

Certificate of Conformance

Energy Efficiency Certification

UL conducted an independent evaluation on behalf of:

Chicony Power Technology Co., Ltd.

2F, No. 25, Wugong 6th Rd., Wugu Dist., New Taipei City 248 Taiwan

for the following products:

External Power Supply

Brand: Chicony

Model: A13-040N3A

This product meets all of the necessary qualifications pursuant to:

-NRCAN: Amendment 11 to the Energy Efficiency Regulations for External Power Supplies, published on October 12, 2011 in the Canada Gazette, Part II

-CEC: Appliance Efficiency Regulations (Title 20, Sections 1601 through 1608) dated December 2010

-US DoE: Office of Energy Efficiency and Renewable Energy 10 CFR Parts 429, 430 and 431 [Docket No. EERE-2010- BT-CE-0014] RIN 1904-AC23

-Australian and New Zealand: Minimum Energy Performance Standards (MEPS): Performance and Marking Requirements for External Power Supplies and AS/NZS4665 – 2005

-EU Directive for Energy-related Products ErP 2009/125/EC and Implementing Measure (IM) no. EC278/2009 for External Power Supplies



2013-08-16

Certification Date

N/A

Certification Revision Date

J. H. SONG

Issued by

13CA46835

UL Product Number



ENERGY EFFICIENCY CERTIFICATION (EEC):Test Report - Cover Page

Customer Name:	Chicony Power Technology Co., Ltd.
Address:	2F, No. 25, Wugong 6th Rd., Wugu Dist., New Taipei City 248 Taiwan

Laboratory Name:	Underwriters Laboratories Taiwan Co., Ltd
Address:	4th & 5th Fl., No. 35, Sec. 2, ChungYang S. Road, Peitou, Taipei City 112, Taiwan

Brand name(s):	Chicony
Model name(s):	A13-040N3A
Product category:	External Power Supply
Electrical Ratings:	I/P: 100-240 Vac, 1A or 2.5A, 50-60 Hz O/P: 19Vdc, 2.1A
Representative (tested) Model:	A13-040N3A
Model differences:	All models are same, except for model designation
Construction details:	N/A

The Sample(s) tested is(are) compliant with the following applied standards/regulations:			
NRCAN: Amendment 11 to the Energy Efficiency Regulations for External Power Supplies, published on October 12, 2011 in the Canada Gazette, Part II			
CEC: Appliance Efficiency Regulations (Title 20, Sections 1601 through 1608) dated December 2010			
US DoE: Office of Energy Efficiency and Renewable Energy 10 CFR Parts 429, 430 and 431 [Docket No. EERE-2010-BT-CE-0014] RIN 1904-AC23			
EPA "Test Method for Calculating the Energy Efficiency of Single-Voltage External AC-DC and AC-AC Power Supplies" dated August 11, 2004			
Australian and New Zealand: Minimum Energy Performance Standards (MEPS): Performance and Marking Requirements for External Power Supplies and AS/NZS4665 – 2005			
EU Directive for Energy-related Products ErP 2009/125/EC and Implementing Measure (IM) no. EC278/2009 for External Power Supply			
Mexico: Secretaría de Energía (Ministry of Energy), Director General de la Comisión Nacional para el Uso Eficiente de la Energía (Director-General of the National Energy Efficiency Commission) - Catálogo de equipos y aparatos para los cuales los fabricantes, importadores, distribuidores y comercializadores deberán incluir información sobre su consumo energético (Catalogue of equipment and appliances for which manufacturers, importers, distributors and retailers are required to provide energy consumption information)			
UL Project No. - Report ID:	13CA46835		
Project Handler:	Patrick Lee	Reviewed by:	Kristin Davis
Issued: (yyyy-mm-dd)	2013-08-16	Revised: (yyyy-mm-dd)	N/A

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ATTACHMENT(S)

Label of External Power Supply

Chicony
POWER TECHNOLOGY

Contact address in EU:
Acer Italy s.r.l
Via Lepesi, 40,
20020 Lainate (MI) Italy
GB4943.1-2011

AC ADAPTER(电源适配器/交换式电源供应器)
MODEL(型号/型號): A13-040N3A
UP/N:A040R059L REV:01

INPUT/Nilai Daya(输入/輸入): 100-240 V~1 A 50-60 Hz
OUTPUT(输出/輸出): 19 V=2.1 A 40 W
Efficiency Level: **V**

CAUTION: FOR INDOOR USE ONLY.
CONNECT ONLY TO GROUNDED OUTLET.
(警告: 限用于信息技术设备及室内使用/限用于資訊技術設備及室內使用)

Vorsicht: Nur für den Gebrauch im Innenbereich.
Nur an geerdete Steckdosen anschließen
Endast für kontorsmaskin.
Apparaten skall anslutas till jordat uttag.
Laitte on liitettävä suojakoskettimilla varustettuun pistorasiaan.

Energy Verified Rendement Énergétique Vérifié

NOM NYCE 1 3 1 2 4 5 - 1 1

SAFETY MARK

KYCHU 100xx-xxxx
MSIP-REM-C1V-A13-040N3A
製造商: 群光電能科技股份有限公司
型號: A13-040N3A
額定輸入: AC 100-240 V 50-60 Hz, 1 A
額定輸出: DC 19 V=2.1 A
地址: (62)-2-69-9741
地址: 群光電能科技股份有限公司

Consumo de energia: 45.4 Wh
En modo de espera: 0.07 Wh
ES0xxxxxx Nxxxxxx

ES 03 09 2017

H005 13 001 Rxxxxx 25413

製造商: 群光電能科技股份有限公司
Made in China/Buatan China/ 中国制造/中國製造 -F1

NNO-1/09 LISTED I.T.E. POWER SUPPLY 0F04 E143700

TÜV RT PS E

日本エイサー株式会社

UL US LISTED

10

S/N: XXCCCCYYWWXXXXXX

00-VS-F0417, Version 2.0, The information and documentation involving UL Mark services are provided on behalf of Underwriters Laboratories (UL) or any authorized licensee of UL. The results reported herein have been performed in accordance with the laboratory's terms of accreditation. This report shall not be reproduced except in full without the written approval of the Laboratory. The results in this report apply to the test sample(s) mentioned above at the time of the testing period only and are not to be used to indicate applicability to other similar products.

DATA PACKAGE INFORMATION SHEET

Applicant Information	Name / Address:	Chicony Power Technology Co., Ltd 2F, No. 25, Wugong 6th Rd., Wugu Dist., New Taipei City 248 Taiwan
Product Information	Standard(s):	<input checked="" type="checkbox"/> NRCan: Amendment 11 to the Energy Efficiency Regulations for External Power Supplies, published on October 12, 2011 in the Canada Gazette, Part II
		<input checked="" type="checkbox"/> International Efficiency Marking Protocol for External Power Supplies
		<input checked="" type="checkbox"/> CEC: Appliance Efficiency Regulations (Title 20, Sections 1601 through 1608) dated December 2010
		<input checked="" type="checkbox"/> US DoE: Office of Energy Efficiency and Renewable Energy 10 CFR Parts 429, 430 and 431 [Docket No. EERE-2010-BT-CE-0014] RIN 1904-AC23
		<input checked="" type="checkbox"/> EPA "Test Method for Calculating the Energy Efficiency of Single-Voltage External AC-DC and AC-AC Power Supplies" dated August 11, 2004
		<input checked="" type="checkbox"/> Australian and New Zealand: Minimum Energy Performance Standards (MEPS): Performance and Marking Requirements for External Power Supplies and AS/NZS4665 - 2005
		<input checked="" type="checkbox"/> EU Directive for Energy-related Products ErP 2009/125/EC and Implementing Measure (IM) no. EC278/2009 for External Power Supply
		Mexico: Secretaría de Energía (Ministry of Energy), Director General de la Comisión Nacional para el Uso Eficiente de la Energía (Director-General of the National Energy Efficiency Commission) - Catálogo de equipos y aparatos para los cuales los fabricantes, importadores, distribuidores y comercializadores deberán incluir información sobre su consumo energético (Catalogue of equipment and appliances for which manufacturers, importers, distributors and retailers are required to provide energy consumption information)
		<input type="checkbox"/> Other:--
	CCNs:	ENVP
	Product Name/Type:	External Power Supply <input checked="" type="checkbox"/> AC-DC <input type="checkbox"/> AC-AC
	Model(s):	A13-040N3A

