

CEC Test Report for Energy Efficiency
of Single-Voltage External AC-DC and AC-AC Power Supplies

Report Reference No.....: 24SCOS08121 02601
 Date of issue.....: 2024-09-04
 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

Protocol.....: International Efficiency Marking Protocol for External Power Supplies,
 Version 3.0
 Samples Received Date.....: 2024-09-01
 Tested Date.....: 2024-09-04

Description of Sample(s):

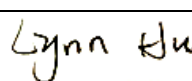
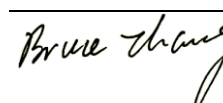
Type of test object.....: CLASS 2 POWER SUPPLY
 Model and/or type reference.....: IVP1200-0500W
 Rating(s).....: Input rating: 100-240VAC 50/60Hz 0.5A
 Output rating: 12.0VDC 0.5A
 Trademark.....: Innov, Invcy
 Country of origin.....: CHINA
 Manufacturer(s).....: Same as applicant
 Factory(ies).....: Same as applicant
 Address.....: Same as applicant

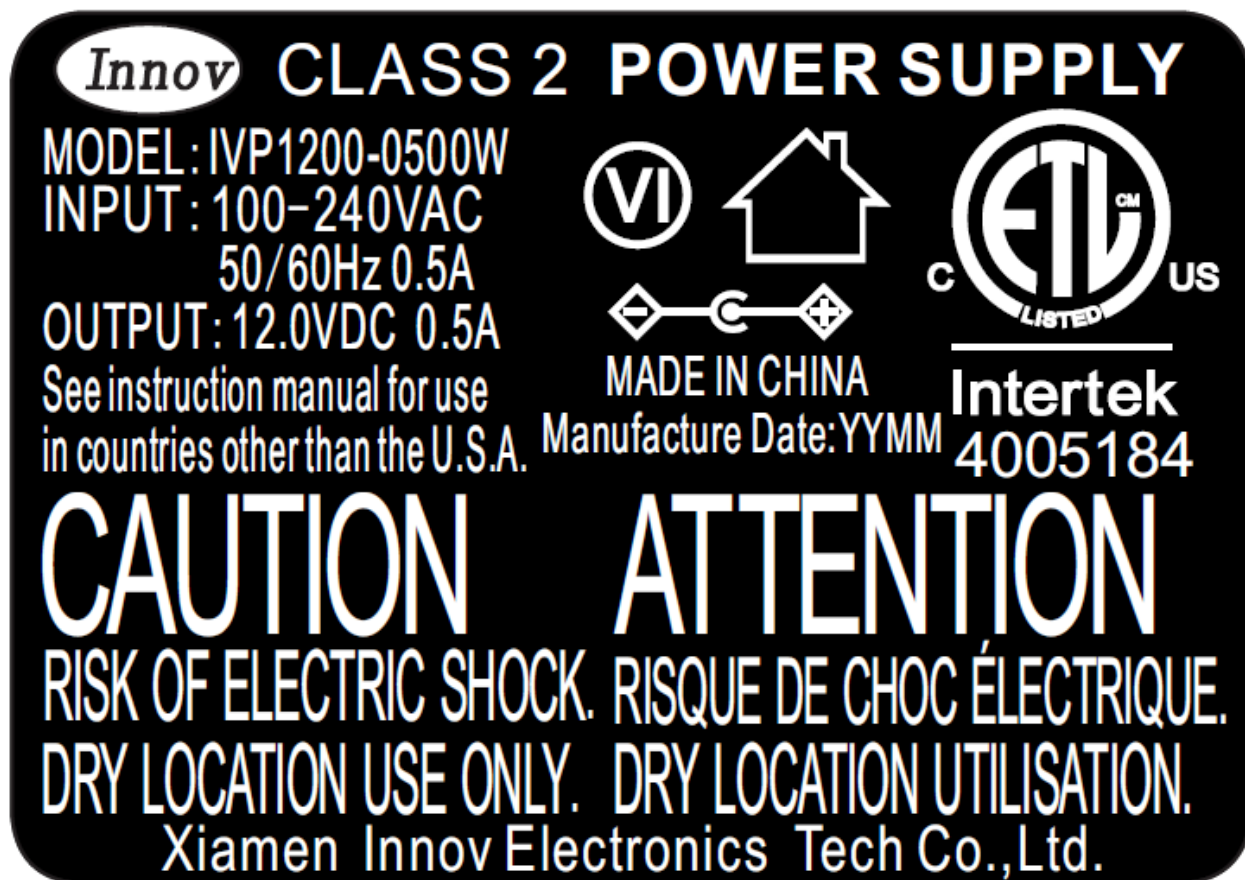
Integral Input power Switch.....: Not present
 UUT Output Cord Length (± 1 cm).....: 180cm 24AWG
 Test Environment Temperature ($^{\circ}\text{C}$) ..: 24.5
 Number of page(s) (Report).....: 11
 Number of page(s) (Attachment).....: Photos: 1 page

