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

Customer Name:	POWER SYSTEMS TECHNOLOGIES FAR EAST LTD
Address:	GRIDLINE 4024E-4026E 4TH fl ATL LOGISTICS CERTRE A BERTH 3 KWAI CHUNG CONTAINER TERMINAL KWAI CHUNG N T, HK

Brand Name(s):	POWER SYSTEMS TECHNOLOGIES FAR EAST LTD
Model Number(s):	B24c
Product Category:	External Power Supply
Representative (tested) Model:	B24c
Model Differences:	--

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

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

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
Testing Performed Under:	[X] UL Lab [ ] Private Label [ ] CTDP/SMTL [ ] WTDP [ ] EPA 3rd Party

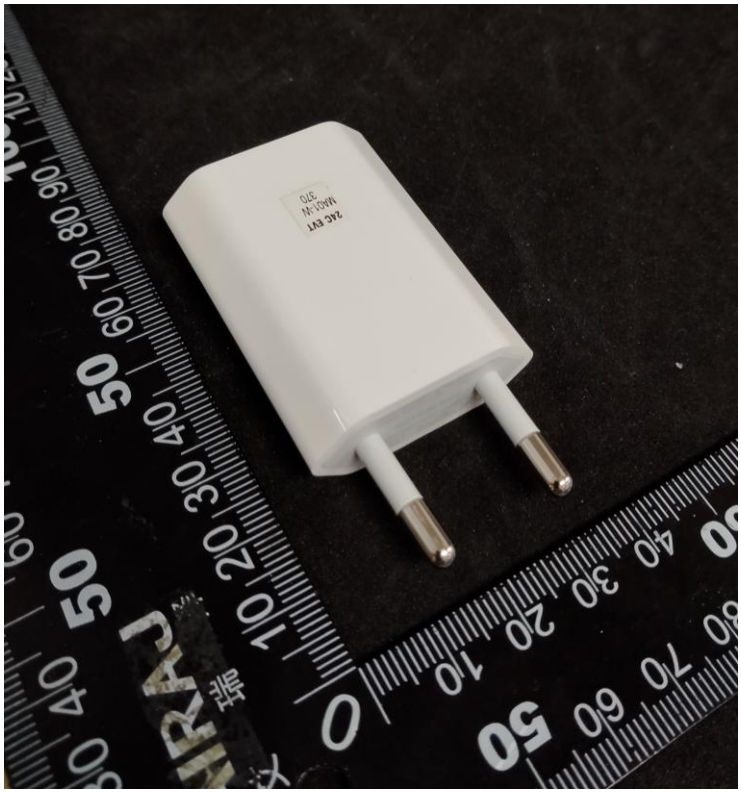
UL Project No.:	4789238389		
Project Handler:	Yoyo Yuan	**Reviewed by:**	Lotus Zhou
Issued: (yyyy-mm-dd)		**Revised:** (yyyy-mm-dd)	N/A

Summary:

Model	Ratings Input / Output	Input Test Voltage/ Freq	Requirement	Active Mode - Average Efficiency		Active Mode - 10% Load Efficiency		No-Load Mode	
				Minimum Efficiency Limit	Calculated Efficiency	Minimum Efficiency	Calculated Efficiency	Max Power Limit (W)	Measured Power (W)
B24c	Input: 100-240V ac, 50/60Hz, 0.15A Output: 5.0VDC, 1A	115V~ 60Hz	DOE (VI)	73.62	74.25	71.87	71.90	0.1	0.0091
		230V~, 50Hz	DOE (VI)	73.62	73.96	71.68	71.89	0.1	0.0082
		100V~, 50Hz	DOE (VI)	73.62	73.92	71.98	72.03	0.1	0.0102

Label:

Photos:



DATA PACKAGE INFORMATION SHEET

Applicant Information	Name:		POWER SYSTEMS TECHNOLOGIES FAR EAST LTD
	Address:		GRIDLINE 4024E-4026E 4TH fl ATL LOGISTICS CERTRE A BERTH 3 KWAI CHUNG CONTAINER TERMINAL KWAI CHUNG N T, HK
Product Information	Standard(s) or Regulation(s)	[ ]	US DoE: Office of Energy Efficiency and Renewable Energy 10 CFR Parts 429 and 430
		[ ]	US CEC: California Code of Regulations, Title 20, Division 2, Chapter 4, Article 4. Appliance Efficiency Regulations, Sections 1601 through 1609
		[ ]	NRCan: Amendment 13 to the Energy Efficiency Regulations for External Power Supplies, in the Canada Gazette, Part II
		[ ]	NRCan: Amendment 14 to the Energy Efficiency Regulations for External Power Supplies in the Canada Gazette, Part II
		[ ]	Quebec: O.C. 434-2017 in GAZETTE OFFICIELLE DU QUÉBEC, May 17, 2017, Vol. 149, No. 20
		[ ]	Australian (Greenhouse and Energy Minimum Standards (External Power Supplies) Determination 2014) and New Zealand (Minimum energy performance standards)
		[ ]	EU Directive for Energy-related Products ErP 2009/125/EC and Implementing Measure (IM) no. EC278/2009 for External Power Supply
		[ ]	EU: Code of Conduct on Energy Efficiency of External Power Supplies Version 5
		[ ]	Mexico: NORMA Oficial Mexicana NOM-029-ENER-2017, Eficiencia energética de fuentes de alimentación externa. Límites, métodos de prueba, marcado y etiquetado.
		[ ]	Other:
	Test method(s)	[x]	10 CFR part 430, subpart B, Appendix Z "Uniform Test Method for Measuring the Energy Consumption of External Power Supplies"
		[ ]	CAN/CSA-C381.1-08 Test method for calculating the energy efficiency of single-voltage external ac-dc and ac-ac power supplies
		[ ]	CAN/CSA-C381.1-17 Test method for calculating the energy efficiency of single-voltage external ac-dc and ac-ac power supplies
		[ ]	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
		[ ]	"Test Method for Calculating the Energy Efficiency of Single-Voltage External AC-DC and AC-AC Power Supplies" dated August 11, 2004
		[ ]	AS/NZS4665.1-2005+A1:2009; AS/NZS4665.2-2005+A1:2009
		[ ]	Other:
	Protocol	[ ]	International Efficiency Marking Protocol for External Power Supplies, Version 3.0
	CCNs:		AAAE
	Product Name/Type:		External Power Supply [x] AC-DC [ ] AC-AC
	Model Number (s):		B24c
Test Location Information	DAP and UL: [ ] CTDP [ ] TCP [ ] TPTDP [ ] WTDP [x] 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**:		Print Holder He(T)/ 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:		Print --
			Date --
	UL WTDP Witness:		[ ] UL Staff conducting or witnessing testing (WTDP only) [ ] UL Staff supervising UL Staff in training
			Print --

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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 %
the test method other than US DoE	23±5	10-80 (For lab references)	±1	<2	≤0.5	±1
US DoE: 10 CFR Parts 429 and 430	20±5					

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 17025:2005 Clause 5.3.1, 5.3.2. 5.3.3, 5.3.4)	[ ] Yes [ ] No [ ] N/A
Personnel:	
Lab Management shall authorize personnel to operate particular types of equipment used in testing. (ISO/IEC 17025:2005 5.2.5)	[ ] Yes [ ] No
Equipment:	
Testing is being conducted within the test equipment calibration dates. (See Test Instrument Information Page and ISO/IEC 17025:2005 5.5.1, 5.5.2, 5.5.4, 5.5.5, 5.5.8,)	[ ] Yes [ ] No
Calibrations for testing equipment are traceable to SI Units. Refer to 00-OP-C0032 (Calibration Certificate Analysis). (ISO/IEC 17025:2005 5.6.2.2)	[ ] Yes [ ] No
Critical Consumables:	
Critical consumables are compliant with test standard requirements. (ISO/IEC 17025:2005 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 17025:2005 Clause 5.8.2)	[ ] Yes [ ] No
Additional Requirements:	
Testing at a third party laboratory selected by UL and not part of the Third Party Test Data Program requires a Mutual Nondisclosure (NDA) and Confidentiality Agreement, 00-LE-F0025, or alternate agreement form approved by UL's Legal Department to be stored and included with the Test Package.	[ ] Yes [ ] No [ ] N/A
Summary:	
The test facility was deemed to have the environment and capabilities necessary to perform the tests included in this data package.	[ ] Yes [ ] No

[ ] The CAS Staff as indicated below, (a competent L1, L2 or L3 in a similar CCN/Standard for a similar test method) was utilized to conduct the witnessing of tests on behalf of the project handler. (Please complete the table below to document the rationale and approval.)