Test Location Information	DAP and UL:	<input type="checkbox"/> CTD	<input type="checkbox"/> TCP	<input type="checkbox"/> TPTDP	<input type="checkbox"/> WTD	<input checked="" type="checkbox"/> UL
	Test Location Name/Address:	Underwriters Laboratories Taiwan Co., Ltd / 4th & 5th Fl., No. 35, Sec. 2, ChungYang S. Road, Peitou, Taipei City 112, Taiwan				
	Tests Conducted By**:	Sign	Robert Kuo			
		Print	Robert Kuo			
	**When all tests are conducted by one person, the printed name and signature can be inserted here instead of on each page containing data.					
	Authorized Signatory or TCP Reviewer:	Sign	--			
		Print	--			
Date		--				
UL WTD / WMT Witness:	Sign	--				
	Print	--				

Reviewed & Accepted	Qualified Project Handler:	Sign	Patrick Lee
		Print	Patrick Lee

LIST OF TESTS

Test Name

Page

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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.

Standard	Ambient Temperature °C	Relative Humidity RH %	Supply Voltage Tolerance	Total Harmonic Distortion THD %	Airspeed, room m/s	Supply Frequency Tolerance %
--	23±5	10-80	±1 (±4)	<2 (<5)	≤0.5	±1

NOTE:

Values in parenthesis apply only to products which are rated for > 1.5kW maximum power. 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).

Witness Test Data Program (WTDP) Information:

Environment:

Accommodations and Environmental conditions, including proper power source meet the requirements of the test standard or UL default criteria (ISO/IEC 17025 Clause 5.3.1, 5.3.2, 5.3.3) Yes No N/A

Equipment:

Testing is being conducted within the test equipment calibration dates. (See Test Instrument Information Page and ISO/IEC 17025 5.6.2.2) Yes No

Critical Consumables:

Critical consumables are compliant with test standard requirements. (ISO/IEC 17025 Clause 4.6) Yes No N/A

Sample Identification:

Identification of items to be tested has been made (e.g. model no., Serial No., etc.) (See Test Sample Identification page and ISO/IEC 17025 Clause 5.8.2) Yes No

Summary:

The test facility was deemed to have the environment and capabilities necessary to perform the tests included in this data package. Yes No

2012-12-01
P.L

TEST SAMPLE IDENTIFICATION

The table below is to provide correlation of sample numbers to specific product related information. Refer to this table when a test identifies a test sample by "Sample No." only.

Sample Number	Sample Card Number	Date Received	Manufacturer, Product Identification and Ratings
S1	A040R059L	2012-12-24	CHICONY POWER TECHNOLOGY CO., LTD / External Power Supply Model A13-040N3A Input: 100-240 Vac, 50-60Hz, 1A Output: 19Vdc, 2.1A
S2	A040R059L	2012-12-24	CHICONY POWER TECHNOLOGY CO., LTD / External Power Supply Model A13-040N3A Input: 100-240 Vac, 50-60Hz, 1A Output: 19Vdc, 2.1A
S3	A040R059L	2012-12-24	CHICONY POWER TECHNOLOGY CO., LTD / External Power Supply Model A13-040N3A Input: 100-240 Vac, 50-60Hz, 1A Output: 19Vdc, 2.1A
Sampling Procedure (if used) :		N/A	

POWER SUPPLY REFERENCE PAGE (ENGINEERING TO COMPLETE)

Product Name/Type:	External AC/DC Power Supply (EPS)
Manufacturer:	CHICONY POWER TECHNOLOGY CO., LTD
Brand Name:	Chicony
Model Number/Designation:	A13-040N3A
Power Supply Class (ex. 2, 3, etc.)	N/A
Existing Roman Numeral Marking, if marked (i.e. III, IV, V)	V

Nameplate Rating:	Input:	100-240 Vac, 1A 50-60 Hz
	Output:	19Vdc, 2.1A

Each sample was tested at:	<input type="checkbox"/> 115V, 60Hz	<input type="checkbox"/> 230V, 50Hz	<input checked="" type="checkbox"/> Both
UUT Output Cord Length (\pm 1 cm):	180 cm		
UUT is a Replacement EPS:	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
Presence of Input Power Switch (Y/N):	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Input Power Switch (ON/OFF):	<input type="checkbox"/> ON	<input type="checkbox"/> OFF	<input checked="" type="checkbox"/> N/A
UUT is a Standard/Low Voltage Type:	<input checked="" type="checkbox"/> Standard	<input type="checkbox"/> Low Voltage	<input type="checkbox"/> N/A
End Product Powered by the UUT:	Not available.		

Notes/Comments: Copied this report from 12CA68931

- | | | |
|-------------------------------------|----------------------------------|--|
| <input checked="" type="checkbox"/> | Maximum Output Power (W): | 39.86 |
| <input checked="" type="checkbox"/> | Maximum Ambient ($^{\circ}$ C): | 21.6 |
| <input checked="" type="checkbox"/> | Sample Operating Position: | <input checked="" type="checkbox"/> Horizontal <input type="checkbox"/> Vertical <input type="checkbox"/> Other (Specify): |

TECHNICIAN'S REFERENCE PAGE

DEFINITIONS

“UUT”: UUT is any acronym for “Unit Under Test”

“Low Voltage External Power Supply”: An external power supply (EPS) with a nameplate output voltage of less than 6 volts and a nameplate output current greater than or equal to 550 milliamps.

“Active Mode”: The condition in which the input of a power supply is connected to line voltage ac and the output is connected to an ac or a dc load drawing a fraction of the power supply's nameplate power output greater than zero.

“Active Mode Efficiency”: The ratio, expressed as a percentage, of the total active output power (ac or dc) produced by a power supply to the active input power (ac) required to produce the total active output power.

“No-Load Mode”: The condition in which the input of a power supply is connected to an ac source consistent with the power supply's nameplate ac voltage, but the output is not connected to a product or any other load.

“Power Factor (True)”: The true power factor is the ratio of the active or real power (P) consumed in watts to the apparent power (S), drawn in volt-amperes (VA).

$$PF = P/S$$

POWER MEASUREMENTS

All power figures should be in watts and rounded to the second decimal place. For loads greater than or equal to 10 W, three significant figures shall be reported.

Where the measured power is not stable, average power readings over a user-selected period are used in this case. The test instrument shall record the true average power over a user selected period, the period selected shall not be less than 5 minutes. If the power varies over a cycle, the period selected to average power shall be one or more complete cycles.

INPUT METER CONSIDERATIONS

The power measurement instrument shall have a resolution of:

- 0.01 W or better for power measurements of 10 W or less;
- 0.1 W or better for power measurements of greater than 10 W up to 100 W; and
- 1 W or better for power measurements of greater than 100 W.

The following attributes in addition to those above are suggested for the input power meter:

- Frequency response of at least 3 kHz.

Power measurement instrument having the ability to average power accurately over any user-selected time interval (this is usually done with an internal math calculation dividing accumulated energy by time within the meter, which is the most accurate approach).