Conclusion:

Standard(s) or Regulation(s): US CEC: California Code of Regulations, Title 20, Division 2, Chapter 4, Article 4. Appliance
 Efficiency Regulations, Sections 1601 through 1609

Test method(s): 10 CFR part 430, subpart B, Appendix Z "Uniform Test Method for Measuring the Energy
 Consumption of External Power Supplies"

Compiled by.....: Lynn Hu
 (+ signature)  Approved by.....: Bruce Zhang
 (+ signature) 

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-Y043	tapeline	694503001 1674	0.01-5.0m	TIC,5.0M	2024/04/06	2025/04/05
ATT-Y217	Anemometer	10200040	0-15.0m/s	PROVA,AVW-01	2023/09/19	2024/09/18
ATT-Y146	Power Parameter Meter	12BB18366	1-600V,0.1-20A, 47-400Hz, 1-3000W,	YOKOGAWA, WT210	2024/06/12	2025/06/11
ATT-Y282	Power Parameter Meter	C3UD2602 4E	0.01V-600V 0.01mA-20A 40-70HZ 0.01mW-6KW	YOKOGAWA , WT310E	2024/03/04	2025/03/03
ATT-Y292	Humidity Meter	MXTH1X-V15019031 4576	15-40°C, 30-80 (%RH)	miaoxin TH20R	2024/06/12	2025/06/11
ATT-Y295	Electronic Load	800495041 747610019	0-120V/0-60A /300W	ITECH, IT8512C+	2024/06/12	2025/06/11

3.Remark

None.

4. Standard**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.

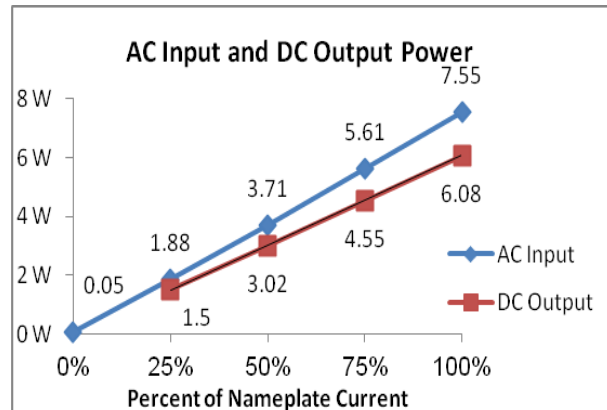
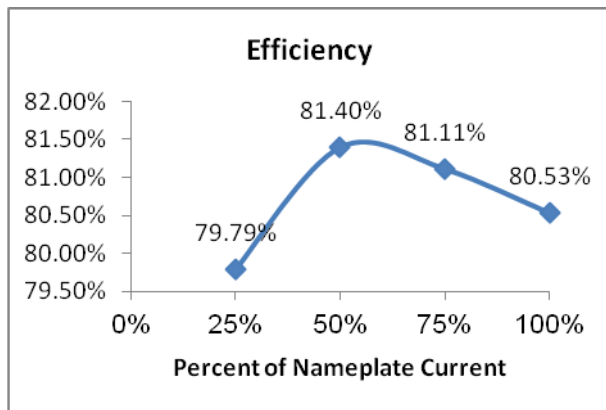
2. For example, a UUT at Load Condition 3 may be tested in a range from 48% (min) to 52% (max) of rated output current.

