[6450-01-P]

DEPARTMENT OF ENERGY

10 CFR Parts 429 and 430

[Docket No. EERE-2014-BT-TP-0043]

RIN: 1904-AD36

Energy Conservation Program: Test Procedures for External Power Supplies

AGENCY: Office of Energy Efficiency and Renewable Energy, Department of Energy.

ACTION: Final rule.

SUMMARY: On October 9, 2014, the U.S. Department of Energy (DOE) issued a notice of proposed rulemaking (NOPR) to amend the test procedure for External Power Supplies (EPSs). That proposed rulemaking serves as the basis for this final rule. The U.S. Department of Energy is issuing a final rule amending its test procedure for external power supplies. These changes, which will not affect the measured energy use, will harmonize the instrumentation resolution and uncertainty requirements with the second edition of the International Electrotechnical Commission (IEC) 62301 standard when measuring standby power along with other international standards programs, and clarify certain testing set-up requirements. This final rule also clarifies which products are subject to energy conservation standards.

DATES: The effective date of this rule is **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].**

The incorporation by reference of certain publications listed in this rule was approved by the Director of the Federal Register as of [**INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER**].

ADDRESSES: The docket, which includes Federal Register notices, public meeting attendee lists and transcripts, comments, and other supporting documents/materials, is available for review at regulations.gov. All documents in the docket are listed in the regulations.gov index. However, some documents listed in the index, such as those containing information that is exempt from public disclosure, may not be publicly available.

A link to the docket web page can be found at: http://www1.eere.energy.gov/buildings/appliance_standards/product.aspx?productid=23. This web page will contain a link to the docket for this notice on the regulations.gov site. The regulations.gov web page will contain simple instructions on how to access all documents, including public comments, in the docket.

For further information on how to review the docket, contact Ms. Brenda Edwards at (202) 586-2945 or by email: Brenda.Edwards@ee.doe.gov.

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SUPPLEMENTARY INFORMATION:

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I. Authority and Background

Title III of the Energy Policy and Conservation Act of 1975 (42 U.S.C. 6291, et seq.; "EPCA" or, in context, "the Act") sets forth a variety of provisions designed to improve energy efficiency. (All references to EPCA refer to the statute as amended through the Energy Efficiency Improvement Act of 2015 – Pub. L. No. 114-11 (April 30, 2015). Part B of title III, which for editorial reasons was re-designated as Part A upon incorporation into the U.S. Code (42 U.S.C. 6291–6309, as codified), establishes the "Energy Conservation Program for Consumer Products Other Than Automobiles." External power supplies are among the products affected by these provisions.

Under EPCA, the energy conservation program consists essentially of four parts: (1) testing, (2) labeling, (3) Federal energy conservation standards, and (4) certification and enforcement procedures. The testing requirements consist of test procedures that manufacturers

of covered products must use as the basis for (1) certifying to DOE that their products comply with the applicable energy conservation standards adopted under EPCA, and (2) making representations about the efficiency of those products. Similarly, DOE must use these test procedures to determine whether the products comply with any relevant standards promulgated under EPCA.

A.General Test Procedure Rulemaking Process

Under 42 U.S.C. 6293, EPCA sets forth the criteria and procedures DOE follows when prescribing or amending test procedures for covered products. EPCA provides in relevant part that any test procedures prescribed or amended under this section shall be reasonably designed to produce test results that measure the energy efficiency, energy use, or estimated annual operating cost of a covered product during a representative average use cycle or period of use and shall not be unduly burdensome to conduct. (42 U.S.C. 6293(b)(3))

In addition, when DOE determines that a test procedure requires amending, it publishes a notice with the proposed changes and offers the public an opportunity to comment on the proposal. (42 U.S.C. 6293(b)(2)) As part of this process, DOE determines the extent to which, if any, the proposed test procedure would alter the measured energy efficiency of any covered product as determined under the existing test procedure. (42 U.S.C. 6293(e)(1))

Section 135 of the Energy Policy Act of 2005 (EPACT 2005), Pub. L. No. 109-58 (Aug. 8, 2005), amended sections 321 and 325 of EPCA by adding certain provisions related to external power supplies (EPSs). Among these provisions were new definitions defining what

constitutes an EPS and a requirement that DOE prescribe "definitions and test procedures for the power use of battery chargers and external power supplies." (42 U.S.C. 6295(u)(1)(A)) DOE complied with this requirement by publishing a test procedure final rule that, among other things, established a new Appendix Z to address the testing of EPSs to measure their energy efficiency and power consumption. See 71 FR 71340 (Dec. 8, 2006) (codified at 10 CFR Part 430, Subpart B, Appendix Z "Uniform Test Method for Measuring the Energy Consumption of External Power Supplies").

Congress further amended EPCA's EPS provisions through its enactment of the Energy Independence and Security Act of 2007 (EISA 2007), Pub. L. No. 110-140 (Dec. 19, 2007). That law amended sections 321, 323, and 325 of EPCA. These changes are noted below.

Section 301 of EISA 2007 amended section 321 of EPCA by modifying the EPS-related definitions found in 42 U.S.C. 6291. While EPACT 2005 defined an EPS as "an external power supply circuit that is used to convert household electric current into DC current or lower-voltage AC current to operate a consumer product,"[1] 42 U.S.C. 6291(36)(A), Section 301 of EISA 2007 further amended this definition by creating a subset of EPSs called Class A External Power Supplies. EISA 2007 defined this subset of products as those EPSs that, in addition to meeting several other requirements common to all EPSs,[2] are "able to convert [line voltage AC] to only 1

[1] The terms "AC" and "DC" refer to the polarity (i.e., direction) and amplitude of current and voltage associated with electrical power. For example, a household wall socket supplies alternating current (AC), which varies in amplitude and reverses polarity. In contrast, a battery or solar cell supplies direct current (DC), which is constant in both amplitude and polarity.

[2] The full EISA 2007 definition of a class A external power supply includes a device that "(I) is designed to convert line voltage AC input into lower voltage AC or DC output; (II) is able to convert to only 1 AC or DC output voltage at a time; (III) is sold with, or intended to be used with, a separate end-use product that constitutes the primary load; (IV) is contained in a separate physical enclosure from the end-use product; (V) is connected to the end-use product

AC or DC output voltage at a time" and have "nameplate output power that is less than or equal to 250 watts." (42 U.S.C. 6291(36)(C)(i)) As part of these amendments, EISA 2007 prescribed minimum standards for these products and directed DOE to publish a final rule by July 1, 2011, to determine whether to amend these standards. See 42 U.S.C. 6295(u)(3)(A) and (D).

Section 310 of EISA 2007 amended section 325 of EPCA by defining the terms "active mode," "standby mode," and "off mode." Each of these modes corresponds to the operational status of a given product – i.e., whether it is (1) plugged into AC mains and switched "on" and performing its intended function, (2) plugged in but not performing its intended function (i.e., simply standing by to be operated), or (3) plugged in, but switched "off," if a manual on-off switch is present. Section 310 also required DOE to amend its test procedure to ensure that standby and off mode energy consumption are measured. It also authorized DOE to amend, by rule, any of the definitions for active, standby, and off mode as long as the DOE considers the most current versions of Standards 62301 ("Household Electrical Appliances—Measurement of Standby Power") and 62087 ("Methods of Measurement for the Power Consumption of Audio, Video and Related Equipment") of the International Electrotechnical Commission (IEC). See 42 U.S.C. 6295(gg)(2)(A) (incorporating EISA 2007 amendments related to standby and off mode energy). Consistent with these provisions, DOE issued a final rule that defined and added these terms and definitions to 10 CFR Part 430, Subpart B, Appendix Z ("Appendix Z"). See 74 FR 13318 (March 27, 2009).

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via a removable or hard-wired male/female electrical connection, cable, cord, or other wiring; and (VI) has nameplate output power that is less than or equal to 250 watts." (42 U.S.C. 6291(36)(C)(i))

DOE further amended Appendix Z by adding a test method for multiple-voltage EPSs, 76 FR 31750 (June 1, 2011). The amendments also revised the definition of "active power" and clarified how to test an EPS that has a current-limiting function, that can communicate with its load, or that combines the current-limiting function with the ability to communicate with a load. A current-limited EPS is one that can significantly lower its output voltage once an internal output current limit has been exceeded, while an EPS that communicates with its load refers to an EPS's ability to identify or otherwise exchange information with its load (i.e., the end-use product to which it is connected). These revisions were necessary to provide manufacturers with sufficient clarity on how to conduct the test and determine the measured energy use for these types of EPSs.

After releasing a preliminary analysis and issuing a proposed set of energy conservation standards, DOE published a final rule prescribing new standards for non-Class A EPSs and amended standards for some Class A EPSs. See 79 FR 7845 (Feb. 20, 2014). EPSs manufactured on or after February 10, 2016 must comply with these standards; for products built outside the U.S., EPSs imported on or after February 10, 2016, must comply with the new standards.[3]

Following the publication of these standards, DOE received many follow-up questions and requests for clarification regarding the testing of EPSs. To address these issues, DOE published a test procedure NOPR on October 9, 2014, which proposed amending the EPS test

[3] Generally, a covered product must comply with the relevant standard in effect as of the date the product is manufactured. For products imported into the U.S., this is the date of importation. See 42 U.S.C. 6291(10) ("The term 'manufacture' means to manufacture, produce, assemble or import.")

procedure to ensure sufficient clarity regarding EPS testing and certification. 79 FR 60996. As part of the proposed rule, DOE outlined certain clarifications to Appendix Z to eliminate any testing ambiguity when measuring the efficiency of an EPS. DOE also proposed to include additional, but optional, measurements within Appendix Z concerning EPS power factor and other loading points outside those previously codified in the CFR. Lastly, DOE expressed its intent to consider all EPSs within the scope of the standards under a single sampling plan rather than maintaining separate sampling plans for Class A EPSs and non-Class A EPSs.

Upon stakeholder request, DOE held a public meeting on November 21, 2014, to discuss these proposed changes to the EPS test procedure. Prior to that meeting, DOE extended the initial deadline for submitting comments. See 79 FR 65351 (Nov. 4, 2014). DOE noted this change at the public meeting. DOE analyzed all of the comments received in response to the October 2014 test procedure NOPR from the list of commenters in Table I-1 and incorporated recommendations, where appropriate, into this test procedure final rule.

Table I-1- List of Commenters

Organization	**Abbreviation**	**Organization type**
Association of Home Appliance Manufacturers	AHAM	Industry Trade Association.
California Investor-Owned Utilities	CA IOUs	Utilities.
Information Technology Industry Council	ITI	Industry Trade Association.
Lutron Electronics	Lutron	Manufacturer.
National Electrical Manufacturers Association	NEMA	Industry Trade Association.
NRDC, ACEEE, ASAP	NRDC, *et al.*	Energy Efficiency Advocates.
Power Tool Institute, Inc.	PTI	Industry Trade Association.

