



TEST REPORT	
Performance of external power supplies	
Report Reference No.	PTC21022304801S-EP01
Tested by (name + signature)	Irving Huang 
Approved by (name + signature)	Chris Du 
Date of issue	Mar-12-2021
Total number of pages	10
Testing Laboratory	Precise Testing & Certification (Guangdong) Co., Ltd.
Address	Building 1, No. 6, Tongxin Road, Dongcheng Street, Dongguan, Guangdong, China.
Applicant's name	Guangdong Green Power Technology Co.,Ltd.
Address	Room 401,Building NO.2,Hongyuan Road 6,Huangpu District,Guangzhou City
Test specification:	
Test method	EN 50563: 2011 + A1: 2013 External a.c. - d.c. and a.c. - a.c. power supplies – Determination of no-load power and average efficiency of active modes. EN 50564: 2011: Electrical and electronic household and office equipment-Measurement of low power consumption.
Test procedure	COMMISSION REGULATION (EC) No 278/2009 COMMISSION REGULATION (EU) 2019/1782
Non-standard test method	None
Test item description	AC/DC ADAPTER
Trademark / brand	绿硕能/LSN
Manufacturer	Same as Applicant
Address	Same as Applicant
Factory	Same as Applicant
Address	Same as Applicant
Model/Type reference	LSN-9G-1950334
Rating(s)	Input: 100-240VAC, 50/60Hz, 1.5A Output: DC 19.5V, 3.34A, 65W

**buduTest item particulars**

Type of plug / inlet.....: ☐ EU plug; ☐ UK plug; ☒ Class I inlet; ☐ Class II inlet;
Plug configuration.....: ☐ The plug is integral with the EUT;
☒ The plug is separate from the EUT
Length of power cord, if any.....: See below
Output cord length.....: 180 cm
Output cord cross-sectional areas.....: 18 AWG
Output plug type.....: ☒ Single pin type; ☐ USB terminal; ☐ Micro USB; ☐ Lightning;
☐ USB-type-C; ☐ others (specify:
Number of output port.....: ☒ Single port; ☐ Double ports; ☐ others (specify:
Output voltage type: ☐ Single-Voltage output; ☐ Multiple-Voltage output;
☒ Adaptive Voltage output;
☐ Switch-selectable single voltage output
Modification to connectors for testing...: Yes
With built in switch.....: No
Product powered by EUT.....: Not known
Other features.....: Not known

Summary of testing:

The submitted samples complied with

- ☒ ERP: Stage II requirements of COMMISSION REGULATION (EC) No 278/2009
- ☒ ERP: Requirements of COMMISSION REGULATION (EU) 2019/1782
- ☐ CoC: Tier 2 requirements of Code of Conduct on Energy Efficiency of External Power Supplies, Ver. 5
- ☒ Other: International Efficiency Marking Protocol for External Power Supplies - Level VI under 230V~, 50Hz.

This sample shall meet the requirement of International Efficiency Marking Protocol for External Power Supplies Version 3.0, September 2013 - Level VI under 115 V~, 60 Hz. Relevant test data were not considered in this report.

When determining the test conclusion, the Measurement Uncertainty of test has been considered.

Measurements of power of 0.50 W or greater was made with an uncertainty of less than or equal to 2 % at the 95 % confidence level.

Measurements of power of less than 0.50 W was made with an uncertainty of less than or equal to 0.01 W at the 95 % confidence level.



Copy of marking plate



Remark: the above marking plate is only a draft artwork to show the product ratings and model No.

**Testing**

Date of receipt of test item.....: Mar-10-2021

No. of sample received.....: 1

Date (s) of performance of tests.....: Mar-10-2021 to Mar-12-2021

General remarks:

This test report shall not be reproduced except in full without the written approval of the testing laboratory.

The test results presented in this report relate only to the item tested.

“(see remark #)” refers to a remark appended to the report.

“(see appended table)” refers to a table appended to the report.

Throughout this report a comma is used as the decimal separator.

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

TEST DESCRIPTION**Preparing for test:**

- a. The built-in switch was in the “on” position.
- b. The metering equipments were connected to the output and the efficiency was measured from the cord immediately adjacent to the output connector.

Load condition:

A set of variable resistive loads was used to load the power supply to provide all active mode load conditions.