TECHNICIAN'S REFERENCE PAGE (Cont'd)

INSTRUCTIONS – TEST PREPARATION AND LOADING

“Built-in switch”: if a built-in switch in the UUT control power flow to the ac input, it shall be ON position for measurement.

“Output Cord”: the UUT must be tested with the output cord supplied by the manufacturer.

Metering equipment shall be connected to the output of the power supply by:

- a) Cutting the cord immediately adjacent to the output connector
- b) Attaching leads and measuring the efficiency form the output connector itself

Where the UUT is directly connected to the end product that it is powering, the cord immediately adjacent to the powered product shall be cut and output measurement probes shall be connected at that point.

“UUT with more than 2 output wires”: in similar cases, the tests shall be conducted on two output wires that supply power to the product. The other output wires (i.e.: used for battery monitoring) shall be left disconnected.

“UUT with switchable output”: in similar cases, the UUT shall be tested for each output voltage, one at a time.

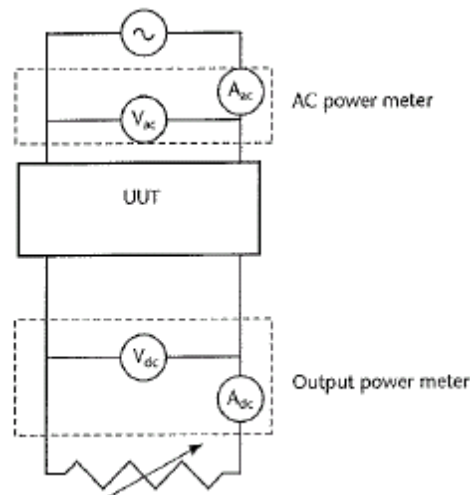
“Loading”: A set of variable Resistive of Electronics Loads shall be used to load the power supply to produce the four active-mode load conditions specified in Table 1 (Load Conditions 1 to 4). While this load may differ from the electronic loads that EPS are designed to power, they provide standardized and repeatable references for testing and product comparison.

When an Electronic Load is used for the output loading, the desired output current should be adjusted in constant current (CC) mode rather than adjusting the required output power in constant power (CP) mode.

When a Resistive Load is used, it needs to be measured precisely with an ohmmeter, a variable resistor may be adjusted to the point where an ammeter confirms that the desired percentage of nameplate output current is flowing through the load.

Figure A1 shows an external power supply test set-up using a variable resistance as the load.

Figure A1 – Generic test set-up using a variable resistive load



Tested by: _____ Tested by: _____ Test Date: 2012-12-26
signature print
Sample # : _____ Instrument Code / Range: _____

ACTIVE/NO-LOAD MODE POWER CONSUMPTION TEST:

NRCAN: CSA-C381.1-08, First Edition;
DoE: CFR Parts 429, 430 and 431 [Docket No. EERE-2010-BT-CE-0014] RIN 1904-AC23;
EPA and/or CEC : Test Method for Calculating the Energy Efficiency of Single-Voltage External AC-DC and AC-AC PS (August 11, 2004) ;
AS/NZS4665 - 2005: Test method and conditions for EPS

TESTING SEQUENCE:

The UUT shall be tested at each load condition specified in Table 1, testing consecutively from Load Condition 1 (100% Load) to Load Condition 5 (No-Load).

The UUT shall be operated at 100% of nameplate current output (Table 1: Load Conditions 1) for at least 30 minutes immediately prior to conducting efficiency measurements.

After this warm-up period, the technician shall monitor AC input power for a period of 5 minutes to assess the stability of the UUT. If the power level does not drift by more than 5% from the maximum value observed, the UUT can be considered stable and the indicated measurements can be recorded at the end of the 5 minute period.

For Agencies other than NRCAN, subsequent Load Conditions 2 - 5 (See Table 1) can then be measured under the same 5 minute stability guidelines. Please take note that only for compliance with requirements in NRCAN programs and CSA/CAN381.1-08, the UUT shall operate under each of the subsequent active/no-load mode conditions (Table 1: Load Conditions 2 to 5) for a minimum warm-up period of not less than 30 minutes.

While the unit operates under each of the subsequent Load Conditions from 2 to 5 (See Table 1) for a period of time not less than required warm-up period, the technician shall record all the indicated measurements two (2) times for each Load Condition, as indicated below:

1st Measurement (required for all Agencies except NRCAN): the technician shall monitor ac input power for a period of 5 minutes to assess the stability of the UUT (See of Table 1, 2 and 3 for details). If the power level does not drift by more than 5% from the maximum value observed, the UUT shall be considered stable and the measurements can be recorded at the end of the 5 minute period.

2nd Measurement (required for NRCAN only): After the mandatory 30 minutes warm-up period for each of the subsequent Load Conditions (See of Table 1, 2 and 3 for details) the unit was further operated under each of the active/no-load mode conditions for a period of time not less than five minutes. If the power level did not drift by more than 5% from the maximum value observed during the five-minute period, stability was considered achieved and the input power consumption was recorded.

When AC input power is not stable over the 5 minute period, the technician shall follow the guidelines established by IEC62301 and CAN/CSA62301, Clause 5.3.2 (a) for measuring average power or Clause 5.3.2 (b) for measuring accumulated energy over time for both AC input and DC output⁽¹⁾.

⁽¹⁾ = IEC62301 and CAN/CSA62301 standards are intended to measure input power, however the methods specified in Clauses 5.3.2 (a) and 5.3.2 (b), may be used to measure Output power for the purposes of this testing.

The sequence mentioned above at items 1 and 2 shall be repeated for each Load Conditions from 2 to 5 in Table 1.

- For Australia/New Zealand requirements (AuNZ), if a power supply has only a 240V, 50Hz input, conduct the testing at 240 V, 50Hz input and record the data in the 230V tables for ACTIVE/NO-LOAD MODE POWER CONSUMPTION TEST. Indicate on the data tables that testing was conducted at 240V, 50 Hz input.

Tested by: _____ Tested by: _____ Test Date: 2012-12-26
signature print
 Sample # : _____ Instrument Code / Range: _____

ACTIVE/NO-LOAD MODE POWER CONSUMPTION TEST: (Cont'd)

TESTING SEQUENCE (Cont'd)

The above testing sequence shall be repeated on three (3) units in total of the same UUT.

Table 1 – Load Conditions and testing sequence

Load Conditions for UUT	Percentage of Nameplate Output Current	Warm-up period by Load Conditions [minutes]	Assessment period after warm-up [minutes]	Number of measurement(s) by Load Conditions
1	100% ± 2% ⁽²⁾	30	5	1 for NRCan & other Agencies
2	75% ± 2%	0 (for other agencies)	5	1 for other Agencies
		30 (for NRCan)	5	1 for NRCan
3	50% ± 2%	0 (for other agencies)	5	1 for other Agencies
		30 (for NRCan)	5	1 for NRCan
4	25% ± 2%	0 (for other agencies)	5	1 for other Agencies
		30 (for NRCan)	5	1 for NRCan
5	0%	0 (for other agencies)	5	1 for other Agencies
		30 (for NRCan)	5	1 for NRCan

Note(s):

⁽²⁾ 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% (min) to 52% (max) of rated output current.

