SPECIFICATION FOR APPROVAL

CUSTOMER: Ideal Power MODEL NO. : XA065BP1200300

CUSTOMER P/N: 40XA065BP1200300 P/N: S-1900185

CUSTOMER MODEL: REV. NO. : 3

DATE : 20191016

DESCRIPTION: Input:100-240Vac ;Output:12.0Vdc 3.0A, SMPS Adaptor

Dear Customer:
Please send one copy of this specification back after you sign and approve for Production.

Customer approved comments:
We have reviewed and approved all pages（page1 to page17）of this SPEC.

Approved By: _____

Date: _____

ISSUED BY	Sky	CHECKED BY	Alan	APPROVED BY	Eric

样品说明(SAMPLE DESCRIPTION)

样品用途 THE PURPOSE OF THE SAMPLE	无样板 (NO-SAMPLE)	工作样板 (WORK-SAMPLE)	功能样板 (FUNCTION-SAMPLE)	最终样板 (FINALLY-SAMPLE)
	□	□	☑	□

此次送样后如客人测试 OK,还需继续的事项/
THE ITEMS NEED BE CONTINUED OF THESE SAMPLES CONFIRMED BY CLIENT

EMI 整改/EMI MODIFICATION	安规申请 /SAFETY APPLY	修改 PCB 设计/ PCB MODIFICATION	开模/MOULD			试产 /TRIAL-PRODUCE
			PCB	DC CORD	CASE	
□	□	□	□	□	□	☑

送样材料偏差清单/
DIFFERENCE OF THE SAMPLE WITH BOM:

位置编号 POSITION NO.	元件类型 PART TYPE	本次送样实际使用 MATERIAL OF THIS SAMPLE	未来量产应用 MASS-PRODUCTION MATERIAL	备注 REMARK

与上次送样差异描述/
DIFFERENCE OF THE SAMPLE WITH BOM:

编号 NO.	上次样品内容 ITEM OF LAST TIME	本次样品改变内容 CHANGED ITEM OF THIS TIME	改变原因 CHANGE REASON
1			
2			
3			
4			
5			

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Design Revision History

REV.	Description of Change		Reason of Change	Changed Date	Revised By	Approved By
	Before	After				
0			Initial Issue	2019.07.10	Sky	Eric
1		Add UL mark	Engineer Change	2019.07.16	Sky	Eric
2		Add mark on carton and white box	Customer need	2019.10.7	Sky	Eric
3	CUSTOMER P/N: 40XA036AC81200300	CUSTOMER P/N: 40XA065BP1200300	Customer change	2019-10-16	SKY	Eric
	Carten to show part number:40XA036AC81200300&RoHS	Carten to show part number:40XA065BP1200300&RoHS				
	DC CORO:22AWG	DC CORO:20AWG				

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1. SCOPE

This document details the electrical, mechanical and environmental specifications of a switching power supply.

1.1 Description

☐ Wall Mount ☑ Desk-Top

☐ Open Frame ☐ Others

2. INPUT REQUIREMENTS

2.1 Input Voltage & Frequency

The range of input voltage is from **90Vac** to **264Vac**

	Min	Normal	Max.
Input Voltage	90Vac	100-240Vac	264Vac
Input Frequency	47Hz	50/60Hz	63Hz

2.2 Input current

The maximum input current is **1.5A** Max. at **100-240Vac** .

2.3 Inrush Current

The inrush current will not exceed **50A** at **100-240Vac** input and Max load for a cold start at 25℃.

3. OUTPUT FEATURES

3.1 Output Parameters

	Output Data	Spec. Limit			Test Condition
3.1.1	**12.0Vdc**	Min. Value	Typical	Max. Value	
3.1.2	Output Voltage	**11.4Vdc**	**12.0Vdc**	**12.6Vdc**	**0-3.0A** Loading
3.1.3	Output Load	**0A**	—	**3.0A**	
3.1.4	Ripple and Noise	—	—	**200mVp-p**	20MHz Bandwidth 10uF Elec. Cap.0.1uF Cer. Cap.
3.1.5	Output Overshoot	—	—	10%	MAX. load & 100-240Vac

3.2 Turn On Delay

During turn on and turn off, no output voltage shall exceed its nominal voltage by more than **10%** and no output shall change its polarity with respect to its return line. All outputs shall reach their steady state values within **3** seconds of turn on.