Organization	Abbreviation	Organization type
Schneider Electric	Schneider Electric	Manufacturer.
Telecommunications Industry Association	TIA	Industry Trade Association.
Wahl Clipper Corporation	Wahl Clipper	Manufacturer.

II. Summary of the Final Rule

This final rule amends the DOE test procedure for EPSs. The amendments are based on the proposed changes in the test procedure NOPR. While DOE is adopting many of the proposals from the NOPR, some of the proposed amendments have been removed from consideration or modified based on stakeholder feedback. As indicated in greater detail below, these amendments clarify the current procedure in Appendix Z and the definitions set forth in 10 CFR 430.2, as well as update the materials incorporated by reference in 10 CFR 430.3. This rule also amends 10 CFR 430.32(w) by inserting a table to more clearly identify applicable EPS standards based on whether the EPS is (1) a Class A or non-Class A EPS and (2) direct or indirect operation. These minor amendments will eliminate any potential ambiguity contained in the test procedure and clarify the regulatory text to ensure that regulated entities fully understand the long-standing views and interpretations of DOE with respect to the application and implementation of the test procedure and the scope of the EPS standards. These amendments will not affect the measured energy use of these products. Instead, they will clarify the manner in which to test for compliance with the EPS energy conservation standards.

First, this final rule harmonizes DOE's test procedure with the latest version of IEC 62301 by providing specific resolution and measurement tolerances. These specifications will

help to ensure that testing is performed with equipment that is capable of reaching these tolerances and that the resulting measurements are consistent.

Second, DOE is outlining the testing configurations that can be used to avoid potential losses caused by testing cables. Appendix Z currently does not clearly outline how multiple measurement devices that operate simultaneously should be connected to a unit under test (UUT). These changes remove the potential for electrical energy losses in the measurement cables and help ensure accurate and repeatable results.

Third, DOE is clarifying that when testing an EPS that is incapable of being tested at one or more of the loading conditions used to calculate the average active mode efficiency, such conditions will be omitted when calculating this metric. Instead, the average active mode efficiency will be determined by averaging the efficiency results at each of the loading conditions that can be measured.

Fourth, this final rule defines and clarifies how to test adaptive EPSs (also referred to as "adaptive-charging," "smart-charging," or "quick-charging" EPSs). Because these types of EPSs were not considered when the current test procedure was first adopted, Appendix Z did not explicitly address the unique characteristics of these types of EPSs to ensure reproducible and repeatable results. This final rule makes certain clarifications to address these products by providing a standardized method for all manufacturers and testing laboratories to follow when testing an adaptive EPS.

Fifth, DOE is including a table within 10 CFR 430.32 ("Energy and water conservation standards and their compliance dates") that clearly outlines which sets of standards apply to which EPS classes. The inclusion of the table is again meant to provide clarity to manufacturers who are trying to determine the applicable standards.

Sixth, DOE is adopting the same sampling plan that is already in place for Class A EPSs for those EPSs that will be subject to standards for the first time in 2016. These revisions consolidate all EPSs that are subject to standards under a single sampling plan and provide manufacturers with the necessary procedures they will need to follow when certifying their EPSs as compliant with the applicable standards. Previously, DOE only provided a sampling plan for Class A EPSs and reserved a second sampling plan for non-Class A EPSs. By adopting a single sampling plan that applies to all EPSs in this final rule, DOE is creating a single, statistically sufficient approach for ensuring that a given EPS basic model complies with the applicable standards.

Finally, this rule incorporates text from the California Energy Commission's (CEC) "Test Method for Calculating the Energy Efficiency of Single-Voltage External AC-DC and AC-AC Power Supplies" into Appendix Z. This document is already incorporated by reference in the current language of Appendix Z. DOE believes that by adopting the referenced text directly, it will help to reduce the testing burden on manufacturers and clarify the intended test methods within a single document.

A summary of these amendments to specific sections of 10 CFR part 430 can be found in Table II-1

Table II-1 – Summary of Proposed Changes and Affected Sections of 10 CFR part 430

Subpart A of Part 430—General Provisions		
Section in 10 CFR Part 430 Subpart A	NOPR Proposal	Final Rule Action
§430.2. Definitions	• Revising definition of "indirect operation external power supply" to include battery chargers contained in separate physical enclosures • Proposed to define "adaptive external power supply" within Appendix Z	• Did not finalize proposal • Finalized definition with clarification within 430.2
Appendix Z to Subpart B of Part 430—Uniform Test Method for Measuring the Energy Consumption of External Power Supplies		
Section in Appendix Z	NOPR Proposal	Final Rule Action
1.Scope	• No Change	• Clarified that scope of the test procedure extends only to EPSs subject to conservation standards
2.Definitions	• Inserting definition for "average active mode efficiency"	• Finalized as proposed
3.Test Apparatus and General Instructions	• Insert exceptions to the test method of 3(a) within subsections 3(a)(i) and 3(a)(ii)	• Finalized within adopted text from the CEC's "Test Method for Calculating the Energy Efficiency of Single-Voltage External AC-DC and AC-AC Power Supplies"

	• Incorporate by reference the uncertainty and resolution requirements of the IEC 62301 (2nd Ed.) standard in 3(a)(i)(A)	• Finalized within adopted text from the CEC's "Test Method for Calculating the Energy Efficiency of Single-Voltage External AC-DC and AC-AC Power Supplies" and finalized identical requirements within 3(b)(i)(A)
4.Test Measurement	• Modify 4(a)(i) to include a table of the required loading conditions and an additional optional loading point at a 10 percent loading condition	• Did not finalize proposal
	• Insert an optional power factor measurement at each loading condition in 4(a)(i)	• Did not finalize proposal
	• Clarify the necessary connections when using multiple measurement devices (4(a)(i))	• Finalized as proposed
	• Clarify how to test when one or more loading conditions cannot be sustained (4(a)(i)(B))	• Finalized within adopted text from the CEC's "Test Method for Calculating the Energy Efficiency of Single-Voltage External AC-DC and AC-AC Power Supplies"
	• Modify 4(a)(ii) to refer to the appropriate loading conditions in Table 1	• Did not finalize as proposed.
	• Modify several sections of 4(b)(i) to refer to an updated Table 2	• Did not finalize as proposed.
	• Revising 4(b)(i)(A)(5) to refer to a new Table 2, which contains a list of prescribed loading conditions to use, including a new 10 percent loading condition	• Did not finalize proposal
	• Modify 4(b)(ii) to refer to the updated loading conditions in new Table 2	• Did not finalize proposal

III.Discussion

A. Measurement Accuracy and Precision

To ease the overall burden involved with the testing of EPSs, and to continue to improve DOE's efforts at harmonizing its testing requirements where feasible to do so, DOE proposed to incorporate by reference into the EPS test procedure the second edition of IEC 62301. The IEC published Edition 2.0 of IEC 62301 in January 2011, shortly before DOE's previous revision to the EPS test procedure. 76 FR 31750. This revised version of the testing standard refined the test equipment specifications, measuring techniques, and uncertainty determination to improve the method for measuring loads with high crest factors and/or low power factors, such as the low power modes typical of EPSs operating in no-load mode. Incorporating this edition into the EPS test procedure would encompass the resolution parameters for power measurements and uncertainty methodologies found in Section 4 (General conditions for measurements) as well as the associated references to Annexes B (Notes on the measurement of low power modes) and D (Determination of uncertainty of measurement) within that section of the second edition of the IEC 62301 standard. While harmonizing with the latest IEC standard is a statutory requirement, DOE nonetheless requested stakeholder feedback regarding the proposed revisions.

TIA, the CA IOUs, NRDC, and Schneider Electric were all supportive of DOE's proposal to harmonize with the latest resolution and uncertainty requirements in the second edition of IEC 62301. (TIA, No.17 at p.2;[4] CA IOUs, No.16 at p.2; NRDC, et al., No.18 at p.2; Schneider, No.13 at p.2) AHAM was also supportive of DOE's proposal but asserted that since

[4] A notation in this form provides a reference for information that is in the docket for this rulemaking (Docket No. EERE-2014-BT-TP-0043), which is maintained at www.regulations.gov. This notation indicates that the statement preceding the reference is from document number 17 in the docket and appears at page 2 of that document.

harmonization is already required under the statute there is no need to amend the language in the test procedure. (AHAM, No.11 at p.2) ITI expressed similar thoughts, supporting DOE's harmonization efforts but suggesting that DOE should either allow for timely test procedure updates to amend the language for each successive revision of IEC standard or include language in the regulatory text referring to the "most recent version" of the standard. (ITI, No.10 at p.2) PTI had no complaints concerning DOE's proposal but noted that the scope of IEC 62301 standard is limited to standby and low-power modes and that DOE should consider how these requirements apply to other tests. (PTI. No.15 at p.2)

With the unanimous support of stakeholders and the statutory mandate to harmonize with the latest IEC standard, DOE is amending the EPS test procedure, codified in Appendix Z of Subpart B to 10 CFR 430, in this final rule to incorporate by reference the second edition of IEC 62301. DOE is specifically referencing the second edition of this standard and is not adopting the proposed approach of referencing the most recent version. DOE lacks authority to adopt a "generic" provision for incorporation by reference. Any standard must be specifically approved for incorporation by reference by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51; furthermore, in order to request approval, the agency must summarize the pertinent parts of the standard in the preamble of both the proposed and final rules. (1 CFR 51.5). Accordingly, references to IEC 62301 are limited to the second edition and its relevant annexes. As part of these amendments, DOE will also amend section 430.3 "Materials incorporated by reference" to add Appendix Z to the list of test procedures that reference the second edition of IEC 62301.

B.Test Set-up

In the NOPR, DOE attempted to clarify certain sections within the DOE test procedure to ensure the test procedure provides accurate, repeatable and reproducible test results. DOE had previously proposed, and ultimately finalized, requirements in 2006 that incorporated by reference certain sections of a test procedure adopted by the California Energy Commission (CEC) into Appendix Z. See generally, 71 FR 71339 (Dec. 8, 2006) (final rule incorporating elements of the CEC test procedure for EPSs). That procedure -- "Test Method for Calculating the Energy Efficiency of Single-Voltage External AC-DC and AC-AC Power Supplies (August 11, 2004)" -- contained a number of provisions, including one ("Measurement Approach") that outlined how UUTs should be conditioned and connected to metering equipment to properly perform the test regardless of the type of load. While this provision generally describes the testing set-up to follow, it also contains gaps that could lead to inconsistent results when testing an EPS.