Tested by: _____ Tested by: _____ Test Date: 2012-12-26
signature print
Sample #: _____ Instrument Code / Range: _____

ACTIVE/NO-LOAD MODE POWER CONSUMPTION TEST: (Cont'd)

TESTING SEQUENCE (Cont'd)

Table 2 – Testing sequence: details of the Load Conditions 1 (for NRCan and Other Agencies)

Start	30 minutes for Stabilization	5 minutes Assess Stability for NRcan and other Agencies	One Reading ⁽³⁾ (for NRCan and other Agencies)
--------------	---	--	---

Table 3 – Testing sequence: details of Load Conditions 2 to 5 (for NRCan and/or Other Agencies)

Start 5 minutes ⁽³⁾ (Assess Stability for other agencies)	1st Reading ⁽⁴⁾ (for Agencies <u>other than</u> NRCan)	25 minutes Additional/Continuing warm-up period for NRCan only	5 minutes (Assess Stability for NRCan only)	2nd Reading ⁽⁴⁾ (For NRCan only)

Note:

⁽³⁾ = for agencies other than NRCan, only one warm-up period of 30 minutes is required for each UUT at the beginning of the test procedure. Technician shall monitor the AC input power during the first 5 minutes to assess the stability of the UUT. If the power level did not drift by more than 5% from the maximum value observed during the 5 minutes period, stability was considered achieved and the input power consumption can be recorded after 5 minutes.
⁽⁴⁾ = If ac input power is not stable over a 5 minute period, the technician shall follow the guidelines established by IEC 62301 for measuring average power or accumulated energy over time for both ac input and dc output.

Tested by: _____ Tested by: _____ Test date: 2012-12-26
signature print
Sample #: S1 Instrument Code / Range: _____

ACTIVE/NO-LOAD MODE POWER CONSUMPTION TEST: (Cont'd)
RESULTS: (Cont'd)

Ambient Temperature (°C): 21.6 Relative Humidity (%): 63.7 Airspeed, room (m/s) : 0.1
Sample No.: 1
Input Test Voltage (Vac): 115 Input Test Frequency (Hz): 60 Rated Output Current (A): 2.1

Load #	External Power Supply Input Electric Data							Power Supply [AC] [DC] Output					
	V	HZ	A	PF	THD	Wh	**Avg. Power (W)	Wh Interval [min]	Minimum Warm-up time [minutes]	V	A	Wh	**Avg. Power (W)
1 (100%)	114.92	60.00	0.750	0.53	0.51	3.785	45.420	5	30 (All)	18.97	2.10	3.322	39.864
2 (75%)	114.95	60.00	0.594	0.50	0.45	2.830	33.960	5	0 (others)	19.03	1.57	2.498	29.976
	114.95	60.00	0.594	0.50	0.45	2.830	33.960	5	30 (NRCAN)	19.03	1.57	2.498	29.976
3 (50%)	114.96	60.00	0.429	0.46	0.39	1.896	22.752	5	0 (others)	19.13	1.05	1.674	20.088
	114.96	60.00	0.429	0.46	0.39	1.896	22.752	5	30 (NRCAN)	19.13	1.05	1.674	20.088
4 (25%)	114.92	60.01	0.241	0.41	0.34	0.958	11.496	5	0 (others)	19.20	0.52	0.840	10.080
	114.92	60.01	0.241	0.41	0.34	0.958	11.496	5	30 (NRCAN)	19.20	0.52	0.840	10.080
5 (0%)	115.33	60.00	0.015	0.03	0.25	0.004	0.048	5	0 (others)				
	115.33	60.00	0.015	0.03	0.25	0.004	0.048	5	30 (NRCAN)				

CEC/DoE/EPA - Efficiency of Power Supply (after 5 min warm-up)					NRCAN - Average results Efficiency of Power Supply (after 30 min warm-up)				
100%	75%	50%	25%	Arithmetic Average of Efficiency at Load Conditions 1 – 4	100%	75%	50%	25%	Arithmetic Average of Efficiency at Load Conditions 1 – 4
87.768	88.26855	88.29114	87.68267	88.0024665	87.7675	88.26855	88.291139	87.68267	88.0024665

CEC/DoE/EPA - Power Consumed by UUT (W)					NRCAN - Power Consumed by UUT (W)				
100%	75%	50%	25%	No Load	100%	75%	50%	25%	No Load
5.556	3.984	2.664	1.416	0.048	5.556	3.984	2.664	1.416	0.048

Tested by: _____ Tested by: _____ Test date: 2012-12-26
signature print
Sample #: S1 Instrument Code / Range: _____

ACTIVE/NO-LOAD MODE POWER CONSUMPTION TEST: (Cont'd)

RESULTS: (Cont'd)

Comments:

** The average power is calculated by the following equation: Avg. Power (Watts) = [Wh X 60 minutes / hours] / Wh Interval (minutes)

If test has not been performed in accordance with requirements in NRCAN: Amendment 11 to the Energy Efficiency Regulations for External Power Supplies, published on October 12, 2011 in the Canada Gazette, Part II; technician shall fill all cells related to NRCAN results with “-“ or leave them “blank”.

If test has been performed in accordance with requirements in NRCAN program only, technician shall fill all cells related to results for all other Agencies other than NRCAN with “-“ or leave them “blank”.

If instantaneous power measurement is acceptable, technician record the instantaneous power measurement under the column “**Avg. Power (W)” and then shall fill cells of columns “Wh” and “Wh Interval” with “-“ or leave them “blank”.

Tested by: _____ Tested by: _____ Test date: 2012-12-26
signature print
Sample #: S2 Instrument Code / Range: _____

ACTIVE/NO-LOAD MODE POWER CONSUMPTION TEST: (Cont'd)
RESULTS: (Cont'd)

Ambient Temperature (°C): 21.6 Relative Humidity (%): 63.7 Airspeed, room (m/s) : 0.1
Sample No.: 2
Input Test Voltage (Vac): 115 Input Test Frequency (Hz): 60 Rated Output Current (A): 2.1

Load #	External Power Supply Input Electric Data							Power Supply [AC] [DC] Output					
	V	HZ	A	PF	THD	Wh	**Avg. Power (W)	Wh Interval [min]	Minimum Warm-up time [minutes]	V	A	Wh	**Avg. Power (W)
1 (100%)	114.92	60.01	0.744	0.53	0.50	3.777	45.324	5	30 (All)	18.95	2.09	3.304	39.648
2 (75%)	114.95	60.01	0.587	0.50	0.46	2.824	33.888	5	0 (others)	19.02	1.57	2.495	29.940
	114.95	60.01	0.587	0.50	0.46	2.824	33.888	5	30 (NRCan)	19.02	1.57	2.495	29.940
3 (50%)	114.91	60.00	0.425	0.46	0.38	1.891	22.692	5	0 (others)	19.09	1.05	1.670	20.040
	114.91	60.00	0.425	0.46	0.38	1.891	22.692	5	30 (NRCan)	19.09	1.05	1.670	20.040
4 (25%)	114.91	60.00	0.241	0.42	0.35	0.958	11.496	5	0 (others)	19.16	0.52	0.837	10.044
	114.91	60.00	0.241	0.42	0.35	0.958	11.496	5	30 (NRCan)	19.16	0.52	0.837	10.044
5 (0%)	115.39	60.01	0.015	0.03	0.26	0.004	0.048	5	0 (others)				
	115.39	60.01	0.015	0.03	0.26	0.004	0.048	5	30 (NRCan)				

CEC/DoE/EPA - Efficiency of Power Supply (after 5 min warm-up)					NRCan - Average results Efficiency of Power Supply (after 30 min warm-up)				
100%	75%	50%	25%	Arithmetic Average of Efficiency at Load Conditions 1 – 4	100%	75%	50%	25%	Arithmetic Average of Efficiency at Load Conditions 1 – 4
87.477	88.34986	88.31306	87.36952	87.87731838	87.47683	88.34986	88.313062	87.36952	87.87731838

CEC/DoE/EPA - Power Consumed by UUT (W)					NRCan - Power Consumed by UUT (W)				
100%	75%	50%	25%	No Load	100%	75%	50%	25%	No Load
5.676	3.948	2.652	1.452	0.048	5.676	3.948	2.652	1.452	0.048

Tested by: _____ Tested by: _____ Test Date: 2012-12-26
signature print
Sample # : S2 Instrument Code / Range: _____

ACTIVE/NO-LOAD MODE POWER CONSUMPTION TEST: (Cont'd)

RESULTS: (Cont'd)

Comments:

** The average power is calculated by the following equation: Avg. Power (Watts) = [Wh X 60 minutes / hours] / Wh Interval (minutes)

If test has not been performed in accordance with requirements in NRCAn: Amendment 11 to the Energy Efficiency Regulations for External Power Supplies, published on October 12, 2011 in the Canada Gazette, Part II; technician shall fill all cells related to NRCAn results with “-“ or leave them “blank”.