3.3 Hold Up Time

10 ms minimum at **115Vac/60Hz** input at maximum load, and **20** ms minimum at **230Vac/50Hz** input at maximum load.

3.4 Output Transient Response

The power supply shall maintain output transient response time within **1500mV** with a loading current change from 20% to 80% of maximum current and 0.5A/μs rise up /drop down test at end of output terminal.

4. PROTECTION REQUIREMENT

4.1 Over Voltage Protection

Over voltage protection shall be included in the adaptor circuit. A single component failure must not cause an over voltage.

4.2 Over Current Protection

The adaptor must have a current limiting function on the output voltage. in overload mode, the output must drop to a low voltage. The OCP **4.5A** max

4.3 Short Circuit Protection

The adaptor must withstand a continuous short circuit on the output without damage.

5. ENVIRONMENTAL CONDITIONS

5.1 Operating

The power supply shall be capable of operating normally in any mode without malfunction happens in the following environmental conditions.

5.1.1 Operating Temperature: **0℃ ~40℃**
Relative Humidity: **10% ~ 90%**
Altitude: Sea level to **2,000 m**.

5.1.2 Vibration: 1.0mm, **10 –55Hz**, 15 minutes per cycle for each axis (X, Y, Z).

5.1.3 Cooling: Natural convection cooling.

5.2 Non - Operating

The power supply shall be capable of withstanding the following environmental conditions extended periods of time, without sustaining electrical or mechanical damage and subsequent operational deficiencies.

5.2.1 Storage Temperature: **-10℃ ~ 70℃**

5.2.2 Relative Humidity: **5% ~ 95%**

5.2.3 Altitude: Sea level to **2,000 m.**

5.2.4 Vibration and Shock:

The power supply shall be designed to withstand normal transportation vibration per **MIL–STD-810D**, method 514 and procedures X, as it is mounted in the chassis assembly and packed for shipping.

6. RELIABILITY AND QUALITY CONTROL

6.1 MTBF

When the power supply is operating within the limits of this specification the MTBF shall be at least **50000** hours at 25℃ (MIL-HDBK-217F).

6.2 Burn-In

The power supply shall withstand a minimum of **4** hours Burn-In test under full load at **35℃ ~40℃** room temperature, after test, product shall operate normally.

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6.3 Component De-rating

Semiconductor junction temperatures shall not exceed the manufacturer's maximum thermal rating.

7. MECHANICAL CHARACTERISTICS

7.1 Physical Dimensions

The detail dimension of the power supply is drawing on APPENDIX A.

7.2 Nameplate

The label of the power supply, please see APPENDIX B.

7.3 Drop test

Dropped freely from 1 m (for wall mount product) height onto the surface is consisted of hardwood 13 mm thick, mounted on two layers of plywood each 19-20 mm thick, all supported on concrete floor 1 time from 3 different surface, after test, it's no safety damage for product.

8. SAFETY

8.1 Safety Standard

The power supply shall be certified under the following international regulatory standards.

Item	Country	Certified	Standard	Present
UL	USA	APPROVED	UL60950-1 2nd /UL62368-1	√
CUL	Canada	APPROVED	CSA C22.2 NO.60950-1/62368-1	√
FCC	USA	APPROVED	PART 15 CLASS B	√
TUV/GS	Europe		EN 60950-1 2nd /EN60065/EN62368-1	□
CE	Europe	APPROVED	EN 55032 EN55024	√
BS/UK	Britain		BS EN 60950-1 2nd/EN60065	□
SAA	Australia		AS/NZS 60950-1/NZS60065	□
CCC	China		GB9254/GB8898/GB4943	□
KC	Korea		K60950	□
PSE	Japan		J60950 (H27)/J60065(H26)	□
Others				□

8.2 Insulation Resistance

Input to output: 10 MΩ min. at 500 VDC.

