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

Customer Name:	GLOBTEK (HONG KONG) LTD
Address:	NIT 1402, BENSON TOWER, 74 HUNG TO RD, KWUN TONG, KOWLOON, HK

Laboratory Name:	UL-CCIC Company Limited Guangzhou Branch
Address:	Electronic Building, Parage Electronic Industrial Park, No. 8 Nanyun Er Road, Guangzhou Science Park, Guangzhou, 510663 China
Brand name(s):	GlobTek, Inc.
Model name(s):	GTM96180-1811-2.0-T3
Product category:	External Power Supply (EPS)
Electrical Ratings:	Input: 100-240V~, 50-60Hz, 0.6A Output: 9Vdc, 2A
Representative (tested) Model:	GTM96180-1811-2.0-T3
Model differences:	N/A
Construction details:	Construction details are specified in the following pictures.

The Sample(s) tested is(are) compliant with the following applied standards/regulations:

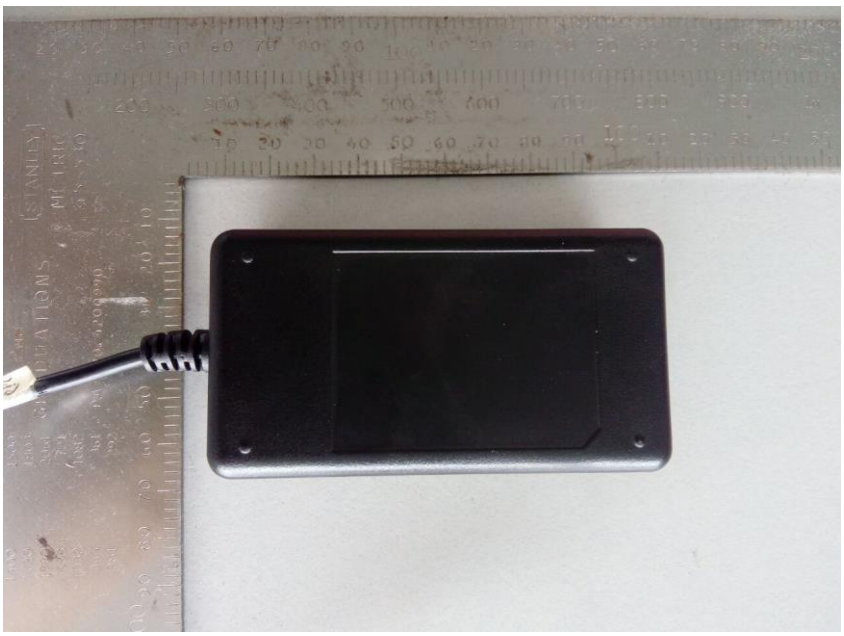
NRCAN: Amendment 11 to the Energy Efficiency Regulations for External Power Supplies, published on October 12, 2011 in the Canada Gazette, Part II

Other (Specify): International Efficiency Marking Protocol for External Power Supplies: Level Verified – VI

UL Project No. - Report ID:	4787524363		
Project Handler:	Connie Tse/Steve Chiu	**Reviewed by:**	Ron Huang/Arial Chuang
Issued: (yyyy-mm-dd)	2016-08-12	**Revised:** (yyyy-mm-dd)	

ATTACHMENT(S)

