Test Report
For Department of Energy

Report Reference No.	:	22SCOS01042 00121
Date of issue	:	Jan. 22, 2022
Testing laboratory	:	DongGuan ShuoXin Electronic Technology Co., Ltd.
Address	:	Zone A, 1F, No. 6, XinGang Road YuanGang Street, XinAn District, ChangAn Town, DongGuan City, GuangDong, China.
Testing location	:	As above.
Applicant	:	Xiamen Innov Electronics Tech Co., Ltd.
Address	:	1F/3F-5F,BLDG 5,No.943-5,Tonglong 2nd Rd,Torch Hi-tech Industrial Zone(Xiang’an), Xiamen,361000, P.R.China
Standard(s) or Regulation(s)	:	US DoE: Office of Energy Efficiency and Renewable Energy 10 CFR Parts 429 and 430
Test method(s)		10 CFR part 430, subpart B, Appendix Z “Uniform Test Method for Measuring the Energy Consumption of External Power Supplies”
Protocol		International Efficiency Marking Protocol for External Power Supplies, Version 3.0
Samples Received Date	:	Jan. 14, 2022
Tested Date	:	Jan.14, 2022
Description of Sample(s):		
Type of test object	:	Class 2 Power Supply
Model and/or type reference	:	IVP1200-1000
Rating(s)	:	Input rating: 100-240V~ 50/60Hz 0.5A Output rating: 12.0V ⎓1.0A
Trademark	:	Innov, Invcy
Class of equipment	:	Class II
Country of origin	:	CHINA
Manufacturer(s)		Same as applicant
Factory(ies)	:	Same as applicant
Address		Same as applicant
Integral Input power Switch	:	N/A
UUT Output Cord Length (±1 cm)	:	180CM
Test Environment Temperature(℃)	:	25
Number of page(s) (Report)	:	12
Number of page(s) (Attachment)	:	Photos: 1 pages

Compiled by..... Lynn Hu (+ signature) Lynn Hu

Approved by ..... Bruce Zhang (+ signature) Bruce Zhang

1. Copy of marking plate:

2. Instruments list:

Instr. Code	Instrument Type	Instr.Serial No	Range Used	Make and Model	Calibration date	Next Calibration date
ATT-Y008	Timer	PC393	0-'24hrs	EVERY DAY	2021/10/26	2022/10/25
ATT-Y043	tapeline	ATT-Y043	0.01-5.0m	Tajima, Hilock-19	2021/04/23	2022/04/22
ATT-Y108	Electronic Load	0020225064 70001013	1-120V/0.1-50A	ITECH, IT8512C	2021/04/21	2022/04/20
ATT-Y109	Electronic Load	0020221661 71001001	1-120V/0.1-50A	ITECH, IT8512C	2021/08/02	2022/08/01
ATT-Y146	Power Parameter Meter	12BB18366	1-600V,0.1-20A, 47-400Hz, 1-3000W,	YOKOGAWA, WT210	2021/08/02	2022/08/01
ATT-Y198	Electronic Load	0020225064 70001009	1-120V/0.1-50A	ITECH, IT8512C	2021/10/26	2022/10/25
ATT-Y217	Anemometer	10200040	0-15.0m/s	PROVA,AVW-01	2021/10/26	2022/10/25
ATT-Y232	Power Parameter Meter	91M336285	1-600V,0.1-20A, 47-400Hz, 1-3000W,	YOKOGAWA, WT210	2021/08/02	2022/08/01
ATT-Y282	Power Parameter Meter	C3UD26024E	0.01V-600V 0.01mA-20A 40-70HZ 0.01mW-6KW	YOKOGAWA，WT310E	2021/03/25	2022/03/24
ATT-Y292	Humidity Meter	/	15-40℃, 30-80 (%RH)	Accurate	2021/08/02	2022/08/01
ATT-Y295	Electronic Load	8004950417 47610019	0-120V/0-60/300W	ITECH, IT8512C+	2021/10/26	2022/10/25

3.Remark

None.

Special Instructions:

Unless specified otherwise in the individual Methods, the tests shall be conducted under the following ambient conditions. Confirmation of these conditions shall be recorded at the time the test is conducted.

