.215		14.89		Pass
240Vac/50Hz	**Temp(℃)**	**Ambient(℃)**	**ΔT(℃)**	**Spec(℃)**	**Result**
Top	39.918	25.654	14.264	45	Pass
Bottom	51.994		26.34		Pass
Left	41.002		15.348		Pass
Right	44.259		18.605		Pass
Inlet	33.818		8.164		Pass
Outlet	38.549		12.895		Pass



100Vac/60Hz



240Vac/50Hz

Key Component Thermal(A)

1.Condition:

Input: 90Vac/47Hz, 264Vac/63Hz
Output: 12Vdc/5.83A
Ambient: 40 degree C

2.Pass and Fail Criteria:

All of the components' temperature of the power supply shall not exceed the components' derating.

3.Result:

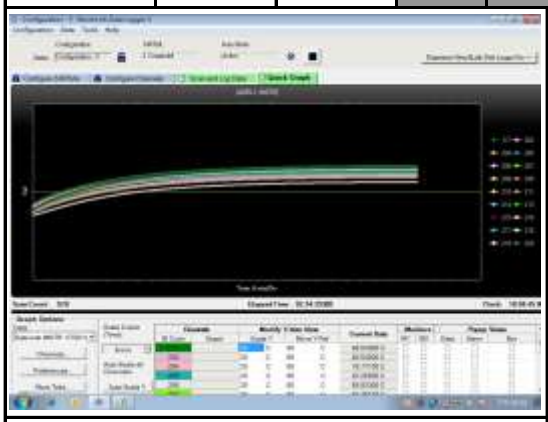
The test result can meet the above criteria, so the result is **PASS.**

Component	90V	264V	Rth	Power Loss(W)		Tj (℃)		Spec (℃)	Derating (℃)	Result
	(℃)	(℃)	(℃/W)	90Vac	264Vac	90Vac	264Vac			
Q050	88.414	84.024	2.78	0.0655	0.0631	88.60	84.20	150	130	Pass
Q201	83.803	80.616	1.72	0.0789	0.0785	83.94	80.75	150	130	Pass
Q051	88.748	81.782	2.78	0.2014	0.1719	89.31	82.26	150	130	Pass
BD001	89.634	76.047	2.2	0.3841	0.3356	90.48	76.79	150	125	Pass
D051	94.521	89.766	26	0.0011	0.0011	94.55	89.79	150	125	Pass

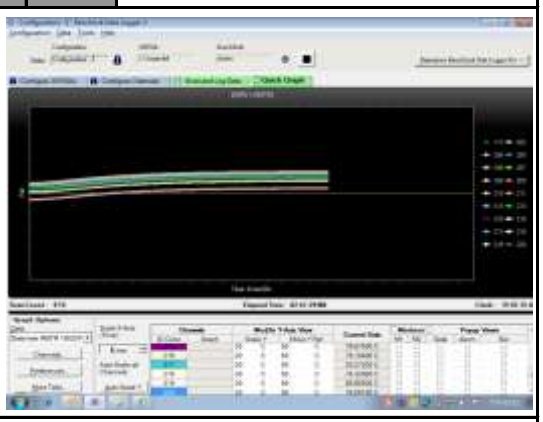
Component	90V	264V	Spec (℃)	Derating (℃)	Result
	(℃)	(℃)			
T050 core	87.537	84.084	130	110	Pass
T050 coils	88.419	85.124	130	110	Pass
L002	76.75	66.501	130	120	Pass
C050	76.621	72.055	105	105	Pass
L050	87.855	79.416	115	105	Pass
C054	85.836	79.439	105	105	Pass
C203	79.508	77.519	105	105	Pass
IC300	78.464	75.391	125	125	Pass
IC100	82.852	78.47	150	150	Pass
RT100	79.005	75.983	125	125	Pass
Amb	39.682	39.739			







90Vac/47Hz



264Vac/63Hz

Key Component Thermal（B）

1.Condition:

Input: 90Vac/47Hz, 264Vac/63Hz
Output: 12Vdc/5.83A
Ambient: 40 degree C

2.Pass and Fail Criteria:

All of the components' temperature of the power supply shall not exceed the components' derating.

3.Result:

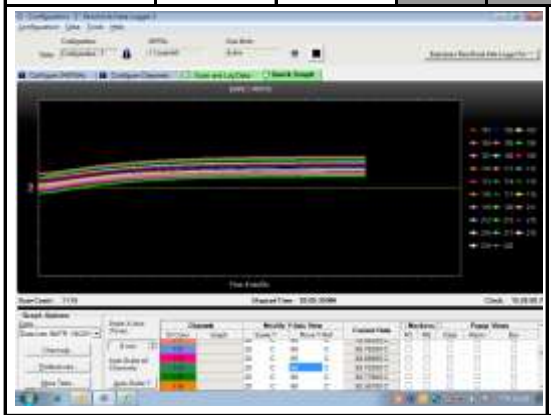
The test result can meet the above criteria, so the result is **PASS.**

Component	90V	264V	Rth	Power Loss(W)		Tj (℃)		Spec (℃)	Derating (℃)	Result
	(℃)	(℃)	(℃/W)	90Vac	264Vac	90Vac	264Vac			
Q050	86.264	79.788	2.5	0.0677	0.0603	86.43	79.94	150	130	Pass
Q201	88.889	84.393	0.9	0.0784	0.0771	88.96	84.46	150	130	Pass
Q051	86.523	78.548	2.5	0.1980	0.1866	87.02	79.01	150	130	Pass
BD001	88.127	74.112	4.2	0.3841	0.3356	89.74	75.52	150	125	Pass
D051	95.935	87.106	26	0.0011	0.0011	95.96	87.13	150	125	Pass

Component	90V	264V	Spec (℃)	Derating (℃)	Result
	(℃)	(℃)			
T050 core	88.396	83.204	130	110	Pass
T050 coils	89.254	84.216	130	110	Pass
L002	76.894	67.654	130	120	Pass
C050	76.484	72.893	105	105	Pass
L050	86.898	75.506	115	105	Pass
C054	85.527	78.056	105	105	Pass
C203	81.054	76.342	105	105	Pass
IC300	81.037	77.369	125	125	Pass
IC100	84.902	78.512	150	150	Pass
RT100	81.631	77.849	125	125	Pass
Amb	40.012	39.998			







90Vac/47Hz



264Vac/63Hz

Key Component Thermal(C)

1.Condition:

Input: 90Vac/47Hz, 264Vac/63Hz
Output: 12Vdc/5.83A
Ambient: 40 degree C

2.Pass and Fail Criteria:

All of the components' temperature of the power supply shall not exceed the components' derating.

3.Result:

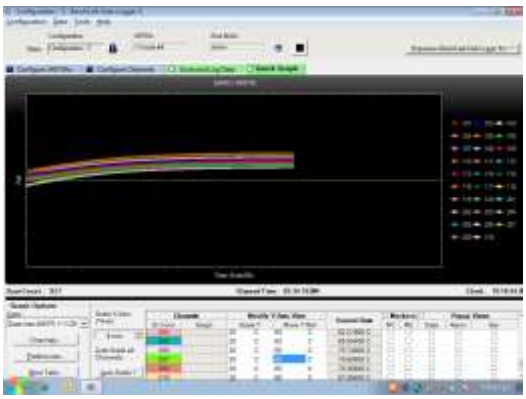
The test result can meet the above criteria, so the result is **PASS.**

Component	90V	264V	Rth	Power Loss(W)		Tj (℃)		Spec (℃)	Derating (℃)	Result
	(℃)	(℃)	(℃/W)	90Vac	264Vac	90Vac	264Vac			
Q050	88.395	82.571	3.6	0.0778	0.0670	88.68	82.81	150	130	Pass
Q201	86.35	82.236	1.72	0.0777	0.0757	86.48	82.37	150	130	Pass
Q051	86.99	79.078	3	0.1973	0.1878	87.58	79.64	150	130	Pass
BD001	88.245	76.974	2.2	0.3841	0.3356	89.09	77.71	150	125	Pass
D051	91.617	85.431	6	0.0011	0.0011	91.62	85.44	150	125	Pass

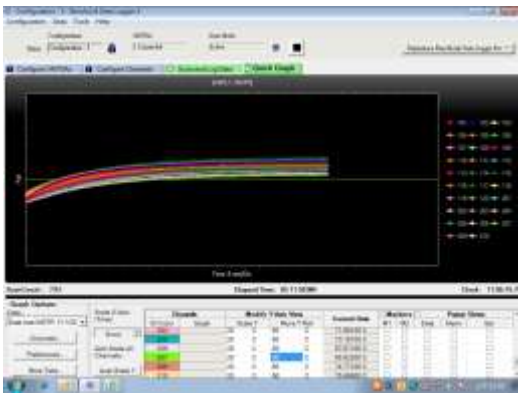
Component	90V	264V	Spec (℃)	Derating (℃)	Result
	(℃)	(℃)			
T050 core	86.085	81.557	130	110	Pass
T050 coils	87.214	82.549	130	110	Pass
L002	76.696	65.949	130	120	Pass
C050	78.104	72.858	105	105	Pass
L050	87.855	75.743	115	105	Pass
C054	84.759	77.262	105	105	Pass
C203	77.629	74.503	105	105	Pass
IC300	79.6	75.106	125	125	Pass
IC100	84.934	79.509	150	150	Pass
RT100	79.4	74.771	125	125	Pass
Amb	40.178	40.024			







90Vac/47Hz



264Vac/63Hz

AC Cycles(A)

1.Condition:

Input: 220Vac/50Hz
Output: 12Vdc/5.83A
Ambient: 25 degree C

2.Pass and Fail Criteria:

The adapter shall withstand a minimum of **4200** cycles of any nominal input voltage without failure rate degradation.

3.Result:

The test result can meet the above criteria, so the result is **PASS.**

	
220Vac/50Hz ON	220Vac/50Hz OFF

AC Cycles(B)

1.Condition:

Input: 220Vac/50Hz
Output: 12Vdc/5.83A
Ambient: 25 degree C

2.Pass and Fail Criteria:

The adapter shall withstand a minimum of **4200** cycles of any nominal input voltage without failure rate degradation.

3.Result:

The test result can meet the above criteria, so the result is **PASS.**

	
220Vac/50Hz ON	220Vac/50Hz OFF

AC Cycles(C)

1.Condition:

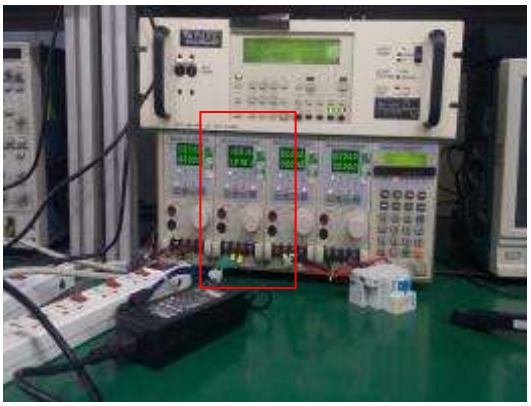
Input: 220Vac/50Hz
Output: 12Vdc/5.83A
Ambient: 25 degree C

2.Pass and Fail Criteria:

The adapter shall withstand a minimum of **4200** cycles of any nominal input voltage without failure rate degradation.

3.Result:

The test result can meet the above criteria, so the result is **PASS.**

	
220Vac/50Hz ON	220Vac/50Hz OFF

EMI(Conduction)---A Source

1.Condition

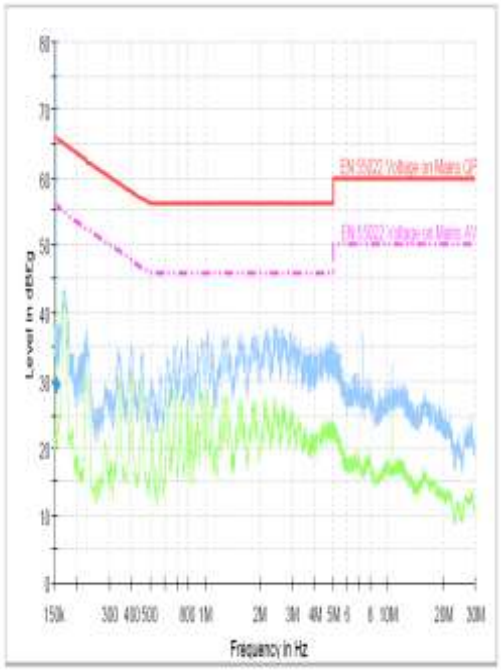
Input: 110Vac&220Vac/50Hz
Output: 12Vdc/5.83A Load
Ambient: 25℃
Humidity: 55%

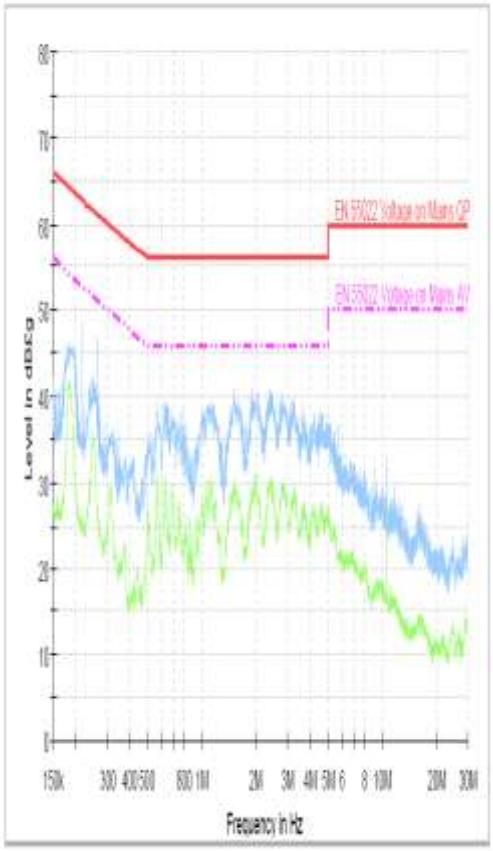
2.Pass and Fail Criteria

Test spec: CISPR22 CLASS B(EN55022); Test conduction emission at 0.15MHz-30MHz.
The EMI(Conduction emission) can meet LITEON requirement and Customer's Spec.

3.Result

During and after the EMI test, the power supply can meet customer's specification,So that the result is pass.

<table>
<tr>
<td>
Voltage with 2-Line-LISN


Final Measurement Detector 1
<table>
<tr><th>Frequency (MHz)</th><th>QuasiPeak (dBµV)</th><th>Meas. Time (ms)</th><th>Bandwidth (kHz)</th><th>Filter</th><th>Line</th><th>Corr. (dB)</th><th>Margin (dB)</th><th>Limit (dBµV)</th><th>Comment</th></tr>
<tr><td>0.153488</td><td>29.2</td><td>1000.000</td><td>9.000</td><td>On</td><td>L1</td><td>10.0</td><td>36.6</td><td>65.8</td><td></td></tr>
</table>
</td>
<td>
Voltage with 2-Line-LISN


</td>
</tr>
<tr>
<td>110V/50Hz</td>
<td>220V/50Hz</td>
</tr>
</table>

EMI(Conduction)(GND)---A Source

1.Condition

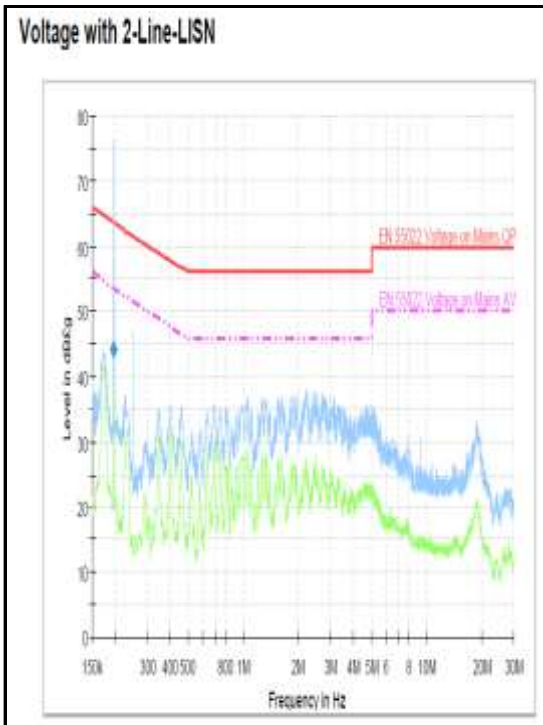
Input: 110Vac&220Vac/50Hz
Output: 12Vdc/5.83A Load
Ambient: 25℃
Humidity: 55%
Connecting (-) output terminal to the ground plane

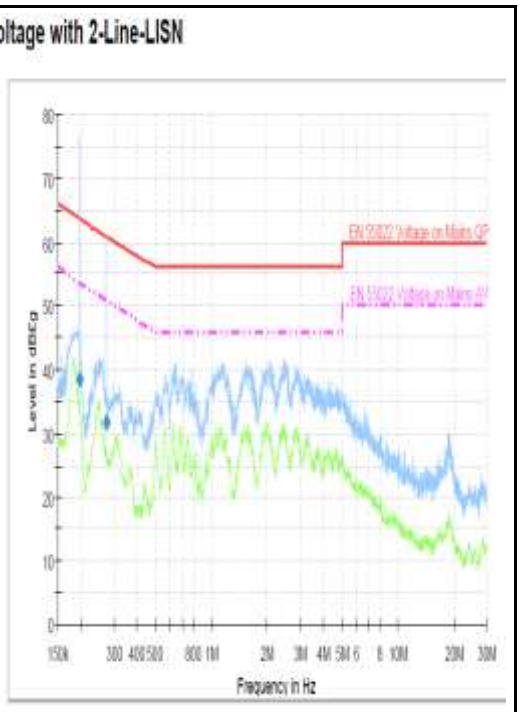
2.Pass and Fail Criteria

Test spec: CISPR22 CLASS B(EN55022); Test conduction emission at 0.15MHz-30MHz.
The EMI(Conduction emission) can meet LITEON requirement and Customer's Spec.