Photo: Model GTM96180-1811-2.0-T3

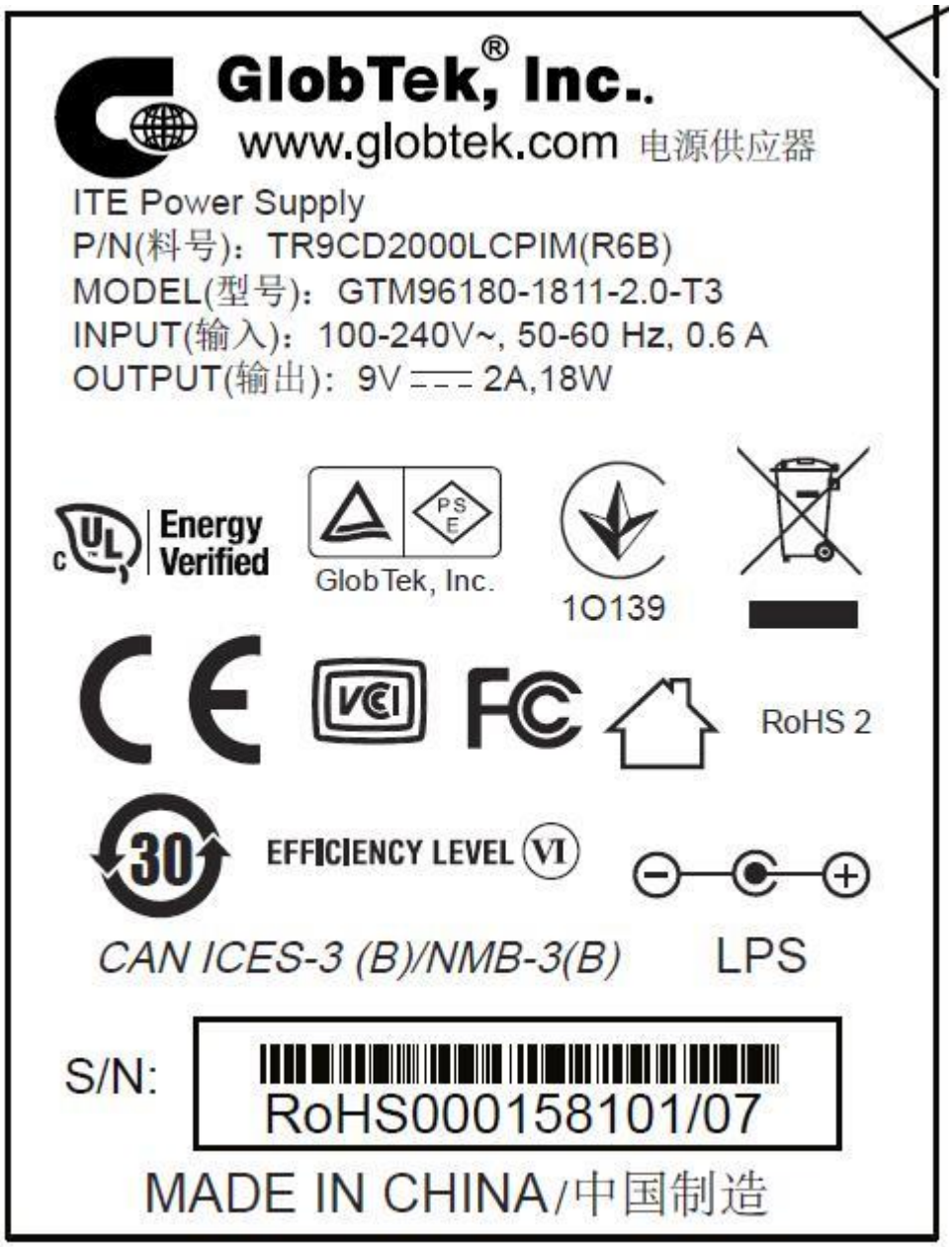


ATTACHMENT(S)

Photo: Model GTM96180-1811-2.0-T3

ATTACHMENT(S)

Label:



DATA PACKAGE INFORMATION SHEET

Applicant Information	Name:	GLOBTEK (HONG KONG) LTD
	Address:	UNIT 1402, BENSON TOWER, 74 HUNG TO RD, KWUN TONG, KOWLOON, HK

Product Information	Standard(s):	☐ "Test Method for Calculating the Energy Efficiency of Single-Voltage External AC-DC and AC-AC Power Supplies" dated August 11, 2004
		☒ International Efficiency Marking Protocol for External Power Supplies, Version 3.0
		☒ NRCan: Amendment 11 to the Energy Efficiency Regulations for External Power Supplies, published on October 12, 2011 in the Canada Gazette, Part II
		☐ US CEC: Appliance Efficiency Regulations (California Code of Regulations, Title 20, Sections 1601 through 1608) dated July 2015
		☐ US DoE: Office of Energy Efficiency and Renewable Energy 10 CFR Parts 429 and 430
		☐ Australian (GEMS) and New Zealand : AS/NZS4665.1-2005+A1:2009; AS/NZS4665.2-2005+A1:2009
		☐ EU Directive for Energy-related Products ErP 2009/125/EC and Implementing Measure (IM) no. EC278/2009 for External Power Supply
		☐ EN50563-2011/A1:2013, External a.c. - d.c. and a.c. - a.c. power supplies – Determination of no-load power and average efficiency of active modes
		☐ EN50564-2011, Electrical and electronic household and office equipment - Measurement of low power consumption
		☐ EU: Code of Conduct on Energy Efficiency of External Power Supplies Version 5
		☐ Mexico: Secretaría de Energía, Director General de la Comisión Nacional para el Uso Eficiente de la - Catálogo de equipos y aparatos para los cuales los fabricantes, importadores, distribuidores y comercializadores deberán incluir información sobre su consumo energético
		☐ Other:
	CCNs:	ENVP
	Product Name/Type:	External Power Supply ☒ AC-DC ☐ AC-AC
	Model Number (s):	GTM96180-1811-2.0-T3

Test Location Information	DAP and UL:	☐ CTDP ☐ TCP ☐ TPTDP ☐ WTDP ☒ UL
	Test Location Name:	UL-CCIC Company Limited Guangzhou Branch
	Test Location Address:	Electronic Building, Parage Electronic Industrial Park, No. 8 Nanyun Er Road, Guangzhou Science Park, Guangzhou, 510663 China
	Tests Conducted By**:	Sign Linsn Lin
		Print Linsn Lin
	**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 WTDP / WMT Witness:	Sign --
		Print --

Reviewed & Accepted	Qualified Project Handler:	Sign Connie Tse/Steve Chiu
		Print Connie Tse/Steve Chiu

LIST OF TESTS

Test Name **Page**

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	<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).
2. Per chapter 4.2 in EN 50564:2011, where the product has an ambient light sensor that affects the power consumption, the test shall be carried out with controlled ambient light conditions. Where the illuminance levels are externally defined (in a test procedure or in the instructions for use), these values shall be used. Where no illuminance levels are stated or defined, reference illuminance levels of more than 300 lux and less than 10 lux shall be used.

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

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
381118-1 381118-2 381118-3	381118	2016-07-12	GLOBTEK (HONG KONG) LTD, GTM96180-1811-2.0-T3, ITE Power Supply Input: 100-240Vac, 50-60Hz, 0.6A Output: 9Vdc, 2A
Sampling Procedure (if used) :			

TEST INSTRUMENTS REFERENCE LIST

Instr. Code	Instrument I.D.	Instrument Type	Range Used Or ***	Make and Model **	Calibration Date	
					Last	Due

Linsn Lin

2016-07-21

"Chamber setting(s) ☐ was ☐ were monitored to ensure that the setting(s) ☐ was ☐ were stable throughout the test time frame. Any deviations from the setting(s) are noted below.

Date	Test	Instrument Code	Time period of deviation	Setting(s)

** Information to be recorded when tests are conducted at a non-UL facility.

*** Refer to specific data sheet for individual scale used.

☒ UL test equipment information is recorded on Meter Use in UL'S Aurora database.