For Test Methods:
10 CFR part 430, subpart B, Appendix Z "Uniform Test Method for Measuring the Energy Consumption of External Power Supplies"

Ambient Temperature ° C	Relative Humidity, RH %	Supply Voltage Tolerance %	Total Harmonic Distortion, THD %	Airspeed m/s	Supply Frequency Tolerance %
20±5	10-80 (For lab references)	±1	≤2	≤0.5	±1

NOTE:
1. The input voltage source shall be capable of delivering at least 10 times the nameplate input power of the UUT (as is specified in IEEE 1515-2000).

Table 1 – Load Conditions

Load Conditions for UUT	Percentage of Derated Nameplate Output Current
1	100% of derated nameplate output current ± 2%(2)
2	75% of derated nameplate output current ± 2%
3	50% of derated nameplate output current ± 2%
4	25% of derated nameplate output current ± 2%
5	0%

Note(s):
1. (2) The 2% allowance is of nameplate output current, not of the calculated current value.

2. For example, a UUT at Load Condition 3 may be tested in a range from 48% (min) to 52% (max) of rated output current.

4. Test Result

4.1 Model No. : IVP1200-1000

4.1.1 Output rating: 12.0V ⎓1.0A

4.1.2 Sample 1#

Tested at: 115Vac, 60Hz

	No Load	Active Power Values				Average
Percent of Nameplate Current	0%	25%	50%	75%	100%	
Output Current (mA)		250	500	750	1,000	
Output Voltage (V)		12.01	11.93	11.85	11.78	
Output Power (W)		3.00	5.97	8.89	11.78	
Ac Input Voltage (V)	115	115	115	115	115	
Ac Input Power (W)	0.050	3.50	6.96	10.47	14.06	
True Power Factor (W/VA)	0.196	0.403	0.467	0.510	0.543	0.481
Total Harmonic Distortion (THD-V%)	0.215	0.243	0.278	0.311	0.334	0.292
Total Harmonic Distortion (THD-A%)	259.16	216.67	175.14	152.57	135.67	170.013
AC Input Frequency (Hz)	60	60	60	60	60	60
Power Consumed by UUT (W)	0.05	0.50	0.99	1.58	2.28	
Efficiency (%)		85.71	85.78	84.91	83.78	85.05

The 10 CFR Part 430 about the Minimum Energy Efficiency Requirements for External Power Supplies. US DOE Issues Final Rule on Energy Efficiency Level VI for External Power Supplies on February 10, 2014.

Limit for efficiency mark level VI:

Minimum Efficiency Average active mode efficiency limit ≥【0.071 * ln (Pout)】- 0.0014 * Pout + 0.67=82.96%

The no-load condition consumption shall not exceed 0.1W.

4. Test Result

4.1 Model No. : IVP1200-1000

4.1.1 Output rating: 12.0V ⎓1.0A

4.1.2 Sample 1#

Tested at: 230Vac, 50Hz

	No Load	Active Power Values				Average
Percent of Nameplate Current	0%	25%	50%	75%	100%	
Output Current (mA)		250	500	750	1,000	
Output Voltage (V)		12.01	11.94	11.86	11.78	
Output Power (W)		3.00	5.97	8.90	11.78	
Ac Input Voltage (V)	230	230	230	230	230	
Ac Input Power (W)	0.093	3.63	7.08	10.58	13.99	
True Power Factor (W/VA)	0.116	0.326	0.369	0.389	0.412	0.374
Total Harmonic Distortion (THD-V%)	0.124	0.148	0.194	0.232	0.266	0.210
Total Harmonic Distortion (THD-A%)	345.47	259.13	236.37	220.94	207.01	230.863
AC Input Frequency (Hz)	50	50	50	50	50	50
Power Consumed by UUT (W)	0.093	0.63	1.11	1.68	2.21	
Efficiency (%)		82.64	84.32	84.12	84.20	83.82

The 10 CFR Part 430 about the Minimum Energy Efficiency Requirements for External Power Supplies. US DOE Issues Final Rule on Energy Efficiency Level VI for External Power Supplies on February 10, 2014.

Limit for efficiency mark level VI:

Minimum Efficiency Average active mode efficiency limit ≥【0.071 * ln (Pout)】- 0.0014 * Pout + 0.67=82.96%

The no-load condition consumption shall not exceed 0.1W.