3.Result

During and after the EMI test, the power supply can meet customer's specification,So that the result is pass.

<table>
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Final Measurement Detector 1
<table>
<tr><th>Frequency (MHz)</th><th>Quasi-Peak (dBµV)</th><th>Meas. Time (ms)</th><th>Bandwidth (kHz)</th><th>Filter</th><th>Line</th><th>Corr. (dB)</th><th>Margin (dB)</th><th>Limit (dBµV)</th><th>Comment</th></tr>
<tr><td>0.197462</td><td>44.0</td><td>1000.000</td><td>9.000</td><td>On</td><td>L1</td><td>10.0</td><td>19.6</td><td>63.8</td><td></td></tr>
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</td>
<td>


Final Measurement Detector 1
<table>
<tr><th>Frequency (MHz)</th><th>Quasi-Peak (dBµV)</th><th>Meas. Time (ms)</th><th>Bandwidth (kHz)</th><th>Filter</th><th>Line</th><th>Corr. (dB)</th><th>Margin (dB)</th><th>Limit (dBµV)</th><th>Comment</th></tr>
<tr><td>0.199861</td><td>38.4</td><td>1000.000</td><td>9.000</td><td>On</td><td>L1</td><td>10.0</td><td>35.2</td><td>63.6</td><td></td></tr>
<tr><td>0.271331</td><td>31.6</td><td>1000.000</td><td>9.000</td><td>On</td><td>N</td><td>10.0</td><td>29.3</td><td>60.9</td><td></td></tr>
</table>
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<tr>
<td>110V/50Hz</td>
<td>220V/50Hz</td>
</tr>
</table>

EMI(Conduction)---B Source

1.Condition

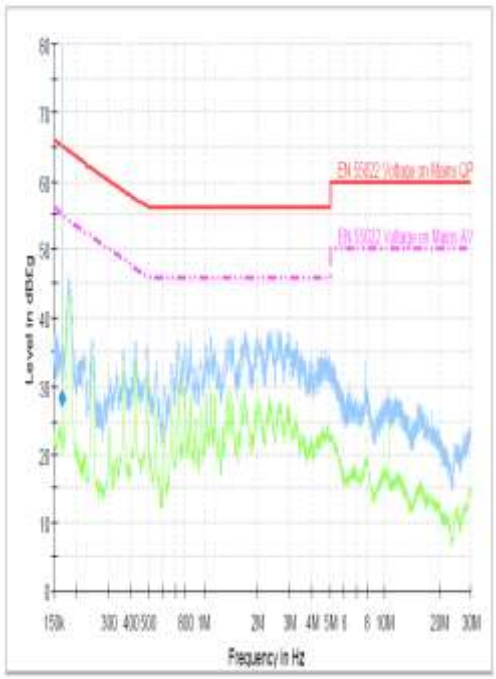
Input: 110Vac&220Vac/50Hz
Output: 12Vdc/5.83A Load
Ambient: 25℃
Humidity: 55%

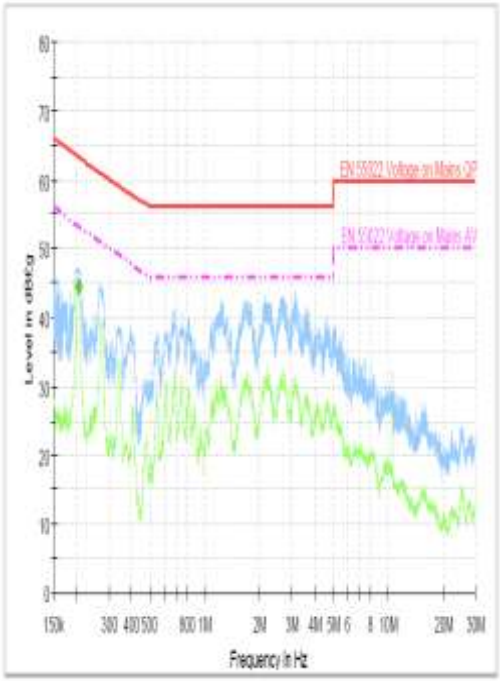
2.Pass and Fail Criteria

Test spec: CISPR22 CLASS B(EN55022); Test conduction emission at 0.15MHz-30MHz.
The EMI(Conduction emission) can meet LITEON requirement and Customer's Spec.

3.Result

During and after the EMI test, the power supply can meet customer's specification,So that the result is pass.

<table>
<tr>
<td>
Voltage with 2-Line-LISN


Final Measurement Detector 1
<table>
<tr><th>Frequency (MHz)</th><th>QuasiPeak (dBEq/V)</th><th>Meas. Time (ms)</th><th>Bandwidth (kHz)</th><th>Filter</th><th>Line</th><th>Corr. (dB)</th><th>Margin (dB)</th><th>Limit (dBEq/V)</th><th>Comment</th></tr>
<tr><td>0.165436</td><td>28.0</td><td>1000.000</td><td>9.000</td><td>On</td><td>L1</td><td>10.0</td><td>37.1</td><td>65.1</td><td></td></tr>
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</td>
<td>
Voltage with 2-Line-LISN


Final Measurement Detector 2
<table>
<tr><th>Frequency (MHz)</th><th>Average (dBEq/V)</th><th>Meas. Time (ms)</th><th>Bandwidth (kHz)</th><th>Filter</th><th>Line</th><th>Corr. (dB)</th><th>Margin (dB)</th><th>Limit (dBEq/V)</th><th>Comment</th></tr>
<tr><td>8.206391</td><td>44.6</td><td>1000.000</td><td>9.000</td><td>On</td><td>N</td><td>10.0</td><td>8.6</td><td>53.2</td><td></td></tr>
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</td>
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<tr>
<td>110V/50Hz</td>
<td>220V/50Hz</td>
</tr>
</table>

EMI(Conduction)(GND)---B Source

1.Condition

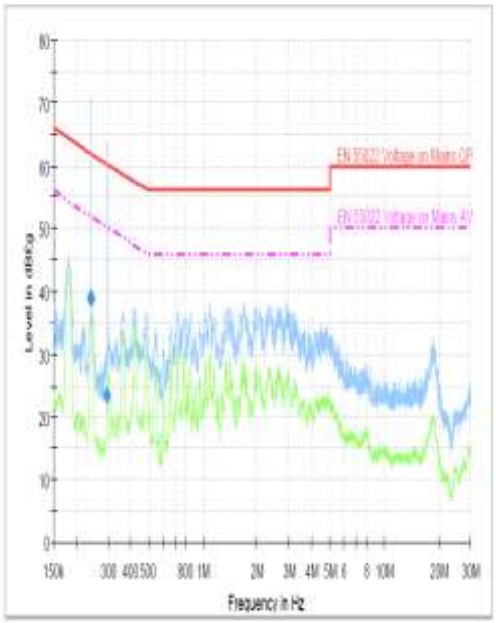
Input: 110Vac&220Vac/50Hz
Output: 12Vdc/5.83A Load
Ambient: 25℃
Humidity: 55%
Connecting (-) output terminal to the ground plane

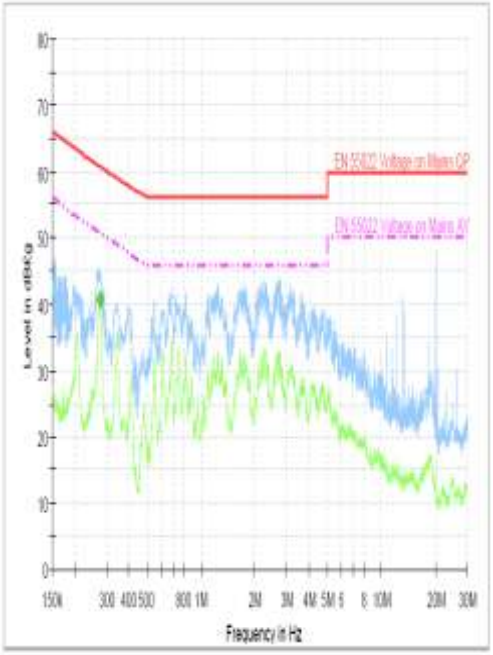
2.Pass and Fail Criteria

Test spec: CISPR22 CLASS B(EN55022); Test conduction emission at 0.15MHz-30MHz.
The EMI(Conduction emission) can meet LITEON requirement and Customer's Spec.

3.Result

During and after the EMI test, the power supply can meet customer's specification,So that the result is pass.

<table>
<tr>
<td>
Voltage with 2-Line-LISN


Final Measurement Detector 1
<table>
<tr><th>Frequency (MHz)</th><th>Quasi-Peak (dBµV)</th><th>Meas. Time (ms)</th><th>Bandwidth (kHz)</th><th>Filter</th><th>Line</th><th>Corr. (dB)</th><th>Margin (dB)</th><th>Limit (dBµV)</th><th>Comment</th></tr>
<tr><td>0.240663</td><td>38.8</td><td>1000.000</td><td>9.000</td><td>On</td><td>L1</td><td>10.0</td><td>23.1</td><td>61.9</td><td></td></tr>
<tr><td>0.293917</td><td>23.4</td><td>1000.000</td><td>9.000</td><td>On</td><td>L1</td><td>10.0</td><td>36.8</td><td>60.2</td><td></td></tr>
</table>
</td>
<td>
Voltage with 2-Line-LISN


Final Measurement Detector 2
<table>
<tr><th>Frequency (MHz)</th><th>Average (dBµV)</th><th>Meas. Time (ms)</th><th>Bandwidth (kHz)</th><th>Filter</th><th>Line</th><th>Corr. (dB)</th><th>Margin (dB)</th><th>Limit (dBµV)</th><th>Comment</th></tr>
<tr><td>0.274856</td><td>40.6</td><td>1000.000</td><td>9.000</td><td>On</td><td>N</td><td>10.0</td><td>18.1</td><td>58.7</td><td></td></tr>
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</tr>
<tr><td>110V/50Hz</td><td>220V/50Hz</td></tr>
</table>

EMI(Conduction)---C Source

1.Condition

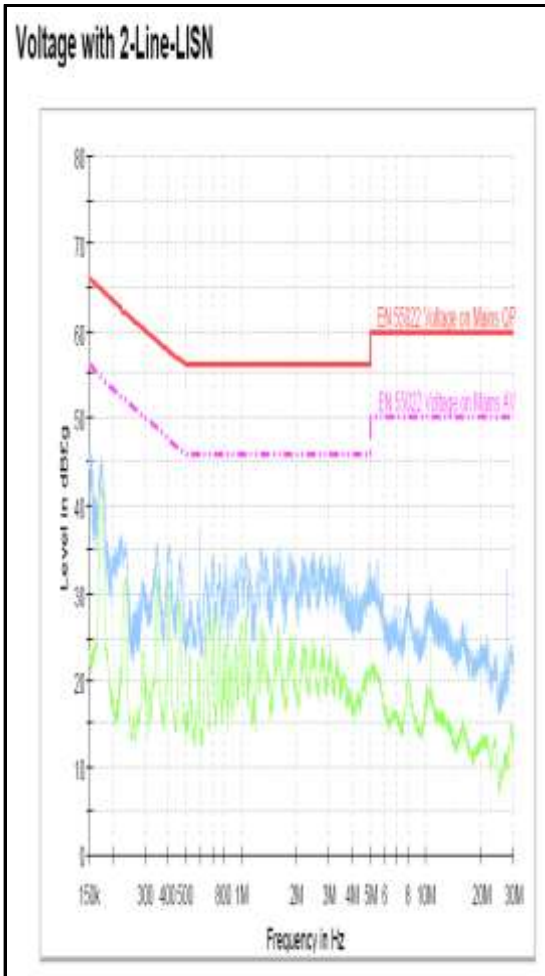
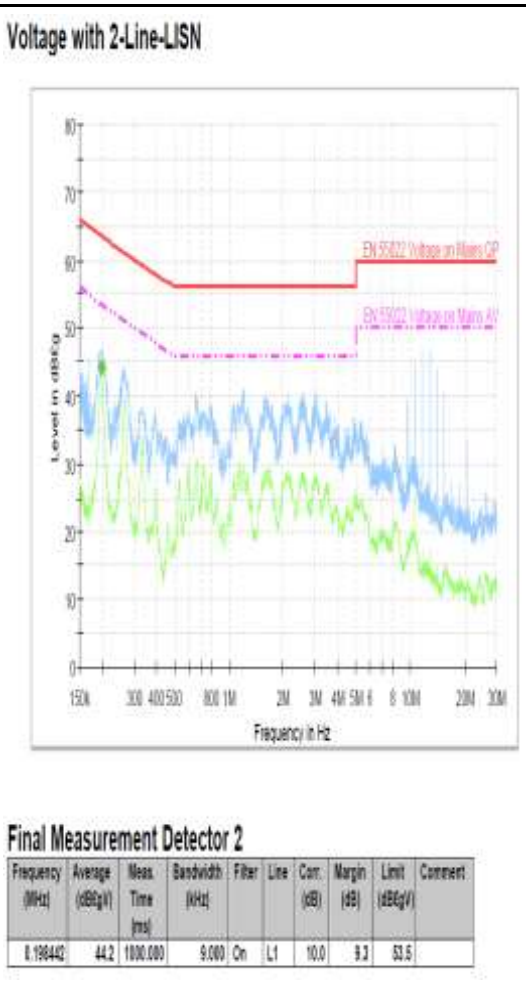
Input: 110Vac&220Vac/50Hz
Output: 12Vdc/5.83A Load
Ambient: 25℃
Humidity: 55%

2.Pass and Fail Criteria

Test spec: CISPR22 CLASS B(EN55022); Test conduction emission at 0.15MHz-30MHz.
The EMI(Conduction emission) can meet LITEON requirement and Customer's Spec.

3.Result

During and after the EMI test, the power supply can meet customer's specification,So that the result is pass.

	
110V/50Hz	220V/50Hz

EMI(Conduction)(GND)---C Source

1.Condition

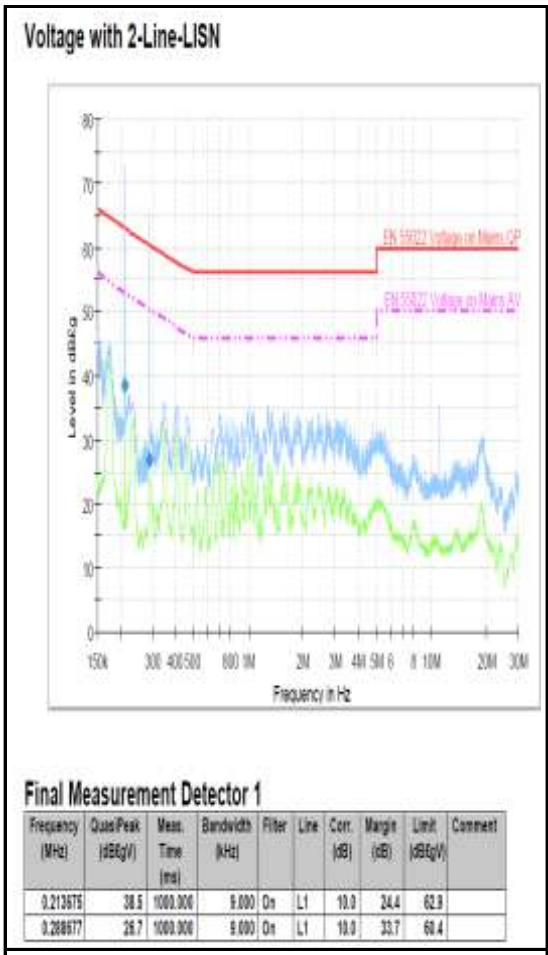
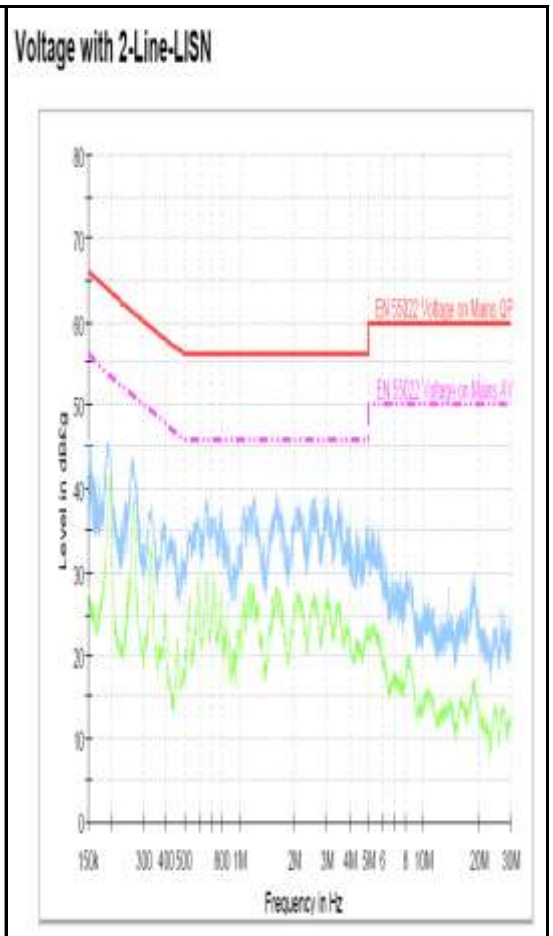
Input: 110Vac&220Vac/50Hz
Output: 12Vdc/5.83A Load
Ambient: 25℃
Humidity: 55%
Connecting (-) output terminal to the ground plane

2.Pass and Fail Criteria

Test spec: CISPR22 CLASS B(EN55022); Test conduction emission at 0.15MHz-30MHz.
The EMI(Conduction emission) can meet LITEON requirement and Customer's Spec.