POWER SUPPLY REFERENCE PAGE (ENGINEERING TO COMPLETE)

Product Name/Type:	External AC/DC Power Supply (EPS)	
Manufacturer:	GLOBTEK (HONG KONG) LTD	
Brand Name:	GlobTek, Inc.	
Model Number/Designation:	GTM96180-1811-2.0-T3	
Model differences:	N/A	
Class A external power supply	☒ Yes ☐ No	
Adaptive external power supply	☐ Yes ☒ No	
Switch-selectable single voltage external power supply	☐ Yes ☒ No	
External Power Supply Product Class ID	☒ B	Direct Operation, AC-DC, Basic-Voltage
	☐ C	Direct Operation, AC-DC, Low-Voltage (except those with nameplate output voltage less than 3 volts and nameplate output current greater than or equal to 1,000 milliamps that charge the battery of a product that is fully or primarily motor operated)
	☐ D	Direct Operation, AC-AC, Basic-Voltage
	☐ E	Direct Operation, AC-AC, Low-Voltage
	☐ H	Direct Operation, High-Power
	☐ N	Indirect Operation

Nameplate Rating:	Input:	100-240Vac, 50-60Hz, 0.6A
	Output:	9Vdc, 2A

Each sample was tested at:	☒ 115V, 60Hz ☐ 127V, 60Hz	☒ 230V, 50Hz ☐ 220V, 60Hz	☐ 240V, 50Hz
UUT Output Cord Length (± 1 cm):	175		
UUT is a Replacement EPS:	☒ Yes	☐ No	☐ N/A
Presence of Input Power Switch (Y/N):	☐ Yes	☒ No	
Input Power Switch (ON/OFF):	☐ ON	☐ OFF	☒ N/A
End Product Powered by the UUT:	N/A		

Notes/Comments:

☐ For Mexico EE - Las pruebas realizadas en 115/230 Vac eran consideradas representativas al 127/220 Vac. (Tests performed on 115/230 Vac were considered representative to 127/220 Vac.)

TECHNICIAN'S REFERENCE PAGE

DEFINITIONS

"UUT": an acronym for "unit under test," which in this case refers to the power supply sample being tested.

"Active mode": A condition in which the input of a power supply is connected to the line voltage ac and the output is connected to an ac or dc load, drawing a fraction of the power supply's nameplate output power.

"Active mode efficiency": The ratio which is 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.

"Ambient temperature": The temperature which is the air immediately surrounding the unit under test (UUT).

"Average Active-Mode Efficiency": The average of the loading conditions (100%, 75%, 50%, and 25% of its nameplate output current) for which it can sustain the output current.

"Manual on-off switch": a switch activated by the user to control power reaching the device. This term does not apply to any mechanical, optical, or electronic switches that automatically disconnect mains power from the device when a load is disconnected from the device, or that control power to the load itself.

"Power Factor (True), PF": 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).

"Nameplate output current": The current output of the power supply as specified by the manufacturer on the label on the housing of the power supply, if absent from the housing, as provided by the manufacturer. This is also called rated output current. Alternatively, it is the nameplate output power divided by nameplate output voltage.

"Nameplate output power": the power output of the power supply as specified on the manufacturer's label on the power supply housing or, if absent from the housing, as specified in documentation provided by the manufacturer, or calculated by multiplying the nameplate output voltage by the nameplate output current (V•A).

"Nameplate Output Voltage": The voltage output of the power supply as specified by the manufacturer on the label on the housing of the power supply (either dc or ac). This is also called rated output voltage.

"No load" a condition in which the input of a power supply is connected to the ac reference source, where the output of the power supply is not connected to a product or any other load.

"No-load power": the wattage of active power (ac) consumed by a power supply operating in the no-load condition.

"Basic-Voltage external power supply": An external power supply is not a low-voltage external power supply.

"Low voltage external power supply": An external power supply with a nameplate output voltage of less than 6 volts and a nameplate output current greater than or equal to 550 milliamperes.

"Direct Operation external power supply": An external power supply can operate a consumer product that is not a battery charger without the assistance of a battery.

"Indirect Operation external power supply": An external power supply cannot operate a consumer product that is not a battery charger without the assistance of a battery.

"Adaptive external power supply": An external power supply that can alter its output voltage during active-mode based on an established digital communication protocol with the end-use application without any user-generated action.

"Switch-selectable single voltage external power supply": A single-voltage AC-AC or AC-DC power supply that allows users to choose from more than one output voltage.

TECHNICIAN'S REFERENCE PAGE (Cont'd)

POWER MEASUREMENT EQUIPMENT AND UNCERTAINTY

Any power measurements recorded, as well as any power measurement equipment utilized for testing, shall conform to the following:
(A) Resolution requirements are outlined in Section 4, "General conditions for measurements," as well as Annexes B, "Notes on the measurement of low power modes," of IEC 62301:2011 and EN50564:2011.
(B) Uncertainty requirements are outlined in Annexes D, "Determination of uncertainty of measurement," of IEC 62301:2011 and EN50564:2011.

The measurement uncertainty related to determination of input power due to the measuring instrument (Ue) is given in 4.4.1 and Annex D of IEC62301:2011 and EN 50564:2011.
Ue = (0.15 + 0.01 / PF) % of input power reading + 0.1 % of input power range;
Input power range = voltage range * current range of power meter.

Measurement of output power shall be calculated or measured power due to the measuring instrument has an uncertainty at the 95 % confidence level of
(1) ≤ 2 % for powers of 0.5 W or greater;
(2) ≤ 0.01W for powers of less than 0.5 W.

EFFICIENCY CALCULATION

Efficiency shall be calculated by dividing the UUT's measured active output power at a given load condition by the active ac input power measured at that load condition. Average efficiency shall also be calculated and reported as the arithmetic mean of the efficiency values calculated at Load Conditions 1, 2, 3, and 4 in Table 1. This is a simple arithmetic average of active mode efficiency values, and is not intended to represent weighted average efficiency, which would vary according to the duty cycle of the product powered by the UUT.

POWER CONSUMPTION CALCULATION

Power consumption of the UUT at each Load Condition 1 – 4 is the difference between the active output power (W) at that Load Condition and the ac active input power (W) at that Load Condition. The power consumption of Load Condition 5 (no load) is equal to the ac active input power (W) at that Load Condition.

TECHNICIAN'S REFERENCE PAGE (Cont'd)

INSTRUCTIONS – TEST PREPARATION AND LOADING

Any built-in switch in the UUT controlling power flow to the AC input must be in the "on" position for this measurement.

Test power supplies packaged for consumer use to power a product with the DC output cord supplied by the manufacturer. There are two options for connecting metering equipment to the output of this type of power supply: Cut the cord immediately adjacent to the DC output connector, or attach leads and measure the efficiency from the output connector itself.