Name of UL Staff conducting WTDP	CCN/Standard to be witnessed	Test(s) to be witnessed	L1, L2 or L3 Competency	Similar CCN/Standard Competency

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
2663710-1 2663710-2 2663710-3	2663710	2019-11-01	Manufacturer: POWER SYSTEMS TECHNOLOGIES FAR EAST LTD Product Identification: B24c 5W Cell Phone Charger Model: B24c Ratings: Input: 100-240V~ 0.15A 50/60Hz Output: 5.0Vdc 1.0A
Sampling Procedure (if used) :		--	

TEST INSTRUMENTS REFERENCE LIST

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

See the meter use
Holder He
2019-11-05

"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:	POWER SYSTEMS TECHNOLOGIES FAR EAST LTD	
Brand Name:	POWER SYSTEMS TECHNOLOGIES FAR EAST LTD	
Model Number/Designation:	B24c	
Model differences:	--	
Class A external power supply	**[x]** Yes **[ ]** No	
Adaptive external power supply	**[ ]** Yes **[x]** No	
Switch-selectable single voltage external power supply	**[ ]** Yes **[x]** No	
External Power Supply Product Class ID	**[ ]** B	Direct Operation, AC-DC, Basic-Voltage
	[x] 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:	100-240V~ 0.15A 50/60Hz
	Output:	5.0Vdc 1.0A

Each sample was tested at:	**[x]** 115V, 60Hz	**[x]** 230V, 50Hz	**[ ]** 240V, 50Hz
	[ ] 127V, 60Hz	**[x]** 100V, 50Hz	
UUT Output Cord Length (± 1 cm):	99cm		
UUT is a Replacement EPS:	**[ ]** Yes	**[ ]** No	**[x]** N/A
Presence of Input Power Switch (Y/N):	**[ ]** Yes	**[x]** No	
Input Power Switch (ON/OFF):	**[ ]** ON	**[ ]** OFF	**[x]** N/A
End Product Powered by the UUT:	N/A		

Notes/Comments:

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).

"Crest Factor, CF": The measured peak current drawn by the product divided by the measured r.m.s current drawn by the product.

"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": the mode of operation when an external power supply is connected to the main electricity supply and the output is not connected to a load.
Note: No-load modes include Standby mode and OFF mode.

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

"Off mode": the condition, applicable only to units with manual on-off switches, in which the external power supply is (1) connected to the main electricity supply; (2) the output is not connected to any load; and (3) all manual on-off switches are turned off.

"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.

TECHNICIAN'S REFERENCE PAGE (Cont'd)

"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.

"Maximum Current Ratio (MCR)": Crest Factor (CF)/Power Factor (PF)

POWER MEASUREMENT EQUIPMENT AND UNCERTAINTY

Any power measurements recorded, as well as any power measurement equipment utilized for testing, shall conform to the following:
Resolution and Uncertainty requirements are outlined in Section 4, "General conditions for measurements," as well as Annexes B, "Notes on the measurement of low power modes," and Annexes D, "Determination of uncertainty of measurement," of IEC 62301:2011 (incorporated by reference; see §430.3) and EN50564:2011.

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)

General sampling requirements for selecting units to be tested. (10 CFR Part 429 Subpart B, 429.11)
(a) When testing of covered products or covered equipment is required to comply with section 323(c) of the Act, or to comply with rules prescribed under section 324, 325, or 342, 344, 345 or 346 of the Act, a sample comprised of production units (or units representative of production units) of the basic model being tested must be selected at random and tested, and must meet the criteria found in §§429.14 through 429.62 of this subpart. Components of similar design may be substituted without additional testing if the substitution does not affect energy or water consumption. Any represented values of measures of energy efficiency, water efficiency, energy consumption, or water consumption for all individual models represented by a given basic model must be the same, except for central air conditioners and central air conditioning heat pumps, as specified in §429.16 of this subpart.
(b) The minimum number of units tested shall be no less than two, except where:
(1) A different minimum limit is specified in §§429.14 through 429.65 of this subpart; or
(2) Only one unit of the basic model is produced, in which case, that unit must be tested and the test results must demonstrate that the basic model performs at or better than the applicable standard(s). If one or more units of the basic model are manufactured subsequently, compliance with the default sampling and representations provisions is required.

Sampling plan for External Power Supplies (10 CFR Part 429 Subpart B, 429.37)
(a) Sampling plan for selection of units for testing. (1) The requirements of §429.11 are applicable to external power supplies; and
(2) For each basic model of external power supply selected for testing, a sample of sufficient size shall be randomly selected and tested to ensure that—
(i) Any represented value of the estimated energy consumption of a basic model for which consumers would favor lower values shall be greater than or equal to the higher of:
(A) The mean of the sample, where:

$\overline{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$, and, $\overline{x}$ is the sample mean; n is the number of samples; and x_i is the i^{th} sample;

Or,
(B) The upper 97.5 percent confidence limit (UCL) of the true mean divided by 1.05, where:

$UCL = \overline{x} + t_{.975}\left(\frac{s}{\sqrt{n}}\right)$ And $\overline{x}$ is the sample mean; s is the sample standard deviation; n is the number of sample; and $t_{0.975}$ is the t statistic for a 97.5% one − tailed confidence interval with n − 1 degrees of freedom (from Appendix A).

and
(ii) Any represented value of the estimated energy consumption of a basic model for which consumers would favor higher values shall be less than or equal to the lower of:
(A) The mean of the sample, where:

$\overline{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$, and, $\overline{x}$ is the sample mean; n is the number of samples; and x_i is the i^{th} sample;

Or,
(B) The lower 97.5 percent confidence limit (LCL) of the true mean divided by 0.95, where:

$LCL = \overline{x} - t_{.975}\left(\frac{s}{\sqrt{n}}\right)$ And $\overline{x}$ is the sample mean; s is the sample standard deviation; n is the number of sample; and $t_{0.975}$ is the t statistic for a 97.5% one − tailed confidence interval with n − 1 degrees of freedom (from Appendix A).

TECHNICIAN'S REFERENCE PAGE (Cont'd)

Appendix A to Subpart B of Part 429—Student's t-Distribution Values for Certification Testing

[One-Sided]

Degrees of freedom (from Appendix A)	Confidence Interval			
	90%	95%	97.5%	99%
1	3.078	6.314	12.71	31.82
2	1.886	2.920	4.303	6.965
3	1.638	2.353	3.182	4.541
4	1.533	2.132	2.776	3.747
5	1.476	2.015	2.571	3.365
6	1.440	1.943	2.447	3.143
7	1.415	1.895	2.365	2.998
8	1.397	1.860	2.306	2.896
9	1.383	1.833	2.262	2.821
10	1.372	1.812	2.228	2.764
11	1.363	1.796	2.201	2.718
12	1.356	1.782	2.179	2.681
13	1.350	1.771	2.160	2.650
14	1.345	1.761	2.145	2.624
15	1.341	1.753	2.131	2.602
16	1.337	1.746	2.120	2.583
17	1.333	1.740	2.110	2.567
18	1.330	1.734	2.101	2.552
19	1.328	1.729	2.093	2.539
20	1.325	1.725	2.086	2.528

TECHNICIAN'S REFERENCE PAGE (Cont'd)

INSTRUCTIONS – TEST PREPARATION AND LOADING

There shall be no intentional cooling of the UUT such as by use of separately powered fans, air conditioners, or heat sinks. The UUT shall be conditioned, rested, and tested on a thermally non-conductive surface. A readily available material such as Styrofoam will be sufficient.

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.

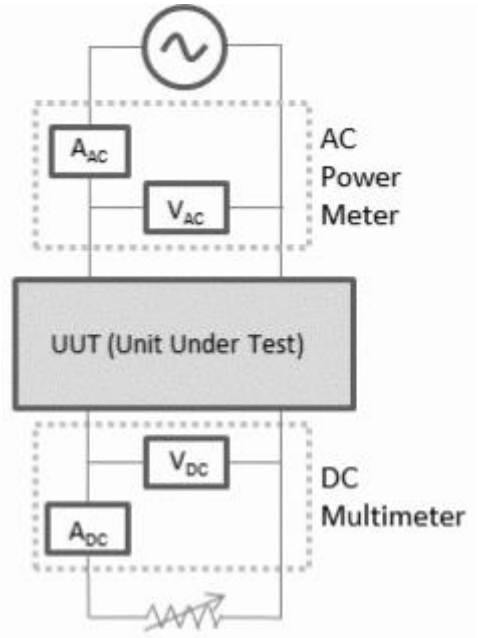
If the power supply is attached directly to the product that it is powering, cut the cord immediately adjacent to the powered product and connect DC measurement probes at that point. Any additional metering equipment such as voltmeters and/or ammeters used in conjunction with resistive or electronic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



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/Quebec, 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/Quebec, the regulations will provide this flexibility by allowing external power supplies to be tested to either the Canadian test standard (CAN/CSA C381.1) or the U.S. test procedure Appendix Z (the agencies other than NRCan/Quebec). If follow Canadian test standard, 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.