DOE specifically noted that the CEC procedure offers no clear instructions regarding how to avoid introducing additional efficiency losses when connecting additional metering equipment, such as voltmeters and ammeters. Using data it collected from investigative testing concerning multiple interpretations of the test procedure text, DOE found that technicians could measure a lower voltage on the output of the UUT when using a voltmeter and ammeter to determine the power consumption if the voltmeter is connected farther down the circuit path than the series ammeter connection. Such inconsistencies would not occur if the voltmeter were instead physically and electrically connected directly to the output of the UUT. In theory, the ammeter acts as a dead short (i.e., a short circuit having zero resistance) and does not introduce

electrical resistance during the measurement. In practice, the testing leads can introduce resistive losses that vary based on, among other factors, the wire gauge of the leads, the length of the leads, and the frequency of the signal being measured. At higher current loads, these losses become even more pronounced and can lead to significant resistive losses within the signal path despite the low impedance nature of ammeters. To clarify the testing configuration, DOE proposed to amend section 4(a)(i) of Appendix Z to require that any equipment necessary to measure the active mode efficiency of a UUT at a specific loading condition must be directly connected to the output cable of the unit. DOE believed that this step would remove any unintended losses in the test measurement introduced by the metering equipment because both meters would be measuring directly from the output connector of the EPS rather than at different points in the signal path. DOE sought comment from stakeholders on whether these additional clarifications regarding the testing set-up when using voltmeters and ammeters would sufficiently clarify the test method and ensure testing accuracy.

The CA IOUs and NRDC both agreed with DOE's proposal to clarify the language in the CEC test procedure within its own EPS procedure to accurately capture real world losses without introducing any additional losses from the test equipment. (CA IOUs, No.16 at p.2; NRDC, et al., No.18 at p.2) AHAM was also supportive of the revised text and encouraged DOE to add a connection diagram for the additional equipment within the rule text to further assist technicians who have to refer to multiple documents when following the test procedure. (AHAM, No.11 at p.3) ITI suggested that DOE require a Kelvin connection (i.e., a connection used to reduce the impact of parasitic resistances) be made between the voltmeter and the output port of the UUT. In ITI's view, separating the current and voltage contacts from each other would eliminate any

contact resistance or contact impedance from affecting the overall measurement. (ITI, No.10 at p.3) Such connections are typically used in four-wire sensing applications where low voltages or currents are present such that the connection leads can have a significant impact on the final measurement. Wahl suggested that, rather than stating that the equipment should be directly connected to the output, DOE should revise the language to specify that measurements be taken directly at the physical enclosure of the UUT because it is more specific and usable for any EPS. (Wahl, No.5 at p.19) PTI, however, claimed that no changes are required to the test procedure, as any measurements should be presumed correct and taken by competent practitioners. (PTI, No.15 at p.2)

In DOE's view, the adoption of the proposed revisions will enhance the usability and repeatability of the current test procedure. Based on the stakeholder comments noted above, in addition to adopting the language proposed in the NOPR to make these connections at the output cable of the EPS, DOE has included a configuration diagram for connecting additional metering equipment between the electronic or resistive load and the output of the UTT. Adding this diagram, in addition to being consistent with DOE's proposal, will help maximize the level of clarity for tests when conducting the test procedure, thereby minimizing the risk of obtaining significantly different results regarding the energy usage of a tested EPS. Figure III.1 which will be included as part of the regulatory text, illustrates an example on how to connect the test equipment to the UUT.

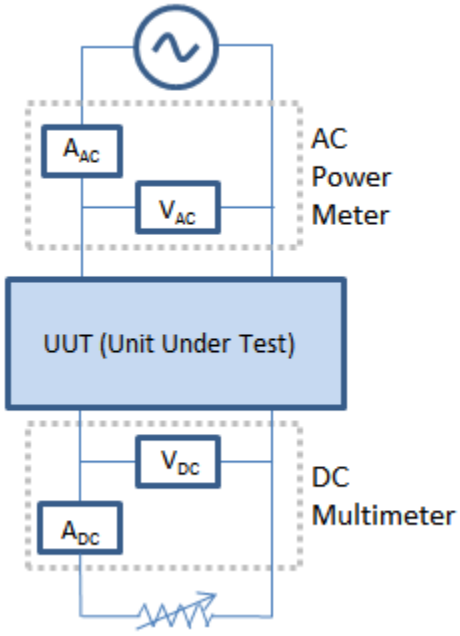

Figure III.1 Example Connection Diagram for EPS Efficiency Measurements

This diagram only illustrates one possible connection assuming a single-voltage EPS, but DOE believes it will also help to provide further aid to technicians in addition to the new test procedure language. These two descriptions, in combination, will help avoid errors caused by differing interpretations of the test procedure language. As stakeholders correctly noted, ensuring a correct connection will reduce any additional losses in the circuit path by eliminating the influence of the testing leads and their contact resistance. Measuring the efficiency of a UUT at any other point would significantly depart from the test methodology currently in place. If DOE were to adopt the measurement method proposed by Wahl, it would allow manufacturers to ignore the DC output cord losses associated with their products. Such an allowance would ease the design burden on manufacturers and result in more products on the EPS market that are less efficient than the recently amended efficiency standards intended. Accordingly, DOE is not adopting Wahl's suggestion and is not requiring a certain type of setup (such as a Kelvin

connection), as suggested by ITI. Instead, DOE has adopted its proposed approach and is clarifying the regulatory text by specifying that additional metering equipment should be physically and electrically connected at the end of the output cable of the UUT.

C. EPSs with Current Limits

The EPS test procedure produces five output values that are used to determine whether a tested EPS complies with Federal standards. These output values (or metrics) are outlined in sections 4(a)(i) and 5(b)(i)(A)(5) of Appendix Z and include active mode efficiency measurements at 25 percent, 50 percent, 75 percent, and 100 percent load as well as the total power consumption of an EPS at 0 percent load. The measured efficiency levels at the loading points (i.e., 25 percent through 100 percent) are averaged to determine the overall EPS conversion efficiency and measured against the Federal standard using an equation that outputs the minimum required efficiency based on the nameplate output power of the EPS under consideration. However, some EPSs, like those used for radios and light-emitting diode (LED) applications, are designed to drive the output voltage to zero under specific loading conditions either to protect the EPS from damage, or overstress, or because the end-use application was never designed to operate in those states. Thus, it is not possible to measure the efficiency at these specific loading conditions. (This type of feature or technology is commonly referred to as "output current-limiting" or "current-limiting" because of the device's actions to limit the output current to the connected device that the EPS serves.) Prior to the publication of the June 2011 test procedure final rule, DOE solicited comments from interested parties on how to test EPSs that utilize output current-limiting techniques at 100 percent load using the test procedure in Appendix Z. 75 FR 16958, 16973 (April 2, 2010). Based on the comments received, and to

ensure that these types of EPSs could be tested for compliance with the federal standards, DOE amended section 4(a)(i) to allow manufacturers with products that utilize output current-limiting at 100 percent load to test affected individual units using active-mode efficiencies measured at 25 percent, 50 percent, and 75 percent loads. 76 FR 31750, 31771 and 31782 (June 1, 2011).

However, as noted in the NOPR, DOE has become aware of other EPS designs which use hiccup protection at loading conditions under 100 percent as a form of fault protection and reset. These EPSs will drive the output voltage down to zero to eliminate any power delivery when the end-use product demands less than a certain percentage of the nameplate output current. Once the output has been reduced to zero, the EPS will periodically check the output load conditions by momentarily reestablishing the nameplate output voltage and monitoring the resulting current draw. If the minimum output current is not reached during these periods, the output voltage is driven to zero again and the EPS output power drops to zero. Similar to EPSs that utilize output current-limiting at maximum load, these EPSs cannot be tested properly under the current DOE test procedure when testing at loading conditions where the hiccup protection is implemented.

To quantify the active mode efficiency of these EPSs, DOE proposed to amend section 4(a)(i)(C) of Appendix Z (which includes a procedure to test those EPSs that list both an instantaneous and continuous output current) to require that in cases where an EPS cannot sustain output at one or more of the four loading conditions, these loading conditions should not be measured. Instead, for these EPSs, the average efficiency would be the average of the loading conditions for which it can sustain output. In addition to this provision, DOE proposed to define the “average active mode efficiency” of an EPS as the average of the active mode efficiencies

recorded when an EPS is loaded at 100 percent, 75 percent, 50 percent, and 25 percent of its nameplate output current. DOE believed that defining average active mode efficiency would assist manufacturers in preparing certification reports and provide additional clarity as to which metrics are considered for compliance with the federal standards. DOE sought comment on the benefits or burdens of representing the average active mode efficiency of these devices as the average of the efficiencies at the loading conditions that can be tested and on the proposed definition for average active mode efficiency.

ITI and Schneider Electric both favored letting manufacturers of EPSs with hiccup protection test their products using only the loading conditions that can be tested. (ITI, No.10 at p.3; Schneider Electric, No.13 at p.3) However, PTI and AHAM disagreed with DOE's proposal over concerns that manufacturers would be punished for innovation and designing for overall energy savings. AHAM stated that current-limiting technologies are a well-developed feature of EPS design and could possibly deliver less power more efficiently at the loading conditions by entering states similar to hiccup protection. (AHAM, No.11 at p.3) PTI agreed with AHAM, stating that manufacturers should not be punished for finding methods of lowering power consumption and that DOE should take the issue under further study to fully understand the impact of the proposed changes (PTI, No.15 at p.2).

The EPS test procedure was developed to apply to any EPS that is subject to Federal energy conservation standards. EPSs are regulated based on the power conversion efficiency at multiple loading points and the no-load power consumption. While DOE recognizes that EPS active mode efficiency is optimized based on the loading conditions expected by the end-use

product, DOE's method of measuring efficiency across the entire loading spectrum ensures that the EPS efficiency is quantifiable and repeatable for all EPSs subject to the federal efficiency standards regardless of usage profiles. The fact that an EPS uses current-limiting techniques at specific loading conditions means that the EPS cannot support such loading conditions and will instead revert to a lower power state when such load demands are required. This means that the state of operation when the current-limiting process is initiated is not representative of the EPS's ability to deliver the required loading point current to the end-use product. Accordingly, DOE believes that any efficiency measurements taken under these circumstances would not represent the actual conversion efficiency at the loading condition where current-limiting occurs and should therefore not be included in the average active mode efficiency. Additionally, DOE is aware of current-limiting techniques utilized in EPSs at only very high loads or lower loads relative to the EPS's nameplate output power. While EPS efficiency tends to decrease at these loading conditions, the conversion efficiency is typically the poorest at very low loads. When EPSs enter current-limiting, low power states, they deliver a much lower power to the end-use product and the conversion efficiency suffers. Therefore, excluding these measurements from the average active-mode efficiency metric would not impair innovation or other energy efficiency efforts because average active-mode efficiency would only include the efficiency at the loading conditions that can be sustained, and not include loading conditions that are represented by lower power, but decreased conversion efficiency. DOE also believes, contrary to AHAM and PTI's comments, that this will result in an advantage to manufacturers by requiring them to calculate average active-mode efficiency using only the higher efficiency measurements taken at the loading conditions that the EPS can sustain. As a result, DOE is codifying in this final rule its definition for average active mode efficiency as the average of the loading conditions (100

percent, 75 percent, 50 percent, and 25 percent of its nameplate output current) for which the EPS can sustain the output current.