3.Result

During and after the EMI test, the power supply can meet customer's specification,So that the result is pass.

<table>
<tr>
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<tr>
<td>110V/50Hz</td>
<td>220V/50Hz</td>
</tr>
</table>

Acoustic Noise Test---A Source

1.Condition

Input: 110Vac/60Hz&220Vac/50Hz.

Output: 12Vdc/0-5.83A Load with 10% step.

Ambient: 25℃

Position of the microphone is vertical distance: 10cm.

The model should burn in 20 minutes with full load.

2.Pass and Fail Criteria

Test Result: Total sound 0-5.83A≦25dB .

3.Result

The power supply's acoustic noise can meet the above criteria, so the test result is PASS.

Voltage / Load	Top		Bottom	
	110V	220V	110V	220V
0-0.1A	15.7	16.1	15.4	15.4
0.1A-10%	13.8	14.9	14.3	14.9
10%-20%	13.3	14.5	14.1	14.4
20%-30%	12.9	14.3	12.8	13.5
30%-40%	11.4	12.8	11.3	12.8
40%-50%	11.5	11.3	11.2	11.9
50%-60%	11.8	11.4	11.6	11.4
60%-70%	12.1	11.6	11.5	11.5
70%-80%	11.1	11.5	11.7	11.5
80%-90%	11.3	11.3	11.1	12.1
90%-100%	11.1	11.6	11.3	11.3

Acoustic Noise Test---B Source

1.Condition

Input: 110Vac/60Hz&220Vac/50Hz.

Output: 12Vdc/0-5.83A Load with 10% step.

Ambient: 25℃

Position of the microphone is vertical distance: 10cm.

The model should burn in 20 minutes with full load.

2.Pass and Fail Criteria

Test Result: Total sound 0-5.83A≦25dB .

3.Result

The power supply's acoustic noise can meet the above criteria, so the test result is PASS.

Voltage / Load	Top		Bottom	
	110V	220V	110V	220V
0-0.1A	14.8	15.9	17.9	17.6
0.1A-10%	14.1	14.6	16.5	16.2
10%-20%	13.9	13.8	13.8	14.1
20%-30%	13.1	13.1	12.5	13.2
30%-40%	12.3	12.9	12.1	12.5
40%-50%	12.1	11.8	11.8	11.9
50%-60%	11.9	11.8	12.0	11.5
60%-70%	11.3	11.7	11.7	11.8
70%-80%	11.6	11.9	11.6	11.5
80%-90%	11.3	11.4	11.3	11.4
90%-100%	11.4	11.5	11.2	11.7

Acoustic Noise Test---C Source

1.Condition

Input: 110Vac/60Hz&220Vac/50Hz.

Output: 12Vdc/0-5.83A Load with 10% step.

Ambient: 25℃

Position of the microphone is vertical distance: 10cm.

The model should burn in 20 minutes with full load.

2.Pass and Fail Criteria

Test Result: Total sound 0-5.83A≦25dB .

3.Result

The power supply's acoustic noise can meet the above criteria, so the test result is PASS.

Voltage / Load	Top		Bottom	
	110V	220V	110V	220V
0-0.1A	15.3	15.8	15.9	16.4
0.1A-10%	14.8	14.9	14.3	15.8
10%-20%	14.6	14.0	14.1	14.5
20%-30%	13.5	13.9	13.5	12.9
30%-40%	12.6	13.1	12.4	12.5
40%-50%	12.2	11.9	11.7	11.8
50%-60%	13.5	12.1	12.0	12.0
60%-70%	11.8	13.0	11.8	13.3
70%-80%	11.4	12.9	12.4	12.5
80%-90%	11.6	11.7	12.1	11.8
90%-100%	11.2	11.9	11.6	11.7

Surge---A,B,C Source

1.Condition:

Input: 110Vac&220Vac/50Hz
Output: 12Vdc/5.83A Load
Ambient: 25℃
Humidity: 55%
Follow EN / IEC 61000-4-5 Standard and customer's Spec.
Combination waveform impulse(1.2*50us).
Phase: 0 °,90 °,180 °,270 °; Interval:18sec;times:5.
Differential mode(Line to Neutral): ±4.0KV combination waveform impulse.
Common mode(Line to GND & Neutral to GND): ±4.0KV combination waveform impulse.

2.Pass and Fail Criteria:

EN/IEC61000-4-5/12 Criteria A: Normal performance within the specification limits.
EN/IEC61000-4-5/12 Criteria B: Temporary loss of function and it can recover automatically.
EN/IEC61000-4-5/12 Criteria C: Temporary loss of function ,but it can recover by hand.
EN/IEC61000-4-5/12 Criteria D: The EUT is damaged.
Before and after the lightning surge test,the power supply must be pass with ATE test and Safety test.

3.Result:

During and after the lightning surge test,the power supply can meet the LITEON requirement and customer's specification, so that the test result is pass.

Severity Level	Test Level			Criteria	Result
	L-N	L-G	N-G		
Spec	+/-4.0KV	+/-4.0KV	+/-4.0KV	A	PASS(A)
110% Spec	+/-4.4KV	+/-4.4KV	+/-4.4KV	A	PASS(A)

EFT---A,B,C Source

1.Condition

Input: 110Vac&220Vac/50Hz
Output: 12Vdc/5.83A Load
Ambient: 25℃
Humidity: 55%
Voltage: DM:+/-1KV & CM:+/-2.0KV.
Follow EN/IEC 61000-4-4 Standard and customer's Spec.
Test time: 1minute each output(line coupling).
Period:300ms, Pulse:75, Frequency:5KHz, Asynchronous.

2.Pass and Fail Criteria

EN/IEC61000-4-4 Criteria A: Normal performance within the specification limits.
EN/IEC61000-4-4 Criteria B: Temporary loss of function and it can recover automatically.
EN/IEC61000-4-4 Criteria C: Temporary loss of function ,but it can recover by hand.
EN/IEC61000-4-4 Criteria D: The EUT is damaged.
Before and after the EFT test, the power supply must be pass with ATE test and Safety test.

3.Result

During and after EFT test,the power supply can meet the LITEON requirement and customer's specification, so that the test result is PASS.

Severity Level	Test level		Criteria	Result
	Difference mode	Common mode		
Spec	+/-1.0KV	+/-2.0KV	A	PASS(A)
110% Spec	+/-1.1KV	+/-2.2KV	A	PASS(A)

ESD---A,B,C Source

1.Condition

Input: 110Vac&220Vac/50Hz
Output: 12Vdc/5.83A Load
Ambient: 25℃,
Humidity: 55%
Follow EN/IEC 61000-4-2 Standard and customer's Spec.
Air discharge:+/-15KV, Contact discharge:+/-8.0KV.
Times: each point 10 times , more than 10 points , Time Interval:1sec.

2.Pass and Fail Criteria

EN/IEC61000-4-2 Criteria A: Normal performance within the specification limits.
EN/IEC61000-4-2 Criteria B: Temporary loss of function and it can recover automatically.
EN/IEC61000-4-2 Criteria C: Temporary loss of function ,but it can recover by hand.
EN/IEC61000-4-2 Criteria D: The EUT is damaged.
Before and after the ESD test,the power supply must be pass with ATE test and Safety test.

3.Result

During and after ESD test,the power supply meet the LITEON requirement and customer's specification, so that the test result is PASS.

Severity Level	Test level		Criteria	Result
	Air Discharge	Contact Discharge		
Spec	+/-15KV	+/-8.0KV	A	PASS(A)
110% Spec	+/-16.5KV	+/-8.8KV	A	PASS(A)

Dip---A,B,C Source

1.Condition

Input: 240Vac/50Hz
Output: 12Vdc/5.83A Load
Ambient: 25℃
Humidity: 55%
Follow EN/IEC 61000-4-11 Standard.
Voltage Dip 100% dip 1/2cycles 10ms;
70% dip 25periods 500ms;
100% dip 250periods 5s.

2.Pass and Fail Criteria

EN/IEC61000-4-11 Criteria A: Normal performance within the specification limits.
EN/IEC61000-4-11 Criteria B: Temporary loss of function and it can recover automatically.
EN/IEC61000-4-11 Criteria C: Temporary loss of function ,but it can recover by hand.
EN/IEC61000-4-11 Criteria D: The EUT is damaged.
100% Voltage reduction: Performance Criteria A.
70% Voltage reduction: Performance Criteria B.
100% Voltage reduction: Performance Criteria C.
Before and after the Dips test, the power supply must be pass with ATE test and Safety test.

3.Result

During and after the Dips test, the power supply meet the LITEON requirement and customer's specification.So that the test result is PASS.

Duration times (Cycle)	Dip Voltage(V=240V/50Hz)			
	100%	70%	Spec	Pass/Fail
1/2	A	NA	A	Pass(A)
25	NA	B	B	Pass(A)
250	B	NA	C	Pass(B)

Vibration

1.Condition:
Operation
Input Voltage:220v/50Hz
Output Load:12Vdc/5.83A
1>Model Of Vibration :Random Wave
2>Acceleration:6G
3>Frequency:10~1000HZ
4>Duration:15minutes /axis
5>Axis:X;Y;Z

2.Pass and Fail Criteria :
a.All samples must be performed function test and visual inspection after the test. Any parameter, function loss during or after test will be classified as fail. And it will be judged as fail if it affects any safety.
b.Any mechanical failure such as solder crack,component damage, PCB broken issues would be judged as fail.

3.Result: PASS.

S/N No.	Process of test	After Test			Result
		Hi-pot Test 4242Vdc,60s	Output	Visual Inspection	
C11551000049	Normal	Pass	Pass	Pass	Pass
C11551000062	Normal	Pass	Pass	Pass	Pass
C11551000060	Normal	Pass	Pass	Pass	Pass

Drop

1.Condition:
a.Drop Height:1m
b.Impact Surface: Hardwood Floor
c.Orientations:6 faces 1faces/time, 8corner 1corner/time

2.Pass and Fail Criteria :
a.All samples would be performed function test and visual inspection after test.Any parameter,function loss would be defined as fail.
b.Any crack on the case surface and welding spot would be judged as fail by inspecting test pin and test finger.

3.Result: PASS.

S/N No.	Hi-pot Test 4242Vdc,60s	Output	Visual inspection	Before test max gap(mm)	After test max gap(mm)	Spec:(mm)
C11551000064	Pass	Pass	Pass	0.35	0.4	0.5(±0.25mm)
C11551000095	Pass	Pass	Pass	0.7	0.75	
C11551000104	Pass	Pass	Pass	0.65	0.65	

T&H Storage Test

1.Condition:
Non-Operating:
a.-40℃& Zero Humidity ;Dwell 4Hours; Power Off
b.+70℃&90% ;Dwell 4Hours; Power Off
c.+40℃&80% R.H;Dwell 4Hours; Power Off
d.Temperature Ramp: 1℃/Minute

2.Pass and Fail Criteria :
a.Any parameter, function loss occurs during test and after test would be defined as fail.
b.Any fail affects in safety requirement after temperature and humidity test would be defined as fail.

3.Result: PASS.

S/N No.	Process of test	After Test			Result
		Hi-pot Test 4242Vdc,60s	Output	Visual Inspection	
C11551000061	Normal	Pass	Pass	Pass	Pass
C11551000059	Normal	Pass	Pass	Pass	Pass

T&H CycleTest

1.Condition:
Operating:
Input: 220V/50Hz
Output: 12Vdc/5.83A
1>.0℃ Zero RH, Dwell 1H,Power on
2>.+40℃ & 80%RH,Dwell 1H,Power on
3>.total 12 cycles
4>.Temperature ramp:1deg.C/minute

2.Pass and Fail Criteria :
a.Any parameter, function loss occurs during test or after test would be defined as fail.
b.Any fail affects in safety requirement after temperature and humidity test would be defined as fail.

3.Result: PASS.

S/N No.	Process of test	After Test			Result
		Hi-pot Test 4242Vdc,60s	Output	Visual Inspection	
C11551000061	Normal	Pass	Pass	Pass	Pass
C11551000059	Normal	Pass	Pass	Pass	Pass

Thermal shock

1.Condition:
a.Test cycle: 12 cycles.
b. Power off.
c.Temperature range: -40℃~+70℃.
d.Temperature point on -40℃ and +70℃, each dwell 30minutes.
e.Temperature transition rate: 5 minutes.
f.The function and safety test after 12 cycles.

2.Pass and Fail Criteria :
Electric characteristic shall be satisfied without distinct damage in appearanc

3.Result: PASS.

S/N No.	Process of test	After Test			Result
		Hi-pot Test 4242Vdc,60s	Output	Visual Inspection	
C11551000089	Normal	Pass	Pass	Pass	Pass
C11551000196	Normal	Pass	Pass	Pass	Pass

DC cable bending test

1.Test Item and Criteria:

Item	Weight	Degree	Time	Speed	Criteria
DC Plug	200g	±90°	3000 cycle	40 cycle/min	Disconnection rate of the wire shall be<30% or less
SR	200g	±90°	3000 cycle	40 cycle/min	Disconnection rate of the wire shall be<30%

2.Result: PASS.

Sample No.	Test times	Total Wires		Disconnected wire		Disconnected rate		Result
		anode	cathode	anode	cathode	anode	cathode	
DC Plug	3000	115	65	1	2	1%	3%	PASS
DC Plug	3000	115	65	2	4	2%	6%	PASS
DC Plug	3000	115	65	2	3	2%	5%	PASS
SR	3000	115	65	1	3	1%	5%	PASS
SR	3000	115	65	0	1	0%	2%	PASS
SR	3000	115	65	1	2	1%	3%	PASS

Vibration(1Box)

1. Test Conditions:
Before test ,the electronic functions,structure,component side and soldering side of the units are ok.
The random vibration levels and breakpoints will be used to test the single container, all six of the containers sides will be tested for 15 minutes/side, after testing is completed it is recommended to conduct a visual and functional test on the product for damage, Random Vibration shall be used at a level of 1.14 grms (truck/air simulation).

Frequency	G2/Hz
1	0.0001
4	0.01
100	0.01
200	0.001

2.Pass and Fail Crit
The sample has no electric characteristic issue and without distinct damage in appearance.

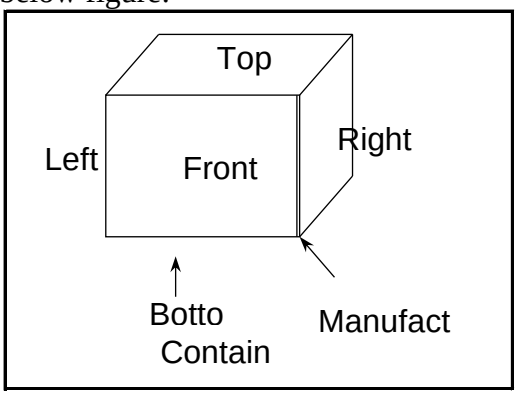
3.Result: PASS.
Vibration test process picture as below:





Drop(1Box)

1. Test Conditions:
The package product have be tested to the criteria set by the package product type and the package product normal mass. The mass of the package product is the total weight of the product,packaging, that would normally be shipped together,and accessories Container Surface Orientation and Identification as below figure:



Detail drop test condition as below table:

Number of drops	Assurance level	Power
10 times	81cm	off

Note: Test condition is following the document' Packaged product test procedure Spec

2.Test Sequence:
1>.A flat drop on the bottom.
2>.A flat drop on the top.
3>.A flat drop on the right.
4>.A flat drop on the left.
5>.A flat drop on the front.
6>.A flat drop on the back.
7>.A corner drop on the most critical component or product direction. If a critical direction can not be determined use the bottom corner at the manufacturing joint.
8>.One of three radiating edges from the critical corner.
9>.A second radiating edge from the critical corner.
10>.The third radiating edge from the critical corner.

3.Pass and Fail Criteria :
The sample has no electric characteristic issue and without distinct damage in appearance.

Picture

1. Drop test process picture as below:









2.Result: PASS.

LITE-ON TECHNOLOGY CORP.