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 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.

2. If accumulated energy approach used, the average power is calculated by the following equation: Avg. Power (Watts) = [Wh X 60 minutes / hours] / Wh Interval (minutes).

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

Sample # : _____ Instrument Code / Range: _____

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

RESULTS FOR SAMPLE 1 under CAN/CSA-C381.1-08 Test method for calculating the energy efficiency of single-voltage external ac-dc and ac-ac power supplies

Ambient Temperature (°C): _____ **Relative Humidity (%):** _____ **Airspeed, room (m/s) :** _____
Input Test Voltage (V ac): 115 **Input Test Frequency (Hz):** 60 **Rated Output Current (A):** _____

	External Power Supply Input Electric Data									External Power Supply Output Electric Data			
Load	V	HZ	A	PF	CF	THD	Wh	Avg. Power (W) (Pm)	Wh Interval [min]	V	A	Wh	Avg. Power (W)
1 (100%)													
2 (75%)													
3 (50%)													
4 (25%)													
Optional (10%)													
5 (0%)													

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Load	Stability Assessment %	*Measurement method used	Slope value (mW/h)	Maximum Current Ratio (MCR)	** Ue	*** Upc	MCR ≤ 10 and Pm ≥ 1 W, Umr ≤ 2%*Pm	MCR ≤ 10 and Pm < 1 W, Uma ≤ 0.02W	MCR > 10 and Pm ≥ 1 W, Ue ≤ Upc	MCR > 10 and Pm < 1 W, Ue ≤ MAX(0.02W or Upc*Pm)
							ent Uncertainty Calculation and Judgement			
1 (100%)							--	--	--	--
2 (75%)							--	--	--	--
3 (50%)							--	--	--	--
4 (25%)							--	--	--	--
Optional (10%)							--	--	--	--
5 (0%)							--	--	--	--

Power Consumed by UUT (W)					
100%	75%	50%	25%	10%	No Load

Efficiency of Power Supply (after 5 min warm-up)					
100%	75%	50%	25%	10%	Arithmetic Average of Efficiency at load 1 ~ 4

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

** Ue is the uncertainty relating to the measuring instrument.

*** Upc is the maximum permitted relative uncertainty for cases where the MCR is > 10.

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

Sample # : _____ Instrument Code / Range: _____

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

RESULTS FOR SAMPLE 2 under CAN/CSA-C381.1-08 Test method for calculating the energy efficiency of single-voltage external ac-dc and ac-ac power supplies

Ambient Temperature (°C): _____ **Relative Humidity (%):** _____ **Airspeed, room (m/s) :** _____
Input Test Voltage (V ac): 115 **Input Test Frequency (Hz):** 60 **Rated Output Current (A):** _____

	External Power Supply Input Electric Data									External Power Supply Output Electric Data			
Load	V	HZ	A	PF	CF	THD	Wh	Avg. Power (W) (Pm)	Wh Interval [min]	V	A	Wh	Avg. Power (W)
1 (100%)													
2 (75%)													
3 (50%)													
4 (25%)													
Optional (10%)													
5 (0%)													

Yoyo Yuan 2019-11-01

				Power Measurement Uncertainty Calculation and Judgement						
Load	Stability Assessment %	*Measurement method used	Slope value (mW/h)	Maximum Current Ratio (MCR)	** Ue	*** Upc	MCR ≤ 10 and Pm ≥ 1 W, Umr ≤ 2%*Pm	MCR ≤ 10 and Pm < 1 W, Uma ≤ 0.02W	MCR > 10 and Pm ≥ 1 W, Ue ≤ Upc	MCR > 10 and Pm < 1 W, Ue ≤ MAX(0.02W or Upc*Pm)
1 (100%)							--	--	--	--
2 (75%)							--	--	--	--
3 (50%)							--	--	--	--
4 (25%)							--	--	--	--
Optional (10%)							--	--	--	--
5 (0%)							--	--	--	--

Power Consumed by UUT (W)					
100%	75%	50%	25%	10%	No Load

Efficiency of Power Supply (after 5 min warm-up)					
100%	75%	50%	25%	10%	Arithmetic Average of Efficiency at load 1 ~ 4

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

** Ue is the uncertainty relating to the measuring instrument.

*** Upc is the maximum permitted relative uncertainty for cases where the MCR is > 10.

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

Sample # : _____ Instrument Code / Range: _____

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

RESULTS FOR SAMPLE 3 under CAN/CSA-C381.1-08 Test method for calculating the energy efficiency of single-voltage external ac-dc and ac-ac power supplies

Ambient Temperature (°C): _____ **Relative Humidity (%):** _____ **Airspeed, room (m/s) :** _____
Input Test Voltage (V ac): 115 **Input Test Frequency (Hz):** 60 **Rated Output Current (A):** _____

	External Power Supply Input Electric Data									External Power Supply Output Electric Data			
Load	V	HZ	A	PF	CF	THD	Wh	Avg. Power (W) (Pm)	Wh Interval [min]	V	A	Wh	Avg. Power (W)
1 (100%)													
2 (75%)													
3 (50%)													
4 (25%)													
Optional (10%)													
5 (0%)													

Yoyo Yuan 2019-11-01

				Power Measurement Uncertainty Calculation and Judgement						
Load	Stability Assessment %	*Measurement method used	Slope v			c	MCR ≤ 10 and Pm ≥ 1 W, Umr ≤ 2%*Pm	MCR ≤ 10 and Pm < 1 W, Uma ≤ 0.02W	MCR > 10 and Pm ≥ 1 W, Ue ≤ Upc	MCR > 10 and Pm < 1 W, Ue ≤ MAX(0.02W or Upc*Pm)
1 (100%)							--	--	--	--
2 (75%)							--	--	--	--
3 (50%)							--	--	--	--
4 (25%)							--	--	--	--
Optional (10%)							--	--	--	--
5 (0%)							--	--	--	--

Power Consumed by UUT (W)					
100%	75%	50%	25%	10%	No Load

Efficiency of Power Supply (after 5 min warm-up)					
100%	75%	50%	25%	10%	Arithmetic Average of Efficiency at load 1 ~ 4

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

** Ue is the uncertainty relating to the measuring instrument.

*** Upc is the maximum permitted relative uncertainty for cases where the MCR is > 10.

Tested by: _____ Tested by: _____ Test date: 2019-11-04
signature print

Sample # : 2663710-1 Instrument Code / Range: _____

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

RESULTS FOR SAMPLE 1 under test method other than CAN/CSA-C381.1-08, NOM-029

Ambient Temperature (°C): 22.3 **Relative Humidity (%):** 51.7 **Airspeed, room (m/s) :** <0.5
Input Test Voltage (V ac): 100 **Input Test Frequency (Hz):** 50 **Rated Output Current (A):** 1

	External Power Supply Input Electric Data									External Power Supply Output Electric Data			
Load	V	HZ	A	PF	CF	THD	Wh	Avg. Power (W) (Pm)	Wh Interval [min]	V	A	Wh	Avg. Power (W)
1 (100%)	99.78	50.00	0.110	0.6127	--	0.25	0.5598	6.7174	**5.00**	4.85	1.00	0.4045	4.8535
2 (75%)	99.78	50.00	0.085	0.5886	--	0.23	0.4165	4.9981	**5.00**	4.93	0.75	0.3082	3.6989
3 (50%)	99.80	50.00	0.061	0.5523	--	0.23	0.2786	3.3434	**5.00**	5.00	0.50	0.2087	2.5043
4 (25%)	99.78	50.00	0.035	0.4918	--	0.22	0.1419	1.7028	**5.00**	5.07	0.25	0.1057	1.2687
Optional (10%)	99.79	50.00	0.017	0.4237	--	0.21	0.0590	0.7081	**5.00**	5.11	0.10	0.0426	0.5107
5 (0%)	99.79	50.00	0.001	0.1917	--	0.20	0.0017	0.0100	**10.00**				