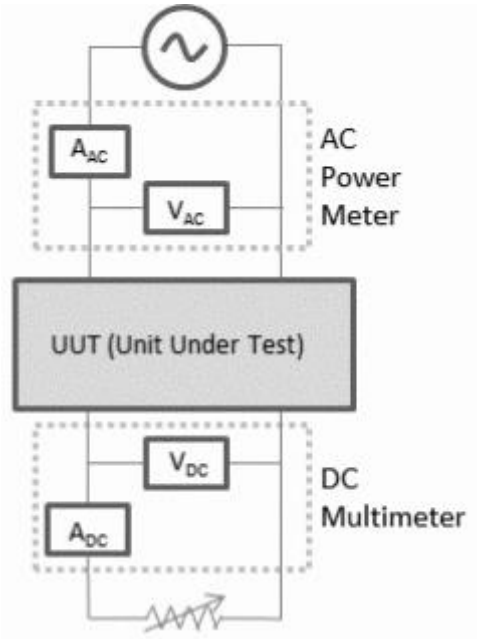
If the power supply is attached directly to the product that it is powering, cut the cord immediately adjacent to the powered product and connect DC measurement probes at that point. Any additional metering equipment such as voltmeters and/or ammeters used in conjunction with resistive or electronic loads must be connected directly to the end of the output cable of the UUT.

If the product has more than two output wires, including those that are necessary for controlling the product, the manufacturer must supply a connection diagram or test fixture that will allow the testing laboratory to put the unit under test into active-mode. Figure 1 provides one illustration of how to set up an EPS for test.

In order to load the power supply to produce all four active-mode load conditions, use a set of variable resistive or electronic loads. Although these loads may have different characteristics than the electronic loads power supplies are intended to power, they provide standardized and readily repeatable references for testing and product comparison.

Note that resistive loads need not be measured precisely with an ohmmeter; simply adjust a variable resistor to the point where the ammeter confirms that the desired percentage of nameplate output current is flowing. For electronic loads, adjust the desired output current in constant current (CC) mode rather than adjusting the required output power in constant power (CP) mode.

Figure 1 – Example connection diagram for EPS efficiency measurement.



Tested by: _____ Tested by: _____ Test Date: _____
signature print

Sample # : _____ Instrument Code / Range: _____

ACTIVE/NO-LOAD MODE POWER CONSUMPTION TEST:

TESTING SEQUENCE:
The UUT shall be tested at each load condition specified in Table 1, testing consecutively from Load Condition 1 to 5. The UUT shall be operated at 100% of nameplate current output (Load Condition 1) for at least 30 minutes immediately prior to conducting efficiency measurements.

For the agencies other than NRCan, 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 measurements can be recorded at the end of the 5 minute period. Subsequent load conditions (see Table 1) can then be measured under the same 5 minute stability guidelines. Note that only one warm-up period of 30 minutes is required for each UUT at the beginning of the test procedure.

If AC input power is not stable over a 5 minute period, the technician shall follow the guidelines established by IEC 62301[(1)] for measuring average power or accumulated energy over time for both ac input and dc output. Specifically in EU Directive for ErP, the stability shall be determined in accordance with EN 50564:2011, 5.3.
Efficiency measurements shall be conducted in sequence from Load Condition 1 to Load Condition 5 as indicated in Table 1. If testing of additional, optional load conditions is desired, that testing should be conducted in accordance with this test procedure and subsequent to completing the sequence described above.

For NRCan, the UUT shall be operated for 30 minutes at each load condition prior to measurement. The input and output power shall be measured using the Accumulated Energy Approach specified in CAN/CSA 62301 clause 5.3.2 b) for at least 5 minutes. No load power shall be recorded for Load Condition 5.
NOTE: To ensure consistent unit, it is recommended that watt-hours and hours be used above, to give watts.

For Australia/New Zealand requirements, if the power supply nameplate input voltage is 240V only, conduct the testing at 240V ac, 50Hz and record in the 230V ac tables for ACTIVE/NO-LOAD MODE POWER CONSUMPTION TEST. The testing voltage, 240V ac, 50 Hz shall be recorded.

The above testing sequence shall be repeated on three UUT in total of the same model.

Test switch-selectable single-voltage external power supplies twice, once at the highest nameplate output voltage and once at the lowest.

Test adaptive external power supplies twice, once at the highest achievable output voltage and once at the lowest.

(1) Same as AS/NZS 62301.

Tested by: _____ Tested by: _____ Test date: _____
signature print

Sample # : _____ Instrument Code / Range: _____

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

Table 1 – Load Conditions

Load Conditions for UUT	Percentage of Nameplate Output Current
1	100% ± 2%(2)
2	75% ± 2%
3	50% ± 2%
4	25% ± 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.
3. It is mandatory for CoC. The UUT shall be considered 10% ± 2% of nameplate output current after load condition 4, warm up period is 0 minute and 5 minutes is for assessment period, and then continue load condition 5.

Comments:
1. 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".

2. 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".

3. 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: 2016-07-20

signature print

Sample # : 381118-1 Instrument Code / Range: _____

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

RESULTS FOR SAMPLE 1:

Ambient Temperature (°C): 23.4 **Relative Humidity (%):** 69.8 **Airspeed, room (m/s) :** <0.5

Input Test Voltage (V ac): 115 **Input Test Frequency (Hz):** 60 **Rated Output Current (A):** 2

	External Power Supply Input Electric Data													Power Supply Output Electric Data			
Load	V	HZ	A	PF	THD	Wh	**Avg. Power (W)	Wh Interval [min]	***Ue	Minimum Warm-up time	Stability Assessment %	*Measurement method used	Slope value (mW/h)	V	A	Wh	**Avg. Power (W)
1 (100%)	114.81	60.00	0.325	0.5700	0.32	1.7884	21.4608	5	0.15833	30 (All)	0.37	Accumlated Energy	--	8.94	2.00	1.491	17.892
2										0 (others)							
(75%)	114.82	60.00	0.253	0.5400	0.31	1.3197	15.8364	5	0.1402	30 (NRCan)	0.09	Accumlated Energy	--	8.99	1.50	1.1231	13.4772
3										0 (others)							
(50%)	114.82	60.00	0.179	0.5100	0.30	0.8714	10.4569	5	0.07573	30 (NRCan)	0.12	Accumlated Energy	--	9.01	1.00	0.7512	9.0144
4										0 (others)							
(25%)	114.76	60.00	0.100	0.4600	0.26	0.4389	5.2665	5	0.05559	30 (NRCan)	0.11	Accumlated Energy	--	9.06	0.50	0.3776	4.5313
Optional										0 (others)							
(10%)										30 (NRCan)							
5										0 (others)							
(0%)	114.79	60.00	0.010	0.0200	0.22	0.0037	0.0221	10	0.0523	30 (NRCan)	24.13	Sampling	303.37E-9				