LITEON

S.P.S

DOC TITLE : 70W	DATE : 21.12.2015
MODEL : PA-1071-11	
DESCRIPTION : SAFETY AUTHORIZATION LIST	

SAFETY ITEM	CERTIFICATE NO.	STANDARDS	SHEET
1.UL/CUL	E132068	UL 60950-1, 2nd Edition,2014-10-14 CSA C22.2 No. 60950-1-07, 2nd Ekition, 2014-10	
2.TUV/GS	S 50322014	EN 60950-1:2006+A11+A1+A12+A2 AfPS GS 2014:01 Par. 3.1	
3.Australia	ULL-100324-EA	AS/NZS 60950.1:2011+A1	
4.CB	JPTUV-066477	IEC 60950-1:2005+A1+A2 EN 60950-1:2006+A11+A1+A12+A2	
5.EAC	RU C-TW.AR21.B.01994	IEC 60950-1	
6.BSMI	CI334062758320	CNS14336-1、CNS13438	
7.CCC	2015010907823381	GB4943.1-2011;GB9254-2008;GB17625.1-2012	
8.Korea	SU10462-15013	K60950-1	
9.PSE	JD 50325536	J60950-1 (H27), J55022 (H22), J3000(H25)	
10.NRCan	4787087445		
11.CE	CE151012D12	EN 55022:2010+AC:2011, Class B CISPR 22:2008,Class B AS/NZS CISPR 22:2009+A1:2010, Class B EN 61000-3-2:2014,Class D EN 61000-3-3:2013 EN 55024:2010	
12.Efficiency test report.			
13.K-MEPS			
14.FCC	FV151012D12A		

UL TEST REPORT AND PROCEDURE

Standard:	UL 60950-1, 2nd Edition, 2014-10-14 (Information Technology Equipment - Safety - Part 1: General Requirements) CAN/CSA C22.2 No. 60950-1-07, 2nd Edition, 2014-10 (Information Technology Equipment - Safety - Part 1: General Requirements)
Certification Type:	Listing
CCN:	QQGQ, QQGQ7 (Power Supplies for Information Technology Equipment Including Electrical Business Equipment)
Product:	AC Adapter
Model:	1) PA-1071-11YX (Y=A-Z, Blank or "-" ; X= 0-9, A-Z, Blank or "-"); 2) PA-1081-11YX (Y=A-Z, Blank or "-" ; X= 0-9, A-Z, Blank or "-")
Rating:	I/P: 100-240Vac, 50/60Hz, 1.5A 1) O/P: 12V /5.83A 2) O/P: 12V /6.67A
Applicant Name and Address:	LITE-ON TECHNOLOGY CORPORATION OCS 90 CHIEN I RD CHUNG HO CITY TAIPEI HSIEN 23585 TAIWAN

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

The applicant is authorized to reproduce the referenced Test Report provided it is reproduced in its entirety.

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

Prepared by: Kyle Lin Reviewed by: Stanley Tsai

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Supporting Documentation

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

A. Authorization - The Authorization page may include additional Factory Identification Code markings.

B. Generic Inspection Instructions -

i. Part AC details important information which may be applicable to products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of this Test Report.

ii. Part AE details any requirements which may be applicable to all products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of each Test Report.

iii. Part AF details the requirements for the UL Certification Mark which is not controlled by the technical standard used to investigate these products. Products are permitted to bear only the Certification Mark(s) corresponding to the countries for which it is certified, as indicated in each Test Report.

Product Description

Electronic components were mounted on PWB and housed in plastic enclosure secured by ultrasonic welding.

Model Differences

Model PA-1071-11YX is similar to model PA-1081-11YX, expect for outpur rating and model designation.

Technical Considerations

- Equipment mobility : movable / transportable
- Connection to the mains : pluggable A
- Operating condition : continuous
- Access location : operator accessible
- Over voltage category (OVC) : OVC II
- Mains supply tolerance (%) or absolute mains supply values : +10%, -10%
- Tested for IT power systems : No
- IT testing, phase-phase voltage (V) : N/A
- Class of equipment : Special Application - Functional Earthing
- Considered current rating of protective device as part of the building installation (A) : 20 A
- Pollution degree (PD) : PD 2
- IP protection class : IP X0
- Altitude of operation (m) : Up to 5000 meters
- Altitude of test laboratory (m) : less than 2000 meters
- Mass of equipment (kg) : 0.466 Kg
- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer’s specification of: 40 °C
- The means of connection to the mains supply is: Pluggable A, Detachable power cord
- The product is intended for use on the following power systems: TN
- The equipment disconnect device is considered to be: Appliance inlet
- The product was investigated to the following additional standards: The unit was evaluated to be

operated up to 5,000 m above sea level and the multiplication factor (1.48) of table A.2 of IEC 60664-1:1992+A1: 2000+A2: 2002 was applied to determinate the minimum required clearance.

- The following accessible locations (with circuit/schematic designation) are within a limited current circuit: Bridging Capacitors C300 secondary sides
- The following circuit locations (with circuit/schematic designation) were investigated as a limited power source (LPS): Output

Additional Information

The tests are based on +10% and -10% tolerance and considered in compliance with +6% and 10% tolerance.

Additional Standards

The product fulfills the requirements of: N/A

Markings and instructions

Clause Title	Marking or Instruction Details
Inter-connecting cables - External detachable	Listee's Name and Part number (Marking or Instruction)
Power rating - Ratings	Ratings (voltage, frequency/dc, current)
Power rating - Company identification	Listee's or Recognized company's name, Trade Name, Trademark or File Number
Power rating - Model	Model Number
Fuses - Rating	Rated current and voltage and type located on or adjacent to fuse or fuseholder.
LPS Marking (Optional)	Marked "LPS" or "Limited Power Source".

Special Instructions to UL Representative

Inspect the transformer(s) listed in Production-Line Testing Requirements per AA1.1- (C).

When the tests are conducted at other location, inspect test record and specification sheet provided by the component manufacturer. Verify the specification sheet indicates 100% routine test specified in Production-Line Testing Requirements be conducted at the component manufacturer.

Production-Line Testing Requirements

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

Model	Component	Removable Parts	Test probe location	V rms	V dc	Test Time, s
All models	Transformer T050	N/A	Primary to Secondary	3000 or	4242	1

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

All models.

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

No Exemption.

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

No Exemption.

Sample and Test Specifics for Follow-Up Tests at UL

Model	Component	Material	Test	Sample(s)	Test Specifics
--	--	--	--	--	--

Zertifikat *Certificate*

TÜVRheinland®

Zertifikat Nr. *Certificate No.*
S 50322014

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0001

Ihr Zeichen *Client Reference*	**Unser Zeichen** *Our Reference*	**Längstens gültig bis** *Latest expiration date (day/mo/yr)*
P2015252	ZTW1-HCR- 10052961 001	30.09.2020

Genehmigungsinhaber *License Holder*
Lite-On Technology Corporation
90, Chien I Road
Chung Ho, Taipei Hsien 235
Taiwan

Fertigungsstätte *Manufacturing Plant*
LITE-ON TECHNOLOGY (CHANGZHOU)
CO., LTD.
No. 88, Yanghu Road Wujin Hi-Tech
Industrial Development Zone
Jiangsu Province
P.R. China

Prüfzeichen *Test Mark*

TÜVRheinland® ZERTIFIZIERT
GS geprüfte Sicherheit
www.tuv.com
ID 1000000000

Geprüft nach *Tested acc. to*
EN 60950-1:2006+A11+A1+A12+A2
AfPS GS 2014:01 Par. 3.1

Zertifiziertes Produkt (Geräteidentifikation) *Certified Product (Product Identification)*

Lizenzentgelte - Einheit *License Fee - Unit*

Schaltnetzteil (AC ADAPTER)

Bezeichnung (Type Designation)	: PA-1071-11YX (LITEON)	8
Y stehe für (stands for)	: A-Z, - oder (or) freibleibend (blank)	1
X stehe für (stands for)	: 0-9, A-Z, - oder (or) freibleibend (blank)	1
Nennspannung (Rated Voltage)	: AC 100-240V, 50/60Hz	
Nennstrom (Rated Current)	: 1.5A	
Ausgang (Output)	: DC 12V/5.83A	
max. Betriebshöhe (max. Operating Altitude)	: 5000m	
max. Umgebungstemperatur (max. Ambient Temperature)	: 40°C	
Schutzklasse (Protection Class)	: I	

Vermerke : Dieses Netzgerät ist geprüft und erfüllt die Anforderungen nach Abschnitt 2.5 als Stromquelle mit begrenzter Leistung. (Remark: The equipment is also tested and complies with sub-clause 2.5 as limited power source.)

10

ANLAGE (Appendix): 1

Dem Zertifikat liegt unsere Prüf- und Zertifizierungsordnung zugrunde.
Produkt und Fertigungsstätte erfüllen § 20 und § 21 des Produktsicherheitsgesetzes.
This certificate is based on our Testing and Certification Regulation.
Product and production fulfill par § 20 and § 21 of the Product Safety Law.

TÜV Rheinland LGA Products GmbH - Tillystraße 2 - 90431 Nürnberg
Tel.: (+49/221)8 06 - 13 71 e-mail: cert-validity@de.tuv.com
Fax: (+49/221)8 06 - 39 35 http://www.tuv.com/safety

Zertifizierungsstelle

TÜV Rheinland LGA Products GmbH TÜVRheinland® Zertifizierungsstelle

Dipl.-Ing. E. Stoelzel

Ausstellungsdatum *Date of Issue* : 01.10.2015 **(day/mo/yr)**

10/020 d 04.08 ® TÜV, TÜEV and TÜV are registered trademarks. Utilisation and application requires prior approval.

Zertifikat *Certificate*

TÜVRheinland®

Zertifikat Nr. *Certificate No.*
S 50322014

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0002

Ihr Zeichen *Client Reference*	**Unser Zeichen** *Our Reference*	**Längstens gültig bis** *Latest expiration date (day/mo/yr)*
P2015252	ZTW1-HCR- 10052961 001	30.09.2020

Genehmigungsinhaber *License Holder*
Lite-On Technology Corporation
90, Chien I Road
Chung Ho, Taipei Hsien 235
Taiwan

Fertigungsstätte *Manufacturing Plant*
LITE-ON TECHNOLOGY (CHANGZHOU)
CO., LTD.
No. 88, Yanghu Road Wujin Hi-Tech
Industrial Development Zone
Jiangsu Province
P.R. China

Prüfzeichen *Test Mark*

TÜVRheinland ZERTIFIZIERT
GS geprüfte Sicherheit
www.tuv.com
ID 1000000000

Geprüft nach *Tested acc. to*
EN 60950-1:2006+A11+A1+A12+A2
AfPS GS 2014:01 Par. 3.1

Zertifiziertes Produkt (Geräteidentifikation) *Certified Product (Product Identification)*

Lizenzentgelte - Einheit *License Fee - Unit*

Schaltnetzteil (AC ADAPTER)

wie Blatt (as page) 01
Ergänzung (Addition)

Bezeichnung (Type Designation)	: PA-1081-11YX (LITEON)	1
Y stehe für (stands for)	: A-Z, - oder (or) freibleibend (blank)	1
X stehe für (stands for)	: 0-9, A-Z, - oder (or) freibleibend (blank)	1
Ausgang (Output)	: DC 12V/6.67A	

Vermerke : Dieses Netzgerät ist geprüft und erfüllt die Anforderungen nach Abschnitt 2.5 als Stromquelle mit begrenzter Leistung. (Remark: The equipment is also tested and complies with sub-clause 2.5 as limited power source.)

3

ANLAGE (Appendix): 1

Dem Zertifikat liegt unsere Prüf- und Zertifizierungsordnung zugrunde.
Produkt und Fertigungsstätte erfüllen § 20 und § 21 des Produktsicherheitsgesetzes.
This certificate is based on our Testing and Certification Regulation.
Product and production fulfill par § 20 and § 21 of the Product Safety Law.

TÜV Rheinland LGA Products GmbH - Tillystraße 2 - 90431 Nürnberg
Tel.: (+49/221)8 06 - 13 71 e-mail: cert-validity@de.tuv.com
Fax: (+49/221)8 06 - 39 35 http://www.tuv.com/safety

Zertifizierungsstelle

TÜV Rheinland LGA Products GmbH
TÜVRheinland
Zertifizierungsstelle

Dipl.-Ing. F. Stoelzel

Ausstellungsdatum *Date of Issue* : 01.10.2015 **(day/mo/yr)**

10/020 d 04.08 ® TÜV, TÜEV and TÜV are registered trademarks. Utilisation and application requires prior approval.

Zertifikat *Certificate*

TÜVRheinland®

Zertifikat Nr. *Certificate No.*
S 50322014

Blatt *Page*
0003

Ihr Zeichen *Client Reference*	**Unser Zeichen** *Our Reference*	**Längstens gültig bis** *Latest expiration date (day/mo/yr)*
P2015252	ZTW1-HCR- 10052961 001	30.09.2020

Genehmigungsinhaber *License Holder*
Lite-On Technology Corporation
90, Chien I Road
Chung Ho, Taipei Hsien 235
Taiwan

Fertigungsstätte *Manufacturing Plant*
LITE-ON POWER TECHNOLOGY (DONGGUAN) CO., LTD
No. 1, Zhenan Road
Shangjiao Section, Changan Town
Dongguan City
Guangdong Province 523878
P.R. China

Prüfzeichen *Test Mark*

TÜVRheinland ZERTIFIZIERT
GS geprüfte Sicherheit
www.tuv.com
ID 1000000000

Geprüft nach *Tested acc. to*
EN 60950-1:2006+A11+A1+A12+A2
AfPS GS 2014:01 Par. 3.1

Zertifiziertes Produkt (Geräteidentifikation)
Certified Product *(Product Identification)*

Lizenzentgelte - Einheit
License Fee - Unit

Schaltnetzteil (AC ADAPTER)

wie Blatt (as page) 01

Ergänzung
(Addition)

Fertigungsstätte: siehe oben
(Factory) (see above)

ANLAGE (Appendix): 1

Dem Zertifikat liegt unsere Prüf- und Zertifizierungsordnung zugrunde.
Produkt und Fertigungsstätte erfüllen § 20 und § 21 des Produktsicherheitsgesetzes.
This certificate is based on our Testing and Certification Regulation.
Product and production fulfill par § 20 and § 21 of the Product Safety Law.

TÜV Rheinland LGA Products GmbH - Tillystraße 2 - 90431 Nürnberg
Tel.: (+49/221)8 06 - 13 71 e-mail: cert-validity@de.tuv.com
Fax: (+49/221)8 06 - 39 35 http://www.tuv.com/safety

Zertifizierungsstelle

TÜV Rheinland LGA Products GmbH Zertifizierungsstelle TÜVRheinland

Dipl.-Ing. F. Stoelzel

Ausstellungsdatum *Date of Issue* : 01.10.2015 **(day/mo/yr)**

10/020 d 04.08 ® TÜV, TUEV and TUV are registered trademarks. Utilisation and application requires prior approval.

TVC Service Pty Ltd

Proof of Compliance

Product	AC Adapter
Name and Address of Applicant	LITE-ON TECHNOLOGY CORPORATION OCS 90 CHIEN I RD CHUNG HO CITY TAIPEI HSIEN, 23585 Taiwan
Trade Mark	LITEON
Model/Type Ref.	PA-1071-11YX,PA-1081-11YX (Y=A-Z, "-" or blank; X=0-9, A-Z, "-" or blank)

This is to certify that the electrical article as described above meets the requirements of the standards listed as follow.

Standard	**Certificate No.:**
AS/NZS 60950.1:2011+A1	ULL-100324-EA By UL International New Zealand Ltd.

Compliance Mark: RCM

Date of Issue: 2015-11-13
Date of Expire:2020-11-05

TVC Service Pty Ltd

David Chen
TVC Service Pty Ltd
556 Musgrave Road ROBERTSON QLD 4109

Supplier's declaration of conformity

As required by the following Notices:

> *Radiocommunications (Compliance Labelling - Devices) Notice 2014* made under section 182 of the *Radiocommunications Act 1992*;

> *Radiocommunications Labelling (Electromagnetic Compatibility) Notice 2008* made under section 182 of the *Radiocommunications Act 1992*

> *Radiocommunications (Compliance Labelling – Electromagnetic Radiation) Notice 2014* made under section 182 of the *Radiocommunications Act 1992* and

> *Telecommunications (Labelling Notice for Customer Equipment and Customer Cabling) Instrument 2015* made under section 407 of the *Telecommunications Act 1997*.

Instructions for completion

> ***Do not return this form to the ACMA***. This completed form must be retained by the supplier as part of the documentation required for the compliance records and must be made available for inspection by the ACMA when requested.

Supplier's details (manufacturer, importer or authorised agent)

Company Name (OR INDIVIDUAL)

TVC Service Pty Ltd. TRADING AS

Street Address (AUSTRALIAN)

556 Musgrave Road Robertson Qld 4109

POSTCODE

Phone:

ACMA supplier code number

(issued by the ACMA prior to 1 March 2013)

OR

ACN/ARBN

61 115 128 115

Product details and date of manufacture

Product description – brand name, type, current model, lot, batch or serial number (if available), software/firmware version (if applicable)

Product: AD ADAPTER
Trade Name: LITEON
Model Number: PA-1071-11YX,PA-1081-11YX (Y=A-Z, "-" or blank; X=0-9, A-Z, "-" or blank)

Date of manufacture or importation of the original/modified item: 2015/11/8

Compliance – applicable standards and other supporting documents

Evidence of compliance with applicable standards may be demonstrated by test reports, endorsed/accredited test reports, certification/competent body statements.

Having had regard to these documents, I am satisfied the above mentioned product complies with the requirements of the relevant ACMA Standards made under the *Radiocommunications Act 1992* and the *Telecommunications Act 1997.*

List the details of the documents the above statement was made, including the standard title, number and, if applicable, number of the test report/endorsed test report or certification/competent body statement

AS/NZS CISPR 22:2009 + A1:2010 –

Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement

Report number: CE151012D12 issued by Bureau Veritas Consumer Products Services (H. K.) Ltd., Taoyuan Branch

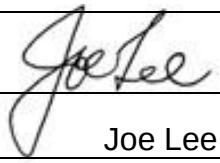
Declaration

I hereby declare that:

1. I am authorised to make this declaration on behalf of the Company mentioned above,
2. the contents of this form are true and correct, and
3. the product mentioned above complies with the applicable above mentioned standards and all products supplied under this declaration will be identical to the product identified above.

***Note*:** Under section 137.1 of the *Criminal Code Act 1995*, it is an offence to knowingly provide false or misleading information to a Commonwealth entity.