				Power Measurement Uncertainty Calculation and Judgement						
Load	Stability Assessment %	*Measurement method used	Slope value (mW/h)	Maximum Current Ratio (MCR)	** Ue	*** Upc	MCR ≤ 10 and Pm ≥ 1 W, Umr ≤ 2%*Pm	MCR ≤ 10 and Pm < 1 W, Uma ≤ 0.02W	MCR > 10 and Pm ≥ 1 W, Ue ≤ Upc	MCR > 10 and Pm < 1 W, Ue ≤ MAX(0.02W or Upc*Pm)
1 (100%)	0.09	--	--	--	0.057406	--	--	--	--	--
2 (75%)	0.10	--	--	--	0.036227	--	--	--	--	--
3 (50%)	0.12	--	--	--	0.030108	--	--	--	--	--
4 (25%)	0.31	--	--	--	0.016084	--	--	--	--	--
Optional (10%)	0.58	--	--	--	0.00709	--	--	--	--	--
5 (0%)	29.08	Sampling	76.42E-9	--	0.001617	--	--	--	--	--

Power Consumed by UUT (W)					
100%	75%	50%	25%	10%	No Load
1.8639	1.2992	0.8391	0.4341	0.1974	0.01

Efficiency of Power Supply (after 5 min warm-up)					
100%	75%	50%	25%	10%	Arithmetic Average of Efficiency at load 1 ~ 4
72.25266	74.00612	74.90279	74.50669	72.12258	73.91706701

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

** Ue is the uncertainty relating to the measuring instrument.

*** Upc is the maximum permitted relative uncertainty for cases where the MCR is > 10.

Tested by: _____ Tested by: _____ Test date: 2019-11-04

signature print

Sample # : 2661710-2 Instrument Code / Range: _____

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

RESULTS FOR SAMPLE 2 under test method other than CAN/CSA-C381.1-08, NOM-029

Ambient Temperature (°C): 22.3 **Relative Humidity (%):** 51.7 **Airspeed, room (m/s) :** <0.5

Input Test Voltage (V ac): 100 **Input Test Frequency (Hz):** 50 **Rated Output Current (A):** 1

	External Power Supply Input Electric Data									External Power Supply Output Electric Data			
Load	V	HZ	A	PF	CF	THD	Wh	Avg. Power (W) (Pm)	Wh Interval [min]	V	A	Wh	Avg. Power (W)
1 (100%)	99.79	50.00	0.109	0.6190	--	0.24	0.5595	6.7139	**5.00**	4.83	1.00	0.4033	4.8397
2 (75%)	99.79	50.01	0.084	0.5946	--	0.24	0.4164	4.9967	**5.00**	4.91	0.75	0.3076	3.6909
3 (50%)	99.79	50.00	0.060	0.5543	--	0.23	0.2777	3.3328	**5.00**	4.99	0.50	0.2084	2.5003
4 (25%)	99.79	50.01	0.035	0.4937	--	0.22	0.1417	1.7004	**5.00**	5.06	0.25	0.1056	1.2667
Optional (10%)	99.78	50.01	0.017	0.4252	--	0.21	0.0590	0.7081	**5.00**	5.10	0.10	0.0425	0.5097
5 (0%)	99.79	50.00	0.001	0.1864	--	0.21	0.0016	0.0093	**10.00**				

				Power Measurement Uncertainty Calculation and Judgement						
Load	Stability Assessment %	*Measurement method used	Slope value (mW/h)	Maximum Current Ratio (MCR)	** Ue	*** Upc	MCR ≤ 10 and Pm ≥ 1 W, Umr ≤ 2%*Pm	MCR ≤ 10 and Pm < 1 W, Uma ≤ 0.02W	MCR > 10 and Pm ≥ 1 W, Ue ≤ Upc	MCR > 10 and Pm < 1 W, Ue ≤ MAX(0.02W or Upc*Pm)
1 (100%)	0.33	--	--	--	0.057108	--	--	--	--	--
2 (75%)	0.20	--	--	--	0.051008	--	--	--	--	--
3 (50%)	0.18	--	--	--	0.030008	--	--	--	--	--
4 (25%)	0.28	--	--	--	0.016041	--	--	--	--	--
Optional (10%)	0.58	--	--	--	0.007077	--	--	--	--	--
5 (0%)	27.89	Sampling	-102.50E-9	--	0.001612	--	--	--	--	--

Power Consumed by UUT (W)					
100%	75%	50%	25%	10%	No Load
1.8742	1.3058	0.8325	0.4337	0.1984	0.0093

Efficiency of Power Supply (after 5 min warm-up)					
100%	75%	50%	25%	10%	Arithmetic Average of Efficiency at load 1 ~ 4
72.08478	73.86675	75.021	74.49424	71.98136	73.86669285

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

** Ue is the uncertainty relating to the measuring instrument.

*** Upc is the maximum permitted relative uncertainty for cases where the MCR is > 10.

Tested by: _____ Tested by: _____ Test date: 2019-11-04

signature print

Sample # : 2663710-3 Instrument Code / Range: _____

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

RESULTS FOR SAMPLE 3 under test method other than CAN/CSA-C381.1-08, NOM-029

Ambient Temperature (°C): 22.3 **Relative Humidity (%):** 51.7 **Airspeed, room (m/s) :** <0.5

Input Test Voltage (V ac): 100 **Input Test Frequency (Hz):** 50 **Rated Output Current (A):** 1

	External Power Supply Input Electric Data									External Power Supply Output Electric Data			
Load	V	HZ	A	PF	CF	THD	Wh	Avg. Power (W) (Pm)	Wh Interval [min]	V	A	Wh	Avg. Power (W)
1 (100%)	99.79	50.00	0.109	0.6135	--	0.25	0.5585	6.7023	**5.00**	4.84	1.00	0.4037	4.8444
2 (75%)	99.79	50.00	0.085	0.5897	--	0.24	0.4155	4.9865	**5.00**	4.92	0.75	0.3079	3.6949
3 (50%)	99.79	50.00	0.060	0.5532	--	0.23	0.2777	3.3323	**5.00**	5.00	0.50	0.2085	2.5016
4 (25%)	99.78	50.01	0.035	0.4928	--	0.22	0.1419	1.7025	**5.00**	5.06	0.25	0.1056	1.2677
Optional (10%)	99.79	50.00	0.017	0.4243	--	0.21	0.0591	0.7095	**5.00**	5.10	0.10	0.0426	0.5107
5 (0%)	99.80	50.01	0.001	0.1854	--	0.20	0.0015	0.0090	**10.00**				

				Power Measurement Uncertainty Calculation and Judgement						
Load	Stability Assessment %	*Measurement method used	Slope value (mW/h)	Maximum Current Ratio (MCR)	** Ue	*** Upc	MCR ≤ 10 and Pm ≥ 1 W, Umr ≤ 2%*Pm	MCR ≤ 10 and Pm < 1 W, Uma ≤ 0.02W	MCR > 10 and Pm ≥ 1 W, Ue ≤ Upc	MCR > 10 and Pm < 1 W, Ue ≤ MAX(0.02W or Upc*Pm)
1 (100%)	0.12	--	--	--	0.057308	--	--	--	--	--
2 (75%)	0.12	--	--	--	0.051138	--	--	--	--	--
3 (50%)	0.15	--	--	--	0.030034	--	--	--	--	--
4 (25%)	0.25	--	--	--	0.016066	--	--	--	--	--
Optional (10%)	0.64	--	--	--	0.007093	--	--	--	--	--
5 (0%)	32.50	Sampling	-78.39E-9	--	0.001609	--	--	--	--	--

Power Consumed by UUT (W)					
100%	75%	50%	25%	10%	No Load
1.8579	1.2916	0.8307	0.4348	0.1988	0.009

Efficiency of Power Supply (after 5 min warm-up)					
100%	75%	50%	25%	10%	Arithmetic Average of Efficiency at load 1 ~ 4
72.27967	74.09806	75.07127	74.46109	71.98027	73.97752217

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

** Ue is the uncertainty relating to the measuring instrument.

*** Upc is the maximum permitted relative uncertainty for cases where the MCR is > 10.

Tested by: _____ Tested by: _____ Test date: 2019-11-04

signature print

Sample # : 2663710-1 Instrument Code / Range: _____

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

RESULTS FOR SAMPLE 1 under test method other than CAN/CSA-C381.1-08, NOM-029

Ambient Temperature (°C): 22.3 **Relative Humidity (%):** 51.7 **Airspeed, room (m/s) :** <0.5