Other than NRCan - 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%	10%	Arithmetic Average of Efficiency at load 1 ~ 4	100%	75%	50%	25%	10%	Arithmetic Average of Efficiency at load 1 ~ 4
83.37061						83.3706106	85.1026749	86.20528072	86.04006		85.17965768

Other than NRCan - Power Consumed by UUT (W)						NRCan - Power Consumed by UUT (W)					
100%	75%	50%	25%	10%	No Load	100%	75%	50%	25%	10%	No Load
3.5688						3.5688	2.3592	1.4425	0.7352		0.0221

* The measurement methods are defined in 5.3.2 or 5.3.3 of the standards, EN 50564:2011 and IEC62301:2011.

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

*** The calculated measurement uncertainty (Ue) is defined in Annex D and complied with 4.4.1 in IEC62301:2011 and EN 50564:2011.

Tested by: _____ Tested by: _____ Test date: 2016-07-20

signature print

Sample # : 381118-2 Instrument Code / Range: _____

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

RESULTS FOR SAMPLE 2:

Ambient Temperature (°C): 23.4 **Relative Humidity (%):** 69.8 **Airspeed, room (m/s) :** <0.5

Input Test Voltage (V ac): 115 **Input Test Frequency (Hz):** 60 **Rated Output Current (A):** 2

	External Power Supply Input Electric Data													Power Supply Output Electric Data			
Load	V	HZ	A	PF	THD	Wh	**Avg. Power (W)	Wh Interval [min]	***Ue	Minimum Warm-up time	Stability Assessment %	*Measurement method used	Slope value (mW/h)	V	A	Wh	**Avg. Power (W)
1 (100%)	114.82	60.00	0.327	0.5700	0.32	1.7911	21.4936	5	0.15846	30 (All)	0.06	Accumlated Energy	--	8.92	2.00	1.4890	17.8675
2										0 (others)							
(75%)	114.82	60.00	0.254	0.5400	0.30	1.3244	15.8928	5	0.14043	30 (NRCan)	0.08	Accumlated Energy	--	8.97	1.50	1.1230	13.4765
3										0 (others)							
(50%)	114.83	60.00	0.181	0.5100	0.30	0.8755	10.5061	5	0.07594	30 (NRCan)	0.09	Accumlated Energy	--	9.02	1.00	0.7533	9.0398
4										0 (others)							
(25%)	114.78	60.00	0.100	0.4600	0.27	0.4395	5.274	5	0.05571	30 (NRCan)	0.13	Accumlated Energy	--	9.08	0.50	0.3785	4.542
Optional										0 (others)							
(10%)										30 (NRCan)							
5										0 (others)							
(0%)	114.78	60.00	0.010	0.0200	0.23	0.0036	0.0217	10	0.00519	30 (NRCan)	14.28	Sampling	161.71E-9				

Other than NRCan - 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%	10%	Arithmetic Average of Efficiency at load 1 ~ 4	100%	75%	50%	25%	10%	Arithmetic Average of Efficiency at load 1 ~ 4
83.1294						83.12939666	84.7962599	86.04334625	86.12059		85.02239861

Other than NRCan - Power Consumed by UUT (W)						NRCan - Power Consumed by UUT (W)					
100%	75%	50%	25%	10%	No Load	100%	75%	50%	25%	10%	No Load
3.6261						3.6261	2.4163	1.4663	0.732		0.0217

* The measurement methods are defined in 5.3.2 or 5.3.3 of the standards, EN 50564:2011 and IEC62301:2011.

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

*** The calculated measurement uncertainty (Ue) is defined in Annex D and complied with 4.4.1 in IEC62301:2011 and EN 50564:2011.

Tested by: _____ (signature) Tested by: _____ (print) Test date: 2016-07-20

Sample # : 381118-3 Instrument Code / Range: _____

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

RESULTS FOR SAMPLE 3:

Ambient Temperature (°C): 23.4 **Relative Humidity (%):** 69.8 **Airspeed, room (m/s) :** <0.5

Input Test Voltage (V ac): 115 **Input Test Frequency (Hz):** 60 **Rated Output Current (A):** 2

	External Power Supply Input Electric Data													Power Supply Output Electric Data			
Load	V	HZ	A	PF	THD	Wh	**Avg. Power (W)	Wh Interval [min]	***Ue	Minimum Warm-up time	Stability Assessment %	*Measurement method used	Slope value (mW/h)	V	A	Wh	**Avg. Power (W)
1 (100%)	114.82	60.00	0.325	0.5700	0.32	1.7870	21.4436	5	0.15826	30 (All)	0.05	Accumlated Energy	--	8.92	2.00	1.4886	17.8633
2										0 (others)							
(75%)	114.83	60.00	0.253	0.5400	0.30	1.3206	15.8467	5	0.14024	30 (NRCan)	0.08	Accumlated Energy	--	8.97	1.50	1.1226	13.4717
3										0 (others)							
(50%)	114.77	60.00	0.180	0.5100	0.29	0.8735	10.4816	5	0.07584	30 (NRCan)	0.10	Accumlated Energy	--	9.03	1.00	0.7533	9.0400
4										0 (others)							
(25%)	114.77	60.00	0.101	0.4600	0.25	0.4399	5.2784	5	0.05565	30 (NRCan)	0.11	Accumlated Energy	--	9.08	0.50	0.3789	4.5471
Optional										0 (others)							
(10%)										30 (NRCan)							
5										0 (others)							
(0%)	114.79	60.00	0.011	0.0200	0.23	0.0036	0.0218	10	0.0052	30 (NRCan)	12.40	Sampling	43.72E-9				

Other than NRCan - 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%	10%	Arithmetic Average of Efficiency at load 1 ~ 4	100%	75%	50%	25%	10%	Arithmetic Average of Efficiency at load 1 ~ 4
83.30364						83.30364305	85.0126525	86.2463746	86.14542		85.17702324

Other than NRCan - Power Consumed by UUT (W)						NRCan - Power Consumed by UUT (W)					
100%	75%	50%	25%	10%	No Load	100%	75%	50%	25%	10%	No Load
3.5803						3.5803	2.375	1.4416	0.7313		0.0218

* The measurement methods are defined in 5.3.2 or 5.3.3 of the standards, EN 50564:2011 and IEC62301:2011.