5. Test Result:

5.1 For Model: IVP1200-0500W

5.1.1 Output rating: 12.0VDC 0.5A

5.1.2 Sample 1#

Measured Diagram at 115V 60Hz

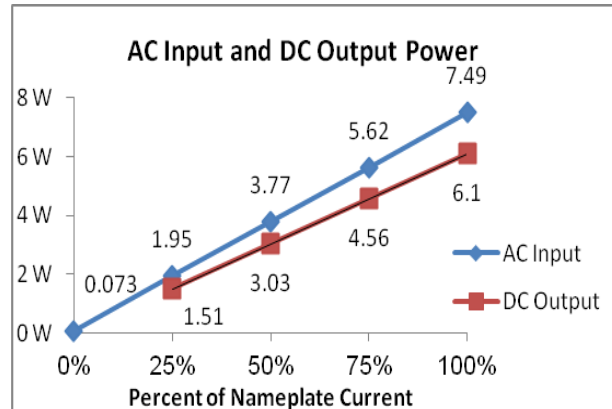
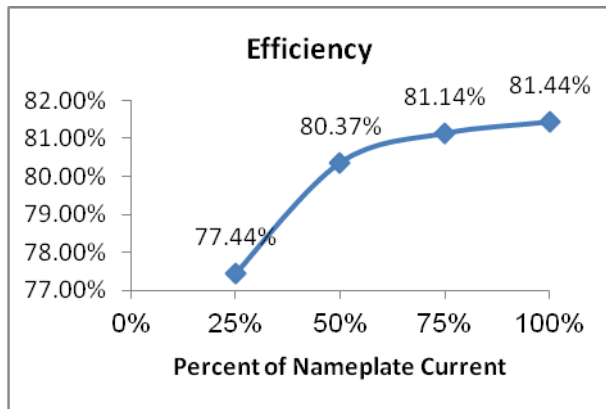
Measured and Calculated Data at 115V 60Hz						Pass
	No Load	Active Power Values				Average
Percent of Nameplate Current	0%	25%	50%	75%	100%	
Output Current (mA)		125	250	375	500	
Output Voltage (V)		12.02	12.08	12.13	12.16	
Output Power (W)		1.50	3.02	4.55	6.08	
Ac Input Voltage (V)	115	115	115	115	115	
Ac Input Power (W)	0.050	1.88	3.71	5.61	7.55	
True Power Factor (W/VA)	0.286	0.464	0.518	0.552	0.579	0.528
Total Harmonic Distortion (THD –V%)	0.223	0.482	0.664	0.802	0.894	0.711
Total Harmonic Distortion (THD –A%)	266.83	185.29	156.32	138.47	124.77	151.213
AC Input Frequency	60	60	60	60	60	60
Power Consumed by UUT (W)	0.05	0.38	0.69	1.06	1.47	
Efficiencya		79.79%	81.40%	81.11%	80.53%	80.71%
Limited efficiency						78.88%

