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Ref. Report No.

LPS-G16072102

TEST REPORT

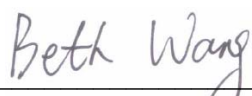
Energy Efficiency Regulations

Energy Efficiency of External Power Supplies

Applicant.....: Dongguan GaoYi Electronic Co., Ltd
Address.....: West Shayao Road, Xisha Road, Shijie Town, Dongguan City,
Guangdong P.R.China
Manufacturer.....: Same as applicant
Address.....: Same as applicant
Factory.....: Same as applicant
Address.....: Same as applicant
Product name.....: Class 2 Power Supply
Output Cord Length (cm).....: 180
Trade mark.....: 
Model No.....: RSS1002-072120-W2
Ratings.....: Input: 100-240V~, 50/60Hz, 0.2A;
Output: 12.0Vdc, 0.6A, 7.2W MAX
Standard.....: US CEC: Appliance Efficiency Regulations (California Code of
Regulations, Title 20, Sections 1601 through 1608),
dated July, 2015(CEC-400-2015-021)
Date of Receiver.....: July 21, 2016
Date of Test.....: July 25, 2016
Date of Issue.....: July 27, 2016
Testing Laboratory.....: Dongguan Lepont Testing Service Co., Ltd.
Address.....: No.117 Ting Shan Industrial Zone, Houjie Town, Dongguan,
Guangdong, P.R. China
Test Report Form No.....: LPS-G16072102
Test Result.....: PASS

This Test Report is Issued Under the Authority of:

Tested By



Beth Wang/Engineer

Approved By



Cory Zhou/Reviewer

Test Report issued under the responsibility of:

Dongguan Lepont Testing Service Co., Ltd.

Copy of marking plate(Representative):

The artwork below may be only a draft.



General product information:

1. The submitted samples were found to comply with the above standard.
2. This test results relate only to the submit samples.

Note: This report shall not be reproduced except for authorized by testing laboratory.

General condition

1. Test Room

The test was carried out in a room that has an air speed close to the UUT of ≤ 0.5 m/s. The ambient temperature was maintained at $20^{\circ}\text{C} \pm 5^{\circ}\text{C}$ throughout the test.

2. Test Voltage

The input voltage is within the specified voltage $\pm 1\%$ and the specified frequency $\pm 1\%$. The UUT was tested at rated supply as mentioned in Summary of testing. The input power source is capable of delivering at least 10 times the nameplate input power of the UUT. The THD of the supply voltage when supplying the UUT in the specified mode was not exceeding 2%, up to and including the 13th harmonic.

3. Test Setup

The UUT was operated at 100% of rated current output for at least 30 minutes immediately prior to conducting efficiency measurements.

4. THD

The THD of the input voltage shall be ≤ 2 percent, up to and including the 13th harmonic. The crest factor of the input voltage shall be between 1.34 and 1.49.

5. Load Conditions

The UUT was tested at four active mode load conditions and the no-load condition according to table below by using electronic load.

Percentage of Nameplate Output Current	
Load Condition 1	100% $\pm$ 2%
Load Condition 2	75% $\pm$ 2%
Load Condition 3	50% $\pm$ 2%
Load Condition 4	25% $\pm$ 2%
Load Condition 5	0%

The 2% allowance is of nameplate output current, not of the calculated current value. For example, a UUT at Load Condition 3 may be tested in a range from 48% to 52% of rated output current.

International Efficiency Marking Protocol for External Power Supplies Version 3.0, September 2013

Mark	Performance Requirements				
	Nameplate Output Power (P _{no})	No-Load Mode Power	Nameplate Output Power (P _{no})	Average Efficiency in Active Mode	Power Factor
I	Used if none of the other criteria are met.				
II	0 to ≤ 10 watts	≤ 0.75	0 to < 1 watt	≥ 0.39 * P _{no}	Not applicable
	> 10 to 250 watts	≤ 1.0	1 to < 49 watts	≥ 0.107 x Ln(P _{no}) + 0.39	
			> 49 watts	≥ 0.82	
III	0 to < 10 watts	≤ 0.5	0 to 1 watt	≥ 0.49 * P _{no}	Not applicable
	10 to 250 watts	≤ 0.75	> 1 to < 49 watts	≥ 0.09 * Ln(P _{no}) + 0.49	
			>49 to 250 watts	≥ 0.84	
IV	0 to 250 watts	≤ 0.5	0 to 1 watt	≥ 0.5 * P _{no}	Not applicable
			1 to 51 watts	≥ 0.09 * Ln(P _{no}) + 0.5	
			>51 to 250 watts	≥ 0.85	
V	0 to < 50 watts	≤ 0.5 for ac-ac; ≤ 0.3 for ac-dc	0 to ≤ 1 watt	Standard: ≥ 0.480 *P _{no} + 0.140 Low Voltage: ≥0.497 * P _{no} + 0.067	EPSs with ≥ 100 watts input power must have a true power factor ≥ 0.9 at 100% of rated load when tested at 115 volts/60Hz.
	≥ 50 to ≤ 250 watts	≤ 0.5	> 1 to 49 watts	Standard: ≥ [0.0626* Ln(P _{no})] + 0.622 Low Voltage: ≥[0.0750 * Ln(P _{no})]+ 0.561	
			> 49 to 250 watts	Standard: ≥ 0.870 Low Voltage: ≥ 0.860	
VI	Single-Voltage				Not Applicable
	0 to ≤ 49 W	AC-DC: ≤ 0.100 AC-AC: ≤ 0.210	0 to ≤ 1 W	Basic Voltage: ≥ 0.5 * P _{no} + 0.16 Low Voltage: ≥ 0.517 * P _{no} + 0.087	
			1 to ≤ 49 W	Basic Voltage: ≥ 0.071* ln(P _{no}) – 0.0014*P _{no} + 0.67 Low Voltage: ≥ 0.0834 * ln(P _{no}) – 0.0014 * P _{no} + 0.609	
	>49 to ≤ 250 W	≤ 0.210	>49 to ≤ 250 W	Basic Voltage: ≥ 0.880 Low Voltage: ≥ 0.870	
	> 250 W	≤ 0.500	>250 W	≥ 0.875	
	Multiple-Voltage				
	Any	≤ 0.300	0 to ≤ 1 W	≥ 0.497 * P _{no} + 0.067	
			1 to ≤ 49 W	≥ 0.075 * ln(P _{no}) + 0.561	
			49 W	≥ 0.860	
VII	Reserved for future use				