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

*** The calculated measurement uncertainty (Ue) is defined in Annex D and complied with 4.4.1 in IEC62301:2011 and EN 50564:2011.

Tested by: _____ Tested by: _____ Test date: 2016-07-20

signature print

Sample # : 381118-1 Instrument Code / Range: _____

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

RESULTS FOR SAMPLE 1:

Ambient Temperature (°C): 23.4 **Relative Humidity (%):** 69.8 **Airspeed, room (m/s) :** <0.5

Input Test Voltage (V ac): 230 **Input Test Frequency (Hz):** 50 **Rated Output Current (A):** 2

	External Power Supply Input Electric Data													Power Supply Output Electric Data			
Load	V	HZ	A	PF	THD	Wh	**Avg. Power (W)	Wh Interval [min]	***Ue	Minimum Warm-up time	Stability Assessment %	*Measurement method used	Slope value (mW/h)	V	A	Wh	**Avg. Power (W)
1 (100%)	229.67	50.00	0.197	0.4600	0.32	1.7406	20.8866	5	0.25152	30 (All)	0.10	Accumlated Energy	--	8.84	2.00	1.4736	17.6838
2 (75%)	229.66	50.01	0.153	0.4500	0.31	1.3066	15.6795	5	0.13791	0 (others)	0.45	Accumlated Energy	--	8.92	1.50	1.1158	13.3898
3 (50%)	229.60	50.00	0.107	0.4300	0.28	0.8759	10.5104	5	0.11464	0 (others)	0.16	Accumlated Energy	--	8.99	1.00	0.7499	8.9992
4 (25%)	229.60	50.00	0.061	0.3800	0.25	0.4432	5.3186	5	0.06121	0 (others)	0.30	Accumlated Energy	--	9.07	0.50	0.3785	4.5418
Optional (10%)										0 (others)							
5 (0%)	229.61	50.00	0.017	0.0100	0.21	0.0072	0.0433	10	0.0147	0 (others)	26.75	Sampling	-2.27E-6				

Other than NRCan - Efficiency of Power Supply (after 5 min warm-up)					
100%	75%	50%	25%	10%	Arithmetic Average of Efficiency at load 1 ~ 4
84.66577	85.39686	85.62186	85.39465		85.26978383

Other than NRCan - Power Consumed by UUT (W)					
100%	75%	50%	25%	10%	No Load
3.2028	2.2897	1.5112	0.7768		0.0433

* The measurement methods are defined in 5.3.2 or 5.3.3 of the standards, EN 50564:2011 and IEC62301:2011.

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

*** The calculated measurement uncertainty (Ue) is defined in Annex D and complied with 4.4.1 in IEC62301:2011 and EN 50564:2011.

Tested by: _____ Tested by: _____ Test date: 2016-07-20

signature print

Sample # : 381118-2 Instrument Code / Range: _____

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

RESULTS FOR SAMPLE 2:

Ambient Temperature (°C): 23.4 **Relative Humidity (%):** 69.8 **Airspeed, room (m/s) :** <0.5

Input Test Voltage (V ac): 230 **Input Test Frequency (Hz):** 50 **Rated Output Current (A):** 2

	External Power Supply Input Electric Data													Power Supply Output Electric Data			
Load	**V**	**HZ**	**A**	**PF**	**THD**	**Wh**	****Avg. Power (W)**	**Wh Interval [min]**	*****Ue**	**Minimum Warm-up time**	**Stability Assessment %**	***Measurement method used**	**Slope value (mW/h)**	**V**	**A**	**Wh**	****Avg. Power (W)**
1 (100%)	229.66	50.00	0.198	0.4600	0.32	1.7475	20.9702	**5**	0.25192	**30 (All)**	0.14	Accumlated Energy	--	8.91	2.00	1.4887	17.8640
2 (75%)	229.62	50.00	0.154	0.4500	0.31	1.3115	15.7375	**5**	0.1382	**0 (others)**	0.38	Accumlated Energy	--	8.97	1.50	1.1231	13.4776
3 (50%)	229.63	50.00	0.107	0.4300	0.28	0.8802	10.5627	**5**	0.11492	**0 (others)**	0.16	Accumlated Energy	--	9.02	1.00	0.7533	9.0400
4 (25%)	229.62	50.00	0.061	0.3800	0.24	0.4450	5.3402	**5**	0.06134	**0 (others)**	0.34	Accumlated Energy	--	9.08	0.50	0.3789	4.5466
Optional (10%)										**0 (others)**							
5 (0%)	229.62	50.01	0.017	0.0100	0.21	0.0072	0.0431	**10**	0.01466	**0 (others)**	23.26	Sampling	930.47E-9				

Other than NRCan - Efficiency of Power Supply (after 5 min warm-up)					
100%	**75%**	**50%**	**25%**	**10%**	**Arithmetic Average of Efficiency at load 1 ~ 4**
85.18755	85.64003	85.58418	85.13913		85.38772382

Other than NRCan - Power Consumed by UUT (W)					
100%	**75%**	**50%**	**25%**	10%	**No Load**
3.1062	2.2599	1.5227	0.7936		0.0431

* The measurement methods are defined in 5.3.2 or 5.3.3 of the standards, EN 50564:2011 and IEC62301:2011.

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

*** The calculated measurement uncertainty (Ue) is defined in Annex D and complied with 4.4.1 in IEC62301:2011 and EN 50564:2011.