If test has been performed in accordance with requirements in NRCAn program only, technician shall fill all cells related to results for all other Agencies other than NRCAn with “-“or leave them “blank”.

If instantaneous power measurement is acceptable, technician record the instantaneous power measurement under the column “**Avg. Power (W)” and then shall fill cells of columns “Wh” and “Wh Interval” with “-“ or leave them “blank”.

Tested by: _____ Tested by: _____ Test Date: 2012-12-26
signature print
Sample #: S3 Instrument Code / Range: _____

ACTIVE/NO-LOAD MODE POWER CONSUMPTION TEST: (Cont'd)
RESULTS: (Cont'd)

Ambient Temperature (°C): 21.6 Relative Humidity (%): 63.7 Airspeed, room (m/s) : 0.1
Sample No.: 3
Input Test Voltage (Vac): 115 Input Test Frequency (Hz): 60 Rated Output Current (A): 2.1

Load #	External Power Supply Input Electric Data							Power Supply [AC] [DC] Output					
	V	HZ	A	PF	THD	Wh	**Avg. Power (W)	Wh Interval [min]	Minimum Warm-up time [minutes]	V	A	Wh	**Avg. Power (W)
1 (100%)	114.93	60.01	0.744	0.53	0.49	3.776	45.312	5	30 (All)	18.87	2.10	3.303	39.636
2 (75%)	114.94	60.00	0.588	0.50	0.45	2.824	33.888	5	0 (others)	18.94	1.57	2.485	29.820
	114.94	60.00	0.588	0.50	0.45	2.824	33.888	5	30 (NRCAN)	18.94	1.57	2.485	29.820
3 (50%)	114.90	60.01	0.425	0.46	0.39	1.891	22.692	5	0 (others)	19.02	1.05	1.663	19.956
	114.90	60.01	0.425	0.46	0.39	1.891	22.692	5	30 (NRCAN)	19.02	1.05	1.663	19.956
4 (25%)	114.92	60.00	0.241	0.41	0.33	0.956	11.472	5	0 (others)	19.09	0.52	0.834	10.008
	114.92	60.00	0.241	0.41	0.33	0.956	11.472	5	30 (NRCAN)	19.09	0.52	0.834	10.008
5 (0%)	114.93	60.00	0.016	0.03	0.26	0.004	0.048	5	0 (others)				
	114.93	60.00	0.016	0.03	0.26	0.004	0.048	5	30 (NRCAN)				

CEC/DoE/EPA - Efficiency of Power Supply (after 5 min warm-up)					NRCAN - Average results Efficiency of Power Supply (after 30 min warm-up)				
100%	75%	50%	25%	Arithmetic Average of Efficiency at Load Conditions 1 - 4	100%	75%	50%	25%	Arithmetic Average of Efficiency at Load Conditions 1 - 4
87.474	87.99575	87.94289	87.23849	87.66266219	87.47352	87.99575	87.942887	87.23849	87.66266219

CEC/DoE/EPA - Power Consumed by UUT (W)					NRCAN - Power Consumed by UUT (W)				
100%	75%	50%	25%	No Load	100%	75%	50%	25%	No Load
5.676	4.068	2.736	1.464	0.048	5.676	4.068	2.736	1.464	0.048

Tested by: _____ Tested by: _____ Test Date: 2012-12-26
signature print
Sample #: S3 Instrument Code / Range: _____

ACTIVE/NO-LOAD MODE POWER CONSUMPTION TEST: (Cont'd)

RESULTS: (Cont'd)

Comments:

** The average power is calculated by the following equation: Avg. Power (Watts) = [Wh X 60 minutes / hours] / Wh Interval (minutes)

If test has not been performed in accordance with requirements in NRCAN: Amendment 11 to the Energy Efficiency Regulations for External Power Supplies, published on October 12, 2011 in the Canada Gazette, Part II; technician shall fill all cells related to NRCAN results with “-“ or leave them “blank”.

If test has been performed in accordance with requirements in NRCAN program only, technician shall fill all cells related to results for all other Agencies other than NRCAN with “-“ or leave them “blank”.

If instantaneous power measurement is acceptable, technician record the instantaneous power measurement under the column “**Avg. Power (W)” and then shall fill cells of columns “Wh” and “Wh Interval” with “-“ or leave them “blank”.

Tested by: _____ Tested by: _____ Test Date: 2012-12-26
signature print
 Sample #: S1 Instrument Code / Range: _____

ACTIVE/NO-LOAD MODE POWER CONSUMPTION TEST: (Cont'd)

RESULTS: (Cont'd)

Ambient Temperature (°C): 21.6 Relative Humidity (%): 63.7 Airspeed, room (m/s) : 0.1
 Sample No.: 1
 Input Test Voltage (Vac): 230 Input Test Frequency (Hz): 50 Rated Output Current (A): 2.1

Load #	External Power Supply Input Electric Data							Power Supply [AC]{DC} Output					
	V	HZ	A	PF	THD	Wh	**Avg. Power (W)	Wh Interval [min]	Minimum Warm-up time	V	A	Wh	**Avg. Power (W)
1 (100%)	229.81	50.00	0.461	0.42	0.50	3.743	44.916	5	30	18.97	2.10	3.321	39.852
2 (75%)	229.84	50.00	0.355	0.41	0.45	2.816	33.792	5	0	19.05	1.57	2.500	30.000
3 (50%)	229.76	50.00	0.246	0.40	0.40	1.891	22.692	5	0	19.11	1.05	1.672	20.064
4 (25%)	230.00	50.01	0.129	0.39	0.34	0.985	11.820	5	0	19.20	0.52	0.840	10.080
5 (0%)	231.00	50.01	0.026	0.01	0.24	0.005	0.060	5	0				

CEC/DoE/EPA - Efficiency of Power Supply (after 5 min warm-up)				
100%	75%	50%	25%	Arithmetic Average of Efficiency at Load Conditions 1 – 4
88.726	88.77841	88.41883	85.27919	87.80051102

CEC/DoE/EPA - Power Consumed by UUT (W)				
100%	75%	50%	25%	No Load
5.064	3.792	2.628	1.74	0.060

Tested by: _____ Tested by: _____ Test Date: 2012-12-26
signature print
Sample # : S1 Instrument Code / Range: _____

ACTIVE/NO-LOAD MODE POWER CONSUMPTION TEST: (Cont'd)

RESULTS: (Cont'd)

Comments:

** The average power is calculated by the following equation: Avg. Power (Watts) = [Wh X 60 minutes / hours] / Wh Interval (minutes)

If instantaneous power measurement is acceptable, technician record the instantaneous power measurement under the column "***Avg. Power (W)" and then shall fill cells of columns "Wh" and "Wh Interval" with "-" or leave them "blank".