5. Test Result:

5.1 For Model: IVP1200-0500W

5.1.1 Output rating: 12.0VDC 0.5A

5.1.2 Sample 1#

Measured Diagram at 230V 50Hz

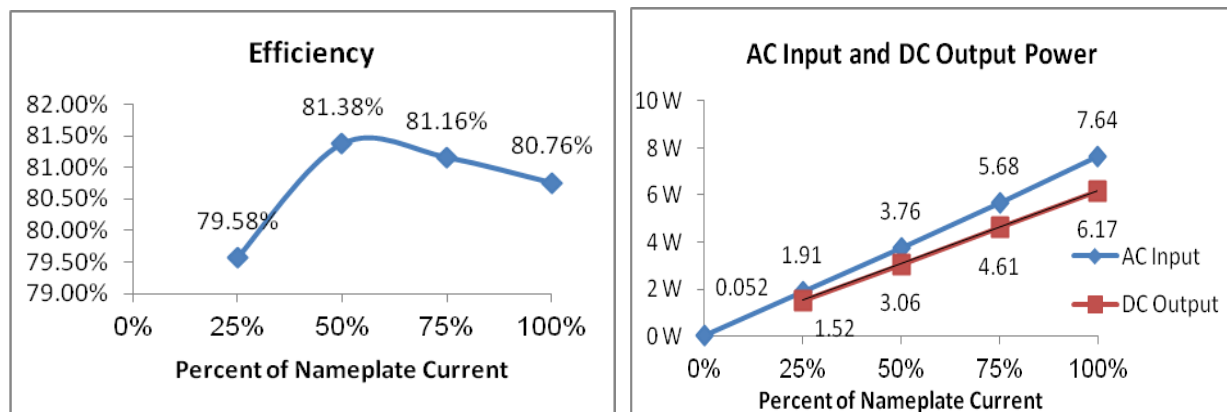
Measured and Calculated Data at 230V 50Hz						Pass
	No Load	Active Power Values				Average
Percent of Nameplate Current	0%	25%	50%	75%	100%	
Output Current (mA)		125	250	375	500	
Output Voltage (V)		12.06	12.13	12.17	12.19	
Output Power (W)		1.51	3.03	4.56	6.10	
Ac Input Voltage (V)	230	230	230	230	230	
Ac Input Power (W)	0.073	1.95	3.77	5.62	7.49	
True Power Factor (W/VA)	0.176	0.372	0.409	0.437	0.459	0.419
Total Harmonic Distortion (THD –V%)	0.131	0.183	0.256	0.303	0.355	0.274
Total Harmonic Distortion (THD –A%)	316.67	242.65	217.82	199.31	187.03	211.703
AC Input Frequency	50	50	50	50	50	50
Power Consumed by UUT (W)	0.073	0.44	0.74	1.06	1.39	
Efficiencya		77.44%	80.37%	81.14%	81.44%	80.10%
Limited efficiency						78.88%