Tested by: _____ Tested by: _____ Test date: 2016-07-20

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Sample # : 381118-3 Instrument Code / Range: _____

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

RESULTS FOR SAMPLE 3:

Ambient Temperature (°C): 23.4 **Relative Humidity (%):** 69.8 **Airspeed, room (m/s) :** <0.5

Input Test Voltage (V ac): 230 **Input Test Frequency (Hz):** 50 **Rated Output Current (A):** 2

	External Power Supply Input Electric Data													Power Supply Output Electric Data			
Load	V	HZ	A	PF	THD	Wh	**Avg. Power (W)	Wh Interval [min]	***Ue	Minimum Warm-up time	Stability Assessment %	*Measurement method used	Slope value (mW/h)	V	A	Wh	**Avg. Power (W)
1 (100%)	229.70	50.00	0.198	0.4600	0.31	1.7445	20.9339	5	0.25175	30 (All)	0.38	Accumlated Energy	--	8.92	2.00	1.4885	17.8621
2 (75%)	229.61	50.00	0.153	0.4500	0.31	1.3086	15.7032	5	0.13803	0 (others)	0.45	Accumlated Energy	--	8.97	1.50	1.1227	13.4728
3 (50%)	229.61	50.00	0.107	0.4300	0.28	0.8792	10.5503	5	0.11485	0 (others)	0.18	Accumlated Energy	--	9.03	1.00	0.7534	9.0405
4 (25%)	229.62	50.00	0.061	0.3800	0.25	0.4442	5.3298	5	0.06127	0 (others)	0.34	Accumlated Energy	--	9.08	0.50	0.3789	4.5471
Optional (10%)										0 (others)							
5 (0%)	229.65	50.00	0.018	0.0100	0.20	0.0073	0.0436	10	0.01476	0 (others)	21.77	Sampling	108.99E-9				

Other than NRCan - Efficiency of Power Supply (after 5 min warm-up)					
100%	75%	50%	25%	10%	Arithmetic Average of Efficiency at load 1 ~ 4
85.32619	85.79653	85.68951	85.31465		85.53171784

Other than NRCan - Power Consumed by UUT (W)					
100%	75%	50%	25%	10%	No Load
3.0718	2.2304	1.5098	0.7827		0.0436

* The measurement methods are defined in 5.3.2 or 5.3.3 of the standards, EN 50564:2011 and IEC62301:2011.

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

*** The calculated measurement uncertainty (Ue) is defined in Annex D and complied with 4.4.1 in IEC62301:2011 and EN 50564:2011.

WORKSHEETS

The measured is the following:

Minimum Average Efficiency in Active Mode	Input Voltage (V ac):	☒ 115V, 60Hz #	☐ 115V, 60Hz	☒ 230V, 50Hz	☐ 115/230V, 50/60Hz	☐ Other: V, Hz
	Sample No.:	2		1		
	Efficiency (%):	85.02		85.27		
~~Minimum 10% Load Average Efficiency in Active Mode~~	~~Sample No.:~~					
	~~Efficiency (%):~~					
Maximum Power In No-Load Condition	Sample No.:	1		3		
	Power (W) :	0.0221		0.0436		

Note:

☒ # - The measurement is performed by the test method of CSA C381.1-08 only. There are two measurements at 115Vac, 60Hz, due to the test methods is different between NRCan and the other regulations.

☐ For NRCan testing, 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 CSA C381.1-08. The results are more than .8 (>) above the minimum efficiency standard.

International Efficiency Marking Protocol (IEMP) for External Power Supplies:

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: >1to49W (85.00 %) at 115V ac; >1to49W (85.00 %) at 230V ac and Maximum Energy Consumption in No-Load Mode is not greater than 0.1 Watt at 115V ac; 0.1 Watt at 230V ac.

☐ 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.

Canada NRCan Energy Efficiency Requirements: (at 115V ac, 60Hz)

Base on Table 2, the calculated Minimum Average Efficiency in Active Mode is: 1to51W (76.01 %), and Maximum Energy Consumption in No-Load Mode is not greater than 0.5 Watt.
This ☒ complies ☐ does not comply with requirements in:

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

~~**CEC Requirements for Class A external power supply: (at 115V ac, 60Hz)**~~

~~Base on Table 2, the calculated Minimum Average Efficiency in Active Mode is: _____ (_____ %), and Maximum Energy Consumption in No-Load Mode is not greater than 0.5 Watt.~~
~~This ☐ complies ☐ does not comply with requirements in:~~

~~**Appliance Efficiency Regulations (California Code of Regulations, Title 20, Sections 1601 through 1608) dated July 2015**~~

WORKSHEETS (CONT'D)

US DoE Requirements for external power supply: (at 115V ac, 60Hz)

Base on Table 2, the calculated Minimum Average Efficiency in Active Mode is: _____ (_____ %), and Maximum Energy Consumption in No-Load Mode is not greater than _____ Watt.
This ☐ complies ☐ does not comply with requirements in:
Office of Energy Efficiency and Renewable Energy 10 CFR Parts 429 and 430

Australian and New Zealand: (at 230V ac or 240V ac, 50Hz)

Base on Table 2, the calculated Minimum Average Efficiency in Active Mode is: _____ (_____ %), and Maximum Energy Consumption in No-Load Mode is not greater than _____ Watt.
This ☐ complies ☐ does not comply with performance mark ☐ III; ☐ IV; ☐ V requirements in:
Australian Greenhouse and Energy Minimum Standards (External Power Supplies) Determination 2014 and New Zealand Energy Efficiency (Energy Using Products) Regulations 2002

Note:
For **Australian**, according to Clause 8(1)(b) in Greenhouse and Energy Minimum Standards (External Power Supplies) Determination 2014, if a product exceeds the energy performance requirements for Mark V as mentioned in Appendix A of AS/NZS 4665.1:2005 and meets the performance requirements for Mark VI mentioned in the IEMP then the product may be labelled in accordance with the requirements for:
(i) Mark V mentioned in Appendix A of AS/NZS 4665.1:2005 and sections 4.2 and 5 of AS/NZS 4665.2:2005 (Energy Performance Mark); or (ii) Mark VI mentioned in the IEMP.