Input Test Voltage (V ac): 115 **Input Test Frequency (Hz):** 60 **Rated Output Current (A):** 1

	External Power Supply Input Electric Data									External Power Supply Output Electric Data			
Load	V	HZ	A	PF	CF	THD	Wh	Avg. Power (W) (Pm)	Wh Interval [min]	V	A	Wh	Avg. Power (W)
1 (100%)	114.69	60.00	0.100	0.5795	--	0.26	0.5543	6.6522	**5.00**	4.85	1.00	0.4046	4.8549
2 (75%)	114.73	60.00	0.078	0.5529	--	0.26	0.4136	4.9630	**5.00**	4.93	0.75	0.3084	3.7003
3 (50%)	114.70	60.00	0.056	0.5160	--	0.24	0.2776	3.3309	**5.00**	5.00	0.50	0.2087	2.5043
4 (25%)	114.72	60.00	0.032	0.4602	--	0.24	0.1420	1.7043	**5.00**	5.07	0.25	0.1057	1.2687
Optional (10%)	114.71	60.00	0.015	0.4033	--	0.24	0.0592	0.7106	**5.00**	5.11	0.10	0.0426	0.5107
5 (0%)	114.72	60.00	0.001	0.1550	--	0.22	0.0015	0.0091	**10.00**				

				Power Measurement Uncertainty Calculation and Judgement						
Load	Stability Assessment %	*Measurement method used	Slope value (mW/h)	Maximum Current Ratio (MCR)	** Ue	*** Upc	MCR ≤ 10 and Pm ≥ 1 W, Umr ≤ 2%*Pm	MCR ≤ 10 and Pm < 1 W, Uma ≤ 0.02W	MCR > 10 and Pm ≥ 1 W, Ue ≤ Upc	MCR > 10 and Pm < 1 W, Ue ≤ MAX(0.02W or Upc*Pm)
1 (100%)	0.11	--	--	--	0.058689	--	--	--	--	--
2 (75%)	0.10	--	--	--	0.037403	--	--	--	--	--
3 (50%)	0.18	--	--	--	0.031055	--	--	--	--	--
4 (25%)	0.33	--	--	--	0.016632	--	--	--	--	--
Optional (10%)	0.73	--	--	--	0.011791	--	--	--	--	--
5 (0%)	39.84	Sampling	-25.63E-9	--	0.00313	--	--	--	--	--

Power Consumed by UUT (W)					
100%	75%	50%	25%	10%	No Load
1.7973	1.2627	0.8266	0.4356	0.1999	0.0091

Efficiency of Power Supply (after 5 min warm-up)					
100%	75%	50%	25%	10%	Arithmetic Average of Efficiency at load 1 ~ 4
72.98187	74.55773	75.18388	74.44112	71.86884	74.2911504

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

** Ue is the uncertainty relating to the measuring instrument.

*** Upc is the maximum permitted relative uncertainty for cases where the MCR is > 10.

Tested by: _____ Tested by: _____ Test date: 2019-11-04

signature print

Sample # : 2663710-2 Instrument Code / Range: _____

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

RESULTS FOR SAMPLE 2 under test method other than CAN/CSA-C381.1-08, NOM-029

Ambient Temperature (°C): 22.3 **Relative Humidity (%):** 51.7 **Airspeed, room (m/s) :** <0.5

Input Test Voltage (V ac): 115 **Input Test Frequency (Hz):** 60 **Rated Output Current (A):** 1

	External Power Supply Input Electric Data									External Power Supply Output Electric Data			
Load	V	HZ	A	PF	CF	THD	Wh	Avg. Power (W) (Pm)	Wh Interval [min]	V	A	Wh	Avg. Power (W)
1 (100%)	114.70	60.01	0.099	0.5889	--	0.26	0.5540	6.6481	**5.00**	4.84	1.00	0.4037	4.8443
2 (75%)	114.72	60.00	0.077	0.5613	--	0.25	0.4142	4.9699	**5.00**	4.92	0.75	0.3078	3.6935
3 (50%)	114.71	60.00	0.056	0.5185	--	0.25	0.2772	3.3258	**5.00**	4.99	0.50	0.2084	2.5009
4 (25%)	114.71	60.00	0.032	0.4633	--	0.25	0.1419	1.7027	**5.00**	5.06	0.25	0.1056	1.2667
Optional (10%)	114.70	60.01	0.015	0.4054	--	0.24	0.0591	0.7090	**5.00**	5.10	0.10	0.0425	0.5097
5 (0%)	114.73	60.00	0.001	0.1554	--	0.23	0.0015	0.0091	**10.00**				

				Power Measurement Uncertainty Calculation and Judgement						
Load	Stability Assessment %	*Measurement method used	Slope value (mW/h)	Maximum Current Ratio (MCR)	** Ue	*** Upc	MCR ≤ 10 and Pm ≥ 1 W, Umr ≤ 2%*Pm	MCR ≤ 10 and Pm < 1 W, Uma ≤ 0.02W	MCR > 10 and Pm ≥ 1 W, Ue ≤ Upc	MCR > 10 and Pm < 1 W, Ue ≤ MAX(0.02W or Upc*Pm)
1 (100%)	0.29	--	--	_	0.04322	--	--	--	--	--
2 (75%)	0.12	--	--	_	0.037111	--	--	--	--	--
3 (50%)	0.15	--	--	_	0.030958	--	--	--	--	--
4 (25%)	0.28	--	--	_	0.016568	--	--	--	--	--
Optional (10%)	0.73	--	--	_	0.007261	--	--	--	--	--
5 (0%)	22.26	Sampling	-54.14E-9	_	0.001629	--	--	--	--	--

Power Consumed by UUT (W)					
100%	75%	50%	25%	10%	No Load
1.8038	1.2764	0.8249	0.436	0.1993	0.0091

Efficiency of Power Supply (after 5 min warm-up)					
100%	75%	50%	25%	10%	Arithmetic Average of Efficiency at load 1 ~ 4
72.86744	74.31739	75.19695	74.39361	71.88999	74.19384544

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

** Ue is the uncertainty relating to the measuring instrument.

*** Upc is the maximum permitted relative uncertainty for cases where the MCR is > 10.

Tested by: _____ Tested by: _____ Test date: 2019-11-04

signature print

Sample # : 2663710-3 Instrument Code / Range: _____

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

RESULTS FOR SAMPLE 3 under test method other than CAN/CSA-C381.1-08, NOM-029

Ambient Temperature (°C): 22.3 **Relative Humidity (%):** 51.7 **Airspeed, room (m/s) :** <0.5

Input Test Voltage (V ac): 115 **Input Test Frequency (Hz):** 60 **Rated Output Current (A):** 1

	External Power Supply Input Electric Data									External Power Supply Output Electric Data			
Load	V	HZ	A	PF	CF	THD	Wh	Avg. Power (W) (Pm)	Wh Interval [min]	V	A	Wh	Avg. Power (W)
1 (100%)	114.71	60.00	0.100	0.5813	--	0.27	0.5535	6.6416	**5.00**	4.84	1.00	0.4036	4.8434
2 (75%)	114.70	60.00	0.078	0.5548	--	0.25	0.4132	4.9590	**5.00**	4.92	0.75	0.3080	3.6963
3 (50%)	114.71	60.01	0.056	0.5193	--	0.25	0.2771	3.3246	**5.00**	5.00	0.50	0.2084	2.5013
4 (25%)	114.71	60.00	0.032	0.4634	--	0.23	0.1420	1.7038	**5.00**	5.06	0.25	0.1056	1.2677
Optional (10%)	114.73	60.00	0.015	0.4051	--	0.23	0.0592	0.7100	**5.00**	5.10	0.10	0.0426	0.5107
5 (0%)	114.71	60.00	0.001	0.1528	--	0.22	0.0015	0.0088	**10.00**				