5. Test Result:

5.2 For Model: IVP1200-0500W

5.2.1 Output rating: 12.0VDC 0.5A

5.2.2 Sample 2#

Measured Diagram at 115V 60Hz

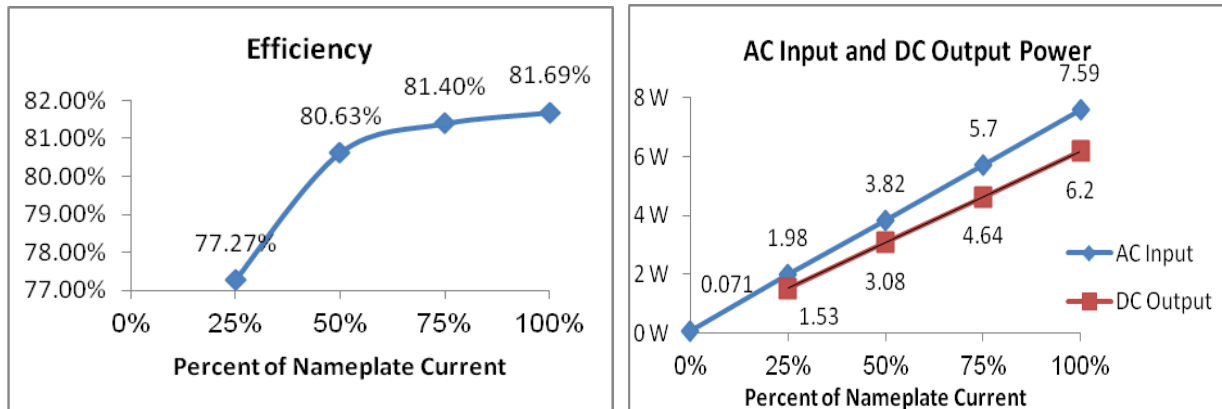
Measured and Calculated Data at 115V 60Hz						Pass
	No Load	Active Power Values				Average
Percent of Nameplate Current	0%	25%	50%	75%	100%	
Output Current (mA)		125	250	375	500	
Output Voltage (V)		12.19	12.25	12.30	12.34	
Output Power (W)		1.52	3.06	4.61	6.17	
Ac Input Voltage (V)	115	115	115	115	115	
Ac Input Power (W)	0.052	1.91	3.76	5.68	7.64	
True Power Factor (W/VA)	0.283	0.467	0.519	0.554	0.580	0.530
Total Harmonic Distortion (THD –V%)	0.224	0.516	0.701	0.832	0.930	0.745
Total Harmonic Distortion (THD –A%)	266.85	183.78	155.24	138.02	124.53	150.393
AC Input Frequency	60	60	60	60	60	60
Power Consumed by UUT (W)	0.052	0.39	0.70	1.07	1.47	
Efficiencya		79.58%	81.38%	81.16%	80.76%	80.72%
Limited efficiency						78.88%

5. Test Result:

5.2 For Model: IVP1200-0500W

5.2.1 Output rating: 12.0VDC 0.5A

5.2.2 Sample 2#

Measured Diagram at 230V 50Hz

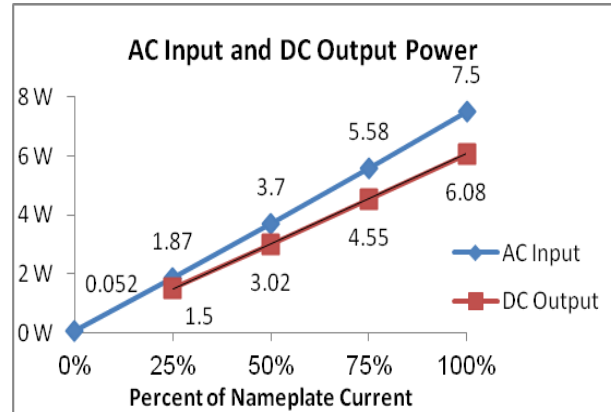
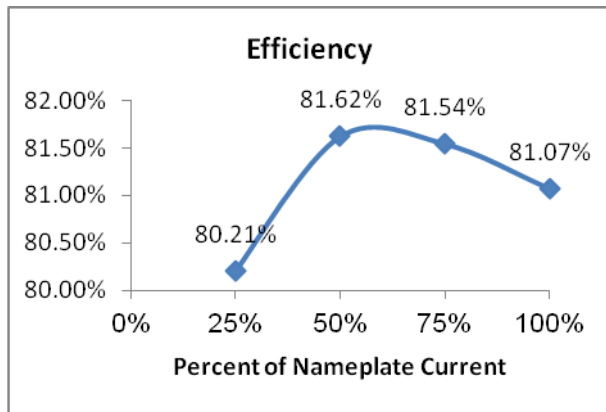
Measured and Calculated Data at 230V 50Hz						Pass
	No Load	Active Power Values				Average
Percent of Nameplate Current	0%	25%	50%	75%	100%	
Output Current (mA)		125	250	375	500	
Output Voltage (V)		12.24	12.32	12.36	12.39	
Output Power (W)		1.53	3.08	4.64	6.20	
Ac Input Voltage (V)	230	230	230	230	230	
Ac Input Power (W)	0.071	1.98	3.82	5.70	7.59	
True Power Factor (W/VA)	0.163	0.368	0.407	0.436	0.459	0.418
Total Harmonic Distortion (THD –V%)	0.132	0.183	0.239	0.292	0.339	0.263
Total Harmonic Distortion (THD –A%)	321.26	244.45	218.53	199.97	186.85	212.450
AC Input Frequency	50	50	50	50	50	50
Power Consumed by UUT (W)	0.071	0.45	0.74	1.06	1.39	
Efficiencya		77.27%	80.63%	81.40%	81.69%	80.25%
Limited efficiency						78.88%