8.3 Dielectric Strength (Hi-Pot)

Primary to Secondary DC4242V or AC3000V 10mA 1 minute for type test, 3 seconds for product.

8.4 Leakage Current

The leakage current shall be less than 5mA when the power supply is operated maximum input voltage and maximum frequency.

9. EMC STANDARDS

9.1 EMI Standards

The power supply shall meet the radiated and conducted emission requirements for EN55032 CLASS B,FCC PART 15 CLASS B.

9.2 EMS Standards(EN55035)

The power supply shall meet the following EMS standards.

9.2.1 IEC61000-4-2 Electrostatic Discharge (ESD)
Static – discharge test by contract or air should be conducted with Static – discharge teeter, energy storage capacitance of 150pF, and discharge resistance of 330Ω.
8KV air discharge, **4KV** contact discharge, Performance Criterion B.

9.2.2 IEC61000-4-3 Radiated Electromagnetic Fields(RS)
Radio- frequency Electromagnetic Field Susceptibility Test, RS, 80-1000MHz,3V/m, 80%AM(1KHz), Performance Criterion A.

9.2.3 IEC61000-4-4 Electrical Fast Transient / Burst (EFT)
Power Line to Line: **1KV**
Performance Criterion B.

9.2.4 IEC61000-4-5 Lightning Surge Attachment
Lightning Surge voltage of differential and common modes shall be applied across AC input lines and across input and frame ground.
Power Line to Line (Common Mode): **1KV**
Power Line & Neutral to Earth (Different Mode): **2KV**

9.2.5 IEC61000-4-6 Conducted Radio Frequency Disturbances (CS)
Conducted Radio Frequency Disturbances Test, CS, 0.15-80 MHz, 3V/m, 80%AM, 1KHz, Performance Criterion A.

9.2.6 IEC61000-4-11 Voltage Dips/Short Interruption/Variations
Voltage dips >95%,0.5 preiods, Performance criterion B,
Voltage dips 30%,25 preiods, Performance criterion C,
Voltage interruptions >95%,250 preiods, Performance criterion C.

10. OTHER REQUIREMENTS

10.1 Hazardous Substances

The components and used materials shall be in compliance with

☑ EU Directive 2011/65/EU "RoHS 2"

10.2 Energy Efficiency

The power supply shall meet the following EMS standards.

10.2.1 The No-Load power consumption shall be less than **0.1W** at input **115/230 Vac.**

10.2.2 The average active mode efficiency shall be higher than **87.41%** at input **115/230 Vac.**

10.2.3 International Efficiency Level **Ⅵ**

10.2.4 This power supply is therefore in compliance with the requirements of

□ California Energy Commission for external power supplies (CEC)

☑ Energy Star requirements for external power supplies(EPS Version 2.0)