				Power Measurement Uncertainty Calculation and Judgement						
Load	Stability Assessment %	*Measurement method used	Slope value (mW/h)	Maximum Current Ratio (MCR)	** Ue	*** Upc	MCR ≤ 10 and Pm ≥ 1 W, Umr ≤ 2%*Pm	MCR ≤ 10 and Pm < 1 W, Uma ≤ 0.02W	MCR > 10 and Pm ≥ 1 W, Ue ≤ Upc	MCR > 10 and Pm < 1 W, Ue ≤ MAX(0.02W or Upc*Pm)
1 (100%)	0.14	--	--	_	0.058556	--	--	--	--	--
2 (75%)	0.16	--	--	_	0.037312	--	--	--	--	--
3 (50%)	0.18	--	--	_	0.030929	--	--	--	--	--
4 (25%)	0.26	--	--	_	0.016572	--	--	--	--	--
Optional (10%)	0.61	--	--	_	0.00727	--	--	--	--	--
5 (0%)	17.87	Sampling	8.39E-9	_	0.001627	--	--	--	--	--

Power Consumed by UUT (W)					
100%	75%	50%	25%	10%	No Load
1.7982	1.2627	0.8233	0.4361	0.1993	0.0088

Efficiency of Power Supply (after 5 min warm-up)					
100%	75%	50%	25%	10%	Arithmetic Average of Efficiency at load 1 ~ 4
72.9252	74.53721	75.23612	74.40427	71.92958	74.27569882

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

** Ue is the uncertainty relating to the measuring instrument.

*** Upc is the maximum permitted relative uncertainty for cases where the MCR is > 10.

Tested by: _____ Tested by: _____ Test date: 2019-11-04
signature print

Sample # : 2663710-1 Instrument Code / Range: _____

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

RESULTS FOR SAMPLE 1 under test method other than CAN/CSA-C381.1-08, NOM-029

Ambient Temperature (°C): 22.3 **Relative Humidity (%):** 51.7 **Airspeed, room (m/s) :** <0.5
Input Test Voltage (V ac): 230 **Input Test Frequency (Hz):** 50 **Rated Output Current (A):** 1

	External Power Supply Input Electric Data									External Power Supply Output Electric Data			
Load	V	HZ	A	PF	CF	THD	Wh	Avg. Power (W) (Pm)	Wh Interval [min]	V	A	Wh	Avg. Power (W)
1 (100%)	229.49	50.00	0.062	0.4655	--	0.24	0.5512	6.6150	**5.00**	4.85	1.00	0.4051	4.8612
2 (75%)	229.47	50.00	0.049	0.4429	--	0.23	0.4166	4.9994	**5.00**	4.93	0.75	0.3087	3.7039
3 (50%)	229.48	50.01	0.035	0.4153	--	0.23	0.2808	3.3699	**5.00**	5.00	0.50	0.2087	2.5043
4 (25%)	229.49	50.00	0.020	0.3772	--	0.22	0.1424	1.7093	**5.00**	5.07	0.25	0.1057	1.2687
Optional (10%)	229.50	50.00	0.009	0.3345	--	0.21	0.0592	0.7101	**5.00**	5.11	0.10	0.0426	0.5107
5 (0%)	229.50	50.01	0.000	0.1019	--	0.21	0.0014	0.0081	**10.00**				

				Power Measurement Uncertainty Calculation and Judgement						
Load	Stability Assessment %	*Measurement method used	Slope value (mW/h)	Maximum Current Ratio (MCR)	** Ue	*** Upc	MCR ≤ 10 and Pm ≥ 1 W, Umr ≤ 2%*Pm	MCR ≤ 10 and Pm < 1 W, Uma ≤ 0.02W	MCR > 10 and Pm ≥ 1 W, Ue ≤ Upc	MCR > 10 and Pm < 1 W, Ue ≤ MAX(0.02W or Upc*Pm)
1 (100%)	0.18	--	--	--	0.065076	--	--	--	--	--
2 (75%)	0.24	--	--	--	0.04274	--	--	--	--	--
3 (50%)	0.39	--	--	--	0.034818	--	--	--	--	--
4 (25%)	0.70	--	--	--	0.025958	--	--	--	--	--
Optional (10%)	1.83	--	--	--	0.011066	--	--	--	--	--
5 (0%)	86.10	Sampling	4.01E-07	--	0.00317	--	--	--	--	--

Power Consumed by UUT (W)					
100%	75%	50%	25%	10%	No Load
1.7538	1.2955	0.8656	0.4406	0.1994	0.0081

Efficiency of Power Supply (after 5 min warm-up)					
100%	75%	50%	25%	10%	Arithmetic Average of Efficiency at load 1 ~ 4
73.48753	74.08689	74.31378	74.22337	71.91945	74.02789073

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

** Ue is the uncertainty relating to the measuring instrument.

*** Upc is the maximum permitted relative uncertainty for cases where the MCR is > 10.

Tested by: _____ Tested by: _____ Test date: 2019-11-04

signature print

Sample # : 2663710-2 Instrument Code / Range: _____

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

RESULTS FOR SAMPLE 2 under test method other than CAN/CSA-C381.1-08, NOM-029

Ambient Temperature (°C): 22.3 **Relative Humidity (%):** 51.7 **Airspeed, room (m/s) :** <0.5

Input Test Voltage (V ac): 230 **Input Test Frequency (Hz):** 50 **Rated Output Current (A):** 1

	External Power Supply Input Electric Data									External Power Supply Output Electric Data			
Load	V	HZ	A	PF	CF	THD	Wh	Avg. Power (W) (Pm)	Wh Interval [min]	V	A	Wh	Avg. Power (W)
1 (100%)	229.50	50.00	0.061	0.4741	--	0.24	0.5490	6.5883	**5.00**	4.85	1.00	0.4048	4.8573
2 (75%)	229.48	50.00	0.048	0.4522	--	0.23	0.4162	4.9939	**5.00**	4.92	0.75	0.3082	3.6980
3 (50%)	229.48	50.00	0.035	0.4181	--	0.22	0.2819	3.3834	**5.00**	5.00	0.50	0.2085	2.5023
4 (25%)	229.50	50.00	0.020	0.3785	--	0.21	0.1427	1.7125	**5.00**	5.06	0.25	0.1056	1.2667
Optional (10%)	229.49	50.00	0.009	0.3320	--	0.20	0.0593	0.7111	**5.00**	5.10	0.10	0.0425	0.5097
5 (0%)	229.47	50.00	0.000	0.1050	--	0.21	0.0013	0.0078	**10.00**				

				Power Measurement Uncertainty Calculation and Judgement						
Load	Stability Assessment %	*Measurement method used	Slope value (mW/h)	Maximum Current Ratio (MCR)	** Ue	*** Upc	MCR ≤ 10 and Pm ≥ 1 W, Umr ≤ 2%*Pm	MCR ≤ 10 and Pm < 1 W, Uma ≤ 0.02W	MCR > 10 and Pm ≥ 1 W, Ue ≤ Upc	MCR > 10 and Pm < 1 W, Ue ≤ MAX(0.02W or Upc*Pm)
1 (100%)	0.18	--	--	--	0.049353	--	--	--	--	--
2 (75%)	0.32	--	--	--	0.042191	--	--	--	--	--
3 (50%)	0.50	--	--	--	0.034777	--	--	--	--	--
4 (25%)	0.70	--	--	--	0.025944	--	--	--	--	--
Optional (10%)	1.55	--	--	--	0.011107	--	--	--	--	--
5 (0%)	90.52	Sampling	1.94E-07	--	0.003159	--	--	--	--	--

Power Consumed by UUT (W)					
100%	75%	50%	25%	10%	No Load
1.731	1.2959	0.8811	0.4458	0.2014	0.0078

Efficiency of Power Supply (after 5 min warm-up)					
100%	75%	50%	25%	10%	Arithmetic Average of Efficiency at load 1 ~ 4
73.72615	74.05034	73.95815	73.96788	71.67768	73.92563103

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

** Ue is the uncertainty relating to the measuring instrument.

*** Upc is the maximum permitted relative uncertainty for cases where the MCR is > 10.

Tested by: _____ Tested by: _____ Test date: 2019-11-04

signature print

Sample # : 2663710-3 Instrument Code / Range: _____

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

RESULTS FOR SAMPLE 3 under test method other than CAN/CSA-C381.1-08, NOM-029

Ambient Temperature (°C): 22.3 **Relative Humidity (%):** 51.7 **Airspeed, room (m/s) :** <0.5

Input Test Voltage (V ac): 230 **Input Test Frequency (Hz):** 50 **Rated Output Current (A):** 1