Penalty: 12 months imprisonment

SIGNATURE OF SUPPLIER OR AGENT 

PRINT NAME Joe Lee

POSITION IN ORGANISATION Director

DATE 13 November 2015

The *Privacy Act 1988* (Cth) (the Privacy Act) imposes obligations on the ACMA in relation to the collection, security, quality, access, use and disclosure of personal information. These obligations are detailed in the Australian Privacy Principles.

The ACMA may only collect personal information if it is reasonably necessary for, or directly related to, one or more of the ACMA's functions or activities.

The purpose of collecting the personal information in this form is to ensure the supplier is identified in the 'Declaration of conformity'. If this Declaration of Conformity is not completed and the requested information is not provided, a compliance label cannot be applied.

Further information on the Privacy Act and the ACMA's Privacy Policy is available at www.acma.gov.au/privacypolicy. The Privacy Policy contains details about how you may access personal information about you that is held by the ACMA, and seek the correction of such information. It also explains how you may complain about a breach of the Privacy Act and how we will deal with such a complaint.

Should you have any questions in this regard, please contact the ACMA's privacy contact officer on telephone on 1800 226 667 or by email at privacy@acma.gov.au.

TVC Service Pty Ltd

Notice to Responsible Supplier (Importer)

TVC Service Pty Ltd holds an ACMA compliance folder against the applicable labelling notices for this product. If you wish the product that you import to be covered by TVC SDoC, you must register into an agency agreement with TVC Service Pty Ltd. A copy of this agreement can be referred to the attachment. Please complete your company details sign and email to service@n14939.com and we will return it to you.

If you already have an agent's agreement with us and you wish this product to be covered by this agreement please email us the product details and we will update and send you an updated soft copy for your records.

The agent's agreement is valid for 1 year so it must be renewed if you wish to continue the product you import is covered by the TVC SDoC and Compliance folder.

The agency agreement is for free.

If the product is in the scope of the ERAC EESS, we may also hold the necessary proof of compliance in order to satisfy the electrical safety requirements. Moreover, we will indicate this in Attachment 1 of the agency agreement as having issued a TVC Proof of Compliance document.

David Chen
TVC Service Pty Ltd
556 Musgrave Road ROBERTSON QLD 4109

Mr. _____
TVC Service Pty Ltd
556 MUSGRAVE ROAD ROBERTSON
QLD 4109
+61-7-3103-2898

Supplier Point of Contact _____
Importer _____
Address _____
_____

Dear Mr./Ms. _____,

AGREEMENT FOR ACMA RCM PRODUCT COMPLIANCE Folder

By agreement (**IMPORTER** _____) appoints TVC Service Pty Ltd. (**Agent**) to be the importer's Agent for the purposes of compliance with the Australian Communications & Media Authority's (ACMA) request for records keeping.

This agreement applies to the Products IMPORTER imports which are marked with RCM logo and for which Agent holds the EMC compliance folders.

Under this agreement, IMPORTER will import the Products specified below to Australia.

Product: _____

Model Name: _____

Trademark: _____

IMPORTER will not modify the Products so as to adversely alter their EMC characteristics, as defined in Agent's compliance folders.

The IMPORTER will install and/or provide instructions for installing the Products to ensure that the Products are operated within the parameters of the manufacturer's published specifications.

Agent accepts full responsibility for the RCM Compliance of the Products in Australia, when used within the manufacturer's specifications.

Agent shall provide IMPORTER with a copy of the relevant Australian Declaration of Conformity (DoC) for each Product to which this agreement applies.

If a Product is modified by Agent or the manufacturer, Agent shall promptly update the compliance folder with the new evidence of compliance as required under the RCM Frame-work and provide IMPORTER with details of the change(s) and a revised DoC as applicable, prior to any of the modified Products being supplied to IMPORTER.

Agent will handle regulatory enquiries from ACMA including non-compliance allegations of the Products, and shall bear any cost of re-testing the Products for ACMA, as well as compliance costs if there is non-compliance with the RCM Frame-work.

If IMPORTER chooses to modify a Product's EMC technical compliance characteristics or use it outside of the manufacturer's specifications then either:

- IMPORTER will negotiate with Agent and bear the expense for Agent to recertify the Product and continue to use Agent's compliance folder, or

- this agreement will cease to operate for any such modified Product and IMPORTER will not use the Agent DoC as proof of compliance with the ACMA Labelling Notices.

This agreement will continue in effect as long as IMPORTER continues marketing the Products in Australia.

Upon thirty days advance written notice by either party, this agreement shall be deemed terminated.

Irregardless of the status of the agreement, Agent shall maintain the compliance folders in accord with ACMA requirements for five years.

Agent shall be responsible for regulatory and compliance issues during the record retention period for Products sold by IMPORTER for so long as this agreement's provisions are in effect.

If the agreement is terminated, Agent will deliver to IMPORTER true copies of the compliance folders before the effective termination date.

Agent shall be responsible for compliance and regulatory enquiries for Products (as noted supra) supplied hereunder by IMPORTER to Australia during the agreement period.

Upon notice of termination by Agent, IMPORTER may use Agent compliance folders to create IMPORTER compliance folders for the Product, and should IMPORTER so choose, IMPORTER will no longer use Agent Declaration of Compliance upon termination hereof taking effect.

Signed on behalf of (IMPORTER):	**Signed for Agent:**
Name:	Name:
Title:	Title:
Date:	Date:

AUSTRALIA & NEW ZEALAND CERTIFICATE OF APPROVAL

Certificate No.	ULL-100324
Page	1/3
Date of Issue	2015-11-05
Certificate Holder	LITE-ON TECHNOLOGY CORPORATION OCS 90 CHIEN I RD CHUNG HO CITY TAIPEI HSIEN, 23585 Taiwan
Certified Product	AC Adapter
Model(s)	PA-1071-11YX, PA-1081-11YX (See Next page)
Trade name or Trademark	LITEON
Rating Information	Model PA-1071-11YX : Input : 100-240 Vac, 50/60 Hz, 1.5 A, Output : 12 Vdc, 5.83 A, Model PA-1081-11YX : Input : 100-240 Vac, 50/60 Hz, 1.5 A, Output : 12 Vdc, 6.67 A,
Declared Class	POWER SUPPLY OR CHARGER - Power supply (electronic or transformer types) designated for use with specific electronic equipment
Tested to Standard	AS/NZS 60950.1:2011+A1
Approval Marking	ULL-100324-EA
Additional Information	See Next Page
Expire date	2020-11-05

Amarjit Singh
Certification Officer

This is to certify that representative samples of the Product described herein ("Certified Product") have been investigated and found in compliance with the Standard(s) indicated on this Certificate. This certificate is issued in accordance with a) the contractual agreement between UL and the certificate holder, b) the ANZ Certification Program Terms and Conditions, c) JAS-ANZ accreditation and d) NSW Government requirements. It is based on type assessment of representative product(s) and is issued for use in Australia and New Zealand only.

This Certificate remains the property of UL International New Zealand Ltd.

Equipment covered by this approval must comply in all respects with the certified article, and is required to be clearly and indelibly marked with the marking indicated in the appendix to this certificate. The certificate holder must immediately notify UL International New Zealand Ltd if these conditions are not met.

Notification must be made to UL International New Zealand Ltd within 20 working days of any modification to the product, change of manufacturer or change of certificate holder details.

If the client provides copies of the certification documents to others, the documents shall be reproduced in their entirety.

This approval shall expire on the date indicated above unless the certificate is suspended, cancelled or withdrawn for any reason prior to that date.

All dates are in Year-Month-Day format (YYYY-MM-DD).

JAS-ANZ

www.jas-anz.org/register

Certification Body

UL International New Zealand Ltd,
21 Tarndale Grove, Albany,
Auckland 0632, New Zealand.
+64 9 415 3355, customerservice.anz@ul.com,
http://newzealand.ul.com

APPENDIX - AUSTRALIA & NEW ZEALAND CERTIFICATE OF APPROVAL

Certificate No. ULL-100324
Page 2/3
Date of Issue 2015-11-05

Additional Information:
Details of Models : PA-1071-11YX and PA-1081-11YX :
Y=A-Z, Blank or "-" ; X= 0-9, A-Z, Blank or "-"
AC/DC Adapter also complies with AS/NZS 60950.1:2015.

Certification Body **UL International New Zealand Ltd,
21 Tarndale Grove, Albany,
Auckland 0632, New Zealand.
+64 9 415 3355, customerservice.anz@ul.com,
http://newzealand.ul.com**

APPENDIX - AUSTRALIA & NEW ZEALAND CERTIFICATE OF APPROVAL

Certificate No. ULL-100324
Page 3/3
Date of Issue 2015-11-05

Certified products shall be marked with one of the following marking options.

1 Product approval mark (minimum size is not specified, as long as the Approval Number is legible).

ULL-100324-EA

or;

2 Regulatory Compliance Mark (RCM), provided that all the requirements of all relevant parts of AS/NZS 4417 applicable to the article are fulfilled.



Certification Body **UL International New Zealand Ltd,**
21 Tarndale Grove, Albany,
Auckland 0632, New Zealand.
+64 9 415 3355, customerservice.anz@ul.com,
http://newzealand.ul.com

IEC IECEE CB SCHEME

Ref. Certif. No.

JPTUV-066477

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

SYSTEME CEI D'ACCEPTATION MUTUELLE DE CERTIFICATS D ESSAIS DES EQUIPEMENTS ELECTRIQUES (IECEE) METHODE OC

CB TEST CERTIFICATE

CERTIFICAT D'ESSAI OC

Product Produit	AC ADAPTER
Name and address of the applicant Nom et adresse du demandeur	Lite-On Technology Corporation 90, Chien I Road Chung Ho, Taipei Hsien 235 Taiwan
Name and address of the manufacturer Nom et adresse du fabricant	Lite-On Technology Corporation 90, Chien I Road Chung Ho, Taipei Hsien 235 Taiwan
Name and address of the factory Nom et adresse de l'usine	See additional page(s)
Ratings and principal characteristics Valeurs nominales et charactéristiques principales	Input : AC 100-240V; 1.5A; 50/60Hz; Class I Output: 1) DC 12V/5.83A, 2) DC 12V/6.67A
Trademark (if any) Marque de fabrique (si elle existe)	LITEON
Type of Manufacturer's Testing Laboratories used Type de programme du laboratoire d'essais constructeur	CTF Stage 1
Model / Type Ref. Ref. de type	1) PA-1071-11YX , 2) PA-1081-11YX (Y = A-Z, Blank or hyphen; X = 0-9, A-Z, Blank or hyphen)
Additional information (if necessary may also be reported on page 2) Les informations complémentaires (si nécessaire, peuvent être indiqués sur la 2ème page)	Also evaluated to EN 60950-1:2006+A11+A1+A12+A2 For model differences, refer to the test report.
A sample of the product was tested and found to be in conformity with Un échantillon de ce produit a été essayé et a été considéré conforme à la	IEC 60950-1:2005+A1+A2 National differences see test report
As shown in the Test Report Ref. No. which forms part of this Certificate Comme indiqué dans le Rapport d'essais numéro de référence qui constitue partie de ce Certificat	11042930 001

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

TÜVRheinland®

TÜV Rheinland Japan Ltd.
Global Technology Assessment Center
4-25-2 Kita-Yamata, Tsuzuki-ku
Yokohama 224-0021 Japan
Phone + 81 45 914-3888
Fax + 81 45 914-3354
Mail: info@jpn.tuv.com
Web: www.tuv.com

Date: 30.09.2015

Signature: Dipl.-Ing. F. Stoelzel

1. LITE-ON TECHNOLOGY (CHANGZHOU) CO., LTD.
   No. 88, Yanghu Road Wujin Hi-Tech Industrial Development Zone
   Jiangsu Province, P.R. China

2. LITE-ON POWER TECHNOLOGY (DONGGUAN) CO., LTD
   No. 1, Zhenan Road
   Shangjiao Section, Changan Town
   Dongguan City, Guangdong Province 523878, P.R. China

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

Report Ref. No.: 11042930 001

Date: 30.09.2015

Signature: Dipl.-Ing. F. Stoelzel

ТАМОЖЕННЫЙ СОЮЗ

СЕРТИФИКАТ СООТВЕТСТВИЯ

№ ТС RU C-TW.АГ21.В.01994

Серия RU № 0285691

ОРГАН ПО СЕРТИФИКАЦИИ продукции "ГОСТ-АЗИЯ РУС" АНО "Центр "ГОСТ АЗИЯ РУС" по подтверждению соответствия продукции и иных объектов, процессов, работ и услуг стандартам, регламентам, правилам и договорам", Адрес: 115191, Россия, г. Москва, ул. 2-ая Рощинская, д. 10; Телефон: +7 (495) 6400914, +7 (499) 2530157; Факс: +7 (495) 6400914, +7 (499) 2530155, E-mail: gostasia@umail.ru, Аттестат рег. № РОСС RU.0001.11АГ21, выдан 16.03.2011 Федеральным агентством по техническому регулированию и метрологии

ЗАЯВИТЕЛЬ

Lite-On Technology Corporation, Адрес: 90, Chien I Road, Chung Ho, Taipei Hsien 235, Taiwan (Тайвань) Телефон: +886-3-3831513, Факс: +886-3-3836720, E-mail: Katrina.Tung@liteon.com

ИЗГОТОВИТЕЛЬ

Lite-On Technology Corporation, Адрес: 90, Chien I Road, Chung Ho, Taipei Hsien 235, Taiwan (Тайвань) (предприятия-изготовители согласно приложению, бланк № 0231486)

ПРОДУКЦИЯ

Блоки питания для информационной техники LITEON модели PA-1071-11YX, PA-1081-11YX (где "Y" = A-Z, « - » или пробел; "X" = 0-9, A-Z, « - » или пробел), изготовлены в соответствии с ТР ТС 004/2011, ТР ТС 020/2011
Серийный выпуск

КОД ТН ВЭД ТС 8504 40 300 9

СООТВЕТСТВУЕТ ТРЕБОВАНИЯМ

Технического регламента Таможенного союза ТР ТС 004/2011 "О безопасности низковольтного оборудования";
Технического регламента Таможенного союза ТР ТС 020/2011 "Электромагнитная совместимость технических средств"

СЕРТИФИКАТ ВЫДАН НА ОСНОВАНИИ

- протокола испытаний № 21/01I11G от 13.11.2015, выданного Испытательной лабораторией ООО «Электробезопасность», аттестат аккредитации № RA.RU.21ХУ01 (выдан 14 мая 2015 г.);
- отчета по результатам анализа состояния производства № ОАП-263 от 13.03.2015, выданного органом по сертификации продукции "ГОСТ-АЗИЯ РУС", аттестат аккредитации № РОСС RU.0001.11АГ21 (срок действия с 16.03.2011 по 16.03.2016).

ДОПОЛНИТЕЛЬНАЯ ИНФОРМАЦИЯ

Срок службы продукции 5 лет.

СРОК ДЕЙСТВИЯ С 13.11.2015 **ПО** 12.11.2020 **ВКЛЮЧИТЕЛЬНО**

М.П.

Руководитель (уполномоченное лицо) органа по сертификации (подпись) В. Ф. Воробьев (инициалы, фамилия)

Эксперт (эксперт-аудитор) (эксперты (эксперты-аудиторы)) (подпись) С. А. Смирнов (инициалы, фамилия)

Бланк изготовлен ЗАО "ОПЦИОН", www.opcion.ru (лицензия № 05-05-09/003 ФНС РФ) тел. (495) 726 4742, Москва, 2013

Created by Pixelnetica SharpScan

ТАМОЖЕННЫЙ СОЮЗ

ПРИЛОЖЕНИЕ

К СЕРТИФИКАТУ СООТВЕТСТВИЯ № ТС RU C-TW.АГ21.В.01994

Серия RU № 0231486

Перечень предприятий-изготовителей продукции, на которую распространяется действие сертификата соответствия

Полное наименование предприятия-изготовителя	Адрес (место нахождения)
1. LITE-ON TECHNOLOGY (CHANGZHOU) CO., LTD.	No. 88, Yanghu Road, Wujin Hi-Tech Industrial Development Zone, Jiangsu Province, P. R. China (Китай)
2. LITE-ON POWER TECHNOLOGY (DONGGUAN) CO., LTD	No. 1, Zhenan Road, Shangjiao Section, Changan Town, Dongguan City, Guangdong Province 523878, P.R. China (Китай)

АНО «ГОСТ АЗИЯ РУС» ОРГАН ПО СЕРТИФИКАЦИИ ПРОДУКЦИИ «ГОСТ - АЗИЯ РУС» ДЛЯ СЕРТИФИКАТОВ РОСС RU.0001.11АГ21

М.П.

Руководитель (уполномоченное лицо) органа по сертификации — (подпись) — В. Ф. Воробьев (инициалы, фамилия)

Эксперт (эксперт-аудитор) (эксперты (эксперты-аудиторы)) — (подпись) — С. А. Смирнов (инициалы, фамилия)

Бланк изготовлен ЗАО "ОПЦИОН", www.opcion.ru (лицензия № 05-05-09/003 ФНС РФ), тел. (495) 726 4742, Москва, 2013

Created by Pixelnetica SharpScan

經 濟 部 標 準 檢 驗 局

BUREAU OF STANDARDS,METROLOGY AND INSPECTION,
MINISTRY OF ECONOMIC AFFAIRS

商 品 驗 證 登 錄 證 書

CERTIFICATE OF THE REGISTRATION OF PRODUCT CERTIFICATION

證書號碼： CI334062758320 號 00
Certificate No.