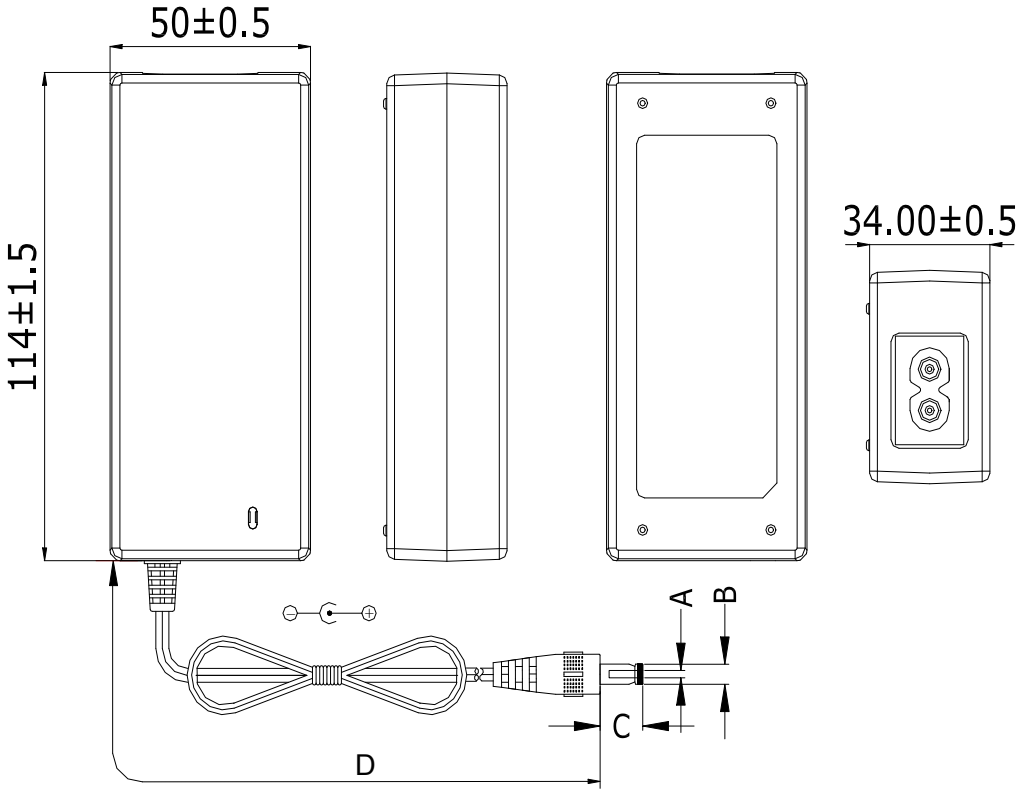
□ EU Code of Conduct Energy requirements of external power supplies

□ Australian and New Zed Energy Performance Requirements for external power supplies (MEPS)

□ China Energy Efficiency requirements for external power supplies (GB20943)

APPENDIX A

External View



Unit : mm

	ΦA	ΦB	C	D
DIMENSION	2.1	5.5	12	1500
TOLERANCE	+0.1/-0	±0.1	±0.5	±50
REMARK	AWG20#/2C UL2468 BLACK "Tunning fork with groove"			

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APPENDIX B

Nameplate

Unit: mm
Tolerance: +0/-0.2
Printed by Laser Printer

* Please Advise If Any Comments About The Name Plate Information
Otherwise, This Information Is Defaulted As Customer Approval,
And Will Be Applied To Production.