	External Power Supply Input Electric Data									External Power Supply Output Electric Data			
Load	V	HZ	A	PF	CF	THD	Wh	Avg. Power (W) (Pm)	Wh Interval [min]	V	A	Wh	Avg. Power (W)
1 (100%)	229.46	50.00	0.062	0.4660	--	0.24	0.5506	6.6078	**5.00**	4.86	1.00	0.4052	4.8619
2 (75%)	229.48	50.00	0.049	0.4425	--	0.24	0.4167	5.0004	**5.00**	4.93	0.75	0.3085	3.7019
3 (50%)	229.49	50.00	0.035	0.4156	--	0.22	0.2811	3.3734	**5.00**	5.00	0.50	0.2085	2.5023
4 (25%)	229.47	50.01	0.020	0.3784	--	0.22	0.1429	1.7143	**5.00**	5.06	0.25	0.1056	1.2677
Optional (10%)	229.50	50.00	0.009	0.3328	--	0.21	0.0590	0.7086	**5.00**	5.10	0.10	0.0426	0.5107
5 (0%)	229.47	50.01	0.000	0.1026	--	0.21	0.0014	0.0082	**10.00**				

				Power Measurement Uncertainty Calculation and Judgement						
Load	Stability Assessment %	*Measurement method used	Slope value (mW/h)	Maximum Current Ratio (MCR)	** Ue	*** Upc	MCR ≤ 10 and Pm ≥ 1 W, Umr ≤ 2%*Pm	MCR ≤ 10 and Pm < 1 W, Uma ≤ 0.02W	MCR > 10 and Pm ≥ 1 W, Ue ≤ Upc	MCR > 10 and Pm < 1 W, Ue ≤ MAX(0.02W or Upc*Pm)
1 (100%)	0.18	--	--	--	0.065004	_	--	--	--	--
2 (75%)	0.24	--	--	--	0.042768	_	--	--	--	--
3 (50%)	0.39	--	--	--	0.034826	_	--	--	--	--
4 (25%)	0.64	--	--	--	0.025958	_	--	--	--	--
Optional (10%)	1.55	--	--	--	0.011079	_	--	--	--	--
5 (0%)	87.65	Sampling	-189.39E-9	--	0.003171	_	--	--	--	--

Power Consumed by UUT (W)					
100%	75%	50%	25%	10%	No Load
1.7459	1.2985	0.8711	0.4466	0.1979	0.0082

Efficiency of Power Supply (after 5 min warm-up)					
100%	75%	50%	25%	10%	Arithmetic Average of Efficiency at load 1 ~ 4
73.5782	74.03208	74.17739	73.94855	72.07169	73.93405278

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

** Ue is the uncertainty relating to the measuring instrument.

*** Upc is the maximum permitted relative uncertainty for cases where the MCR is > 10.

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

Sample # : _____ Instrument Code / Range: _____

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

RESULTS FOR SAMPLE 1 under NOM-029

Ambient Temperature (°C): _____ **Relative Humidity (%):** _____ **Airspeed, room (m/s) :** _____
Input Test Voltage (V ac): 127 **Input Test Frequency (Hz):** 60 **Rated Output Current (A):** _____

	External Power Supply Input Electric Data									External Power Supply Output Electric Data			
Load	V	HZ	A	PF	CF	THD	Wh	Avg. Power (W) (Pm)	Wh Interval [min]	V	A	Wh	Avg. Power (W)
1 (100%)													
2 (75%)													
3 (50%)													
4 (25%)													
Optional (10%)													
5 (0%)													

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Load	Stability Assessment %	*Measurement method used	Slope v…	Ratio (MCR)			rement Uncertainty Calculation and Judgement			
							MCR ≤ 10 and Pm ≥ 1 W, Umr ≤ 2%*Pm	MCR ≤ 10 and Pm < 1 W, Uma ≤ 0.02W	MCR > 10 and Pm ≥ 1 W, Ue ≤ Upc	MCR > 10 and Pm < 1 W, Ue ≤ MAX(0.02W or Upc*Pm)
1 (100%)							--	--	--	--
2 (75%)							--	--	--	--
3 (50%)							--	--	--	--
4 (25%)							--	--	--	--
Optional (10%)							--	--	--	--
5 (0%)							--	--	--	--

Power Consumed by UUT (W)					
100%	75%	50%	25%	10%	No Load

Efficiency of Power Supply (after 5 min warm-up)					
100%	75%	50%	25%	10%	Arithmetic Average of Efficiency at load 1 ~ 4

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

** Ue is the uncertainty relating to the measuring instrument.

*** Upc is the maximum permitted relative uncertainty for cases where the MCR is > 10.

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

Sample # : _____ Instrument Code / Range: _____

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

RESULTS FOR SAMPLE 2 under NOM-029

Ambient Temperature (°C): _____ **Relative Humidity (%):** _____ **Airspeed, room (m/s) :** _____
Input Test Voltage (V ac): 127 **Input Test Frequency (Hz):** 60 **Rated Output Current (A):** _____

	External Power Supply Input Electric Data									External Power Supply Output Electric Data			
Load	V	HZ	A	PF	CF	THD	Wh	Avg. Power (W) (Pm)	Wh Interval [min]	V	A	Wh	Avg. Power (W)
1 (100%)													
2 (75%)													
3 (50%)													
4 (25%)													
Optional (10%)													
5 (0%)													

				Power Measurement Uncertainty Calculation and Judgement						
Load	Stability Assessment %	*Measurement method used	Slope va				MCR ≤ 10 and Pm ≥ 1 W, Umr ≤ 2%*Pm	MCR ≤ 10 and Pm < 1 W, Uma ≤ 0.02W	MCR > 10 and Pm ≥ 1 W, Ue ≤ Upc	MCR > 10 and Pm < 1 W, Ue ≤ MAX(0.02W or Upc*Pm)
1 (100%)							--	--	--	--
2 (75%)							--	--	--	--
3 (50%)							--	--	--	--
4 (25%)							--	--	--	--
Optional (10%)							--	--	--	--
5 (0%)							--	--	--	--

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Power Consumed by UUT (W)					
100%	75%	50%	25%	10%	No Load

Efficiency of Power Supply (after 5 min warm-up)					
100%	75%	50%	25%	10%	Arithmetic Average of Efficiency at load 1 ~ 4

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

** Ue is the uncertainty relating to the measuring instrument.

*** Upc is the maximum permitted relative uncertainty for cases where the MCR is > 10.

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

Sample # : _____ Instrument Code / Range: _____

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

RESULTS FOR SAMPLE 3 under NOM-029

Ambient Temperature (°C): _____ **Relative Humidity (%):** _____ **Airspeed, room (m/s) :** _____
Input Test Voltage (V ac): 127 **Input Test Frequency (Hz):** 60 **Rated Output Current (A):** _____

	External Power Supply Input Electric Data									External Power Supply Output Electric Data			
Load	V	HZ	A	PF	CF	THD	Wh	Avg. Power (W) (Pm)	Wh Interval [min]	V	A	Wh	Avg. Power (W)
1 (100%)													
2 (75%)													
3 (50%)													
4 (25%)													
Optional (10%)													
5 (0%)													

				Power Measurement Uncertainty Calculation and Judgement						
Load	Stability Assessment %	*Measurement method used	Slope valu				MCR ≤ 10 and Pm ≥ 1 W, Umr ≤ 2%*Pm	MCR ≤ 10 and Pm < 1 W, Uma ≤ 0.02W	MCR > 10 and Pm ≥ 1 W, Ue ≤ Upc	MCR > 10 and Pm < 1 W, Ue ≤ MAX(0.02W or Upc*Pm)
1 (100%)							--	--	--	--
2 (75%)							--	--	--	--
3 (50%)							--	--	--	--
4 (25%)							--	--	--	--
Optional (10%)							--	--	--	--
5 (0%)							--	--	--	--

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Power Consumed by UUT (W)					
100%	75%	50%	25%	10%	No Load

Efficiency of Power Supply (after 5 min warm-up)					
100%	75%	50%	25%	10%	Arithmetic Average of Efficiency at load 1 ~ 4

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

** Ue is the uncertainty relating to the measuring instrument.

*** Upc is the maximum permitted relative uncertainty for cases where the MCR is > 10.

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

Sample # : _____ Instrument Code / Range: _____

OFF MODE POWER CONSUMPTION TEST:

If the external power supply UUT incorporates manual ON-OFF switches, all manual ON-OFF switches shall be placed in the "OFF" position for the OFF mode measurement, and measure and record its power consumption at "Load Condition 5" in Table 1.

The UUT is considered stable if, over 5 minutes with samples taken at least once every second, the AC input power does not drift from the maximum value observed by more than 1 percent or 50 milliwatts, whichever is greater. Measure the off-mode power consumption of a switch-selectable single-voltage external power supply twice—once at the highest nameplate output voltage and once at the lowest.