D. Power Factor

As discussed in the NOPR, power factor is a relative measure of transmission losses between the power plant and an item plugged into AC mains (i.e., a wall outlet). The power factor of a given device is represented as a ratio of the active power delivered to the device relative to the combination of this reactive power and active power. An ideal load will have a power factor of 1, where all the power generated is delivered to the load as active power. For a given nameplate output power and efficiency, products with a lower power factor cause greater power dissipation in the transmission wiring, an effect that also becomes more pronounced at higher input powers.

DOE stated that power factor is a critical component in establishing the overall efficiency profile of EPSs. Most of the efficient power supplies available on the market today use switched-mode topologies (i.e., power transfer circuits that use switching elements and electromagnetic fields to transmit power) that draw current in short spikes from the power grid. These current spikes can cause the voltage and current input waveforms of the EPS to be significantly out of phase, resulting in a low power factor and putting more stress on the power grid to deliver real power. While switched-mode power supplies have served to dramatically improve the achievable efficiencies of EPSs, the fact that power factor had gone unexamined during their widespread adoption brought overall system efficiency into consideration. To help ascertain the power factor inputs, DOE proposed to collect power factor measurements at each loading condition through

an optional provision within the test procedure but not to require its measurement or submission as part of a certification report. In DOE's view, this proposed change would increase testing flexibility while minimizing additional testing burden, as most modern power analyzers are capable of measuring true power factor. DOE sought comment on the inclusion of power factor measurements within the test procedure and the repeatability of such measurements.

The CA IOUs and NRDC urged that power factor be measured at each loading condition because the power factor affects the overall system efficiency. Both also urged DOE to make power factor measurements mandatory for EPSs with a nameplate output power exceeding 50 watts. (CA IOUs, No.16 at p.3; NRDC, et al., No.18 at p.4) NRDC agreed with DOE's initial assessment that the additional burden placed on manufacturers would be minimal as most modern day power meters are capable of measuring true power factor and collecting such data would allow for a complete analysis of the impact of EPS power factor on energy consumption. (NRDC, et al., No.18 at p.4) Several stakeholders, however, disagreed with DOE's proposal to include optional power factor measurements at each loading condition.

ITI and Schneider Electric both stated that they do not support measuring power factor below loads of 75 watts. (ITI, No.10 at p.3; Schneider, No.13 at p.3) ITI and Schneider questioned the value of measuring this value. They also noted that global criteria were available to measure power factor at ratings of 75 watts and higher. AHAM also suggested that DOE refrain from including power factor measurements and to instead focus on product efficiency, noting that without defined test parameters such as source impedance there cannot be meaningful and repeatable power factor measurements. (AHAM, No.11 at p.3) TIA expressed similar

concerns, stating that expanding the rule beyond product efficiency to power distribution will only serve to increase stakeholder confusion when the emphasis of the test procedure should be focused on product efficiencies. (TIA, No.17 at p.3) PTI argued that power factor is outside the scope of the rulemaking to provide meaningful measures of energy efficiency. (PTI, No.15 at p.3)

After carefully considering these comments, DOE has decided, at this time, not to adopt a voluntary provision to record power factor. As noted by several commenters and by DOE itself, see 79 FR at 61001, the efficiency impacts attributable to lower power factors are more pronounced in cases involving higher input powers. The availability of criteria for measuring power factors starting at 75 watts suggests that this power level may be an appropriate minimum power level at which to consider the impacts from power factor. However, DOE currently lacks sufficient data to make a fully informed decision on whether power factor measurements should be limited in this manner. Additionally, even though DOE presented its power factor proposal as a voluntary option, the benefits of the proposal are, at this time, unclear. In light of this situation, along with the significant questions raised by commenters, DOE is declining to adopt this aspect of its proposal. DOE may, however, continue to evaluate the merits of regulating power factor in future energy conservation efforts.

E. Adaptive EPSs

In the test procedure NOPR, DOE described a new EPS technology that enables EPSs that connect to their end-use products via a universal serial bus (USB) to provide higher charging currents than specified in the USB standard by increasing the output voltage of the EPS in cases

where the end-use product battery is severely depleted. This technology has the advantage of speeding the charging process and cutting the overall time needed to charge a product's battery. DOE noted that this faster charging was activated through communication lines between the charger and the charge control chip embedded in the end-use device. However, DOE stated that only certain products paired with the necessary chargers are able to communicate and have the EPS provide a higher charging current. The same chargers would not be able to reach the same charging current when paired with a device not capable of this communication.

DOE proposed to refer to these types of EPSs as "adaptive EPSs" and to define them as single-voltage EPSs that can alter their output voltage during active mode based on an established communication protocol with the end-use application without any user-generated action. DOE believed that, due to the fluctuation in the output voltage of adaptive EPSs depending on the state of the end-use product, manufacturers might list multiple output voltages, multiple output currents, and/or multiple output powers to categorize all the potential states of the EPS, making the correct testing conditions difficult to discern within the existing DOE test procedure. To remove this potential ambiguity, DOE proposed that adaptive EPSs would be tested at both the highest and lowest achievable output voltages for loading conditions where output current is greater than 0% of the rated nameplate output current. For the 0% loading condition, or the no-load measurement condition, DOE proposed to add clarifying language stating that the EPS under test must be placed in no-load mode and any additional signal connections to the unit be disconnected prior to measuring input power. DOE believed that if the load was not disconnected from the EPS entirely, but instead, the current demand was decreased to zero electronically with the load still physically connected, that the output voltage may remain

artificially high and impact the results of the no-load power measurement. The higher output voltage would not be representative of the voltage this EPS would operate under in no-load mode, because an adaptive EPS would only output a higher voltage when requested via the adaptive communication protocol. While this methodology was consistent with DOE's approach to testing switch-selectable EPSs, DOE sought input from stakeholders on its proposal and any additional proposals that may increase the accuracy of the test method.

Several stakeholders commented on DOE's proposed definition of an adaptive EPS. Both the CA IOUs and ITI supported DOE's proposed definition of an adaptive EPS. (CA IOUs, No.16 at p.2; ITI, No. 10 at p.4) However, Schneider Electric, AHAM, and PTI all stated that DOE's definition of an adaptive EPS was too broad and vague. (Schneider, No.13 at p.4; AHAM, No.11 at p.3, PTI, No.15 at p.2) Schneider claimed that it could not accurately identify any products that would qualify as adaptive EPSs based on DOE's proposed definition. (Schneider, No. 13 at p.4) Similarly, PTI urged DOE to refine the definition of adaptive EPSs to specify that the communication protocol is digital so as to avoid manufacturers classifying their products as adaptive EPSs due to regular and expected output voltage fluctuations. (PTI, No.15 at p.2)

DOE is not aware of any existing adaptive EPS technology that relies on analog communication. Nonetheless, some stakeholders have urged DOE to provide further guidance as to what can be considered an adaptive EPS. To this end, DOE is clarifying its adaptive EPS definition by incorporating PTI's suggestion that the communication protocol used by adaptive EPSs is digital. Consequently, an adaptive EPS is an EPS 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. By specifying the use of digital communication, DOE seeks to remove any classification ambiguity related to the line and load fluctuations that are common with any power supply and help clarify the intended definition proposed in the NOPR.

DOE also received feedback from stakeholders on its proposed approach to testing adaptive EPSs. While recognizing the limitations of the proposed approach, NRDC and the CA IOUs nevertheless supported DOE's proposed approach to test adaptive EPSs at the highest and lowest achievable output voltages. (NRDC, et al., No. 18 at p.6, CA IOUs, No. 16 at p.2) However, the CA IOUs stated that DOE should test adaptive EPSs with and without the communication enabled at both the highest and lowest output voltage to establish the most accurate no-load power consumption metric. (CA IOUs, No.16 at p.2-3) AHAM, however, stated that EPSs should be tested at the nameplate rating regardless of whether they are adaptive EPSs and that the product classification should be decided by the manufacturer. AHAM also stated it was unclear whether the current procedure could not be performed on adaptive EPSs – and if it could, in its view, there would be no reason to make a change for these EPSs. (AHAM, No.11 at p.3)

Other stakeholders provided DOE with additional information concerning the likely nameplate markings of adaptive EPSs. Both Schneider Electric and ITI commented that adaptive EPSs should align with the IEC 60950 standard for safety of information technology equipment,

which requires every output voltage to be listed along with the associated output current. (Schneider, No.13 at p.4; ITI, No.10 at p.4).

DOE believes that any test procedure should be flexible enough to apply to several different design variations of one consumer product. Adaptive EPSs are unique among EPSs because of their ability to operate at one power level when communicating with certain consumer products but an inability to reach a similar operating point when used with other consumer products that lack the communication. The EPS test procedure should be able to capture the efficiencies at the various output conditions in which it will operate, which includes these two scenarios. DOE continues to believe that this could be performed by conducting the test twice at each loading condition – once at the highest achievable output voltage that is utilized while communicating with a load and once at the lowest achievable output voltage utilized during load communication. Due to the nature of EPS design, the points in between the highest and lowest output voltage will be no less efficient than either extreme.[5] Additionally, DOE has been informed through conversations with manufacturers and through public comment submissions that manufacturers will list all the achievable output voltage and achievable output current combinations of adaptive EPSs on the nameplate in accordance with the IEC 60950[6] industry standard, making DOE's proposal practical to implement since the nameplate rating extremes will be used to determine the loading points for testing. Since manufacturers already include each output voltage on the nameplate, the highest and lowest achievable voltages will be

[5] At higher output voltages, EPSs typically have greater efficiency due to a lower loss ratio of the fixed voltage drops in the conversion circuitry to the nominal output voltage. These losses do not increase linearly with output voltage, so higher output voltages typically provide greater conversion efficiency.
[6] IEC 60950 Ed. 2.2, *Safety of information technology equipment*, December 2005

included for adaptive EPSs and therefore technicians should be able to determine the appropriate test conditions.

The average active-mode efficiency will still be based on the average of the four loading conditions used to measure single-voltage efficiency. However, manufacturers of adaptive EPSs will generate two average active-mode efficiency metrics for each EPS – one based on the average of the efficiencies recorded at the lowest voltage achieved during the charging cycle and one based on the average of the efficiencies recorded at the highest voltage achieved during the charging cycle. This methodology will also allow DOE to maintain consistency with its testing approach for switch-selectable EPSs. Unlike switch-selectable EPSs, DOE will only require manufacturers of adaptive EPSs to certify their products with one no-load power measurement, as such EPSs operate at only one output voltage when in a no-load state.

With respect to no-load mode, switch-selectable EPSs, by definition, can maintain several different output voltages when the end-use product is disconnected from the EPS. The exact output voltage is determined by the position of the switch on the EPS enclosure. The fact that the output voltage can change via a user-generated action means that the no-load power consumption at each output voltage can vary despite the fact that the power drawn from the mains is consumed by the EPS in the no-load state. For this reason, DOE requires manufacturers of switch-selectable EPSs to certify the no-load metric at the highest and lowest nameplate output voltage for these products.