5. Test Result:

5.3 For Model: IVP1200-0500W

5.3.1 Output rating: 12.0VDC 0.5A

5.3.2 Sample 3#

Measured Diagram at 115V 60Hz

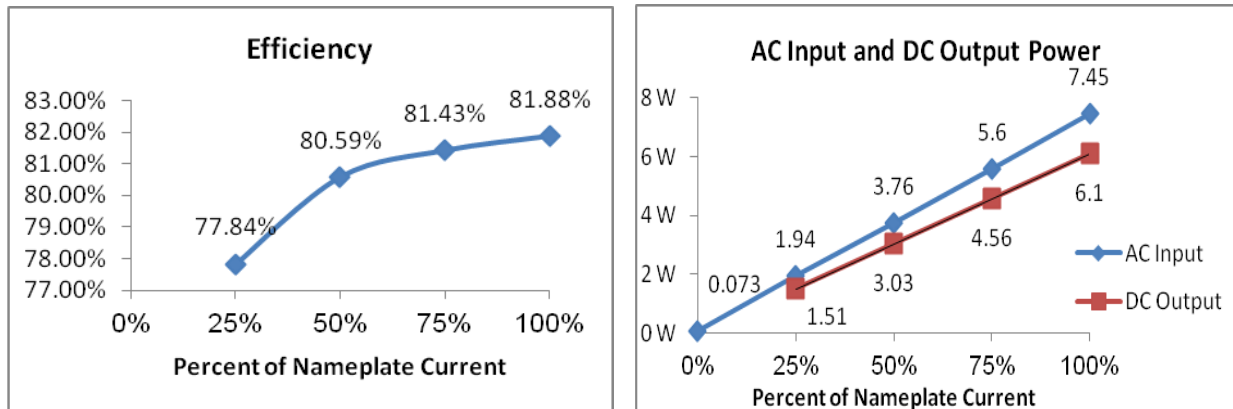
Measured and Calculated Data at 115V 60Hz						Pass
	No Load	Active Power Values				Average
Percent of Nameplate Current	0%	25%	50%	75%	100%	
Output Current (mA)		125	250	375	500	
Output Voltage (V)		12.01	12.07	12.13	12.16	
Output Power (W)		1.50	3.02	4.55	6.08	
Ac Input Voltage (V)	115	115	115	115	115	
Ac Input Power (W)	0.052	1.87	3.70	5.58	7.50	
True Power Factor (W/VA)	0.251	0.449	0.507	0.545	0.573	0.519
Total Harmonic Distortion (THD –V%)	0.222	0.504	0.672	0.776	0.841	0.698
Total Harmonic Distortion (THD –A%)	269.58	192.93	160.84	141.79	127.12	155.670
AC Input Frequency	60	60	60	60	60	60
Power Consumed by UUT (W)	0.052	0.37	0.68	1.03	1.42	
Efficiencya		80.21%	81.62%	81.54%	81.07%	81.11%
Limited efficiency						78.88%