茲據 光寶科技股份有限公司 申請驗證登錄，經審查結果符合規定，准予登錄並使用商品安全標章及識別號碼： R33275 。其登錄事項如下：
The application made by LITE-ON TECHNOLOGY CORP. for Registration of Product Certification has been reviewed and found to be in compliance with related regulations. Therefore, registration is granted with the Product Safety Mark and the Identification No. R33275 . Details of the registration are follows :

申 請 人 ：光寶科技股份有限公司 統一編號：23357403
Applicant Uniform No.

地 址 ：臺北市內湖區瑞光路392號22樓
Address

生產廠場 ：詳如附表
Factory

廠 址 ：詳如附表
Factory Address

商品種類名稱：
Type/name of product

商品分類號列： 8504.40.20.00.3
C.C.C Code

中文名稱 ： 電源供應器
Chinese name

英文名稱 ： AC ADAPTER
English name

型 式： PA-1071-11
Type

系列型式 ： PA-1081-11(以下空白)
Series of the type

依據標準 ： CNS14336-1 (099/09/30年版)、CNS13438 (095/06/01年版)
Standards

標準檢驗局或所屬分局發證（發證地址：100臺北市中正區濟南路1段4號）
(本證書經驗證機關使用鋼印後生效)
This certificate is issued by the BSMI. (No.4, Sec. 1, Jinan Rd., Zhongzheng Dist., Taipei City 100, Taiwan)
(This certificate will become effective only when stamped with the BSMI seal.)

登錄日期：中華民國	104	年	11	月	25	日
Registration Date	2015	(year)	11	(month)	25	(day)
本證書有效期限至	107	年	11	月	24	日
Expiration Date	2018	(year)	11	(month)	24	(day)
發證日期：中華民國	104	年	11	月	25	日
Date of issuc	2015	(year)	11	(month)	25	(day)

註1：持本證書進口驗證登錄商品時，進口人須與本證書名義人相同。

註2：次年度商品驗證登錄年費繳納期限為當年11月30日，逾期未繳納者，經限期繳納屆期未繳納，即依商品檢驗法第42條第7款規定廢止驗證登錄，並自次年度1月1日起生效。

經 濟 部 標 準 檢 驗 局

BUREAU OF STANDARDS,METROLOGY AND INSPECTION,
MINISTRY OF ECONOMIC AFFAIRS

商 品 驗 證 登 錄 證 書

CERTIFICATE OF THE REGISTRATION OF PRODUCT CERTIFICATION

證書號碼： CI334062758320 號 00
Certificate No.

生產廠場：
Factory：

1. LITE-ON TECHNOLOGY (CHANGZHOU) CO., LTD.
No.88, Yanghu Road, Wujin Hi-Tech Industrial
Development Zone Jiangsu Province 213100 China

2. LITE-ON POWER TECHNOLOGY (DONGGUAN) CO.,LTD
No.1, Zhenan Road, Shangjiao Section, Changan Town,
Dongguan City, Guangdong Province,China

3. Lite-On Technology Corporation
90, Chien I Road, Chung Ho Taipei Hsien, 235, TAIWAN

（以下空白）

中国国家强制性产品认证证书

证书编号：2015010907823381

委托人名称、地址

光宝科技股份有限公司
台湾省台北县中和市建一路90号

生产者(制造商)名称、地址

光宝科技股份有限公司
台湾省台北县中和市建一路90号

生产企业名称、地址

光宝科技（常州）有限公司
江苏省武进高新技术产业开发区阳湖路88号

产品名称和系列、规格、型号

电源适配器

PA-1071-11YX（Y=A-Z，空白或连字符，X=0-9，A-Z，空白或连字符，仅用于区分销售型号，不影响安全和电磁兼容性）、PA-1081- 11YX（Y=A-Z，空白或连字符，X=0-9，A-Z，空白或连字符，仅用于区分销售型号，不影响安全和电磁兼容性）规格：PA-1071-11YX：输入：100-240V～，50/60Hz，1.5A 输出：12Vdc,5.83A PA-1081-11YX输入：100-240V～，50/60Hz，1.5A 输出：12Vdc,6.67A(不带电线组件销售，仅适用于海拔5000米及以下)

产品标准和技术要求

GB4943.1-2011;GB9254-2008;GB17625.1-2012

上述产品符合强制性产品认证实施规则
CNCA-C09-01:2014的要求，特发此证。

发证日期：2015年11月23日　　有效期至：2020年11月23日

证书有效期内本证书的有效性依据发证机构的定期监督获得保持。

本证书的相关信息可通过国家认监委网站www.cnca.gov.cn查询

主　任：

中国质量认证中心

中国·北京·南四环西路188号9区 100070

CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION

No. : 2015010907823381

NAME AND ADDRESS OF THE APPLICANT

Lite-On Technology Corp.
90. Chien 1 Road, Chung Ho, Taipei Hsien 235 Taiwan

NAME AND ADDRESS OF THE MANUFACTURER

Lite-On Technology Corp.
90. Chien 1 Road, Chung Ho, Taipei Hsien 235 Taiwan

NAME AND ADDRESS OF THE FACTORY

LITE-ON TECHNOLOGY (CHANGZHOU) CO., LTD.
No. 88, Yanghu Road, Wujin Hi-Tech Industrial Development Zone, Jiangsu Province

NAME, MODEL AND SPECIFICATION

AC ADAPTER

PA-1071-11YX (Y=A-Z, 空白或连字符, X=0-9, A-Z, 空白或连字符, 仅用于区分销售型号, 不影响安全和电磁兼容性)、PA-1081- 11YX (Y=A-Z, 空白或连字符, X=0-9, A-Z, 空白或连字符, 仅用于区分销售型号, 不影响安全和电磁兼容性) 规格: PA-1071-11YX: 输入: 100-240V～, 50/60Hz, 1.5A 输出: 12Vdc, 5.83A PA-1081-11YX输入: 100-240V～, 50/60Hz, 1.5A 输出: 12Vdc, 6.67A(Sale without cord set, Altitude up to 5000m)

THE STANDARDS AND TECHNICAL REQUIREMENTS FOR THE PRODUCTS

GB4943.1-2011;GB9254-2008;GB17625.1-2012

This is to certify that the above mentioned products have met the requirements of implementation rules for compulsory certification(REF NO. CNCA-C09-01:2014).

Date of issue: Nov. 23, 2015 Date of expiry: Nov. 23, 2020

Validity of this certificate is subject to positive result of the regular follow up inspection by issuing certification body until the expiry date.

This certificate can be verified through CNCA's website: www.cnca.gov.cn

President: Wang Kejiao

CHINA QUALITY CERTIFICATION CENTRE

Section 9,No.188,Nansihuan Xilu, Beijing 100070 P.R.China
http://www.cqc.com.cn

Q 1281464

접 수 번 호 (Receipt No.) : 15-062148-01

전 기 용 품 안 전 인 증 서

Electrical Appliances Safety Certificate

안 전 인 증 번 호 (Certificate No.)	:	SU10462-15013
제 조 업 자 명 (Manufacturer)	:	Lite-On Technology (Changzhou) Co., Ltd.
대 표 자 명 (President)	:	Mr. Raymond Soong
제조공장의 주소 (Factory Address)	:	No.88, Yanghu Road, Wujin Hi-Tech Industrial Development Zone, Jiangsu Province, 213100, China
제 품 명 (Product)	:	직류전원장치 (AC/DC adapter)
기 본 모 델 명 (Basic Model)	:	PA-1081-11
정 격 (Rating)	:	AC 100-240 V, 50/60 Hz, 1.5 A (O/P: DC 12 V, 6.67 A)
파 생 모 델 명 (Series Model)	:	PA-1071-11
적 용 기 준 (Standard)	:	K60950-1(2011-12)

「전기용품안전 관리법 시행규칙」 제6조제2항에 따라 위의 전기용품에 대하여 안전인증서를 발급합니다.

We Issue Electrical Appliances Safety Certification as above product by Article 6 Section 2 of the Electrical Appliances Safety Control Law Enforcement Regulation.

2015 년 (Year) 11 월 (month) 10 일 (day)

ktl 한국산업기술시험원장 KOREA TESTING LABORATORY

※ 이 인증서는 「전기용품안전 관리법」에 따른 전기용품 안전성 확인에 한정된 것이며, 그 밖의 다른 법률이 적용되는 제품의 경우에는 해당 법률에 따라 추가로 인증·허가 등을 받아야 합니다.

첨 부 : (Annex)

1. 안전관리부품 및 재질목록 (List of Critical Components)
2. 기본모델 · 파생모델의 내용 (Descriptions of the basic and series model)
3. 전기용품안전인증의 변경 현황 (Revisions Status)

適合同等証明書
Certificate of Conformity

TÜVRheinland®

証明書番号 Certificate No.	ページ Page
JD 50325536	1

申請者照会番号 Applicant Reference	検査機関照会番号 Our Reference	発行年月日 Date of Issue
Hsiehm-114042495	ZTW1-FS-11043621 001	2015 年 11 月 27 日

申請者 Applicant
LITE-ON TECHNOLOGY (CHANGZHOU) CO., LTD.
No. 88, Yanghu Road Wujin Hi-Tech, Industrial Development Zone, Jiangsu Province, P.R. China

製造工場 Manufacturing Plant
LITE-ON TECHNOLOGY (CHANGZHOU) CO., LTD.
No. 88, Yanghu Road Wujin Hi-Tech, Industrial Development Zone, Jiangsu Province, P.R. China

検査の方法 Inspection Method

- 技術上の基準を定める省令の解釈 別表第十二：J60950-1(H27), J55022(H22), J3000(H25)
  Interpretation on Ministerial Ordinance establishing Technical Requirements Appendix 12: J60950-1 (H27), J55022 (H22), J3000(H25)
- 施行規則別表第四（交流用電気機械器具）
  Appendix 4 of the Enforcement Regulations (AC Electric Appliances)

特定電気用品名
Name of Specified Electrical Appliance and Material
：直流電源装置
DC Power Supply Unit

型式の区分
Type Classification
：（「添付 1.0」参照）
(Refer to "Attachment 1.0")

証明書の有効期間
Validity of Certificate
：本証明書は、施行令で規定された期間である 2020 年 11 月 26 日まで有効です。
This certificate is effective until 26 November, 2020, being the period stipulated by the Enforcement Ordinance.

電気用品安全法第 8 条第 1 項に規定する技術基準及び同法第 9 条第 2 項の経済産業省令で定める基準（法第 9 条第 1 項第 2 号に係る検査に係るものに限る）に適合していることを証明します。
This is to certify that the above-mentioned Specified Electrical Appliances and Materials complies with the technical requirements stipulated in Paragraph 1 of Article 8 of Electrical Appliances and Materials Safety Act (here under referred to as the Act) and the requirements defined by the ordinance of the Ministry of Economy, Trade and Industry based on Paragraph 2 of Article 9 of the Act (limited to Item 2 of Paragraph 1 of Article 9 for Inspection of the Act).

注意事項 Notes

(1) この適合同等証明書は、提出された試験用の電気用品に関して評価を行った上で交付したものであり、同一の型式の区分にある電気用品について電気用品安全法第 8 条第 1 項に規定する技術基準適合確認の義務を履行したことを示すものではありません。
This Certificate of Conformity is issued only for those submitted test samples that are in conformity with Technical Requirements. It does not mean, for electrical products within the same classification, that the manufacturer has fulfilled the obligation to be in compliance with the technical standards specified based on Article 8, Item 1 of the Electrical Appliance and Material Safety Act.

(2) この適合同等証明書は、別紙に記載されている型式の区分の範囲内及び区分の組み合わせについてのみ有効です。
This Certificate of Conformity is valid only in conjunction with type classification sheet(s) specified as attached.

テュフ ラインランド 台湾リミテッド
TÜV Rheinland Taiwan Ltd.
１１階、７５８、パートウロード、セクション４、ショウサン区、台北１０５、台湾
11F, No. 758, Bade Rd., Sec. 4, Songshan Dist., Taipei 105, Taiwan, R.O.C.

発行者 Issued by
氏名 Name Dipl.-Ing. F. Stoelzel
フリードリッヒ シュトルツェル

TÜV Rheinland Taiwan Ltd. TÜVRheinland® Certification Body

TÜV320 d 04.08 ® TÜV, TUEV and TUV are registered trademarks. Utilisation and application requires prior approval.

添付 Attachment：1.0　　発行日 Date of Issue：2015 年 11 月 27 日

【型式の区分 Type Classification**】**

型式区分管理 No: (Type Classification Control No:)　：　CL-01

証明書番号 (Certificate No.)　：　JD 50325536

特定電気用品名
(Name of Specified Electrical Appliance and Material)　：　直流電源装置
DC Power Supply Unit

申請者 (Applicant)　：　**LITE-ON TECHNOLOGY (CHANGZHOU) CO., LTD.**

海外製造事業者
(Overseas Manufacturer/factory)　：　**LITE-ON TECHNOLOGY (CHANGZHOU) CO., LTD.**

要素 Factor	区分 Classification
定格入力電圧 (Rated input voltage)	125V 以下のもの及び 125V を超えるもの (125V or less, and exceeding 125V)
入力側の定格容量 (Rated capacity on input side)	80VA を超え 90VA 以下のもの (Exceeding 80VA, and less than or equal to 90VA)
定格周波数（変圧器を有するものの場合に限る。） (Rated frequency (limited to those with transformer)	50Hz のもの及び 60Hz のもの (50Hz, and 60Hz)
交流用端子 (AC terminal)	ないもの (Without AC terminal)
直流定格電圧 (Rated DC voltage)	15V 以下のもの (15V or less)
変圧器 (Transformer)	あるもの (With transformer)
変圧器の巻線の絶縁の種類 (Transformer winding insulation class)	B 種のもの (Class B)
直流電圧の調整装置 (DC voltage adjusting mechanism)	ないもの (Without adjusting mechanism)
回路の保護機構 (Circuit protection device)	あるもの (With circuit protection device)
器体スイッチ (Body switch)	ないもの (Without body switch)
外郭の材料 (Outer case material)	合成樹脂のもの (Plastic)
用途 (Application)	電池充電用のもの及びその他のもの (For battery charging, and Others)
電源電線と器体との接続の方式 (Method of attaching power supply cord)	接続器利用のもの (Coupling device)
二重絶縁 (Double insulation)	施してないもの (Without double insulation)

テュフ　ラインランド　台湾リミテッド
TÜV Rheinland Taiwan Ltd.

１１階、７５８、パートウロード、セクション４、ショウサン区、台北１０５、台湾
11F, No. 758, Bade Rd., Sec. 4, Songshan Dist., Taipei 105, Taiwan, R.O.C.

発行者 Issued by

氏名 Name　Dipl.-Ing. F. Sinnatzel
フリードリット シュナルツィル

TÜV Rheinland Taiwan Ltd. Certification Body

10\020 d 04 08 ® TUV, TÜV and TUV are registered trademarks. Utilisation and application requires prior approval.

添付 Attachment：1.0　　**発行日** Date of Issue：2015 年 11 月 27 日

【型式の区分 Type Classification**】**

型式区分管理 No: (Type Classification Control No:) ： CL-02

証明書番号 (Certificate No.) ： JD 50325536

特定電気用品名 (Name of Specified Electrical Appliance and Material) ： 直流電源装置 DC Power Supply Unit

申請者 (Applicant) ： **LITE-ON TECHNOLOGY (CHANGZHOU) CO., LTD.**

海外製造事業者 (Overseas Manufacturer/factory) ： **LITE-ON TECHNOLOGY (CHANGZHOU) CO., LTD.**

要素 Factor	区分 Classification
定格入力電圧 (Rated input voltage)	125V 以下のもの及び 125V を超えるもの (125V or less, and exceeding 125V)
入力側の定格容量 (Rated capacity on input side)	90VA を超え 100VA 以下のもの (Exceeding 90VA, and less than or equal to 100VA)
定格周波数（変圧器を有するものの場合に限る。） (Rated frequency (limited to those with transformer)	50Hz のもの及び 60Hz のもの (50Hz, and 60Hz)
交流用端子 (AC terminal)	ないもの (Without AC terminal)
直流定格電圧 (Rated DC voltage)	15V 以下のもの (15V or less)
変圧器 (Transformer)	あるもの (With transformer)
変圧器の巻線の絶縁の種類 (Transformer winding insulation class)	B 種のもの (Class B)
直流電圧の調整装置 (DC voltage adjusting mechanism)	ないもの (Without adjusting mechanism)
回路の保護機構 (Circuit protection device)	あるもの (With circuit protection device)
器体スイッチ (Body switch)	ないもの (Without body switch)
外郭の材料 (Outer case material)	合成樹脂のもの (Plastic)
用途 (Application)	電池充電用のもの及びその他のもの (For battery charging, and Others)
電源電線と器体との接続の方式 (Method of attaching power supply cord)	接続器利用のもの (Coupling device)
二重絶縁 (Double insulation)	施してないもの (Without double insulation)

テュフ　ラインランド　台湾リミテッド
TÜV Rheinland Taiwan Ltd.

１１階、７５８、パートウロード、セクション４、ショウサン区、台北１０５、台湾
11F, No. 758, Bade Rd., Sec. 4, Songshan Dist., Taipei 105, Taiwan, R.O.C.

発行者 Issued by

氏名 Name　Dipl.-Ing. F. Stoelzel
フリードワット シュトルツェル

TÜV Rheinland Taiwan Ltd. TÜVRheinland Certification Body

TÜV, TUEV and TUV are registered trademarks. Utilisation and application requires prior approval.