Adaptive EPSs, however, can only maintain higher voltages while communicating with the end-use product via a physical USB connection. During the no-load measurement, the EPS will be disconnected from any load and will, as a result, not be communicating with the end-use product. Placing the EPS into no-load mode will therefore yield a static output voltage such that one measurement will be sufficient to represent the actual power consumption of the EPS when disconnected from the load. DOE will amend section 429.37 to state that manufacturers will be required to submit average active-mode efficiencies at both the highest and lowest nameplate output voltage as well as a single no-load power measurement for adaptive EPSs.

Stakeholders and interested parties also contributed a number of comments related to applicable standards for adaptive EPSs. NRDC and the CA IOUs both stated that adaptive EPSs should meet the applicable standards at both voltage conditions tested under DOE's test methodology. (NRDC, et al., No. 18 at p.6, CA IOUs, No.16 at p.3) However, ITI stated that DOE needed to elaborate on the appropriate standard level equations that should be used to certify adaptive EPSs because the proposed language indicated that only basic voltage equations would apply, which may not always be the case for adaptive EPSs because of their fluctuating output voltage and current combinations. (ITI, No.10 at p.5) Additionally, ITI commented that adaptive EPSs should not be subject to any federal efficiency standards to avoid stifling innovation. Instead, ITI recommended that DOE only focus on data collection for adaptive EPSs. (ITI, No. 10 at p.4)

The ability of an adaptive EPS to alter its output voltage based on digital communication with an end-use product does not prevent an adaptive EPS from meeting the statutory definition

of a Class A EPS as set by Congress in EISA 2007. Among other factors, a Class A EPS is able to convert to only 1 AC or DC output voltage at a time. Based on DOE's understanding of adaptive EPSs, while such EPSs can alter their output voltage, and/or current based on communications received from the end-use product, they still can only output one voltage at any given time. As such, DOE expects many adaptive EPSs to fall within the definition of a Class A EPS, and would therefore, be subject to the currently applicable standards for Class A EPSs. Manufacturers of Class A adaptive EPSs should be compliant and certify compliance with the Class A EPS standards by testing them according to the DOE test procedure. Similarly, these EPSs will be subject to the standards with which compliance in required in February 2016.

F. EPS Loading Points

DOE currently requires that efficiency measurements be recorded by manufacturers at 0 percent, 25 percent, 50 percent, 75 percent, and 100 percent of the nameplate output current load. See 10 CFR 430, Subpart B, Appendix Z. The last four metrics are ultimately averaged to determine the overall active mode efficiency of an EPS. While these measurements span the majority of an EPS's loading profile, consumer loads are increasingly utilizing standby modes to minimize power consumption during periods of inactivity, a development that has resulted in many EPSs spending more time in loading conditions below 25 percent, where the EPS active mode efficiency tends to rapidly decrease due to the increase in the ratio of fixed losses to the output power. This decrease is due in large part to a higher loss ratio where the fixed losses represent a higher percentage of the overall power consumed when compared to the output power.

To collect data on EPS efficiency and energy consumption at these lower loading points, DOE proposed to add an optional, loading condition at 10% the nameplate output current of the EPS under test to the test procedure in the NOPR. DOE cited research conducted by NRDC[7] as well as the efforts of the European Union[8] as the reasoning behind the inclusion of the additional loading point. However, as with the EU voluntary program, DOE stated that the additional measurement would not be factored into the average active mode efficiency metric used to certify EPSs with the federal efficiency standards. Instead, the measurement would serve as a stand-alone data point for DOE's consideration should it be provided by manufacturers in the certification reports. This proposed change would have had no impact on measuring compliance with the current energy conservation standards for Class A EPSs or the recently promulgated standards for direct operation EPSs that manufacturers must meet beginning in 2016. DOE felt that this minimally burdensome revision would increase the flexibility of the EPS test procedure should DOE decide to incorporate such a measurement into an efficiency standard in the future. DOE received several comments from stakeholders on this proposed additional measurement.

The CA IOUs agreed that an additional measurement at 10% of the tested EPS's nameplate output power could be an important measurement when characterizing the energy consumption of EPSs and supported DOE's intention to exclude it from the average active mode efficiency metric. (CA IOUs, No.16 at p.2) In fact, both NRDC and the CA IOUs urged DOE to make the 10% measurement mandatory for all EPSs with a nameplate output power exceeding

[7] NRDC: External Power Supplies – Additional Efficiency Opportunities, http://www.appliance-standards.org/sites/default/files/Next_Efficiency_Opportunities_for_External_Power_Supplies_NRDC.pdf
[8] European Union: Code of Conduct on External Power Supplies Version 5 (available at http://iet.jrc.ec.europa.eu/energyefficiency/sites/energyefficiency/files/code_of_conduct_for_ps_version_5_-_draft_120919.pdf

50 watts in order to capture efficiency data for EPSs typically used with products that spend a significant portion of time in lower power modes such as laptops. (CA IOUs, No.16 at p.3; NRDC, et al., No.18 at p.3) However, several other stakeholders disagreed with DOE's proposed approach.

ITI questioned the utility of including a 10% loading condition as an optional measurement, asserted that such a requirement would be burdensome without clearly being useful and noted that DOE should not expect to see significantly higher efficiency gains made at lower loads. ITI added that the inclusion of an additional 10% loading point does not more completely represent the achievable efficiencies of EPSs. (ITI, No.10 at p.5) ITI added that while the 10% loading point could represent achievable efficiencies for some EPSs in certain industries, it would not be universally applicable. See id. Schneider Electric agreed with ITI, stating that the 10% loading condition may more accurately capture the achievable efficiencies of EPSs in certain industries but not all. (Schneider, No.13 at p.5) PTI stated similarly that the currently-followed approach of averaging of the four loading conditions within the test procedure is already questionable because EPSs generally operate at higher loads and adding a 10% loading condition moves DOE further away from its intended goal of measuring EPS efficiency under typical usage. (PTI, No.15 at p.3) AHAM added that the inclusion of a 10% loading condition gives a low loading level the same weight as a much higher loading condition. (AHAM, No.11 at p.3) Lastly, TIA stated that DOE should not include an additional loading point measurement within the test procedure even in an optional capacity unless it has collected data that would support such a revision. (TIA, No.17 at p.3)

After carefully considering these comments, DOE has re-evaluated its proposal to include an additional, optional active-mode efficiency measurement at 10% of an EPS's nameplate output power and is declining to include such a measurement in the test procedure at this time. While DOE does not believe this addition would have presented a significant burden to manufacturers, the fact that the measurement would have been optional leads DOE to believe that the likelihood of gathering substantial data on EPS efficiency at lower loads through voluntary additions to certification reports would be very low. Instead, DOE may opt to further evaluate the merits of recording additional loading point measurements prior to setting any future recording requirement at this or another level. As part of this effort, DOE may continue to evaluate any potential loading conditions that may better represent the total energy consumption of EPSs associated with various consumer products rather than focusing entirely on the 10% loading condition. Should it conclude that significant energy savings may be possible by improving the active-mode conversion efficiency of additional loading points, DOE may revisit this issue in a future rulemaking.

G.Energy Conservation Standards

After receiving several questions concerning the amended standards for EPSs issued on February 10, 2014, DOE proposed in the NOPR to amend 10 CFR 430.32(w)(1)(iii) to include a clarifying table to more clearly identify which EPS standards apply based on whether the EPS is (1) a Class A or non-Class A EPS and (2) direct or indirect operation. As currently defined in DOE's regulations at 10 CFR 430.2, a "direct operation EPS" is an EPS that can operate a consumer product that is not a battery charger without the assistance of a battery, whereas an "indirect operation EPS" is an EPS that cannot operate a consumer product (other than a battery

charger) without the assistance of a battery. The applicable standards for each combination of these products can be seen in Table III-1 below.

Table III-1- Applicable Standards of Class A and Non-Class A EPSs

	Class A EPS	Non-Class A EPS
Direct Operation EPS	Level VI: 10 CFR 430.32(w)(1)(ii)	Level VI: 10 CFR 430.32(w)(1)(ii).
Indirect Operation EPS	Level IV: 10 CFR 430.32(w)(1)(i)	No Standards.

DOE intended the definitions of direct operation and indirect operation EPSs to be mutually exclusive and collectively exhaustive, so that any EPS would be either a direct or indirect operation EPS, but not both. The new regulations required that any direct-operation EPS (regardless of whether it was also a Class A EPS) would have to meet these new standards. Any indirect operation EPS would not be required to meet the new standards, but would still be required to comply with the Class A efficiency requirements if that EPS meets the definition of a Class A EPS. The Class A EPS definition is found in 42 U.S.C. 6291(36). DOE also updated the International Efficiency Marking Protocol to add a new mark, "VI," to indicate compliance with the new efficiency requirements established for direct operation EPSs. In order to assist manufacturers in determining which standards apply to their product, DOE proposed to add Table III-1 to 10 CFR 430.32(w)(1)(iii).

NRDC supported DOE's clarification on which standards apply to which types of EPSs and the proposed revisions to the CFR. (NRDC et al., No.18 at p.2) There were no comments opposing the inclusion of the clarifying table. As such, DOE is amending 10 CFR 430.32(w)(1)(iii) to include Table III-1. Although DOE had intended the definitions of direct operation and indirect operation EPSs to be collectively exhaustive, DOE now believes that these terms may not adequately describe the full range of EPSs available. Nonetheless, Table 1 does

accurately reflect the relationship between the new standards and classifications and the statutory standards and classifications. Additionally, since manufacturers must use the test procedure in Appendix Z to Subpart B of Part 430 when making any representation of the energy efficiency or energy consumption of an external power supply that is within the scope of the test procedure.

DOE is also clarifying that only those external power supplies subject to the energy conservation standards fall within the scope of the test procedure. By excluding external power supplies that are not subject to standards from the scope of the test procedure, manufacturers of these EPSs will not have to use Appendix Z when making representations of the energy efficiency or energy consumption of those EPSs.

In addition to the clarifications made in this final rule, DOE expects to address additional issues that were raised in the context of this rulemaking in a forthcoming notice of proposed rulemaking related to external power supplies.

H. Indirect Operation EPSs

The NOPR discussed whether EPSs that power battery chargers contained in separate physical enclosures from their end-use products would be considered indirect operation EPSs under the proposed test procedure. 79 FR at 61005. DOE noted that a battery charger is considered a consumer product in and of itself, and DOE is currently undertaking a rulemaking to consider establishing efficiency standards for battery chargers. Because that rulemaking would encompass the efficiency of EPSs that power battery chargers, DOE has defined direct operation EPS to exclude such EPSs. See 10 CFR 430.2 ("Direct operation external power supply means

an external power supply that can operate a consumer product that is not a battery charger without the assistance of a battery."). An EPS that can only operate a battery charger in a separate physical enclosure from the end-use product, but not any other consumer product, is not a direct operation EPS, and would therefore, not be subject to the efficiency standards for direct operation EPSs. See 79 FR 7859, 7929. DOE proposed to modify the indirect operation EPS definition to clarify that EPSs that can only operate battery chargers contained in physical enclosures separate from the end-use products (but not other consumer products) are indirect operation EPSs. The proposed definition specified that an indirect operation EPS is an EPS that (1) cannot operate a consumer product (that is not a battery charger) without the assistance of a battery or (2) solely provides power to a battery charger that is contained in a separate physical enclosure from the end-use product. DOE received several stakeholder comments on the definition and determination methodology associated with indirect operation EPSs.