Tested by: _____ Tested by: _____ Test Date: 2012-12-26
signature print
 Sample #: S2 Instrument Code / Range: _____

ACTIVE/NO-LOAD MODE POWER CONSUMPTION TEST: (Cont'd)

RESULTS: (Cont'd)

Ambient Temperature (°C): 21.6 Relative Humidity (%): 63.7 Airspeed, room (m/s) : 0.1
 Sample No.: 2
 Input Test Voltage (Vac): 230 Input Test Frequency (Hz): 50 Rated Output Current (A): 2.1

Load #	External Power Supply Input Electric Data							Power Supply [AC]{DC} Output					
	V	HZ	A	PF	THD	Wh	**Avg. Power (W)	Wh Interval [min]	Minimum Warm-up time	V	A	Wh	**Avg. Power (W)
1 (100%)	229.82	50.01	0.461	0.42	0.50	3.735	44.820	5	30	18.95	2.09	3.304	39.648
2 (75%)	229.85	50.01	0.357	0.41	0.45	2.826	33.912	5	0	19.02	1.57	2.495	29.940
3 (50%)	229.81	50.01	0.248	0.40	0.39	1.894	22.728	5	0	19.09	1.05	1.669	20.028
4 (25%)	230.56	50.00	0.131	0.39	0.33	0.982	11.784	5	0	19.16	0.52	0.837	10.044
5 (0%)	231.00	50.00	0.026	0.01	0.24	0.006	0.072	5	0				

CEC/DoE/EPA - Efficiency of Power Supply (after 5 min warm-up)				
100%	75%	50%	25%	Arithmetic Average of Efficiency at Load Conditions 1 – 4
88.461	88.28733	88.12038	85.23422	87.52560916

CEC/DoE/EPA - Power Consumed by UUT (W)				
100%	75%	50%	25%	No Load
5.172	3.972	2.7	1.74	0.072

Tested by: _____ Tested by: _____ Test Date: 2012-12-26
signature print
Sample # : S2 Instrument Code / Range: _____

ACTIVE/NO-LOAD MODE POWER CONSUMPTION TEST: (Cont'd)
RESULTS: (Cont'd)

Comments:

** The average power is calculated by the following equation: Avg. Power (Watts) = [Wh X 60 minutes / hours] / Wh Interval (minutes)

If instantaneous power measurement is acceptable, technician record the instantaneous power measurement under the column "***Avg. Power (W)" and then shall fill cells of columns "Wh" and "Wh Interval" with "-" or leave them "blank."

Tested by: _____ Tested by: _____ Test Date: 2012-12-26
signature print
Sample #: S3 Instrument Code / Range: _____

ACTIVE/NO-LOAD MODE POWER CONSUMPTION TEST: (Cont'd)
RESULTS: (Cont'd)

Ambient Temperature (°C): 21.6 Relative Humidity (%): 63.7 Airspeed, room (m/s) : 0.1
Sample No.: 3
Input Test Voltage (Vac): 230 Input Test Frequency (Hz): 50 Rated Output Current (A): 2.1

Load #	External Power Supply Input Electric Data							Power Supply [AC]-[DC] Output					
	V	HZ	A	PF	THD	Wh	**Avg. Power (W)	Wh Interval [min]	Minimum Warm-up time	V	A	Wh	**Avg. Power (W)
1 (100%)	230.64	50.01	0.461	0.42	0.50	3.735	44.820	5	30	18.86	2.10	3.301	39.612
2 (75%)	229.85	50.00	0.356	0.41	0.44	2.819	33.828	5	0	18.93	1.57	2.485	29.820
3 (50%)	229.81	50.00	0.247	0.40	0.39	1.895	22.740	5	0	19.01	1.05	1.663	19.956
4 (25%)	230.63	50.00	0.131	0.39	0.33	0.982	11.784	5	0	19.08	0.52	0.834	10.008
5 (0%)	229.76	50.00	0.027	0.01	0.25	0.005	0.060	5	0				

CEC/DoE/EPA - Efficiency of Power Supply (after 5 min warm-up)				
100%	75%	50%	25%	Arithmetic Average of Efficiency at Load Conditions 1 – 4
88.38	88.15183	87.75726	84.92872	87.30449679

CEC/DoE/EPA - Power Consumed by UUT (W)				
100%	75%	50%	25%	No Load
5.208	4.008	2.784	1.776	0.060

Tested by: _____ Tested by: _____ Test Date: 2012-12-26
signature print

Sample #: S3 Instrument Code / Range: _____

ACTIVE/NO-LOAD MODE POWER CONSUMPTION TEST: (Cont'd)

RESULTS: (Cont'd)

Comments:

** The average power is calculated by the following equation: Avg. Power (Watts) = [Wh X 60 minutes / hours] / Wh Interval (minutes)

If instantaneous power measurement is acceptable, technician record the instantaneous power measurement under the column "***Avg. Power (W)" and then shall fill cells of columns "Wh" and "Wh Interval" with "-" or leave them "blank."

WORKSHEETS

NRCan, Energy Efficiency Requirements

Table 3: Minimum Average Efficiency in Active Mode

Nameplate Output	Minimum Average Efficiency in Active Mode (expressed as a decimal)
< 1 WATT	0.5 * Nameplate Output
≥ 1 watt and ≤ 51 watts	0.09 * Ln(Nameplate Output) + 0.5
> 51 watts	0.85
Note: Where Ln (Nameplate Output) = Natural Logarithm of the nameplate output expressed in watts.	

Base on Table 3, the calculated Minimum Average Efficiency in Active Mode is: 0.83 (83 %)

The measured Minimum Average Efficiency in Active Mode is the following:

Model:	A13-040N3A		
Nameplate Output:	19.0Vdc,2.1A		
Minimum Average Efficiency in Active Mode	Sample No.:	S3	
	Input Voltage:	<input checked="" type="checkbox"/> 115V, 60Hz <input type="checkbox"/> 230V, 50Hz <input type="checkbox"/> 115/230V, 50/60Hz <input type="checkbox"/> 240V, 50Hz	
	Efficiency :	0.88 (88 %)	

Table 4: Maximum Energy Consumption in No-Load Mode

Nameplate Output	Maximum Power in No-Load Mode
Any output	0.5 watt

The measured Maximum Power In No-Load Condition is the following:

Model:	A13-040N3A		
Nameplate Output:	19.0Vdc,2.1A		
Maximum Power In No-Load Condition	Sample No.:	S1	
	Input Voltage:	<input checked="" type="checkbox"/> 115V, 60Hz <input type="checkbox"/> 230V, 50Hz <input type="checkbox"/> 115/230V, 50/60Hz <input type="checkbox"/> 240V, 50Hz	
	Power :	0.05 W	

This complies does not comply with requirements in:

NRCan: Amendment 11 to the Energy Efficiency Regulations for External Power Supplies, published on October 12, 2011 in the Canada Gazette, Part II

Note :

According to guidance form the letter to CB for EPS testing 4-16-12, the test procedure is following “Test Method for Calculating the Energy Efficiency of Single-Voltage External Ac-Dc and Ac-Ac Power Supplies,” August 11, 2004, in APPENDIX Z to SUBPART B of PART 430 instead of C381.1-08. The results are more than .8 (>) above the minimum efficiency standard.
Robert Kuo 2012-12-26

WORKSHEETS

US DoE and CEC Energy Efficiency Requirements

Table 5: Minimum Average Efficiency in Active Mode

Nameplate Output	Minimum Average Efficiency in Active Mode (expressed as a decimal)
< 1 WATT	0.5 * Nameplate Output
≥ 1 watt and ≤ 51 watts	0.09 * Ln(Nameplate Output) + 0.5
> 51 watts	0.85
Note: Where Ln (Nameplate Output) = Natural Logarithm of the nameplate output expressed in watts.	