Ambient Temperature (°C): _____ **Relative Humidity (%):** _____ **Airspeed, room (m/s) :** _____
Input Test Voltage (V ac): 127 **Input Test Frequency (Hz):** 60 **Rated Output Current (A):** _____

	External Power Supply Input Electric Data											
sample #	V	HZ	A	PF	CF	THD	Wh	Avg. Power (W) (Pm)	Wh Interval [min]	Stability Assessment %	*Measurement method used	Slope value (mW/h)

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	Power Measurement Uncertainty Calculation and Judgement						
sample #	Maximum Current Ratio (MCR)	** Ue	*** Upc	MCR ≤ 10 and Pm ≥ 1 W, Umr ≤ 2%*Pm	MCR ≤ 10 and Pm < 1 W, Uma ≤ 0.02W	MCR > 10 and Pm ≥ 1 W, Ue ≤ Upc	MCR > 10 and Pm < 1 W, Ue ≤ MAX (0.02W or Upc*Pm)
				--	--	--	--
				--	--	--	--
				--	--	--	--
				--	--	--	--
				--	--	--	--
				--	--	--	--

* The measurement methods are defined in 5.3.2 or 5.3.3 of the standards, EN 50564:2011 and IEC62301:2011.
** Ue is the uncertainty relating to the measuring instrument.
*** Upc is the maximum permitted relative uncertainty for cases where the MCR is > 10.

Base on Table 2, this results is [greater than] [not greater than] _____ Watt as Maximum Energy Consumption in No-Load Mode.

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

Sample # : _____ Instrument Code / Range: _____

DURABILITY OF MARKING TEST for **NOM-029-ENER-2017**

METHOD

A sample of the marking label was subjected to this test. The surface of each marking as noted below was rubbed by hand for a period of 15 seconds with a water soaked cloth.

RESULTS

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TEST OBSERVATIONS:	
	Water
Any Damage?	
Legible?	
Curled?	
Edge Lifted?	
Easily Removed Intact?	

The marking [was] [was not] durable and legible. The label [was] [was not] easily removed and [did] [did not] show curling.

Comments:

WORKSHEETS

The measured is the following:

[ ] International Efficiency Marking Protocol (IEMP) for External Power Supplies: (at 115/230V ac, 60/50 Hz)

	Efficiency (%):	Sample No.:
Minimum Average Efficiency in Active Mode	74.19 / 73.93	2 / 2
Maximum Power In No-Load Condition	0.0091W / 0.0082W	1, 2 / 3

Base on Table 2, this EPS is complied with the requirements for level: VI at 115V ac; level: VI at 230V ac;
The calculated Minimum Average Efficiency in Active Mode is: > 1 to ≤ 49 W (73.62 %) at 115V ac; > 1 to ≤ 49 W (73.62 %) at 230V ac and Maximum Energy Consumption in No-Load Mode is not greater than 0.100 Watt at 115V ac; 0.100 Watt at 230V ac.
[ ] 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/Quebec and US CEC requirements for external power supply: (at 115V ac, 60 Hz)

CAN/CSA-C381.1-08	Efficiency (%):	Sample No.:
Minimum Average Efficiency in Active Mode		
Maximum Power In No-Load Condition		
10 CFR Appendix Z to Subpart B of Part 430	**Efficiency (%):**	**Sample No.:**
Minimum Average Efficiency in Active Mode		
Maximum Power In No-Load Condition		

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 comply with requirements in:

[ ] Amendment 13 to the Energy Efficiency Regulations for External Power Supplies in the Canada Gazette, Part II

[ ] Quebec: O.C. 434-2017 in GAZETTE OFFICIELLE DU QUÉBEC, May 17, 2017, Vol. 149, No. 20

WORKSHEETS (CONT'D)

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

The sampling plan calculation following 10CFR 429.1 and 429.37

	Sample mean	*LCL/0.95	The lower of sample mean or LCL/0.95
Active mode			

	Sample mean	**UCL/1.05	The higher of sample mean or UCL/1.05
No load mode			

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

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

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

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

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

This comply with requirements in:

[ ] Office of Energy Efficiency and Renewable Energy 10 CFR Parts 429 and 430

[ ] California Code of Regulations, Title 20, Division 2, Chapter 4, Article 4. Appliance Efficiency Regulations, Sections 1601 through 1609

[ ] Amendment 14 to the Energy Efficiency Regulations for External Power Supplies in the Canada Gazette, Part II

[ ] Others: _____

[ ] MEXICO : NORMA Official Mexicana NOM-029-ENER-2017: (at 127V ac, 60 Hz)

	Efficiency (%):	Sample No.:
Minimum Average Efficiency in Active Mode		
Maximum Power In No-Load Condition		

Base on Table 11, the calculated Minimum Average Efficiency in Active Mode is: _____ (_____ %), and Maximum Energy Consumption in No-Load Mode is not greater than _____ Watt.
This [comply] [does not comply] with requirements for **NOM-029-ENER-2017, Eficiencia energética de fuentes de alimentación externa. Límites, métodos de prueba, marcado y etiquetado**.

WORKSHEETS (CONT'D)

[ ] Australian GEMS and New Zealand MEPS: (at 230V ac or 240V ac, 50Hz)
[ ] European Union (EU) Energy-related Products (ErP): (at 230V ac, 50Hz)
[ ] European Union (EU) Code of Conduct: (at 230V ac, 50Hz)
[ ] Others: _____

Input Voltage(V ac): 230V ac, 50 Hz	**Efficiency (%):**	**Sample No.:**
Minimum Average Efficiency in Active Mode		
Minimum 10% Load Average Efficiency in Active Mode	--	--
Maximum Power In No-Load Condition		
[ ] Input Voltage(V ac): 240 V ac, 50 Hz	**Efficiency (%):**	**Sample No.:**
Minimum Average Efficiency in Active Mode		
Maximum Power In No-Load Condition		

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 [comply] [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.

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 [comply] [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.**

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 [comply] [does not comply] with requirements for **Code of Conduct on Energy Efficiency of External Power Supplies, Version 5**.

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~~

Table 11 - Límite de eficiencia energética en modo activo y potencia en modo de no carga que deben cumplir las FAE

Clasificación según su nivel de tensión de salida	Tensión nominal de salida en c.c.	Con una Potencia de salida (P_o)	Nivel de Eficiencia	Límite mínimo de eficiencia energética en modo activo, mayor o igual que:	Límite máximo de potencia en modo de no carga menor o igual que:
Tensión de salida USB	5,0 V ± 0,25 V	Menor o igual que 1,0 W	V	0,497 x P_o + 0,067	0,30
			VI	0,517 x P_o + 0,087	0,10
		Mayor que 1,0 W y menor o igual que 49,0 W	V	0,075 x [L_n (P_o)] + 0,561	0,30
			VI	0,0834 x [L_n (P_o)] - 0,0014 x P_o + 0,609	0,10
		Mayor que 49,0 W y menor o igual que 250,0 W	V	0,86	0,50
			VI	0,87	0,21
Baja tensión de salida	Menor a 6,0 V	Menor o igual que 1,0 W	V	0,497 x P_o + 0,067	0,30
			VI	0,517 x P_o + 0,087	0,10
		Mayor que 1,0 W y menor o igual que 49,0 W	V	0,075 x [L_n (P_o)] + 0,561	0,30
			VI	0,0834 x [L_n (P_o)] - 0,0014 x Po + 0,609	0,10
		Mayor que 49,0 W y menor o igual que 250,0 W	V	0,86	0,50
			VI	0,87	0,21
Tensión de salida genérica	Mayor o igual a 6,0 V	Menor o igual que 1,0 W	V	0,480 x P_o + 0,140	0,30
			VI	0,5 x P_o + 0,16	0,10
		Mayor que 1,0 W y menor o igual que 49,0 W	V	0,0626 x [L_n (P_o)] + 0,622	0,30
			VI	0,071 x (L_n (P_o)) - 0,0014 x Po + 0,67	0,10
		Mayor que 49,0 W y menor o igual que 250,0 W	V	0,87	0,50
VI	0,88				0,21

En donde:

L_n: Logaritmo natural. El orden de las operaciones algebraicas requiere que el cálculo del logaritmo natural se realiza primero.

P_o: Potencia de salida de la FAE

========== END OF DATASHEET PACKAGE. ==========