Test Conditions for Measurement:

1. The EUT was operated at 100% of nameplate current output for at least 30 minutes, at rated voltage and frequency.
2. After the warm up period, the input power was monitor for a period of 5 minutes. Under the stable power level condition was established as per standard, the measurement was recorded -at the end of the 5 minutes period.
3. If input power is not stable over a 5 minutes period, the average power over the time for both input and output were measured.
4. Efficiency measurement was conducted in sequence form load condition 1 to load condition 6 as per standard.
5. 5. If the external power supply UUT incorporates manual ON-OFF switches, the UUT shall be placed in OFF mode, and its power consumption shall be measured and recorded at “Load Condition 6”. In OFF mode, all manual ON-OFF switches shall be placed in the “OFF” position.
6. Efficiency was calculated by dividing the measured active output power at the given load condition by the active ac input power measured at that load condition. Then the average efficiency was calculated and reported as the arithmetic mean of the efficiency values calculated.



Percentage of rated output current	
Load condition	Percentage
1	100 +/- 2%
2	75 +/- 2%
3	50 +/- 2%
4	25 +/- 2%
5	10 +/- 1%
6	0%(no-load condition)
NOTE The 2 % relates to maximum deviation from the target percentage value. For example, an external power supply at load condition 3 may be tested in a range from 48 % to 52 % of the rated output current.	

Proportional allocation method for loading multi-voltage external power supplies:

1. Consider a multiple-voltage power supply with N output busses, and nameplate output voltages $V_1, \dots, V_N$, corresponding output current ratings $I_1, \dots, I_N$, and a nameplate output power P.
2. The derating factor, D, shall be calculated by dividing the power supply nameplate output power P by the sum of the nameplate output powers of the individual output busses, equal to the product of bus nameplate output voltage and current I_i/V_i , as follows:

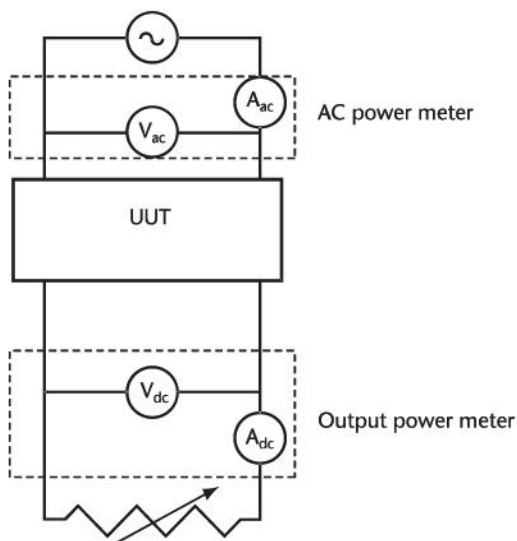
$$D = \frac{P}{\sum_{i=1}^N V_i I_i}$$

Where ↵
D = derating factor ↵
P = nameplate output power ↵
N = output busses ↵
 $V_{1, \dots, N}$ = nameplate output voltage ↵
 $I_{1, \dots, N}$ = nameplate output current ratings ↵

If $D \geq 1$, then loading every bus to its nameplate output current does not exceed the overall nameplate output power for the power supply. In this case, each output bus shall simply be loaded to the percentages of its nameplate output current. However, if $D < 1$, it is an indication that loading each bus to its nameplate output current will exceed the overall nameplate output power for the power supply. In this case, and at each load condition, each output bus shall be loaded to the appropriate percentage of its nameplate output current listed, multiplied by the derating factor D.

3. Some multiple-voltage power supplies might require a minimum output current for each output bus of the power supply for correct operation. In these cases, the load current for each output at Loading Condition 4 in Table 2 shall be greater than the minimum output current requirement. Thus, if the test method's calculated load current for a given voltage bus is smaller than the minimum output current requirement, the minimum output current shall be used to load the bus.

Generic Test Set-up Using a Variable Resistance Load



EU Energy-related Products (ErP) directive Ecodesign requirements

set out in Annex II, 1 a) & b) of COMMISSION REGULATION (EU) 2019/1782
for no-load electric power consumption and average active efficiency of external power supplies

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

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



49W <to ≤250W	≤ 0.21W	N/A
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Multiple-Voltage		
Nameplate Output Power (P _{no})	Minimum Average Efficiency in Active Mode	Verdict
0 to ≤ 1 W	$\geq 0.497 * P_{no} + 0.067$	N/A
1 to ≤ 49 W	$\geq 0.075 * \ln(P_{no}) + 0.561$	N/A
49 W	≥ 0.860	N/A
Nameplate Output Power (P _{no})	Maximum Power in No-Load Mode	Verdict
Any	≤ 0.30	N/A
Notes: N/A		

Supplementary information to test procedure for multiple-voltage:

According to Annex II, 3 Measurements and calculations of COMMISSION REGULATION (EU) 2019/1782 For the purposes of compliance and verification of compliance with the requirements of this Regulation, measurements and calculations shall be made using harmonised standards the reference numbers of which have been published for this purpose in the Official Journal of the European Union, or other reliable, accurate and reproducible methods, which take into account the generally recognised state of the art.