Base on Table 5, the calculated Minimum Average Efficiency in Active Mode is: 0.83 (83 %)

The measured Minimum Average Efficiency in Active Mode is the following:

Model:	A13-040N3A		
Nameplate Output:	19.0Vdc,2.1A		
Minimum Average Efficiency in Active Mode	Sample No.:	S3	
	Input Voltage:	<input checked="" type="checkbox"/> 115V, 60Hz <input type="checkbox"/> 230V, 50Hz <input type="checkbox"/> 115/230V, 50/60Hz <input type="checkbox"/> 240V, 50Hz	
	Efficiency :	0.88 (88 %)	

Table 6: Maximum Energy Consumption in No-Load Mode

Nameplate Output	Maximum Power in No-Load Mode
Any output	0.5 watt

The measured Maximum Power In No-Load Condition is the following:

Model:	A13-040N3A		
Nameplate Output:	19.0Vdc,2.1A		
Maximum Power In No-Load Condition	Sample No.:	S1	
	Input Voltage:	<input checked="" type="checkbox"/> 115V, 60Hz <input type="checkbox"/> 230V, 50Hz <input type="checkbox"/> 115/230V, 50/60Hz <input type="checkbox"/> 240V, 50Hz	
	Power :	0.05 W	

This complies does not comply with requirements in:

- CEC: Appliance Efficiency Regulations (Title 20, Sec. 1601 through 1608) dated December 2010
- US DoE: Office of Energy Efficiency and Renewable Energy 10 CFR Parts 429, 430 and 431 [Docket No. EERE-2010-BT-CE-0014] RIN 1904-AC23

WORKSHEETS (CONT'D)

Table 7: International Efficiency Marking Protocol for External Power Supplies

Mark	Performance Requirements				
	Nameplate Power Output (P _{no}) ¹	No- Load Power ²	Nameplate Power Output (P _{no})	Average Active Efficiency ³	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 x 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 x P _{no}	Not applicable
	10 to 250 watts	≤ 0.75	> 1 to 49 watts	≥ 0.09 x Ln(P _{no})+0.49	
			> 49 to 250 watts	≥ 0.84	
IV	0 to 250 watts	≤ 0.5	0 to < 1 watt	≥ 0.5 x P _{no}	Not applicable
			1 to 51 watts	≥ 0.09 x 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 ⁴ : ≥ 0.497 * P _{no} + 0.067	Power supplies with greater than or equal to 100 watts input power must have a true power factor of 0.9 or greater 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 and higher	Reserved for future use.				

- Base on Table 7, the calculated Minimum Average Efficiency in Active Mode is: 0.85 (85 %)
- The measured Minimum Average Efficiency in Active Mode is the following: 0.87 (87 %)
- The measured maximum input power exceeded did not exceed 0.3W 0.5W during Load Condition 5.
- The true power factor was 0.9 or greater at 100% of rated load when tested at 115V, 60Hz.
This requirement applies only to Level V power supplies with input power greater than or equal to 100W at 115V, 60Hz.
- The EPS meets does not meet the requirements for level: V 115V 230V

WORKSHEETS (CONT'D)

Former ENERGY STAR Program Requirements for Single-Voltage External AC-DC and AC-AC Power Supplies (v2.0)

Table 8: Energy-Efficiency Criteria for AC-AC and AC-DC External Power Supplies in Active Mode: Standard Models

Nameplate Output Power (P _{no})	Minimum Average Efficiency in Active Mode (expressed as a decimal)
0 TO ≤ 1 Watt	≥ 0.480 * P _{no} + 0.140
> 1 to ≤ 49 Watts	≥ [0.0626 * Ln (P _{no})] + 0.622
> 49 Watts	≥ 0.870

Note: All efficiency values shall be rounded to the hundredths place.

Table 9: Energy-Efficiency Criteria for AC-AC and AC-DC External Power Supplies in Active Mode: Low Voltage Models

Nameplate Output Power (P _{no})	Minimum Average Efficiency in Active Mode (expressed as a decimal)
0 TO ≤ 1 Watt	≥ 0.497 * P _{no} + 0.067
> 1 to ≤ 49 Watts	≥ [0.0750 * Ln (P _{no})] + 0.561
> 49 Watts	≥ 0.860

Note: All efficiency values shall be rounded to the hundredths place.

Base on Tables 8 & 9, the calculated Minimum Average Efficiency in Active Mode is: 0.85 (85 %)

The measured Minimum Average Efficiency in Active Mode is the following:

Model:	A13-040N3A	
Nameplate Output:	19.0Vdc,2.1A	
Minimum Average Efficiency in Active Mode	Sample No.:	S3
	Input Voltage:	<input type="checkbox"/> 115V, 60Hz <input checked="" type="checkbox"/> 230V, 50Hz <input type="checkbox"/> 115/230V, 50/60Hz
	Efficiency :	0.87 (87 %)

Table 10: Energy Consumption Criteria for No-Load

Nameplate Output Power (P _{no})	Maximum Power in No-Load	
	Ac-Ac EPS	Ac-Dc EPS
0 to < 50 watts	≤ 0.5 watts	≤ 0.3 watts
≥ 50 to ≤ 250 watts	≤ 0.5 watts	≤ 0.5 watts

The measured Maximum Power In No-Load Condition is the following:

Model:	A13-040N3A	
Nameplate Output:	19.0Vdc,2.1A	
Maximum Power In No-Load Condition	Sample No.:	S2
	Input Voltage:	<input type="checkbox"/> 115V, 60Hz <input checked="" type="checkbox"/> 230V, 50Hz <input type="checkbox"/> 115/230V, 50/60Hz
	Power :	0.07 W

This complies does not comply with the sunset ENERGY STAR Program Requirements for Single-Voltage External AC-DC and AC-AC Power Supplies (v2.0), International Efficiency Marking Protocol Level V.

WORKSHEETS (CONT'D)

EU Directive for Energy-related Products 2009/125/EC and Implementing Measure no. EC278/2009 for External Power Supply

Table 11: Energy-Efficiency Criteria for AC-AC and AC-DC External Power Supplies in Active Mode: Standard Models

Nameplate Output Power (P _{no})	Minimum Average Efficiency in Active Mode (expressed as a decimal)
0 to ≤ 1 Watt	≥ 0.480 * P _o + 0.140
> 1 to ≤ 51 Watts	≥ [0.063 * Ln (P _o)] + 0.622
> 51 Watts	≥ 0.870

Note: All efficiency values shall be rounded to the hundredths place.

Table 12: Energy-Efficiency Criteria for AC-AC and AC-DC External Power Supplies in Active Mode: Low Voltage Models

Nameplate Output Power (P _{no})	Minimum Average Efficiency in Active Mode (expressed as a decimal)
0 to ≤ 1 Watt	≥ 0.497 * P _o + 0.067
> 1 to ≤ 51 Watts	≥ [0.0750 * Ln (P _o)] + 0.561
> 51 Watts	≥ 0.860

Note: All efficiency values shall be rounded to the hundredths place.