NRDC and AHAM both supported DOE's revision to the definition of an indirect operation EPS. (NRDC, et al., No.18 at 2-3, AHAM, No.11 at p.3) AHAM also expressed concern, however, that the determination method for an indirect operation EPS is part of the definition rather than the EPS test procedure. (AHAM, No.11 at p.2) In its view, because determining whether an EPS is an indirect operation EPS involves testing, those steps should be moved to become part of the test procedure. PTI agreed with AHAM's assertion and stated that the determination method needs to be performed in the context of a test procedure that specifies equipment and environmental requirements. (PTI, No.15 at p.3)

ITI disagreed with the proposed revision to the indirect operation EPS definition and suggested removing the clause, "that is contained in a separate physical enclosure from the end-use product," from that revision. It also urged DOE to provide more clarity as to the meaning of "operate a consumer product." According to ITI, a consumer product should operate by providing equivalent functionality when being directly powered from an EPS as it would provide when being directly powered by a charged battery or batteries. (ITI, No.10 at p.6).

The indirect operation determination method is not intended to test a product for energy consumption, but to place it into the appropriate product class for standards compliance and remains part of the indirect operation definition itself. Therefore, DOE does not believe that providing specific conditions is necessary for a determination method as opposed to a discrete test procedure. DOE does not see any compelling reason to move a determination of the applicability of the amended federal efficiency standards into the test procedure. Therefore, DOE intends to keep the determination of an indirect operation EPS outside the language of the test procedure.

As has been discussed, an EPS that can only operate a battery charger, but not any other consumer product, may be regulated as part of the battery charger at a later date by separate efficiency standards for battery chargers. After consideration of the issues raised in ITI's comment, DOE believes that further consideration of how best to clarify the indirect operation external power supply definition is warranted. Accordingly, DOE plans to address the definition in a forthcoming notice of proposed rulemaking.

In addition to proposed revisions to the indirect operation definition, DOE attempted to clarify some of the ambiguity regarding standards applicable to EPSs that can be used with multiple end-use applications, some of which are operated directly and others indirectly in the NOPR. See generally, 79 FR 60996. DOE stated that so long as an EPS can operate any consumer product directly, DOE considers it to be a direct operation EPS. If an EPS is shipped with a consumer product that the EPS can only operate indirectly, but that same EPS can also be used to directly operate another consumer product, DOE would still consider that EPS to be a direct operation EPS and subject to the applicable direct operation EPS efficiency standards.

PTI commented that DOE's assertion that an EPS can only be indirect if it is incapable of powering any product directly is unreasonable because a manufacturer could in no way certify that the EPS associated with any end-use product might be used in another manner by a different manufacturer. (PTI, No.15 at p.3) AHAM similarly stated that manufacturers must not be held accountable for consumers using certain EPSs with other products they were never intended to be associated with. (AHAM, No.11 at p.2) ITI recommended that DOE resolve any confusion regarding the certification of products that could be used in multiple configurations by specifying that when an "individual stakeholder" sells an EPS in both configurations, the EPS should comply with the direct operation standards. (ITI, No.10 at p.6)

DOE intended this proposal regarding indirect and direct operation EPSs to clarify the standards applicable to specific EPSs. In stating that so long as an EPS can operate any consumer product directly it is considered a direct operation EPS, DOE intended to refer to a manufacturer's distribution footprint and how its products may be deployed in the field. If, for

example, a manufacturer uses one EPS design for a number of consumer products within a design family, and that EPS could be considered a direct operation EPS with one product and an indirect operation EPS with another product within that design family, then the EPS would need to meet the direct operation EPS standards. If the EPS is designed in a way that would make it only capable of operating certain types of products, and those products are operated exclusively indirectly, it would not be subject to the direct operation standards. Similarly, if an original equipment manufacturer (OEM) or an original design manufacturer (ODM) sells an EPS design to be used with other consumer products, the burden then falls on the EPS-certifying manufacturer (typically importers) to understand the intended use of the EPS in the field and certify accordingly. Failure to submit a certification report as a direct operation EPS, however, is not determinative that an EPS is not a direct operation EPS.

I. EPSs for Solid State Lighting

In the NOPR, DOE explained that certain components, commonly referred to as "transformers" or "drivers", that are used with solid state lighting (SSL) applications, would be subject to the Class A EPS energy conservation standards provided that they meet the statutory definition of a Class A EPS. This definition, as established by Congress in EISA 2007, provides six characteristics of a Class A EPS, all of which must be met in order for a device to be considered a Class A EPS. As discussed in the February 10, 2014 final rule, DOE determined that there were no technical differences between the EPSs that power certain SSL (including LED) products and those that are used with other end-use applications that would prevent an EPS used with SSL products from meeting the statutory definition of a Class A EPS. 79 FR 7846. See also 79 FR at 61005-61006 (reiterating DOE's belief that "many drivers, or

transformers, used for SSL applications would meet the definition of a Class A EPS and . . . be subject to the applicable energy conservation standards.") As such, DOE believes that many drivers or transformers, such as LED drivers used for landscape lighting, lighting strings, portable luminaires, and other lighting applications, would meet all six characteristics of a Class A EPS and would therefore be subject to the applicable energy conservation standards. In the NOPR public meeting, DOE provided further guidance on how manufacturers should interpret the six characteristics of a Class A EPS as it relates to SSL applications.

Specifically, DOE clarified at the public meeting that an EPS is designed to convert line voltage AC input into lower voltage AC or DC output and explained that because fluorescent ballasts output higher voltage AC waveforms than the line voltage input they receive, they would not be considered an EPS. See Transcript (Pub. Mtg. Transcript, No. 9 at p. 47-48). During the meeting, DOE also discussed that one of the Class A criteria is that the device must be contained in a separate physical enclosure from the end-use product. Because many LED drivers are contained inside the same housing as the luminaire itself, these devices would not be considered Class A EPSs because they are contained within the same physical enclosure of the end-use product.

In response to the proposed rule, DOE received several comments on how to apply the statutory criteria for EPSs, particularly in the context of SSL drivers. The CA IOUs agreed that, with limited exceptions, drivers and transformers for SSL products meet the criteria to be considered within the scope of the rulemaking. (CA IOUs, No.16 at p.2) However, NEMA took issue with a number of aspects of DOE's approach regarding SSL products. It disagreed with

DOE's conclusion that there are no technical differences between SSL drivers and other types of EPSs included within the scope of the revised EPS standards, citing such additional features as dimming functionality, network control, and light color control. (NEMA, No.14 at p.3) NEMA also commented that under certain interpretations of the rulemaking text, even the products DOE specifically listed as included within the EPS scope could be excluded. It requested that DOE revise its interpretation of a consumer product and provide concrete examples of covered and non-covered products to assist the lighting industry's understanding of the scope of the rulemaking (NEMA, No.14 at p.3) NEMA further stated that many SSL/LED drivers are not sold with, or intended to be used with, a separate end-use product and, consequently, do not fall into the Class A EPS definition and should not be subject to regulation. Additionally, even if these products did meet the Class A definition, according to NEMA, DOE could not properly test SSL drivers under the existing DOE test procedure, even with the amendments proposed in the NOPR. (NEMA, No.14 at p.2)

Lutron Electronics echoed many of NEMA's concerns, stating that the scope of the EPS rulemaking was unclear as it related to LED drivers and that DOE's assertion that LED drivers are technologically equivalent to other similarly rated EPSs that fall within the rule's scope was not based on any technical analysis. (Lutron, No.12 at p.2) Lutron also stated that DOE should follow the course of other standards development organizations and consider regulating LED drivers and lighting ballasts in a separate rulemaking from EPSs. Lutron claims that treating these products as regulated EPSs will eliminate certain SSL drivers with networking capabilities from the market because of the strict no-load standards required by the 2014 final rule. Lutron argued that eliminating this added utility will remove several smart energy management tools

from buildings and result in higher overall energy consumption. Additionally, Lutron agreed with NEMA's statement that LED drivers should not be considered as part of the EPS rulemaking because they are not "external" to the luminaire they are powering. (Lutron, No.12 at p.3-4)

Any device that meets the congressional definition of an EPS is a covered product that may be subject to energy conservation standards. (42 U.S.C. 6291(36)) Congress defined an EPS as "an external power supply circuit that is used to convert household electric current into DC current or lower-voltage AC current to operate a consumer product." 42 U.S.C. 6291(36)(A). While a device that meets the EPS definition is considered a covered product, only certain EPSs are currently subject to energy conservation standards. Specifically, Congress defined, and established energy conservation standards for, Class A EPSs. (42 U.S.C. 6291(36)(C)(i)). DOE has no authority to alter the applicability of the Class A EPS standards as set forth by Congress.

Whether a given product satisfies the applicable definition is assessed at the time a product is manufactured. For products imported into the U.S., this is the date of importation. See 42 U.S.C. 6291(10) ("The term 'manufacture' means to manufacture, produce, assemble or import.") Thus, although many LED drivers are sold to an end-user inside the same housing as a luminaire, an LED driver imported into the U.S. as a separate product, prior to being incorporated into a luminaire, is a Class A EPS at the time of its manufacture (importation), if it meets the other five criteria, because it would not yet be contained within the same physical enclosure as the end-use product. However, if any such LED driver were not able to convert household electric current into DC current or lower-voltage AC current at the time it is imported,

it would not meet the definition of an EPS and, therefore, would not be subject to energy conservation standards.

When determining whether an EPS meets the statutory definition of a Class A EPS, DOE evaluates whether all six characteristics are present in the device in question. While NEMA has brought forward several additional functionalities, such as dimming functionality, network control, and light color control, that may be used to distinguish one Class A EPS from another, any device that contains the six criteria of a Class A EPS would be subject to the Class A EPS energy conservation standards. Only the six characteristics of a Class A EPS, and not any additional technical functionality, are used by DOE to determine whether a device is considered a Class A EPS. As such, DOE expects some SSL drivers to fall within the definition of a Class A EPS and, consequently, are subject to the current Class A standards. Class A EPSs must meet the Class A EPS standards when tested using the DOE test procedure and sampling provisions. Similarly, these Class A EPSs will be subject to the standards with which compliance is required in February 2016. (See discussion regarding Table III-1.)

Finally, in addressing stakeholder concerns that SSL drivers cannot be tested under the existing DOE test procedure when taking the no-load measurement of a hard-wired connection, DOE notes the test method states that the no-load measurement should be taken by cutting the cord adjacent to the end-use product and conducting the measurement probes at that point in section 4(a)(ii) of Appendix Z. As discussed in Section K, this language was previously incorporated by reference in Appendix Z by citing the CEC's "Test Method for Calculating the

Energy Efficiency of Single-Voltage External AC-DC and AC-AC Power Supplies (August 11, 2004)", but will be adopted into Appendix Z as part of this final rule. Therefore, DOE's test method does, in fact, provide a clear method for testing no-load mode of hardwired connections.