4. Test Result

4.2 Model No. : IVP1200-1000

4.2.1 Output rating: 12.0V ⎓1.0A

4.2.2 Sample 2#

Tested at: 115Vac, 60Hz

	No Load	Active Power Values				Average
Percent of Nameplate Current	0%	25%	50%	75%	100%	
Output Current (mA)		250	500	750	1,000	
Output Voltage (V)		12.04	11.96	11.88	11.81	
Output Power (W)		3.01	5.98	8.91	11.81	
Ac Input Voltage (V)	115	115	115	115	115	
Ac Input Power (W)	0.050	3.47	6.94	10.44	13.99	
True Power Factor (W/VA)	0.185	0.401	0.468	0.510	0.543	0.481
Total Harmonic Distortion (THD-V%)	0.217	0.246	0.280	0.309	0.327	0.291
Total Harmonic Distortion (THD-A%)	280.13	217.76	175.79	153.09	135.82	170.615
AC Input Frequency (Hz)	60	60	60	60	60	60
Power Consumed by UUT (W)	0.05	0.46	0.96	1.53	2.18	
Efficiency (%)		86.74	86.17	85.34	84.42	85.67

The 10 CFR Part 430 about the Minimum Energy Efficiency Requirements for External Power Supplies. US DOE Issues Final Rule on Energy Efficiency Level VI for External Power Supplies on February 10, 2014.

Limit for efficiency mark level VI:

Minimum Efficiency Average active mode efficiency limit ≥【0.071 * ln (Pout)】- 0.0014 * Pout + 0.67=82.96%

The no-load condition consumption shall not exceed 0.1W.

4. Test Result

4.2 Model No. : IVP1200-1000

4.2.1 Output rating: 12.0V ⎓1.0A

4.2.2 Sample 2#

Tested at: 230Vac, 50Hz

	No Load	Active Power Values				Average
Percent of Nameplate Current	0%	25%	50%	75%	100%	
Output Current (mA)		250	500	750	1,000	
Output Voltage (V)		12.04	11.96	11.88	11.80	
Output Power (W)		3.01	5.98	8.91	11.80	
Ac Input Voltage (V)	230	230	230	230	230	
Ac Input Power (W)	0.086	3.56	7.01	10.51	13.88	
True Power Factor (W/VA)	0.104	0.320	0.362	0.384	0.408	0.369
Total Harmonic Distortion (THD-V%)	0.125	0.144	0.178	0.219	0.255	0.199
Total Harmonic Distortion (THD-A%)	374.13	261.03	239.80	224.52	209.13	233.620
AC Input Frequency (Hz)	50	50	50	50	50	50
Power Consumed by UUT (W)	0.086	0.55	1.03	1.60	2.08	
Efficiency (%)		84.55	85.31	84.78	85.01	84.91

The 10 CFR Part 430 about the Minimum Energy Efficiency Requirements for External Power Supplies. US DOE Issues Final Rule on Energy Efficiency Level VI for External Power Supplies on February 10, 2014.

Limit for efficiency mark level VI:

Minimum Efficiency Average active mode efficiency limit ≥【0.071 * ln (Pout)】- 0.0014 * Pout + 0.67=82.96%

The no-load condition consumption shall not exceed 0.1W.

4. Test Result

4.3 Model No. : IVP1200-1000

4.3.1 Output rating: 12.0V ⎓1.0A

4.3.2 Sample 3#

Tested at: 115Vac, 60Hz

	No Load	Active Power Values				Average
Percent of Nameplate Current	0%	25%	50%	75%	100%	
Output Current (mA)		250	500	750	1,000	
Output Voltage (V)		12.04	11.96	11.88	11.80	
Output Power (W)		3.01	5.98	8.91	11.80	
Ac Input Voltage (V)	115	115	115	115	115	
Ac Input Power (W)	0.051	3.50	6.97	10.49	14.06	
True Power Factor (W/VA)	0.184	0.402	0.468	0.510	0.544	0.481
Total Harmonic Distortion (THD-V%)	0.214	0.240	0.275	0.304	0.324	0.286
Total Harmonic Distortion (THD-A%)	271.64	217.58	175.34	152.48	135.44	170.210
AC Input Frequency (Hz)	60	60	60	60	60	60
Power Consumed by UUT (W)	0.051	0.49	0.99	1.58	2.26	
Efficiency (%)		86.00	85.80	84.94	83.93	85.17

The 10 CFR Part 430 about the Minimum Energy Efficiency Requirements for External Power Supplies. US DOE Issues Final Rule on Energy Efficiency Level VI for External Power Supplies on February 10, 2014.

Limit for efficiency mark level VI:

Minimum Efficiency Average active mode efficiency limit ≥【0.071 * ln (Pout)】- 0.0014 * Pout + 0.67=82.96%

The no-load condition consumption shall not exceed 0.1W.