- Base on Tables 11 & 12, the calculated Minimum Average Efficiency in Active Mode is: 0.85 (85 %)
- The measured Minimum Average Efficiency in Active Mode is the following:

Model:	A13-040N3A		
Nameplate Output:	19.0Vdc,2.1A		
Minimum Average Efficiency in Active Mode	Sample No.:	S3	
	Input Voltage:	<input type="checkbox"/> 115V, 60Hz <input checked="" type="checkbox"/> 230V, 50Hz <input type="checkbox"/> 115/230V, 50/60Hz	
	Efficiency :	0.87 (87 %)	

Table 13: Power Consumption Criteria for No-Load

Nameplate Output Power (P _{no})	Maximum Power in No-Load		
	Ac-Ac EPS	Ac-Dc EPS	Low Voltage EPS
0 to < 51 watts	≤ 0.5 watts	≤ 0.3 watts	≤ 0.3 watts
≥ 51 watts	≤ 0.5 watts	≤ 0.5 watts	n/a

- The measured Maximum Power In No-Load Condition is the following:

Model:	A13-040N3A		
Nameplate Output:	19.0Vdc,2.1A		
Maximum Power In No-Load Condition	Sample No.:	S2	
	Input Voltage:	<input type="checkbox"/> 115V, 60Hz <input checked="" type="checkbox"/> 230V, 50Hz <input type="checkbox"/> 115/230V, 50/60Hz	
	Power :	0.07 W	

This complies does not comply with requirements in:

EU Directive for Energy-related Products 2009/125/EC and Implementing Measure no. EC278/2009 for External Power Supply

WORKSHEETS (CONT'D)

Australian and New Zealand Minimum Efficiency Performance Standard (MEPS)

Table 14: MEPS required minimum efficiency level III

Nameplate Power Output (Pno)	Average Efficiency
0 to 1 watt	$\geq 0.49 \times Pno$
> 1 to 49 watts	$\geq 0.09 \times \ln(Pno) + 0.49$
> 49 to 250 watts	≥ 0.84

Where: Pno is the nameplate output power of the Unit Under Test.
"Ln" refers to the natural logarithm (base e). The algebraic order of operations requires that the "ln" calculation be performed first.

- Base on Table 14, the calculated Minimum Average Efficiency in Active Mode is: 0.82 (82 %)
- The measured Minimum Average Efficiency in Active Mode is the following:

Model:	A13-040N3A		
Nameplate Output:	19.0Vdc,2.1A		
Minimum Average Efficiency in Active Mode	Sample No.:	S3	
	Input Voltage:	<input type="checkbox"/> 115V, 60Hz <input checked="" type="checkbox"/> 230V, 50Hz <input type="checkbox"/> 115/230V, 50/60Hz	
	Efficiency :	0.87 (87 %)	

Table 15: MEPs required maximum no-load power (Watts)

Nameplate Power Output (Pno)	No Load Power Watts AC-DC	No Load Power Watts AC-AC
0 to < 10 watts	≤ 0.5	N/A
10 to 250 watts	≤ 0.75	N/A

- The measured Maximum Power In No-Load Condition is the following:

Model:	A13-040N3A		
Nameplate Output:	19.0Vdc,2.1A		
Maximum Power In No-Load Condition	Sample No.:	S2	
	Input Voltage:	<input type="checkbox"/> 115V, 60Hz <input checked="" type="checkbox"/> 230V, 50Hz <input type="checkbox"/> 115/230V, 50/60Hz <input type="checkbox"/> 240V, 50Hz	
	Power :	0.07 W	

This complies does not comply with Minimum Efficiency Level III in:

- Australian and New Zealand: Minimum Energy Performance Standards (MEPS) - Performance and Marking Requirements for External Power Supplies

WORKSHEETS (CONT'D)**Australian and New Zealand Minimum Efficiency Performance Standard (MEPS) (Cont'd)****Table 16: Efficiency requirements for 'high efficiency', performance mark IV, external power supplies**

Nameplate Power Output (Pno)	Average Efficiency
0 to 1 watt	$\geq 0.5 \times Pno$
> 1 to 51 watts	$\geq 0.09 \times \ln(Pno) + 0.5$
> 51 to 250 watts	≥ 0.85

Where: Pno is the nameplate output power of the Unit Under Test.

"Ln" refers to the natural logarithm (base e). The algebraic order of operations requires that the "ln" calculation be performed first.

Base on Table 16, the calculated Minimum Average Efficiency in Active Mode is: 0.83 (83 %)

The measured Minimum Average Efficiency in Active Mode is the following:

Model:	A13-040N3A		
Nameplate Output:	19.0Vdc,2.1A		
Minimum Average Efficiency in Active Mode	Sample No.:	S3	
	Input Voltage:	<input type="checkbox"/> 115V, 60Hz <input checked="" type="checkbox"/> 230V, 50Hz <input type="checkbox"/> 115/230V, 50/60Hz	
	Efficiency :	0.87 (87 %)	

Table 17: No load requirements for "high efficiency", performance mark IV, external power supplies

Nameplate Power Output (Pno)	No Load Power Watts AC-DC	No Load Power Watts AC-AC
0 to \leq 250 watts	≤ 0.5	N/A

The measured Maximum Power In No-Load Condition is the following:

Model:	A13-040N3A		
Nameplate Output:	19.0Vdc,2.1A		
Maximum Power In No-Load Condition	Sample No.:	S2	
	Input Voltage:	<input type="checkbox"/> 115V, 60Hz <input checked="" type="checkbox"/> 230V, 50Hz <input type="checkbox"/> 115/230V, 50/60Hz <input type="checkbox"/> 240V, 50Hz	
	Power :	0.07 W	

This complies does not comply with High Efficiency Level IV in:

Australian and New Zealand: Minimum Energy Performance Standards (MEPS) - Performance and Marking Requirements for External Power Supplies

WORKSHEETS (CONT'D)

Australian and New Zealand Minimum Efficiency Performance Standard (MEPS) (Cont'd)

Table 18: Efficiency requirements for "High efficiency" performance mark V

Output specifications	Nameplate output power (P_{no})	Average active mode efficiency
Out. voltage < 6 Volts And Output current \geq 0.55 Amps	0 to 1	$\geq 0.497 \times P_{no} + 0.067$
	>1 to 49	$\geq 0.075 \times L_n(P_{no}) + 0.561$
	> 49 to 250	≥ 0.86
All other models	0 to 1	$\geq 0.480 \times P_{no} + 0.140$
	> 1 to 49	$\geq 0.0626 \times L_n(P_{no}) + 0.622$
	> 49 to 250	≥ 0.87

Base on Table 18, the calculated Minimum Average Efficiency in Active Mode is: 0.85 (85 %)

The measured Minimum Average Efficiency in Active Mode is the following:

Model:	A13-040N3A		
Nameplate Output:	19.0Vdc,2.1A		
Minimum Average Efficiency in Active Mode	Sample No.:	S3	
	Input Voltage:	<input type="checkbox"/> 115V, 60Hz <input checked="" type="checkbox"/> 230V, 50Hz <input type="checkbox"/> 115/230V, 50/60Hz	
	Efficiency :	0.87 (87 %)	

Table 19: No load requirements for "high efficiency", performance mark V, external power supplies

Nameplate Power Output (Pno)	No Load Power Watts AC-DC	No Load Power Watts AC-AC
0 to < 50	≤ 0.3	N/A
≥ 50 to 250	≤ 0.5	N/A

The measured Maximum Power In No-Load Condition is the following:

Model:	A13-040N3A		
Nameplate Output:	19.0Vdc,2.1A		
Maximum Power In No-Load Condition	Sample No.:	S2	
	Input Voltage:	<input type="checkbox"/> 115V, 60Hz <input checked="" type="checkbox"/> 230V, 50Hz <input type="checkbox"/> 115/230V, 50/60Hz <input type="checkbox"/> 240V, 50Hz	
	Power :	0.07 W	

This complies does not comply with High Efficiency Level V in:

Australian and New Zealand: Minimum Energy Performance Standards (MEPS) - Performance and Marking Requirements for External Power Supplies

and

Australian and New Zealand: Energy Labelling and MEPS program Regulatory Ruling No. 17, rev. A, 08/09/2008

Comments: according to requirements in Energy Labelling and MEPS program Regulatory Ruling No. 17, rev. A, 08/09/2008, A single output AC-DC and/or AC-DC external power supply may be marked "V", in lieu of III or IV, only if both its no-load power consumption and average active mode efficiency, measured in accordance with AS/NZS 4665.1:2005, at 230 V a.c., meets the levels specified in Table 18 and Table 19 above.