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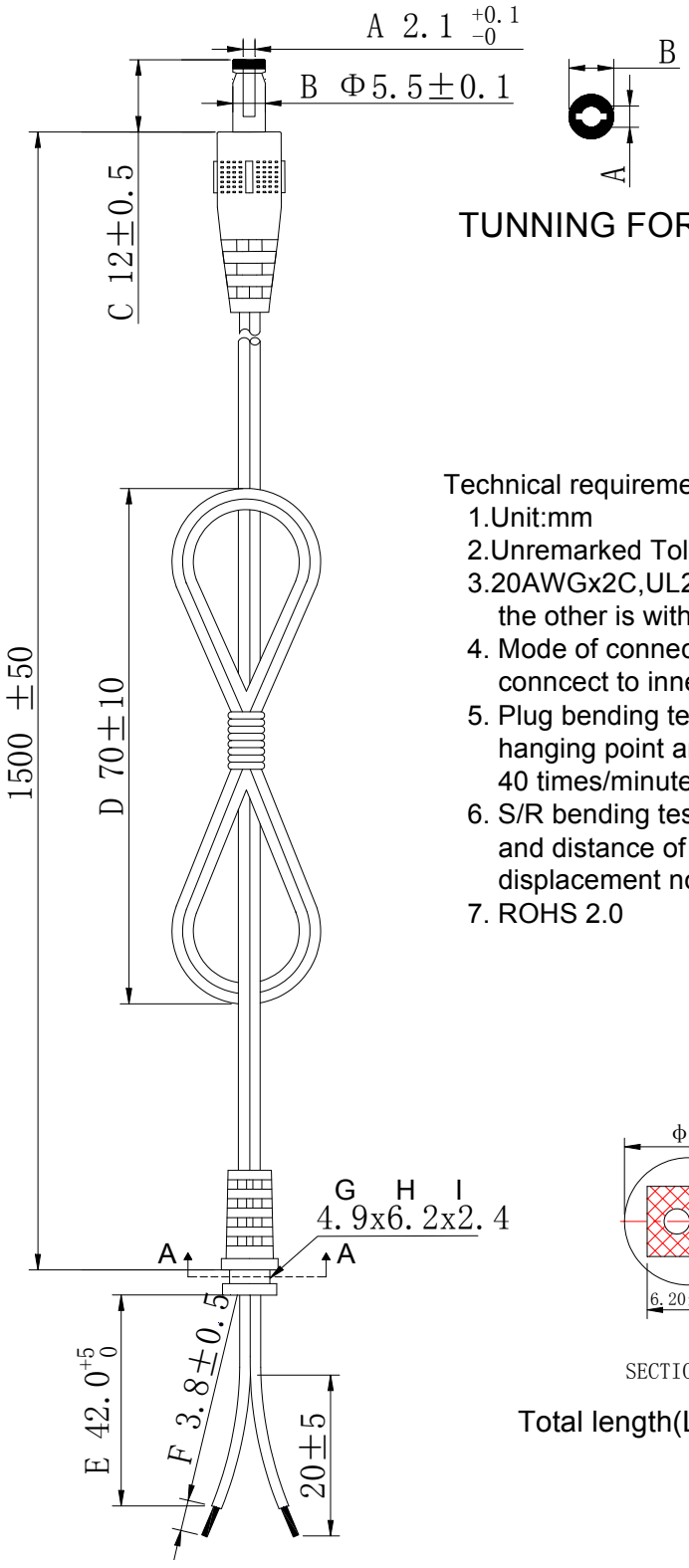
APPENDIX C

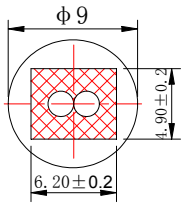
DC CORD



TUNNING FORK WITH GROOVE

Technical requirements:

1. Unit:mm
2. Unremarked Tolerance:±0.3;
3. 20AWGx2C,UL2468;one is black , the other is with white minus sign
4. Mode of connection:wire with white minus sign conncect to inner tip
5. Plug bending test:load 200g weight,distance of hanging point and fulcrum:30cm,angle:60° 40 times/minute, min 2000 times
6. S/R bending test: load 20LB(9072g), continous 1minute and distance of hanging point and fulcrum is 30cm, displacement no more than 5mm
7. ROHS 2.0



SECTION A-A

Total length(L):1500 ±50(IQC checks)

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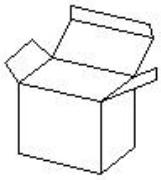
APPENDIX D

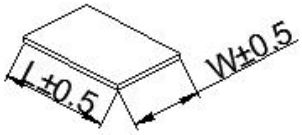
Packing Drawing

PRUDUCT/产品：

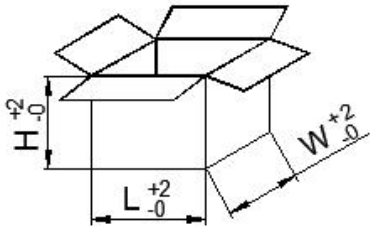
PRIMARY BOX/小白盒：



PAPERBOARD/平卡：



CARTON/纸箱：



DIMENSION(UNIT IN cm):

	L	W	H
WHITE BOX	9.0	4.0	14.0
PAPERBOARD	37.0	37.0	0.5
CARTON	38.5	38.5	30.8

PACKING METHOD:

PAPERBOARD PLACEMENT METHOD	PUT A PAPERBOARD BETWEEN THE TOP AND BOTTOM,TOTAL 2PCS
PACKING METHOD	36PCS/LAYER X 2 LAYERS
QTY	72PCS
N.W.	14.50KG
G.W.	15.65KG

备注：以上 N.W/G.W 供参考，实际以大货生产为准。

REMARK:

1. STORAGE CONDITION
   TEMPERATURE: -10℃～+60℃
   RELATIVE HUMIDITY: 30%～80%
2. STORAGE PERIOD: 6 MONTHES
3. ANLISTATIG: NO REQUIREMENT
4. PLEASE ADVISE IF ANY COMMENTS ABOUT THE PACKING INFORMATION. OTHERWISE,THIS INFORMATION IS DEFAULTED AS CUSTOMER APPROVAL, AND WILL BE APPLIED TO PRODUCTION.

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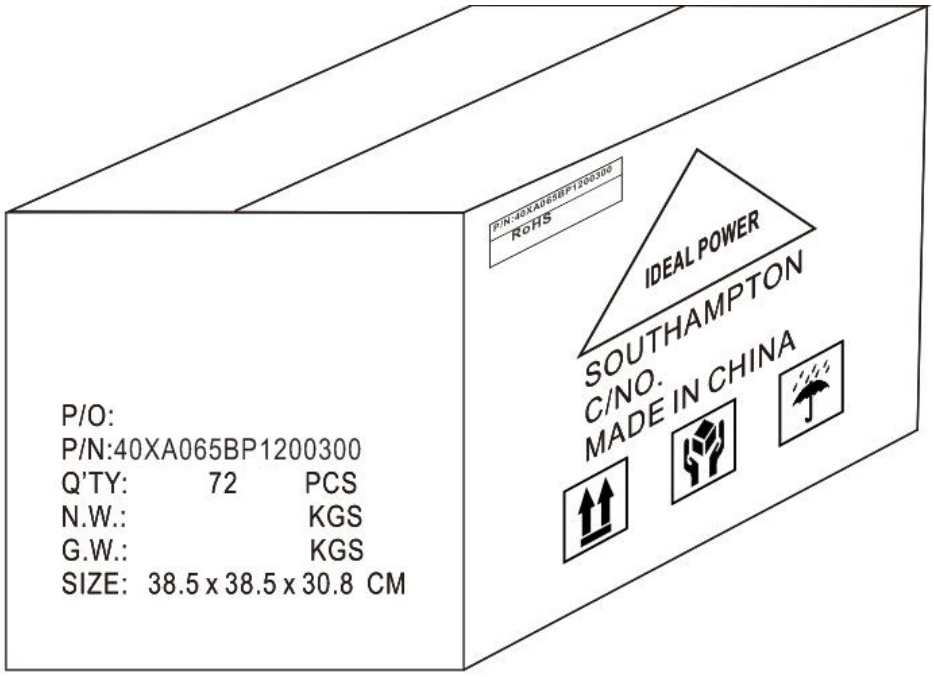
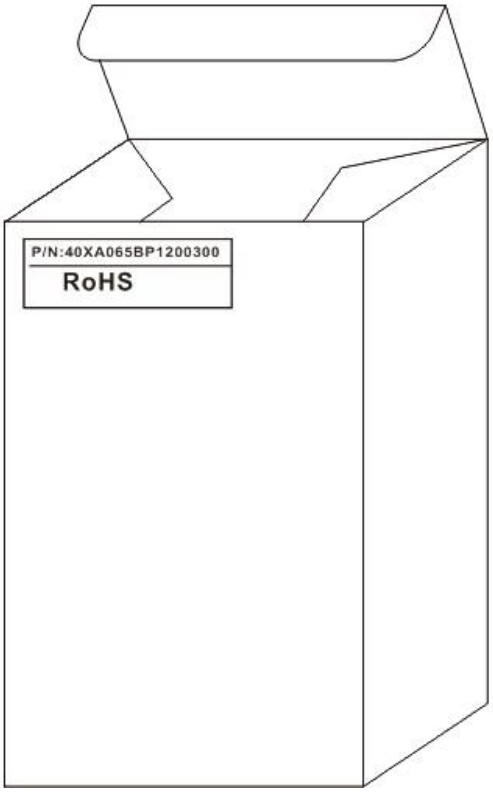
APPENDIX E