4. Test Result

4.3 Model No. : IVP1200-1000

4.3.1 Output rating: 12.0V ⎓1.0A

4.3.2 Sample 3#

Tested at: 230Vac, 50Hz

	No Load	Active Power Values				Average
Percent of Nameplate Current	0%	25%	50%	75%	100%	
Output Current (mA)		250	500	750	1,000	
Output Voltage (V)		12.04	11.96	11.88	11.80	
Output Power (W)		3.01	5.98	8.91	11.80	
Ac Input Voltage (V)	230	230	230	230	230	
Ac Input Power (W)	0.091	3.62	7.07	10.54	13.95	
True Power Factor (W/VA)	0.115	0.320	0.363	0.384	0.408	0.369
Total Harmonic Distortion (THD-V%)	0.125	0.146	0.183	0.222	0.256	0.202
Total Harmonic Distortion (THD-A%)	356.37	260.17	241.91	222.38	208.73	233.298
AC Input Frequency (Hz)	50	50	50	50	50	50
Power Consumed by UUT (W)	0.091	0.61	1.09	1.63	2.15	
Efficiency (%)		83.15	84.58	84.54	84.59	84.22

The 10 CFR Part 430 about the Minimum Energy Efficiency Requirements for External Power Supplies. US DOE Issues Final Rule on Energy Efficiency Level VI for External Power Supplies on February 10, 2014.

Limit for efficiency mark level VI:

Minimum Efficiency Average active mode efficiency limit ≥【0.071 * ln (Pout)】- 0.0014 * Pout + 0.67=82.96%

The no-load condition consumption shall not exceed 0.1W.

The measured is the following:

External Power Supplies: (at 115/230V ac, 60/50 Hz)

	Efficiency (%):	Sample No.:
Minimum Average Efficiency in Active Mode	85.05/83.82	1/1
Maximum Power in No-Load Condition	0.051/0.093	3/1

Base on Table 2, this EPS is complied with the requirements for level: VI at 115V ac; level: VI at 230V ac;
The calculated Minimum Average Efficiency in Active Mode is: 1 W <PO ≤ 49 W (82.96 %) at 115V ac; 1 W <PO ≤ 49 W (82.96 %) at 230V ac and Maximum Energy Consumption in No-Load Mode is not greater than 0.100 Watt at 115V ac; 0.100 Watt at 230V ac.

10 CFR part 430, subpart B, Appendix Z "Uniform Test Method for Measuring the Energy Consumption of External Power Supplies": (at 115V ac, 60Hz)

The sampling plan calculation following 10CFR 429.1 and 429.37

	Sample mean	*LCL/0.95	The lower of sample mean or LCL/0.95
Average efficiencyin active mode	85.30%	88.93%	85.30%
	Sample mean	**UCL/1.05	The higher of sample mean or UCL/1.05
No-load mode power	0.0503	0.0493	0.0503

* the lower 97.5 percent confidence limit (LCL) of the true mean divided by 0.95
** the upper 97.5 percent confidence limit (UCL) of the true mean divided by 1.05

Base on Table 2, the calculated Minimum Average Efficiency in Active Mode is: 1 W <PO ≤ 49 W (82.96 %), and MaximumEnergyConsumption in No-Load Mode is not greater than 0.100Watt.
Any represented value of the estimated energy consumption of a basic model in Active Mode could be certified in the following range.

Based on Table 2, the calculated Minimum Average Efficiency		The represented value [is declared by manufacturer]		Based on sampling plan, the lower of sample mean or LCL/0.95
82.96%	≤	85.30%	≤	85.30%

Any represented value of the estimated energy consumption of a basic model in No-Load condition could be certified in the following range.

Based on sampling plan, the higher of sample mean or UCL/1.05		The represented value [is declared by manufacturer]		Based on table 2, the Maximum Energy Consumption
0.0503	≤	0.0503	≤	0.100