Certificate of

Conformance

Energy Efficiency Certification

UL conducted an independent evaluation on behalf of:

LITE-ON TECHNOLOGY CORPORATION

OSC 90 CHIEN I RD., CHUNG HO CITY, TAIPEI HSIEN, 23585, TAIWAN

for the following products:

AC POWER ADAPTER

Brand:
LITEON

Model:
PA-1081-11YX ;
PA-1071-11YX
(Y=A-Z, Blank or "-"; X= 0-9, A-Z, Blank or "-")

This product meets all of the necessary qualifications pursuant to:

- NRCan: Amendment 11 to the Energy Efficiency Regulations for External Power Supplies, published on October 12, 2011 in the Canada Gazette, Part II
- US CEC: Appliance Efficiency Regulations (California Code of Regulations, Title 20, Sections 1601 through 1608) dated July 2015
- US DoE: Office of Energy Efficiency and Renewable Energy 10 CFR Parts 429 and 430
- Australian (GEMS) and New Zealand: AS/NZS4665.1-2005+A1:2009; AS/NZS4665.2-2005+A1:2009
- EU Directive for Energy-related Products ErP 2009/125/EC and Implementing Measure (IM) no. EC278/2009 for External Power Supply
- EU: Code of Conduct on Energy Efficiency of External Power Supplies Version 5
- International Efficiency Marking Protocol for External Power Supplies – Level Verified - V, VI

c UL | Energy Verified

2015-10-08
Certification Date

N/A
Certification Revision Date

Issued by

4787087445
UL Product Number

00-VS-F0418, Version 4.1, This is to certify that representative samples of the Certified Product(s) listed above have been investigated by UL to the Standard(s) indicated on this certificate, in accordance with the UL Global Services Agreement and the EEC Terms & Conditions ("Agreement"). The Certificate Holder is entitled to use the UL Energy Verified Mark for the Certified Product(s) listed on the certificate and manufactured at the production site(s) covered by the UL Test Report, in accordance with the terms of the Agreement. This Certificate shall remain valid unless a Standard identified on this Certificate is amended or withdrawn prior to that date or these is a non-compliance with the Agreement.

CERTIFICATE OF CONFORMITY

Equipment	:	AC ADAPTER
Brand Name	:	LITEON
Test Model No.	:	PA-1081-11
Multiple Listing	:	PA-1071-11YX, PA-1081-11YX (Y= A-Z, "-" or blank; X= 0-9, A-Z, "-" or blank)
Applicant	:	LITE-ON TECHNOLOGY CORP.
Test Report No.	:	FV151012D12A

We, **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, declare that the equipment above has been tested in our facility and found compliance with the requirement limits of applicable standards. The test record, data evaluation and Equipment Under Test (EUT) configurations represented herein are true and accurate under the standards herein specified.

47 CFR FCC Part 15, Subpart B, Class B

ICES-003:2012 Issue 5, Class B

ANSI C63.4:2014

Henry Lai / Director

Dec. 11, 2015

No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan (R.O.C.)

Tel: 886-2-26052180 Fax: 886-2-26051924

http://www.bureauveritas-adt.com E-Mail: service.adt@tw.bureauveritas.com

FCC Verification Test Report

Report No.:	FV151012D12A
Test Model:	PA-1081-11
Series Model:	PA-1071-11YX, PA-1081-11YX (Y= A-Z, “-” or blank; X= 0-9, A-Z, “-” or blank)
Received Date:	Dec. 9, 2015
Test Date:	Dec. 9, 2015
Issued Date:	Dec. 11, 2015
Applicant:	LITE-ON TECHNOLOGY CORP.
Address:	90, Chien I Road, Chung Ho, Taipei Hsien, Taiwan, R.O.C
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan (R.O.C.)

LAB CODE: 200836-0

Testing Laboratory 2021

This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification.
The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.
The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies.

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Release Control Record

Issue No.	Description	Date Issued
FV151012D12A	Original release.	Dec. 11, 2015

1 Certificate of Conformity

Product:	AC ADAPTER
Brand:	LITEON
Test Model:	PA-1081-11
Series Model:	PA-1071-11YX, PA-1081-11YX (Y= A-Z, "-" or blank; X= 0-9, A-Z, "-" or blank)
Sample Status:	Engineering sample
Applicant:	LITE-ON TECHNOLOGY CORP.
Test Date:	Dec. 9, 2015
Standards:	47 CFR FCC Part 15, Subpart B, Class B ICES-003:2012 Issue 5, Class B ANSI C63.4:2014

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by : Sharon Tsui , **Date:** Dec. 11, 2015

Sharon Tsui / Specialist

Approved by : Henry Lai , **Date:** Dec. 11, 2015

Henry Lai / Director

2 Summary of Test Results

47 CFR FCC Part 15, Subpart B / ICES-003:2012 Issue 5, Class B

ANSI C63.4:2014

FCC Clause	ICES-003 Clause	Test Item	Result/Remarks	Verdict
15.107	6.1	AC Power Line Conducted Emissions	Minimum passing Class B margin is -1.84 dB at 18.25781 MHz	Pass
15.109	6.2.1	Radiated Emissions up to 1 GHz	Minimum passing Class B margin is -6.85 dB at 32.27 MHz	Pass
	6.2.2	Radiated Emissions above 1 GHz	EUT's highest frequency is 25-130kHz	N/A

Note: 1. There is no deviation to the applied test methods and requirements covered by the scope of this report.
2. N/A: Not Applicable

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT:

The listed uncertainties are the worst case uncertainty for the entire range of measurement. Please note that the uncertainty values are provided for informational purposes only and are not used in determining the PASS/FAIL results.

Measurement	Frequency	Expended Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.78 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.20 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 Features of EUT

The tests reported herein were performed according to the method specified by LITE-ON TECHNOLOGY CORP., for detailed feature description, please refer to the manufacturer's specifications or user's manual.

3.2 General Description of EUT

Product	AC ADAPTER
Brand	LITEON
Test Model	PA-1081-11
Series Model	PA-1071-11YX, PA-1081-11YX (Y= A-Z, “-” or blank; X= 0-9, A-Z, “-” or blank)
Model Difference	Marketing differentiation
Sample Status	Engineering sample
Operating Software	N/A
Power Supply Rating	Rating: Refer to note as below Power Cord: Non-Shielded DC cable (1.1m) with one ferrite core
Accessory Device	N/A
Data Cable Supplied	N/A

Note:

The EUT is an AC ADAPTER (AC 3-Pin) which has the following models with ouput difference.

Model No.	AC I/P	DC O/P
PA-1071-11YX	100-240V, 50/60Hz, 1.5A	12V, 5.83A
PA-1081-11YX		12V, 6.67A
The “Y” in the model could be defined as A-Z, “-” or blank, and the “X” in the model could be defined as 0~9, A~Z or blank for marketing differentiation.		

3.3 Operating Modes of EUT and Determination of Worst Case Operating Mode

1. The EUT has been pre-tested under following test modes, and test mode 1 was the worst case.

Mode	X-CAPACITOR	THERMISTOR
	C001=0.33~0.47uF	TR001 (Optional) TR002 (Optional)
1	Minimum	X
2	Maximum	O

2. Test modes are presented in the report as below.

Test Item	Mode	X-CAPACITOR	THERMISTOR	Input Power	Test Condition
		C001=0.33~0.47uF	TR001 (Optional) TR002 (Optional)		
Conducted Emission Test	1	Minimum	X	120V/60Hz	Full Load
	2	Maximum	O		
Radiated Emission Test	2	Maximum	O		

3.4 Test Program Used and Operation Descriptions

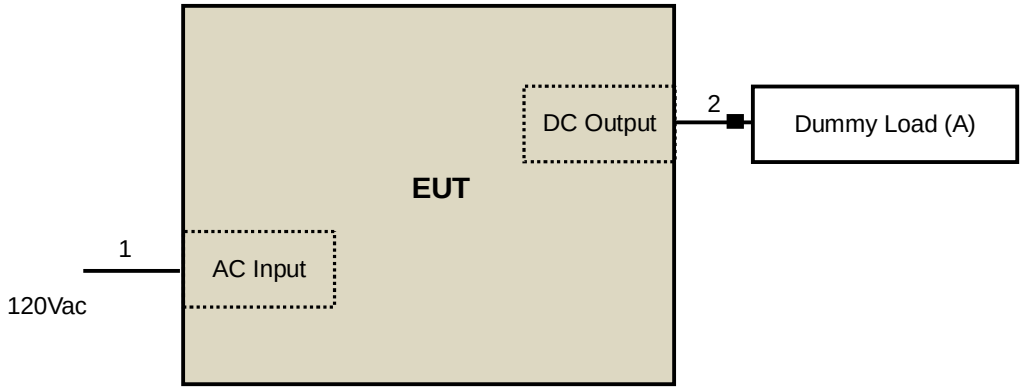
Set the EUT under full resistor load.

3.5 Primary Clock Frequencies of Internal Source

The highest frequency generated or used within the EUT or on which the EUT operates or tunes is 25-130kHz, provided by LITE-ON TECHNOLOGY CORP., for detailed internal source, please refer to the manufacturer's specifications.

4 Configuration and Connections with EUT

4.1 Connection Diagram of EUT and Peripheral Devices



4.2 Configuration of Peripheral Devices and Cable Connections

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	DUMMY LOAD	BVADT	L19B	L2-010028	N/A	Provided by Lab

Note: All power cords of the above support units are non-shielded (1.8m).

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	AC power cable	1	1.8	N	0	Provided by Lab
2.	DC cable	1	1.1	N	1	Supplied by client

Note: The core(s) is(are) originally attached to the cable(s).

5 Conducted Emissions at Mains Ports

5.1 Limits

Frequency (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

Notes: 1. The lower limit shall apply at the transition frequencies.
2. The limit decreases linearly with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

5.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
ROHDE & SCHWARZ TEST RECEIVER	ESCS 30	838251/021	Oct. 26, 2015	Oct. 25, 2016
ROHDE & SCHWARZ Artificial Mains Network (For EUT)	ENV216	101195	Apr. 27, 2015	Apr. 26, 2016
LISN With Adapter (for EUT)	AD10	C03Ada-002	Apr. 27, 2015	Apr. 26, 2016
EMCO L.I.S.N. (For peripherals)	3825/2	9504-2359	Jul. 27, 2015	Jul. 26, 2016
SCHWARZBECK Artificial Mains Network (For EUT)	NNLK8129	8129229	May 06, 2015	May 05, 2016
Software	Cond_V7.3.7	NA	NA	NA
RF cable (JYEBAO) With10dB PAD	5D-FB	Cable-C03.01	Sep. 23, 2015	Sep. 22, 2016
LYNICS Terminator (For EMCO LISN)	0900510	E1-01-300	Jan. 19, 2015	Jan. 18, 2016
LYNICS Terminator (For EMCO LISN)	0900510	E1-01-301	Jan. 29, 2015	Jan. 28, 2016
ROHDE & SCHWARZ Artificial Mains Network (For TV EUT)	ESH3-Z5	100220	Nov. 13, 2015	Nov. 12, 2016
LISN With Adapter (for TV EUT)	100220	N/A	Nov. 13, 2015	Nov. 12, 2016

Notes: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. 3.
3. The VCCI Site Registration No. C-274.
4. Tested Date: Dec. 9, 2015

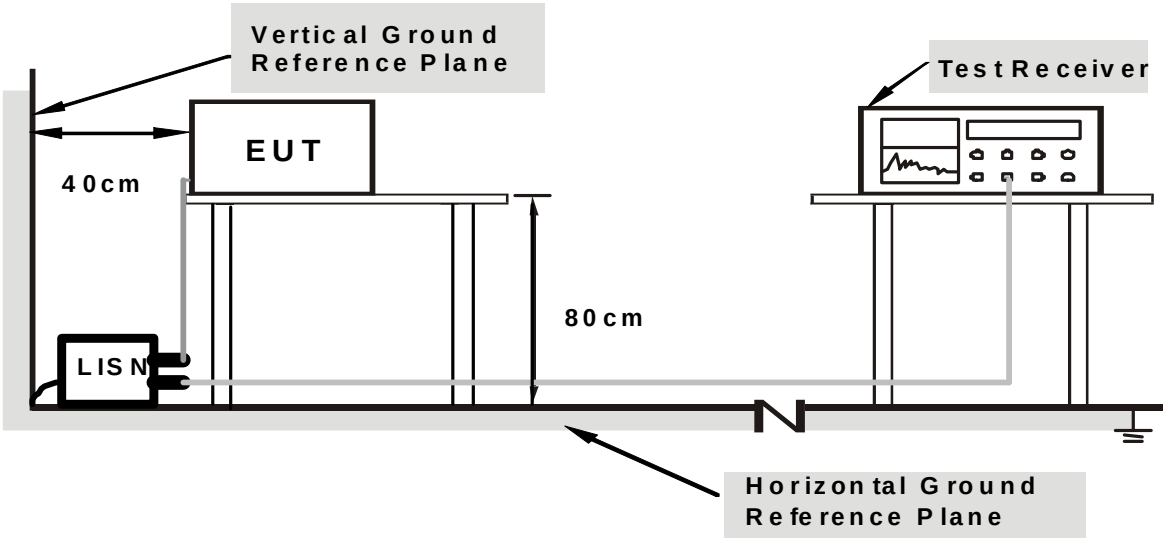
5.3 Test Arrangement

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

c. The test results of conducted emissions at mains ports are recorded of six worst margins for quasi-peak (mandatory) [and average (if necessary)] values against the limits at frequencies of interest unless the margin is 20 dB or greater.

Note: The resolution bandwidth and video bandwidth of test receiver is 9kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.



Note: Support units were connected to second LISN.

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

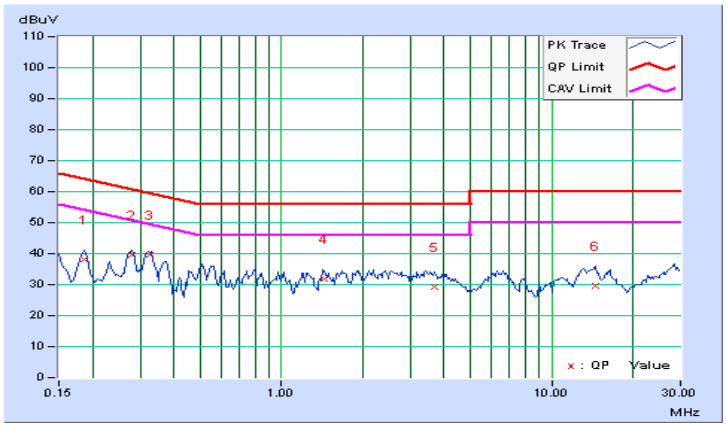
5.4 Test Results (1)

Frequency Range	150kHz ~ 30MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	**Environmental Conditions**	24℃, 76%RH
Tested by	Justin Liu		
Test Mode	Mode 1		

Phase Of Power : Line (L)										
No	**Frequency (MHz)**	**Correction Factor (dB)**	**Reading Value (dBuV)**		**Emission Level (dBuV)**		**Limit (dBuV)**		**Margin (dB)**	
			Q.P.	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**
1	0.18516	9.69	28.63	27.78	38.32	37.47	64.25	54.25	-25.93	-16.78
2	0.27891	9.69	29.81	28.77	39.50	38.46	60.85	50.85	-21.35	-12.39
3	0.32569	9.69	29.90	28.48	39.59	38.17	59.56	49.56	-19.97	-11.39
4	1.43478	9.71	22.27	15.44	31.98	25.15	56.00	46.00	-24.02	-20.85
5	3.69531	9.75	19.58	12.75	29.33	22.50	56.00	46.00	-26.67	-23.50
6	14.53906	9.87	19.75	13.00	29.62	22.87	60.00	50.00	-30.38	-27.13

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

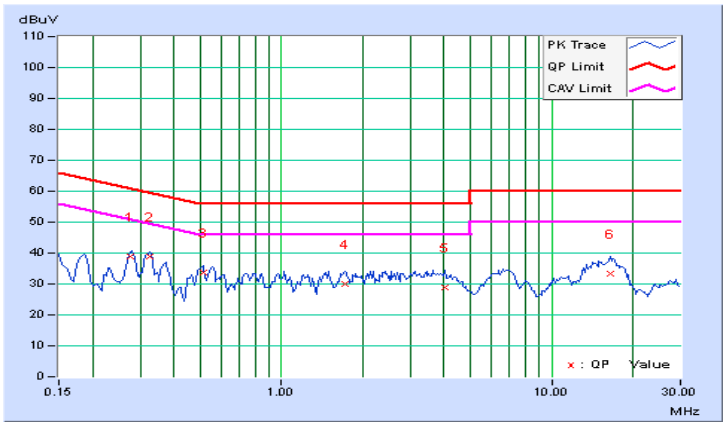


Frequency Range	150kHz ~ 30MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	**Environmental Conditions**	24℃, 76%RH
Tested by	Justin Liu		
Test Mode	Mode 1		

Phase Of Power : Neutral (N)										
No	**Frequency (MHz)**	**Correction Factor (dB)**	**Reading Value (dBuV)**		**Emission Level (dBuV)**		**Limit (dBuV)**		**Margin (dB)**	
			Q.P.	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**
1	0.27755	9.65	29.23	28.12	38.88	37.77	60.89	50.89	-22.01	-13.12
2	0.32460	9.65	29.18	27.93	38.83	37.58	59.59	49.59	-20.76	-12.01
3	0.51328	9.65	24.02	19.74	33.67	29.39	56.00	46.00	-22.33	-16.61
4	1.71484	9.69	20.42	13.24	30.11	22.93	56.00	46.00	-25.89	-23.07
5	4.01563	9.72	19.21	12.42	28.93	22.14	56.00	46.00	-27.07	-23.86
6	16.41797	9.89	23.41	15.94	33.30	25.83	60.00	50.00	-26.70	-24.17