Measurements and calculations have been made using harmonised standards US DOE: Appendix Z to Subpart B of 10 CFR Part 430 for multiple-voltage in this report.


Test Data:

Test result for single-voltage output (Output: 19.5Vdc, 3.34A)						
Rated Load	100%	75%	50%	25%	0% (no-load)	10%
Input Voltage(V)	230	230	230	230	230	230
Input frequency (Hz)	50	50	50	50	50	50
Measured Output Voltage (V)	19.58	19.67	19.79	19.87	19.97	19.92
Output Current (mA)	3340	2505	1670	835	0	334
Active Output Power (W)	65.39	49.27	33.04	16.59	0	6.65
Measured Input Current (mA)	655.0	514.4	359.2	197.5	30.8	94.0
Measured Input Power (W)	73.0	54.9	36.8	18.6	0.16	7.73
True Power Factor	0.6549	0.6432	0.6233	0.5902	0.0275	0.5605
THD (%)	107.83	113.28	121.52	132.22	6.409	140.23
Power Consumed by EUT (W)	7.61	5.63	3.76	2.01	--	1.08
Calculated Efficiency (%)	89.58	89.74	89.78	89.19	--	86.03
Average Efficiency (%)	89.57				--	--

Limit for Level VI requirement:		Result
ERP	Minimum Efficiency (%): 88.0% Maximum No Load Power (W): 0.21W Refer to Point 1 of ANNEX II of COMMISSION REGULATION (EU) 2019/1782	Pass

Test Results			
	Model No.	Test at 230Vac,50Hz	Energy Efficiency
No load Power (W)	1	0.16	≤0.21W
Average Efficiency (%)	1	89.57	≥88.00
Verdict	--	Pass	--



Report No.: PTC21022304801S-EP01

Test instruments				
Name	Brand	Model	Last cal. date	Next cal. date
Digital Power Meter	YOKOGAWA	WT310	Mar 18, 2020	Mar 17, 2021
Stopwatch	Shanghai Leigu Instrument Co., Ltd.	TA228	Mar 18, 2020	Mar 17, 2021
Hygrothermo graph	Thermo	TA-138	Mar 18, 2020	Mar 17, 2021
DC electronic load	Nanjing meiruo electronics co. LTD	M9712	Mar 18, 2020	Mar 17, 2021

Test Conditions:

Temperature: 25.2°C	Humidity: 54.6%RH
THD of Test Power System: 0.8%	--



Fig.1

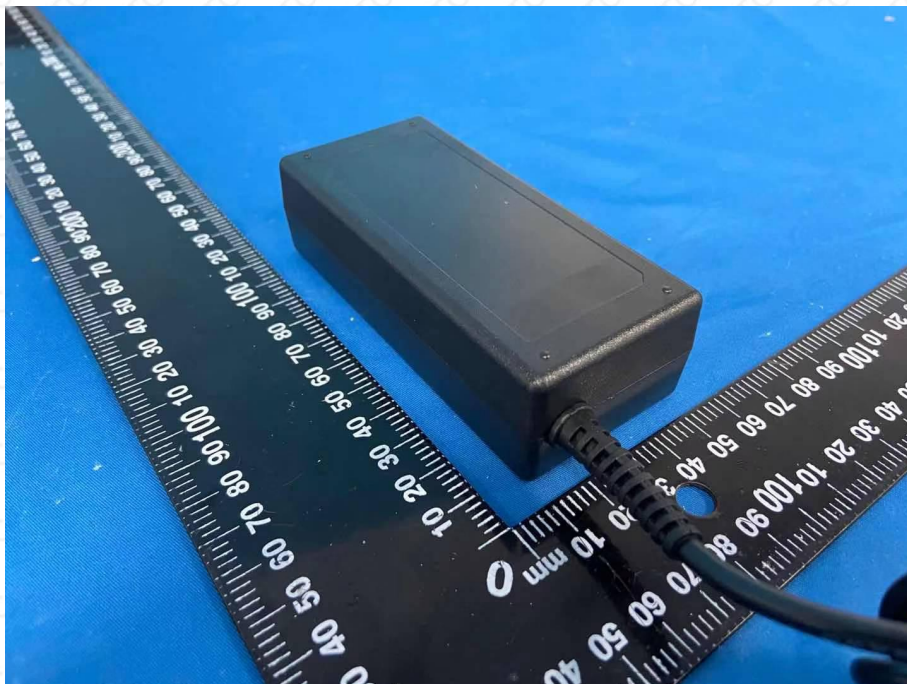


Fig.2

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