Table 2: International Efficiency Marking Protocol for External Power Supplies

Mark	Performance Requirements				
	Nameplate Output Power (P_{no})[2]	No-Load Mode Power[3]	Nameplate Output Power (P_{no})	Average Efficiency in Active Mode[4]	Power Factor
I	Used if none of the other criteria are met.				
II	0 to ≤ 10 W	≤ 0.75	0 to < 1 W	≥ 0.39 * P_{no}	Not Applicable
	> 10 to 250 W	≤ 1.0	1 to < 49 W	≥ 0.107 * ln(P_{no}) + 0.39	
			> 49 W	≥ 0.82	
III	0 to < 10 W	≤ 0.5	0 to 1 W	≥ 0.49 * P_{no}	Not Applicable
	10 to 250 W	≤ 0.75	> 1 to 49 W	≥ 0.09 * ln(P_{no}) + 0.49	
			> 49 to 250 W	≥ 0.84	
IV	0 to 250 W	≤ 0.5	0 to < 1 W	≥ 0.5 * P_{no}	Not Applicable
			1 to 51 W	≥ 0.09 * ln(P_{no}) + 0.5	
			> 51 to 250 W	≥ 0.85	
V	0 to < 50 W	AC-DC: ≤ 0.3 AC-AC: ≤ 0.5	0 to ≤ 1 W	Basic Voltage: ≥ 0.480 * P_{no} + 0.140 Low Voltage[5]: ≥ 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.
			> 1 to ≤ 49 W	Basic Voltage: ≥ 0.0626 * ln(P_{no}) + 0.622 Low Voltage: ≥ 0.0750 * ln(P_{no}) + 0.561	
	≥ 50 to ≤ 250 W	≤ 0.5	> 49 to 250 W	Basic Voltage: ≥ 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.				

[2] P_{no} is the Nameplate Output Power of the unit under test.
[3] In Australia and New Zealand, AC-AC external power supplies are not required to meet the no-load mode power requirements.
[4] "ln" refers to the natural logarithm.
[5] A low-voltage model is an EPS with nameplate output voltage of less than 6 volts and nameplate output current greater than or equal to 550 milliamperes. A basic-voltage model is an EPS that is not a low-voltage model.

Attachment: Photo documentations

For model: IVP1200-1000

View:

[x] general

[ ] front

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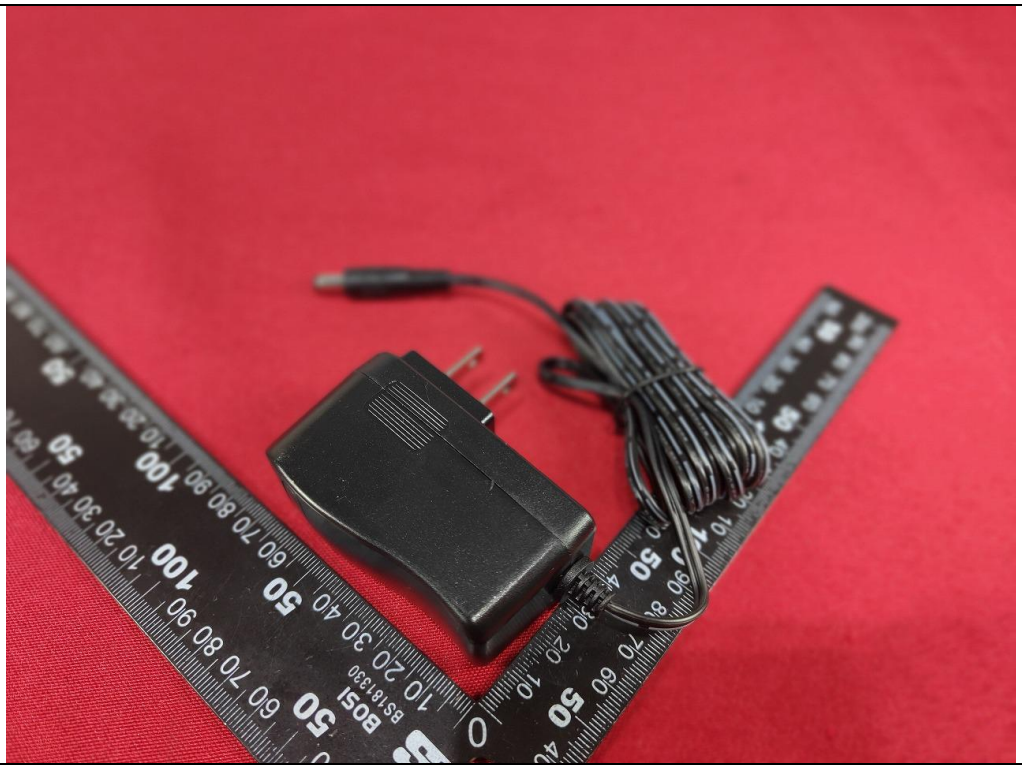

View:

[x] general

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