Description for marking on carton and white box





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APPENDIX E

SAMPLE TEST REPORT

CUSTOMER	Ideal Power	P/N	S-1900185
MODEL NO.	XA065BP1200300 1#	CUSTOMER P/N	40XA065BP1200300

Items No.	Test Items	Unit	Test condition & result				Spec. Limit	Pass/Fail
			90Vac 60Hz	115Vac 60Hz	230Vac 50Hz	264Vac 50Hz		
1	Unload input current	mA	16.27	20.76	36.13	39.82	—	-
2	Unload input power	W	0.05	0.05	0.08	0.15	＜0.1W(230V)	Pass
3	Rated load input current	mA	718.2	574.0	298.4	270.7	≤1500mA	Pass
4	Rated load input power	W	40.96	40.46	40.29	40.54	—	-
5	Unload output voltage (0.0A)	V	12.28	12.28	12.28	12.28	11.4-12.6Vdc	Pass
6	Rated load output voltage (3.0A)	V	11.64	11.64	11.65	11.65	11.4-12.6Vdc	Pass
7	Rated load Output ripple&noise voltage (3.0A)	mV	130	130	126	126	≤200mVp-p	Pass
8	Short-circuittest (Pin&Iout)	W	1.25	2.41	3.15	4.87	≤6W	Pass
9	Over current protection	A	3.85	3.92	3.62	3.51	OCP≤4.5A	Pass
10	Output overshoot	%	-	-	-	-	≤10%	-
11	Turn on delay time	mS	-	-	-	-	≤3000mS	-
12	Hold up time	mS	-	-	-	-	≥10mS /(115Vac) ≥20mS /(230Vac)	-
13	Efficiency	%	-	-	-	-	≥87.41%	-
14	Hi-pot test	Pri. to Sec. : 2121Vdc, 1Minute, Cut off current≤10mA (Test result: 0.0002mA)						Pass
15	Max. and Light load change test	Max. load to Light load：OK Light load to max. load: OK (90-264Vac)						
16	Burn-in	Burn-in 4 Hrs, The sample OK						
17	Appe. label and fusion	Appearance: OK, Label: OK, Fusion: OK						

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APPENDIX E

Energy Star TEST REPORT

CUSTOMER	Ideal Power	P/N	S-1900185
MODEL NO.	XA065BP1200300 1#	CUSTOMER P/N	40XA065BP1200300

Items No.	Test parameter	Unit	Input voltage 115Vac/60Hz						Spec. Limit	Pass/Fail
			100%	75%	50%	25%	0%	Aver.Eff.		
1	Input current	mA	588.3	432.3	312.7	188.7	20.76		≤ 1500mA	Pass
2	Input power	W	40.27	30.13	20.18	10.14	0.05		-	-
3	Output current	A	3	2.25	1.5	0.75			-	-
4	Output voltage	V	11.61	11.78	11.96	12.12			-	-
5	Power factor	-	-	-	-	-			-	-
6	Efficiency	%	86.49	87.97	88.90	89.64		88.25	≥87.41%	Pass

Items No.	Test parameter	Unit	Input voltage 230Vac/50Hz						Spec. Limit	Pass/Fail
			100%	75%	50%	25%	0%	Aver.Eff.		
1	Input current	mA	297.6	221.2	164.8	101.3	39.82		≤1500mA	Pass
2	Input power	W	40.17	30.21	20.27	10.28	0.15		-	-
3	Output current	A	3	2.25	1.5	0.75			-	-
4	Output voltage	V	11.63	11.79	11.96	12.12			-	-
5	Power factor	-	-	-	-	-			-	-
6	Efficiency	%	86.86	87.81	88.51	88.42		87.90	≥87.41%	Pass