European Union (EU) Energy-related Products (ErP): (at 230V ac, 50Hz)

Base on Table 3, 4 and 5, the calculated Minimum Average Efficiency in Active Mode is: _____ (_____ %), and Maximum Energy Consumption in No-Load Mode is not greater than _____ Watt.
This ☐ complies ☐ does not comply with requirements for **EU Directive for Energy-related Products 2009/125/EC and Implementing Measure no. EC 278/2009 for External Power Supply.**

European Union (EU) Code of Conduct: (at 230V ac, 50Hz)

Base on Table 6, 7, 8, 9, and 10, the calculated Minimum Average Efficiency in Active Mode is: _____ (_____ %), at 10% Load is: _____ (_____ %), and Maximum Energy Consumption in No-Load Mode is not greater than _____ Watt.
This ☐ complies ☐ does not comply with requirements for **Code of Conduct on Energy Efficiency of External Power Supplies, Version 5**.

MEXICO CONUEE and PROFECO: Energy Consumption Information

1) Energy consumption by unit of time under normal operating conditions of the equipment or appliance[(1)]: _____ Wh. If applicable[(2)]:
2) Consumption of energy in idle mode in unit of time of the equipment or appliance[(3)]: _____ Wh.

Notes:
(1) This is the consumption under full charge conditions and for a 1 hour period of time. The consumption must be indicated in the following units: kW-h/year, kW-h /month W-h /day.
(2) In accordance with Article 26, section II, of the Regulation of the Law for the Sustainable Use of Energy, if applicable, it must indicate the consumption of energy in idle mode by unit of time. If not applicable, write "not applicable."
(3) This is the passive electric energy consumption, when the appliance or equipment is connected to the electrical power circuit, even when the equipment is off, and not performing its main function. The consumption must be indicated in the following units: kW-h/year, kW-h /month W-h /day.
(4). The energy consumption for a hour (Wh) is calculated by the following equation:
The Maximum Avg. Power (Watts) at 100% load x 1 hour (h).

Table 2: International Efficiency Marking Protocol for External Power Supplies, Version 3.0

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.

Table 3: ErP Energy-Efficiency Criteria for AC-AC and AC-DC EPS in Active Mode: Standard Models

Nameplate Output Power (P_o)	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 4: ErP Energy-Efficiency Criteria for AC-AC and AC-DC EPS in Active Mode: Low Voltage Models

Nameplate Output Power (P_o)	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.	

Table 5: ErP Power Consumption Criteria for No-Load

Nameplate Output Power (P_o)	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

Table 6: CoC Energy-Efficiency Criteria for AC-AC and AC-DC EPS in Active Mode: Standard Models

Nameplate Output Power (P_{no})	Minimum Four Point Average Efficiency in Active Mode (expressed as a decimal)	
	Tier 1 – Jan 1st, 2014	Tier 2 – January 1st, 2016
0.3 to ≤ 1 Watt	≥ 0.500 * P_{no} + 0.146	≥ 0.500 * P_{no} + 0.169
> 1 to ≤ 49 Watts	≥ 0.0626 * Ln (P_{no}) + 0.646	≥ 0.071 * Ln (P_{no}) – 0.00115 * P_{no} + 0.670
> 49 to ≤ 250 Watts	≥ 0.890	≥ 0.890
Note: All efficiency values shall be rounded to the hundredths place.		

Table 7: CoC Energy-Efficiency Criteria for AC-AC and AC-DC EPS in Active Mode: Low Voltage Models

Nameplate Output Power (P_{no})	Minimum Four Point Average Efficiency in Active Mode (expressed as a decimal)	
	Tier 1 – Jan 1st, 2014	Tier 2 – January 1st, 2016
0.3 to ≤ 1 Watt	≥ 0.500 * P_{no} + 0.086	≥ 0.517 * P_{no} + 0.091
> 1 to ≤ 49 Watts	≥ 0.0755 * Ln (P_{no}) + 0.586	≥ 0.0834 * Ln (P_{no}) – 0.0011 * P_{no} + 0.609
> 49 to ≤ 250 Watts	≥ 0.880	≥ 0.880
Note: All efficiency values shall be rounded to the hundredths place.		

Table 8: CoC Energy-Efficiency Criteria for AC-AC and AC-DC EPS in Active Mode: Standard Models

Nameplate Output Power (P_{no})	Minimum 10% Load Average Efficiency in Active Mode (expressed as a decimal)	
	Tier 1 – Jan 1st, 2014	Tier 2 – January 1st, 2016
0.3 to ≤ 1 Watt	≥ 0.500 * P_{no} + 0.046	≥ 0.5 * P_{no} + 0.060
> 1 to ≤ 49 Watts	≥ 0.0626 * Ln (P_{no}) + 0.546	≥ 0.071 * Ln (P_{no}) – 0.00115 * P_{no} + 0.570
> 49 to ≤ 250 Watts	≥ 0.790	≥ 0.790
Note: All efficiency values shall be rounded to the hundredths place.		

Table 9: CoC Energy-Efficiency Criteria for AC-AC and AC-DC EPS in Active Mode: Low Voltage Models

Nameplate Output Power (P_{no})	Minimum 10% Load Average Efficiency in Active Mode (expressed as a decimal)	
	Tier 1 – Jan 1st, 2014	Tier 2 – January 1st, 2016
0.3 to ≤ 1 Watt	≥ 0.500 * P_{no}	≥ 0.517 * P_{no}
> 1 to ≤ 49 Watts	≥ 0.072 * Ln (P_{no}) + 0.500	≥ 0.0834 * Ln (P_{no}) – 0.00127 * P_{no} + 0.518
> 49 to ≤ 250 Watts	≥ 0.780	≥ 0.780
Note: All efficiency values shall be rounded to the hundredths place.		

Table 10: CoC Power Consumption Criteria for No-Load

Nameplate Output Power (P_{no})	Maximum Power in No-Load	
	Tier 1 – Jan 1st, 2014	Tier 2 – January 1st, 2016
≥ 0.3 to < 49 Watts	≤ 0.150 watts	≤ 0.075 watts
≥ 49 to < 250 Watts	≤ 0.250 watts	≤ 0.150 watts
Mobile handheld battery driven and < 8 W	≤ 0.075 watts	≤ 0.075 watts

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