Nonetheless, DOE recognizes that EPSs may change over time as manufacturers add new features and update designs in order to compete for consumers. Acknowledging that innovation and product development may occasionally cause products to change in ways that either (1) make the results of a test procedure not representative of actual energy use or efficiency, or (2) make it impossible to test in accordance with the relevant test procedure, DOE considers petitions for waivers from test procedures under certain circumstances. Any interested party—typically a manufacturer—may submit a petition for a test procedure waiver for a basic model of a covered product if the basic model's design prevents it from being tested according to the test procedures, or if the test procedure yields materially inaccurate or unrepresentative energy use data. 10 CFR 430.27. To the extent that manufacturers wish to obtain a waiver from the EPS test procedure, manufacturers should petition DOE for a waiver and/or interim waiver. More information on the waiver process is available on the DOE website: http://energy.gov/eere/buildings/test-procedure-waivers

J.Sampling Plan

For certification and compliance, manufacturers are required to rate each basic model according to the sampling provisions specified in 10 CFR Part 429. In the NOPR, DOE explained that because the recent energy conservation standards apply to direct operation EPSs, which include both Class A and non-Class A EPSs, there is no longer a need to differentiate

between Class A and non-Class A EPSs for the purposes of Part 429. See 79 FR at 61006. As a result, DOE proposed to amend §429.37 so that the sampling plan would be applied to any EPS subject to energy conservation standards. DOE sought comment on this proposal to apply the sampling plan requirements to all EPSs subject to an energy conservation standard, regardless of whether they meet the Class A definition.

AHAM agreed that there should not be differing class requirements between different types of EPSs and supported DOE's proposal to have one singular sampling plan for all products within the scope of the EPS standards. (AHAM, No.11 at p.3-4) The CA IOUs and NRDC also agreed with DOE's proposal to unite all EPSs under the same sampling requirements that are currently outlined in the Class A EPS sampling plan in 429.37. (CA IOUs, No.16 at p.3; NRDC, et al., No.18 at p.2)

ITI agreed that adopting one sampling plan may work for some but not all situations, citing the difference between DOE's sampling plans based on manufacturing volume and industry sampling plans. ITI recommended that DOE consider specific quality control documents typically used by industry to ensure an acceptable outgoing quality control level, optimize yield, and minimize cost. However, they did not outline specific instances where one sampling plan would be problematic. (ITI, No.10 at p.7)

Based on the comments submitted by stakeholders, DOE has not found any technical reason that would prevent both Class A and non-Class A EPSs from being subject to the same sampling requirements. DOE's current Class A sampling requirements are consistent with the

sampling plans of other consumer products. Therefore, DOE is amending 429.37 in this final rule to establish one sampling plan for EPSs.

K.Expanding Regulatory Text

In the process of developing the EPS test procedure, DOE incorporated existing methodologies from a number of different standard setting organizations. For example, the single-voltage test procedure codified in Appendix Z references specific sections of the CEC's "Test Method for Calculating the Energy Efficiency of Single-Voltage External AC-DC and AC-AC Power Supplies (August 11, 2004)" to outline how the active mode efficiency and no-load mode power consumption tests should be performed. Within these sections, there are two additional references to standards developed by IEC[9] and the Institute of Electrical and Electronics Engineers (IEEE)[10]. Therefore, technicians must reference four separate documents published by four independent organizations in order to properly perform the functions required by the EPS test procedure.

In 2013, the Canadian Standards Association (CSA) recognized the confusion associated with referencing multiple documents and amended their EPS test procedure[11] to incorporate the text from Appendix Z directly. Rather than keep the references to the CEC procedure found in Appendix Z, however, the CSA adopted the text from the specific sections referenced by the DOE procedure. After reviewing the revised CSA procedure, DOE found that the new text is

[9] IEC 62301 Ed. 1.0, *Household electrical appliances - Measurement of standby power*, June 2005
[10] IEEE Std 1515-2000, IEEE Recommended Practice for Electronic Power Subsystems: Parameter Definitions, Test Conditions, and Test Methods
[11] CAN/CSA-C381.1, *Test method for calculating the energy efficiency of single-voltage external ac-dc and ac-ac power supplies*, (November 2008)

identical to the test procedure in Appendix Z, but greatly enhances the clarity of Appendix Z by consolidated the referenced text within the test procedure itself. DOE believes that these efforts have reduced the burden on stakeholders and technicians since the text referenced from the CEC procedure can now be found within a single document. Stakeholders agreed with this determination within the comments submitted for the test procedure NOPR.

AHAM specifically commented that the DOE and CSA procedures are identical and if DOE wished to incorporate any language by reference it would be more appropriate to do so from a document published by a standard setting organization rather than one developed by a government contractor. (AHAM, No.11 at p.2-3) Since then, DOE has evaluated the merits of referencing the CSA test procedure directly rather than continuing to revise the CEC text with additional exceptions and clarifications.

After further consideration, DOE is instead electing to incorporate the text previously incorporated by reference from the CEC's "Test Method for Calculating the Energy Efficiency of Single-Voltage External AC-DC and AC-AC Power Supplies (August 11, 2004)" into Appendix Z of Subpart B to 10 CFR part 430. If DOE were to incorporate the CSA test procedure, it would still need to make certain clarifications based on the amendments adopted in this final rule, and the intent behind adopting one point of reference within the test procedure would be nullified. Technicians would still need to refer to multiple sources in order to follow the DOE EPS test procedure. Instead, DOE is adopting an approach identical to the one taken by the CSA during the 2013 revision of its test procedure such that multiple references can be consolidated into a single document. This approach will not alter the method used to determine

the active mode efficiency or no-load power consumption in any way. Rather, it will directly insert the test methodology from the CEC test procedure into Appendix Z and eliminate the need for technicians to reference specific sections of that document. This revision will also allow DOE to modify the specific text within Appendix Z should the need arise in any future rulemakings rather than having to provide additional clarifications on the procedures detailed in the CEC test method.

Any amendments DOE has codified within Appendix Z related to referenced CEC text will be incorporated into the language adopted in this final rule as well. For example, DOE will adopt nearly all of the text in the "General Conditions for Measurement" section of the CEC test procedure that was previously incorporated by reference, expect for those provisions in the section for which DOE had already codified exceptions. Specifically, this section of the CEC test procedure noted that EPSs are to be tested at both 115VAC, 60 Hz and 230VAC, 50 Hz. However, DOE codified language in the 2006 test procedure final rule that states that EPSs will only be tested at 115V, AC, 60Hz. So, although the text from this section is being adopted into Appendix Z as part of this final rule, DOE is modifying the specific language associated with the test voltages to align with the exceptions already codified in Appendix Z. All other similar instances are also reflected in the regulatory text. Since these clarifications to the referenced text were previously adopted for the EPS test procedure, the modifications to the text from the CEC procedure will not alter the way the test procedure is performed. DOE believes this approach will further reduce any confusion over the current EPS test procedure regulatory text, and is therefore adopting this approach as part of this final rule.

L. Effective Date and Compliance Date of Test Procedure

The effective date for this test procedure is 30 days after publication in the Federal Register. At that time, the new metrics and any other measure of energy consumption relying on these metrics may be represented pursuant to the final rule. Consistent with 42 U.S.C. 6293(c), energy consumption or efficiency representations by manufacturers must be based on the new test procedure and sampling plans starting 180 days after the date of publication of this test procedure final rule. Starting on that date, any such representations, including those made on marketing materials, websites (including qualification with a voluntary or State program), and product labels must be based on results generated using the final rule procedure as well as the sampling plan in 10 CFR part 429.

IV.Procedural Issues and Regulatory Review

A.Review Under Executive Order 12866

The Office of Management and Budget (OMB) has determined that test procedure rulemakings do not constitute "significant regulatory actions" under section 3(f) of Executive Order 12866, Regulatory Planning and Review, 58 FR 51735 (Oct. 4, 1993). Accordingly, this action was not subject to review under the Executive Order by the Office of Information and Regulatory Affairs (OIRA) in the Office of Management and Budget (OMB).

B.Review Under the Regulatory Flexibility Act

The Regulatory Flexibility Act (5 U.S.C. 601 et seq.) requires preparation of an initial regulatory flexibility analysis (IFRA) for any rule that by law must be proposed for public comment, unless the agency certifies that the rule, if promulgated, will not have a significant

economic impact on a substantial number of small entities. As required by Executive Order 13272, "Proper Consideration of Small Entities in Agency Rulemaking," 67 FR 53461 (August 16, 2002), DOE published procedures and policies on February 19, 2003 to ensure that the potential impacts of its rules on small entities are properly considered during the DOE rulemaking process. 68 FR 7990. DOE has made its procedures and policies available on the Office of the General Counsel's website: http://energy.gov/gc/office-general-counsel.

For manufacturers of EPSs, the Small Business Administration (SBA) has set a size threshold, which defines those entities classified as "small businesses" for the purposes of the statute. DOE used the SBA's small business size standards to determine whether any small entities would be subject to the requirements of the rule. 65 FR 30836, 30848 (May 15, 2000), as amended at 65 FR 53533, 53544 (Sept. 5, 2000) and codified at 13 CFR part 121. The size standards are listed by North American Industry Classification System (NAICS) code and industry description and are available at *http://www.sba.gov/content/summary-size-standards-industry.* EPS manufacturing is classified under NAICS 335999, "All Other Miscellaneous Electrical Equipment and Component Manufacturing." The SBA sets a threshold of 500 employees or less for an entity to be considered as a small business for this category.

DOE reviewed the final rule under the provisions of the Regulatory Flexibility Act and the procedures and policies published on February 19, 2003. This final rule prescribes certain limited clarifying amendments to an already-existing test procedure that will help manufacturers and testing laboratories to consistently conduct that procedure when measuring the energy efficiency of an EPS, including in those instances where compliance with the applicable Federal

energy conservation is being assessed. DOE has concluded that the final rule will not have a significant impact on a substantial number of small entities.

Although DOE initially believed that there were no domestic manufacturers of EPS who qualify as small businesses, DOE conducted a further review to update its assessment. DOE's most recent small business search continued to show that the majority of EPS manufacturers are foreign-owned and -operated companies. Of the few that are domestically-owned, most are larger companies with more than 500 employees. DOE's most recent search again showed that there are no small, domestic manufacturers of EPSs. Even if small domestic manufacturers of EPSs existed in the U.S., the nature of the revisions to the EPS test procedure make it unlikely that these changes would have created any additional certification costs that would cause adverse impacts to those manufacturers. Therefore, there are no small business impacts to evaluate for purposes of the Regulatory Flexibility Act.

In addition, DOE expects any potential impact from this final rule to be minimal. As noted earlier, DOE's EPS test procedure has existed since 2005 and the modest clarifications in the final rule are unlikely to create a burden on any manufacturers. These revisions harmonize the instrumentation resolution and uncertainty requirements with the second edition of the International Electrotechnical Commission (IEC) 62301 standard when measuring standby power along with other international standards programs. They also clarify certain testing set-up requirements. These updates will not increase the testing burden on EPS manufacturers.