U.S. DOE 10 CFR Part 430 Final Rule, published on Feb. 10, 2014 (Level VI) for no-load electric power consumption and average active efficiency of external power supplies

**Table I-1: Energy Conservation Standards for Direct Operation EPSs
(Compliance Starting Feb. 10, 2016)**

Single-Voltage External AC-DC or AC-AC Power Supply, Basic-Voltage			
Nameplate Output Power (Pno)	Minimum Average Efficiency in Active Mode		Verdict
≤ 1W	≥ 0.5 ×Pno + 0.16		N/A
1 W < to ≤ 49 W	≥ 0.071 × ln(Pno) – 0.0014 ×Pno +0.67		P
49W < to ≤ 250W	≥ 0.880		N/A
> 250W	≥ 0.875		N/A
Nameplate Output Power (Pno)	Maximum Power in No-Load Mode		Verdict
	☐ Ac-Ac EPS	☒ Ac-Dc EPS	
≤ 1W	≤ 0.21W	≤ 0.10W	N/A
1 W < to ≤ 49 W	≤ 0.21W	≤ 0.10W	P
49W < to ≤ 250W	≤ 0.21W		N/A
> 250W	≤ 0.50W		N/A

Single-Voltage External AC-DC or AC-AC Power Supply, Low-Voltage			
Nameplate Output Power (Pno)	Minimum Average Efficiency in Active Mode		Verdict
≤ 1W	≥ 0.517 × Pout + 0.087		N/A
1 W < to ≤ 49 W	≥ 0.0834 × ln(Pno) – 0.0014 × Pno + 0.609		N/A
49W < to ≤ 250W	≥ 0.870		N/A
> 250W	≥ 0.875		N/A
Nameplate Output Power (Pno)	Maximum Power in No-Load Mode		Verdict
	☐ Ac-Ac EPS	☐ Ac-Dc EPS	
≤ 1W	≤ 0.21W	≤ 0.10W	N/A
1 W < to ≤ 49 W	≤ 0.21W	≤ 0.10W	N/A
49W < to ≤ 250W	≤ 0.21W		N/A
> 250W	≤ 0.50W		N/A

Test data

Sample Model: RSS1002-072120-W2		115Vac / 60Hz			
Load condition	No Load	Active load of the nameplate (12Vdc, 0.6A)			
Percent of Nameplate Current	0%	25%	50%	75%	100%
Output voltage(Vdc)	12.11	12.09	12.34	12.28	12.23
Output Current(mA)	--	150	300	450	600
Active Output Power(W)	--	1.814	3.702	5.526	7.338
Input Power(W)	0.059	2.237	4.485	6.694	8.903
Total Harmonic Distortion(THD,V%)	1.203	1.223	1.364	1.566	1.722
True Power Factor(W/VA)	0.255	0.456	0.507	0.544	0.585
Efficiency(%)	--	81.09	82.54	82.68	82.42
Average Efficiency(%)	--	82.18			

Sample Model: RSS1002-072120-W2		230Vac / 50Hz			
Load condition	No Load	Active load of the nameplate (12Vdc, .0.6A)			
Percent of Nameplate Current	0%	25%	50%	75%	100%
Output voltage(Vdc)	12.11	12.06	12.28	12.28	12.22
Output Current(mA)	--	150	300	450	600
Active Output Power(W)	--	1.809	3.684	5.526	7.332
Input Power(W)	0.078	2.299	4.493	6.682	8.836
Total Harmonic Distortion(THD,V%)	0.924	0.863	0.895	0.941	1.011
True Power Factor(W/VA)	0.207	0.446	0.521	0.538	0.543
Efficiency(%)	--	78.69	81.99	82.07	72.98
Average Efficiency(%)	--	81.59			

TEST RESULTS AND REQUIREMENT:

Test Results:

	Model No.	Test at 115V, 60Hz	Test at 230V, 50Hz	Efficiency requirements
No load power (W)	RSS1002-072120-W2	0.059	0.078	≤ 0.10
Average Efficiency (%)	RSS1002-072120-W2	82.18	81.59	≥ 80.01
Verdict	---	PASS	PASS	---

Photo documentation:



Photo 1



Photo 2

Equipment used for measurement

Test Equipment List					
Equipment Name	Manufacturer	Model #	Reg. No.	Cal. Date	Next Cal.
Power Meter	YOKOGAWA	WT310	LEP014-006	2016-03-16	2017-03-15
Digital Multimeter	FLUKE	Fluke17B	LEP001-001	2016-03-16	2017-03-15
DC Electric load	ARRAY	3710A	LEP015-001	2016-03-16	2017-03-15
Measuring Tape	Henan Yu Cheng Xinxin Measuring Factory	5M	LEP110-001	2016-03-16	2017-03-15
Temperature-Humidity Recorder	MaoDi Electronic Co., Ltd.	DR-40-232	LEP013-001	2016-03-16	2017-03-15

-----End of Report-----