

Manufacturing Test Requirement

130W Notebook Adapter

Part Number : PA-1131-29D1

Approval By : Alex CC Chen

Customer	Rev.	Written By	Effective Date	LITE-ON Technology Corp.
DELL	A	Leo Ku	Feb/06/2018	SHEET 1 of 8
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Revision HistoryX01,2017/08/14

-Initial release.

X02,2017/11/13

-Add 6. ATE setting.

X03,2017/12/01

-Update 3.2 Over current protection.

X04,2017/12/28

-Update 3.2 Over current protection.

X05,2018/01/08

-Update 6. ATE setting.

A01,2018/02/02A02,2018/02/06

-Update 2.9 Power loss

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1. Input / Output Requirement

Input Voltage	Input Frequency
90Vac ~ 264Vac	47Hz ~ 63Hz

DC Output	MIN	MAX	PEAK	UNIT
19.5V	0	6.67	8.47(4s)	A

2. Detail Description:

2.1. Inrush current

Test condition			Design Requirement
AC input	DC output		
115V/60Hz	+19.5	6.67A	140A Peak(cold)
230V/50Hz			

2.2. Rated current

Test condition			Design Requirement
AC input	DC output		
90V/60Hz	+19.5V	6.67A	1.8A(max)

2.3. Power factor

Test condition			Design Requirement
AC input	DC output		
115V/230V	+19.5V	6.67A	0.92(min)
115V/230V	+19.5V	2.67A	0.6(min)

2.4. Hold-up time

Test condition			Design Requirement
AC input	DC output		
90V/60Hz	+19.5V	6.67A	REF

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2.5. Turn-on time

Test condition			Design Requirement
AC input	DC output		
90V/47Hz	+19.5V	6.67A	3 sec.(max)
240V/50Hz			

2.6. Output rise time

Test condition			Design Requirement
AC input	DC output		
90V/60Hz	+19.5V	6.67A	2~400 mS
240V/50Hz			

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

2.7. Power supply efficiency

Test condition			Design Requirement
AC input	DC output		
115V/60Hz	+19.5V	6.67A	88%(Min)
230V/50Hz			89%(Min)

Average Efficiency value of 25%, 50%, 75%, 100% load condition shall be more than **88%** (after B/I 30min) and **87%**(at cold start) with 115VAC
89% (after B/I 30min) and **88%**(at cold start) with 230VAC

2.8. Full load power supply efficiency

Test condition			Design Requirement
AC input	DC output		
90V/60Hz	+19.5V	6.67A	86% (cold start)
			87% (B/I 30min)

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2.9. Power loss

Test condition				Design Requirement
AC input		DC output		
115V/60Hz	230V/50Hz	+19.5V	0A	0.21W(Max)
			0.0128A	0.5W(Max)

Note1: RD and DQE: Using the power meter of YOKOGAWA WT-210
(Integration mode, Integration period: 3 minute, current level: 0.5A and warm up at no load 5 minute. The efficiency shall higher than 50%).

Note2: For **mass production line** auto-test, Test method: Delay 2S,
then integrate 10S.

Design Requirement:

When Pout=0W, Pin should be less than 0.35W.

When Pout=0.25W, Pin should be less than 0.78W.

2.10. Output combine regulation & Ripple/Noise test

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

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

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

Test condition			Design Requirement	
AC input	DC output		Item	
90V/47Hz	+19.5V	0A	Ripple/Noise	<500mVp-p
			Regulation	18.5~20.5V
90V/47Hz		6.67A	Ripple/Noise	<500mVp-p
			Regulation	18.5~20.5V
100V/60Hz		0A	Ripple/Noise	<500mVp-p
			Regulation	18.5~20.5V
100V/60Hz		6.67A	Ripple/Noise	<500mVp-p
			Regulation	18.5~20.5V
240V/50Hz		0A	Ripple/Noise	<500mVp-p
			Regulation	18.5~20.5V
240V/50Hz		6.67A	Ripple/Noise	<500mVp-p
			Regulation	18.5~20.5V

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264V/50Hz	+19.5V	0A	Ripple/Noise	<500mVp-p
			Regulation	18.5~20.5V
264V/50Hz		6.67A	Ripple/Noise	<500mVp-p
			Regulation	18.5~20.5V

2.11. Dynamic load

Test condition			Design Requirement
AC input	DC output		
90V/60Hz	18~21V	0.05~6.0A	Rise: 0.25A/uS Fall: 0.25A/uS Frequency: 50Hz~10KHz
100V/60Hz			
240V/50Hz			
265V/50Hz			

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

2.12. Peak load

Test condition			Design Requirement
AC input	DC output		
90V/60Hz	18~21V	6.67~10.6A(10mS)	Rise: 0.25A/uS Fall: 0.25A/uS Frequency: 50Hz~10KHz
100V/60Hz			
240V/50Hz			
265V/50Hz			

3. Protection

3.1. Over voltage protection

Test condition			Design Requirement		
AC input	DC output				
90V/60Hz	+19.5V	0A	MIN	MAX	Shutdown & Latch off
240V/50Hz		6.67A	21.2	25	

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3.2. Over current protection

Test condition			Design Requirement
AC input	DC output		
90V/60Hz	+19.5V	8~12A	Shutdown & Latch off
240V/50Hz			

3.3. Short circuit protection

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

3.4. Over temperature protection

When the inside temperature of PSU rise to 105 ~ 125 degree C, the PSU will shutdown and latch off until the AC reset. Please short the RT100 to make sure the OTP circuit could work well. It simulation the over temperature condition occur.

4. HI-POT test

Apply DC4242V on primary to secondary 1sec. No component, no arcing, no noise, and the cut off current shall below 10mA.

5. Insulation resistance

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

6. ATE Setting

Input Voltage:

	Minimum	Maximum	Nominal
Low line range	90VAC	139VAC	100-127VAC
High line range	180VAC	264VAC	200-240VAC

According to supply mains in all of the world, it can be classified low line range and high line range. For ATE setting to avoid that input voltage high line (180~264VAC) switch to low line(90~139VAC).

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