Note: 1. Aver.Eff.Spec.(≥87.41 %) & Unload input power Spec.(≤0.1W)for EPS Version 2.0)

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APPENDIX E

SAMPLE TEST REPORT

CUSTOMER	Ideal Power	P/N	S-1900185
MODEL NO.	XA065BP1200300 2#	CUSTOMER P/N	40XA065BP1200300

Items No.	Test Items	Unit	Test condition & result				Spec. Limit	Pass/Fail
			90Vac 60Hz	115Vac 60Hz	230Vac 50Hz	264Vac 50Hz		
1	Unload input current	mA	16.27	20.72	34.48	39.46	—	-
2	Unload input power	W	0.04	0.04	0.07	0.15	＜0.1W(230V)	Pass
3	Rated load input current	mA	739.7	585.1	304.8	276.5	≤1500mA	Pass
4	Rated load input power	W	40.90	40.33	40.19	40.54	—	-
5	Unload output voltage (0.0A)	V	12.28	12.27	12.27	12.27	11.4-12.6Vdc	Pass
6	Rated load output voltage (3.0A)	V	11.61	11.61	11.61	11.61	11.4-12.6Vdc	Pass
7	Rated load Output ripple&noise voltage (3.0A)	mV	129	129	125	125	≤200mVp-p	Pass
8	Short-circuittest (Pin&Iout)	W	2.49	2.60	2.81	2.67	≤6W	Pass
9	Over current protection	A	3.84	3.91	3.62	3.52	OCP≤4.5A	Pass
10	Output overshoot	%	-	-	-	-	≤10%	-
11	Turn on delay time	mS	-	-	-	-	≤3000mS	-
12	Hold up time	mS	-	-	-	-	≥10mS /(115Vac) ≥20mS /(230Vac)	-
13	Efficiency	%	-	-	-	-	≥87.41%	-
14	Hi-pot test	Pri. to Sec. : 2121Vdc, 1Minute, Cut off current≤10mA (Test result: 0.0002mA)						Pass
15	Max. and Light load change test	Max. load to Light load：OK Light load to max. load: OK (90-264Vac)						
16	Burn-in	Burn-in 4 Hrs, The sample OK						
17	Appe. label and fusion	Appearance: OK, Label: OK, Fusion: OK						

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APPENDIX E

Energy Star TEST REPORT

CUSTOMER	Ideal Power	P/N	S-1900185
MODEL NO.	XA065BP1200300 2#	CUSTOMER P/N	40XA065BP1200300

Items No.	Test parameter	Unit	Input voltage 115Vac/60Hz						Spec. Limit	Pass/Fail
			100%	75%	50%	25%	0%	Aver.Eff.		
1	Input current	mA	569.7	426.2	309.4	183.1	20.72		⩽ 1500mA	Pass
2	Input power	W	40.61	30.29	20.20	10.15	0.04		-	-
3	Output current	A	3	2.25	1.5	0.75			-	-
4	Output voltage	V	11.63	11.78	11.94	12.09			-	-
5	Power factor	-	-	-	-	-			-	-
6	Efficiency	%	85.91	87.50	88.66	89.33		87.85	⩾87. 41%	Pass

Items No.	Test parameter	Unit	Input voltage 230Vac/50Hz						Spec. Limit	Pass/Fail
			100%	75%	50%	25%	0%	Aver.Eff.		
1	Input current	mA	295.7	223.7	165.3	101.4	34.48		⩽1500mA	Pass
2	Input power	W	40.06	30.20	20.21	10.23	0.07		-	-
3	Output current	A	3	2.25	1.5	0.75			-	-
4	Output voltage	V	11.63	11.78	11.94	12.09			-	-
5	Power factor	-	-	-	-	-			-	-
6	Efficiency	%	87.09	87.76	88.62	88.64		88.03	⩾87. 41%	Pass

Note: 1. Aver.Eff.Spec.(⩾87.41 %) & Unload input power Spec.(⩽0.1W)for EPS Version 2.0)

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