5. Test Result:

5.3 For Model: IVP1200-0500W

5.3.1 Output rating: 12.0VDC 0.5A

5.3.2 Sample 3#

Measured Diagram at 230V 50Hz

Measured and Calculated Data at 230V 50Hz						Pass
	No Load	Active Power Values				Average
Percent of Nameplate Current	0%	25%	50%	75%	100%	
Output Current (mA)		125	250	375	500	
Output Voltage (V)		12.05	12.13	12.17	12.19	
Output Power (W)		1.51	3.03	4.56	6.10	
Ac Input Voltage (V)	230	230	230	230	230	
Ac Input Power (W)	0.073	1.94	3.76	5.60	7.45	
True Power Factor (W/VA)	0.156	0.363	0.403	0.433	0.455	0.414
Total Harmonic Distortion (THD –V%)	0.126	0.178	0.234	0.291	0.341	0.261
Total Harmonic Distortion (THD –A%)	315.26	246.95	220.87	202.05	188.91	214.695
AC Input Frequency	50	50	50	50	50	50
Power Consumed by UUT (W)	0.073	0.43	0.73	1.04	1.35	
Efficiencya		77.84%	80.59%	81.43%	81.88%	80.44%
Limited efficiency						78.88%

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.
	≥ 50 to ≤ 250 W	≤ 0.5	> 1 to ≤ 49 W	Basic Voltage: ≥ 0.0626 * ln(P _{no}) + 0.622 Low Voltage: ≥ 0.0750 * ln(P _{no}) + 0.561	
			> 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.

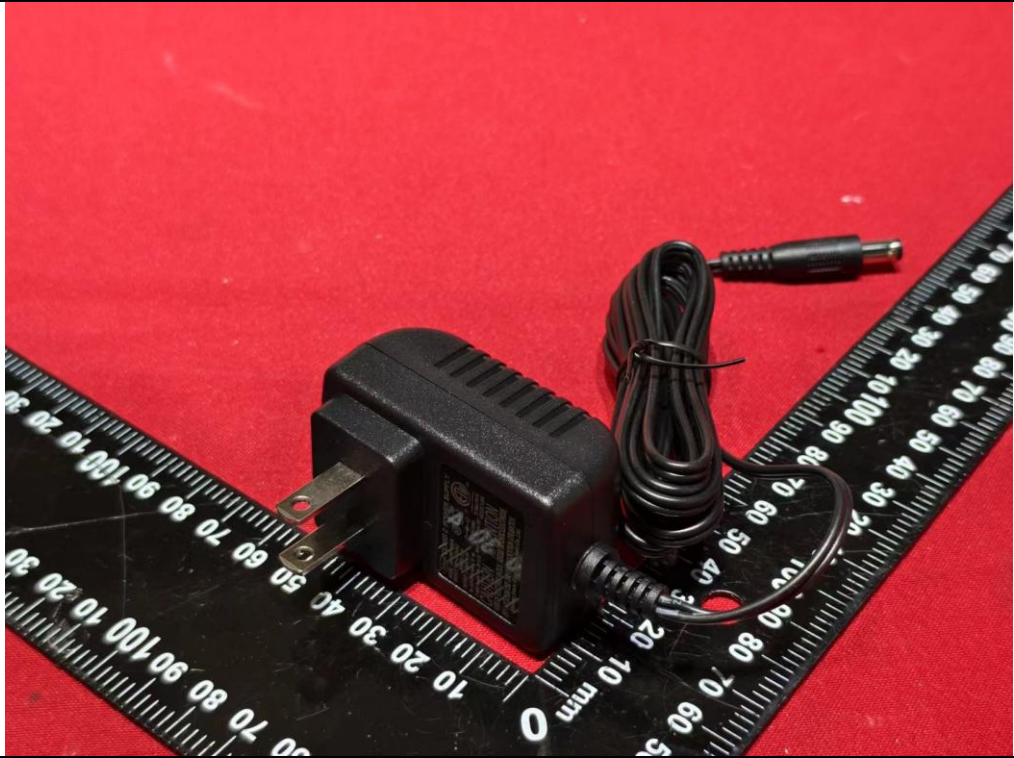
³ In Australia and New Zealand, AC-AC external power supplies are not required to meet the no-load mode power requirements.

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: IVP1200-0500W**

View:

☒ [x] general☐ [] front☐ [] rear☐ [] right☐ [] left☐ [] top☐ [] bottom

View:

☒ [x] general☐ [] front☐ [] rear☐ [] right☐ [] left☐ [] top☐ [] bottom