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



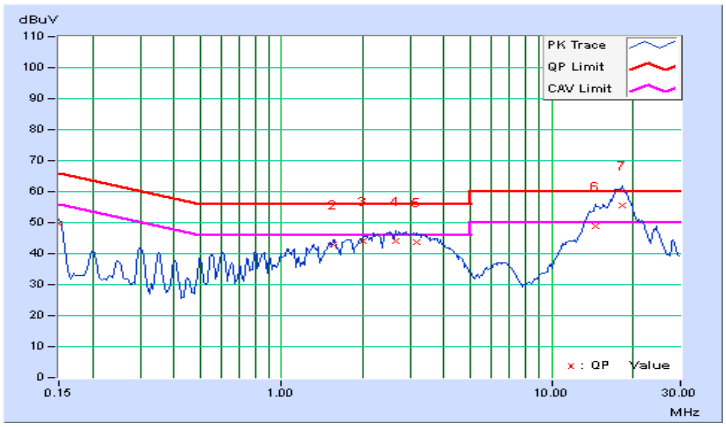
5.5 Test Results (2)

Frequency Range	150kHz ~ 30MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	**Environmental Conditions**	24℃, 76%RH
Tested by	Justin Liu		
Test Mode	Mode 2		

Phase Of Power : Line (L)										
No	**Frequency (MHz)**	**Correction Factor (dB)**	**Reading Value (dBuV)**		**Emission Level (dBuV)**		**Limit (dBuV)**		**Margin (dB)**	
			Q.P.	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**
1	0.15000	9.69	40.01	39.30	49.70	48.99	66.00	56.00	-16.30	-7.01
2	1.56132	9.72	33.23	24.81	42.95	34.53	56.00	46.00	-13.05	-11.47
3	2.01172	9.73	34.27	25.76	44.00	35.49	56.00	46.00	-12.00	-10.51
4	2.64063	9.74	34.32	27.04	44.06	36.78	56.00	46.00	-11.94	-9.22
5	3.16406	9.74	34.07	25.94	43.81	35.68	56.00	46.00	-12.19	-10.32
6	14.53125	9.87	39.08	33.04	48.95	42.91	60.00	50.00	-11.05	-7.09
7	**18.25781**	**9.90**	**45.66**	**38.26**	**55.56**	**48.16**	**60.00**	**50.00**	**-4.44**	**-1.84**

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

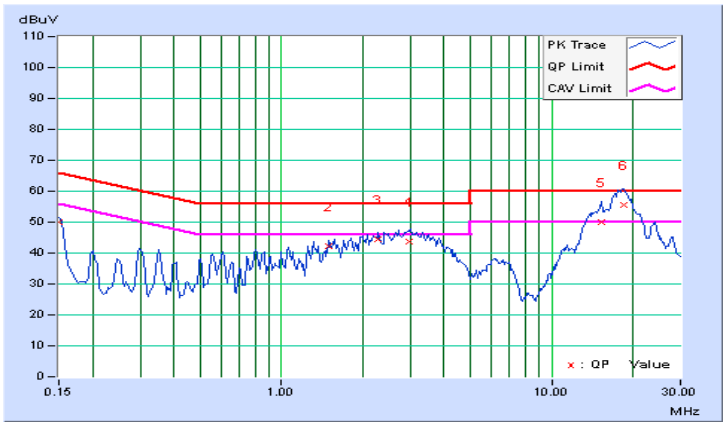


Frequency Range	150kHz ~ 30MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	**Environmental Conditions**	24℃, 76%RH
Tested by	Justin Liu		
Test Mode	Mode 2		

Phase Of Power : Neutral (N)										
No	**Frequency (MHz)**	**Correction Factor (dB)**	**Reading Value (dBuV)**		**Emission Level (dBuV)**		**Limit (dBuV)**		**Margin (dB)**	
			Q.P.	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**
1	0.15000	9.65	40.17	39.56	49.82	49.21	66.00	56.00	-16.18	-6.79
2	1.50391	9.69	32.40	25.52	42.09	35.21	56.00	46.00	-13.91	-10.79
3	2.27344	9.70	34.75	26.10	44.45	35.80	56.00	46.00	-11.55	-10.20
4	2.98719	9.71	33.96	26.52	43.67	36.23	56.00	46.00	-12.33	-9.77
5	15.31250	9.87	40.04	33.78	49.91	43.65	60.00	50.00	-10.09	-6.35
6	18.61328	9.92	45.66	37.40	55.58	47.32	60.00	50.00	-4.42	-2.68

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



6 Radiated Emissions up to 1 GHz

6.1 Limits

Emissions radiated outside of the specified bands, shall be according to the general radiated limits as following:

Radiated Emissions Limits at 10 meters (dBμV/m)				
Frequencies (MHz)	FCC 15B / ICES-003, Class A	FCC 15B / ICES-003, Class B	CISPR 22, Class A	CISPR 22, Class B
30-88	39	29.5	40	30
88-216	43.5	33.1		
216-230	46.4	35.6		
230-960			47	37
960-1000	49.5	43.5		

Radiated Emissions Limits at 3 meters (dBμV/m)				
Frequencies (MHz)	FCC 15B / ICES-003, Class A	FCC 15B / ICES-003, Class B	CISPR 22, Class A	CISPR 22, Class B
30-88	49.5	40	50.5	40.5
88-216	54	43.5		
216-230	56.9	46		
230-960			57.5	47.5
960-1000	60	54		

Notes: 1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. QP detector shall be applied if not specified.

6.2 Test Instruments

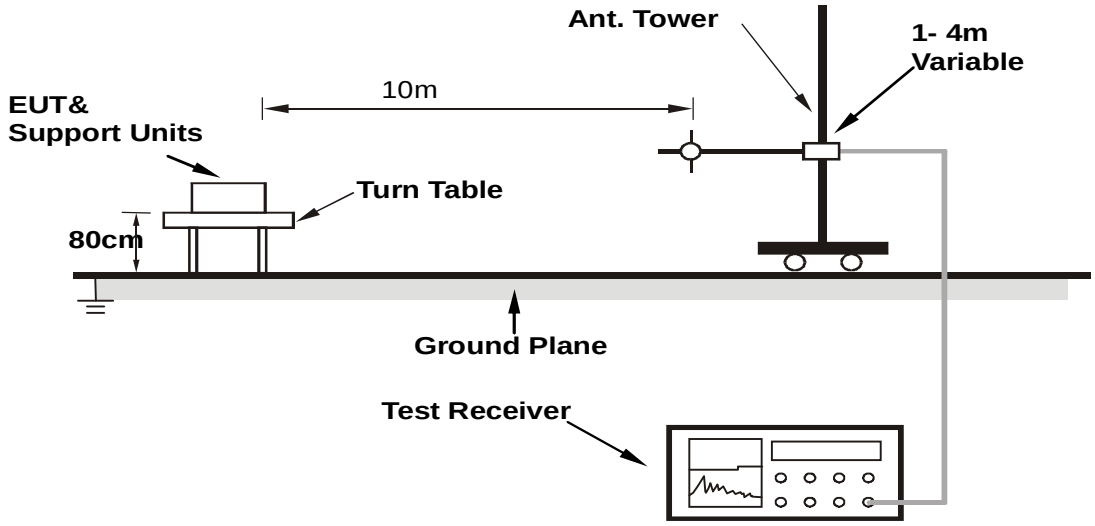
Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
ROHDE & SCHWARZ TEST RECEIVER	ESCS 30	845552/004	Sep. 03, 2015	Sep. 02, 2016
Schaffner Bilog Antenna	CBL6111D	22262	Feb. 11, 2015	Feb. 10, 2016
ADT. Turn Table	TT100	0205	NA	NA
ADT. Tower	AT100	0205	NA	NA
Software	Radiated_V7.6.15.9.4	NA	NA	NA
ADT RF Switches BOX	EMH-011	1001	Oct. 29, 2015	Oct. 28, 2016
WOKEN RF cable	8D	CABLE-ST2-01	Oct. 29, 2015	Oct. 28, 2016

Notes: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Open Site No. 2.
3. The VCCI Site Registration No. R-237.
4. The FCC Site Registration No. 90424.
5. Tested Date: Dec. 9, 2015

6.3 Test Arrangement

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at an accredited test facility. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is up to 1 GHz.

Note: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for quasi-peak detection (QP) at frequency up to 1GHz.



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

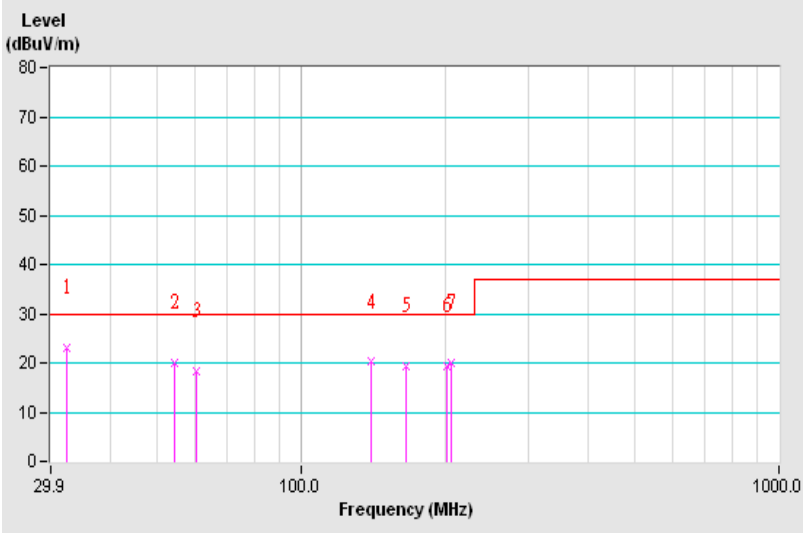
6.4 Test Results

Frequency Range	30MHz ~ 1GHz	**Detector Function & Resolution Bandwidth**	Peak (PK), 120kHz
Input Power	120Vac, 60Hz	**Environmental Conditions**	30℃, 70%RH
Tested by	Vincent Lin		
Test Mode	Mode 1		

Antenna Polarity & Test Distance : Horizontal at 10 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	**32.27**	**23.15 PK**	**30.00**	**-6.85**	**4.00 H**	**224**	**5.50**	**17.65**
2	54.28	20.13 PK	30.00	-9.87	4.00 H	319	12.39	7.74
3	60.42	18.25 PK	30.00	-11.75	4.00 H	247	10.69	7.56
4	140.28	20.19 PK	30.00	-9.81	4.00 H	102	6.41	13.78
5	166.28	19.31 PK	30.00	-10.69	4.00 H	212	6.87	12.44
6	202.15	19.36 PK	30.00	-10.64	4.00 H	154	7.92	11.44
7	206.27	20.03 PK	30.00	-9.97	4.00 H	337	8.54	11.49

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value

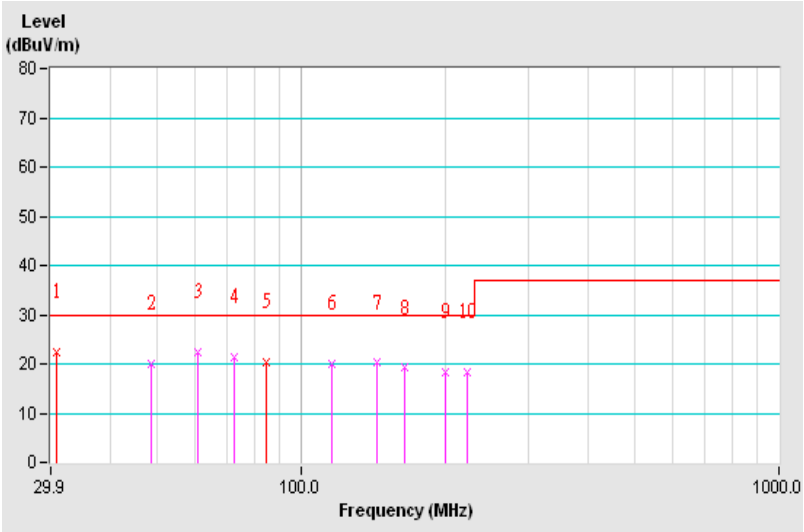


Frequency Range	30MHz ~ 1GHz	**Detector Function & Resolution Bandwidth**	Peak (PK) / Quasi-Peak (QP), 120kHz
Input Power	120Vac, 60Hz	**Environmental Conditions**	30℃, 70%RH
Tested by	Vincent Lin		
Test Mode	Mode 1		

Antenna Polarity & Test Distance : Vertical at 10 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	30.75	22.31 QP	30.00	-7.69	1.07 V	227	3.61	18.70
2	48.39	20.13 PK	30.00	-9.87	1.15 V	313	10.64	9.49
3	60.86	22.37 PK	30.00	-7.63	1.75 V	339	14.89	7.48
4	72.34	21.49 PK	30.00	-8.51	1.36 V	131	13.58	7.91
5	84.32	20.33 QP	30.00	-9.67	1.64 V	227	10.81	9.52
6	116.27	20.01 PK	30.00	-9.99	1.00 V	115	6.79	13.22
7	144.27	20.19 PK	30.00	-9.81	1.00 V	210	6.58	13.61
8	164.28	19.23 PK	30.00	-10.77	1.00 V	141	6.82	12.41
9	200.64	18.27 PK	30.00	-11.73	1.00 V	213	6.92	11.35
10	222.21	18.27 PK	30.00	-11.73	1.00 V	101	5.78	12.49

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value



7 Pictures of Test Arrangements

7.1 Conducted Emissions at Mains Ports





7.2 Radiated Emissions up to 1 GHz





Appendix – Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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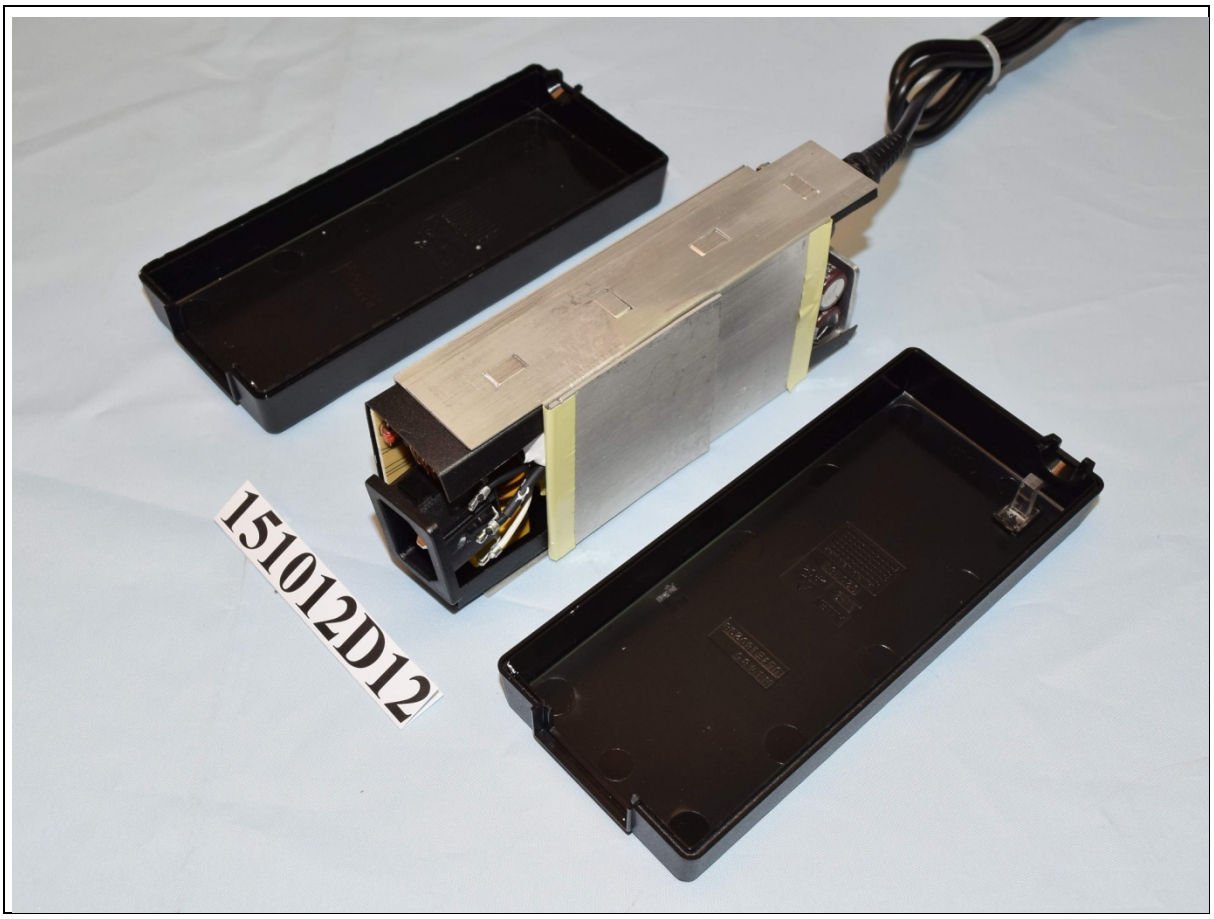
Email: service.adt@tw.bureauveritas.com
Web Site: www.bureauveritas-adt.com

The address and road map of all our labs can be found in our web site also.

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