For these reasons, DOE certifies that this final rule will not have a significant economic impact on a substantial number of small entities.

C.Review Under the Paperwork Reduction Act of 1995

Manufacturers of EPSs must certify to DOE that their products comply with any applicable energy conservation standards. In certifying compliance, manufacturers must test their products according to the DOE test procedures for EPSs, including any amendments adopted for those test procedures. DOE has established regulations for the certification and recordkeeping requirements for all covered consumer products and commercial equipment, including EPSs. *See* 10 C.F.R. Part 429, Subpart B. The collection-of-information requirement for the certification and recordkeeping is subject to review and approval by OMB under the Paperwork Reduction Act (PRA). This requirement has been approved by OMB under OMB control number 1910-1400. Public reporting burden for the certification is estimated to average 30 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

Notwithstanding any other provision of the law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with, a collection of information subject to the requirements of the PRA, unless that collection of information displays a currently valid OMB Control Number.

D.Review Under the National Environmental Policy Act of 1969

This rule amends the DOE test procedure for EPSs. DOE has determined that this rule falls into a class of actions that are categorically excluded from review under the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.) and DOE's implementing regulations

at 10 CFR part 1021. Specifically, this rule amends an existing rule without affecting the amount, quality or distribution of energy usage, and, therefore, will not result in any environmental impacts. Thus, this rulemaking is covered by Categorical Exclusion A5 under 10 CFR part 1021, subpart D, which applies to any rulemaking that interprets or amends an existing rule without changing the environmental effect of that rule.[12] Accordingly, neither an environmental assessment nor an environmental impact statement is required.

E.Review Under Executive Order 13132

Executive Order 13132, "Federalism," 64 FR 43255 (August 4, 1999), imposes certain requirements on agencies formulating and implementing policies or regulations that preempt State law or that have Federalism implications. The Executive Order requires agencies to examine the constitutional and statutory authority supporting any action that would limit the policymaking discretion of the States and to carefully assess the necessity for such actions. The Executive Order also requires agencies to have an accountable process to ensure meaningful and timely input by State and local officials in the development of regulatory policies that have Federalism implications. On March 14, 2000, DOE published a statement of policy describing the intergovernmental consultation process it will follow in the development of such regulations. 65 FR 13735. DOE examined this final rule and determined that it will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. EPCA governs and prescribes Federal preemption of State regulations as to energy conservation for the products that are the subject of this final rule. States can petition DOE for exemption from such

[12] In its October 2014 proposal, DOE had inadvertently identified this exclusion as Category A6.

preemption to the extent, and based on criteria, set forth in EPCA. (42 U.S.C. 6297(d)) No further action is required by Executive Order 13132.

F. Review Under Executive Order 12988

Regarding the review of existing regulations and the promulgation of new regulations, section 3(a) of Executive Order 12988, "Civil Justice Reform," 61 FR 4729 (Feb. 7, 1996), imposes on Federal agencies the general duty to adhere to the following requirements: (1) eliminate drafting errors and ambiguity; (2) write regulations to minimize litigation; (3) provide a clear legal standard for affected conduct rather than a general standard; and (4) promote simplification and burden reduction. Section 3(b) of Executive Order 12988 specifically requires that Executive agencies make every reasonable effort to ensure that the regulation: (1) clearly specifies the preemptive effect, if any; (2) clearly specifies any effect on existing Federal law or regulation; (3) provides a clear legal standard for affected conduct while promoting simplification and burden reduction; (4) specifies the retroactive effect, if any; (5) adequately defines key terms; and (6) addresses other important issues affecting clarity and general draftsmanship under any guidelines issued by the Attorney General. Section 3(c) of Executive Order 12988 requires Executive agencies to review regulations in light of applicable standards in sections 3(a) and 3(b) to determine whether they are met or it is unreasonable to meet one or more of them. DOE has completed the required review and determined that, to the extent permitted by law, this final rule meets the relevant standards of Executive Order 12988.

G. Review Under the Unfunded Mandates Reform Act of 1995

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA) requires each Federal agency to assess the effects of Federal regulatory actions on State, local, and Tribal governments and the private sector. Pub. L. No. 104-4, sec. 201 (codified at 2 U.S.C. 1531). For a regulatory action resulting in a rule that may cause the expenditure by State, local, and Tribal governments, in the aggregate, or by the private sector of $100 million or more in any one year (adjusted annually for inflation), section 202 of UMRA requires a Federal agency to publish a written statement that estimates the resulting costs, benefits, and other effects on the national economy. (2 U.S.C. 1532(a), (b)) The UMRA also requires a Federal agency to develop an effective process to permit timely input by elected officers of State, local, and Tribal governments on a proposed "significant intergovernmental mandate," and requires an agency plan for giving notice and opportunity for timely input to potentially affected small governments before establishing any requirements that might significantly or uniquely affect small governments. On March 18, 1997, DOE published a statement of policy on its process for intergovernmental consultation under UMRA. 62 FR 12820; also available at http://energy.gov/gc/office-general-counsel. DOE examined this final rule according to UMRA and its statement of policy and determined that the rule contains neither an intergovernmental mandate, nor a mandate that may result in the expenditure of $100 million or more in any year, so these requirements do not apply.

H. Review Under the Treasury and General Government Appropriations Act, 1999

Section 654 of the Treasury and General Government Appropriations Act, 1999 (Pub. L. 105-277) requires Federal agencies to issue a Family Policymaking Assessment for any rule that may affect family well-being. This final rule will not have any impact on the autonomy or

integrity of the family as an institution. Accordingly, DOE has concluded that it is not necessary to prepare a Family Policymaking Assessment.

I.Review Under Executive Order 12630

DOE has determined, under Executive Order 12630, "Governmental Actions and Interference with Constitutionally Protected Property Rights" 53 FR 8859 (March 18, 1988), that this regulation will not result in any takings that might require compensation under the Fifth Amendment to the U.S. Constitution.

J. Review Under Treasury and General Government Appropriations Act, 2001

Section 515 of the Treasury and General Government Appropriations Act, 2001 (44 U.S.C. 3516 note) provides for agencies to review most disseminations of information to the public under guidelines established by each agency pursuant to general guidelines issued by OMB. OMB's guidelines were published at 67 FR 8452 (Feb. 22, 2002), and DOE's guidelines were published at 67 FR 62446 (Oct. 7, 2002). DOE has reviewed this final rule under the OMB and DOE guidelines and has concluded that it is consistent with applicable policies in those guidelines.

K. Review Under Executive Order 13211

Executive Order 13211, "Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use," 66 FR 28355 (May 22, 2001), requires Federal agencies to prepare and submit to OMB, a Statement of Energy Effects for any significant energy action. A "significant energy action" is defined as any action by an agency that promulgated or is expected

to lead to promulgation of a final rule, and that: (1) is a significant regulatory action under Executive Order 12866, or any successor order; and (2) is likely to have a significant adverse effect on the supply, distribution, or use of energy; or (3) is designated by the Administrator of OIRA as a significant energy action. For any significant energy action, the agency must give a detailed statement of any adverse effects on energy supply, distribution, or use if the regulation is implemented, and of reasonable alternatives to the action and their expected benefits on energy supply, distribution, and use.

This regulatory action is not a significant regulatory action under Executive Order 12866. Moreover, it would not have a significant adverse effect on the supply, distribution, or use of energy, nor has it been designated as a significant energy action by the Administrator of OIRA. Therefore, it is not a significant energy action, and, accordingly, DOE has not prepared a Statement of Energy Effects.

L. Review Under Section 32 of the Federal Energy Administration Act of 1974

Under section 301 of the Department of Energy Organization Act (Pub. L. 95–91; 42 U.S.C. 7101), DOE must comply with section 32 of the Federal Energy Administration Act of 1974, as amended by the Federal Energy Administration Authorization Act of 1977. (15 U.S.C. 788; FEAA) Section 32 essentially provides in relevant part that, where a proposed rule authorizes or requires use of commercial standards, the notice of proposed rulemaking must inform the public of the use and background of such standards. In addition, section 32(c) requires DOE to consult with the Attorney General and the Chairman of the Federal Trade Commission (FTC) concerning the impact of the commercial or industry standards on competition.

This final rule incorporates testing methods contained in the following standard: IEC Standard 62301 "Household electrical appliances—Measurement of standby power." It also incorporates a testing method developed by the State of California, section 1604(u)(1) of the CEC 2007 Appliance Efficiency Regulations. DOE has evaluated these testing standards and believes that the IEC standard was developed in a manner that fully provides for public participation, comment, and review. Additionally, DOE has consulted with the Attorney General and the Chairwoman of the FTC concerning the effect on competition of requiring manufacturers to use the test method in this standard and neither objected to its incorporation.

M. Description of Materials Incorporated by Reference

In this final rule, DOE is updating the incorporation by reference of International Electrotechnical Commission (IEC) Standard 62301 ("IEC 62301"), (Edition 2.0, 2011-01), Household electrical appliances—Measurement of standby power, to add it to Appendix Z. This testing standard is an industry accepted test procedure that sets a standardized method to follow when measuring the standby power of household and similar electrical appliances. Included within this testing standard are the details regarding test set-up, testing conditions, and stability requirements that are necessary to help ensure consistent and repeatable test results. Copies of this testing standard are readily available from the IEC at https://webstore.iec.ch/publication/6789 and also from the American National Standards Institute, 25 W. 43rd Street, 4th Floor, New York, NY 10036, (212) 642-4900, or go to http://webstore.ansi.org.

N. Congressional Notification

As required by 5 U.S.C. 801, DOE will report to Congress on the promulgation of this rule before its effective date. The report will state that it has been determined that the rule is not a "major rule" as defined by 5 U.S.C. 804(2).

V. Approval of the Office of the Secretary

The Secretary of Energy has approved publication of this final rule.

List of Subjects

10 CFR Part 429

Administrative practice and procedure, Confidential business information, Energy conservation, Household appliances, Imports, Reporting and recordkeeping requirements.

10 CFR Part 430

Administrative practice and procedure, Confidential business information, Energy conservation, Household appliances, Imports, Incorporation by reference, Intergovernmental relations, Small businesses.

Issued in Washington, DC, on August 17, 2015.

Kathleen B. Hogan
Deputy Assistant Secretary for Energy Efficiency
Energy Efficiency and Renewable Energy

For the reasons stated in the preamble, DOE amends parts 429 and 430 of Chapter II of Title 10, Code of Federal Regulations as set forth below:

PART 429—CERTIFICATION, COMPLIANCE, AND ENFORCEMENT FOR CONSUMER PRODUCTS AND COMMERCIAL AND INDUSTRIAL EQUIPMENT

1. The authority citation for part 429 continues to read as follows:

Authority: 42 U.S.C. 6291-6317.

2. Section 429.37 is amended by revising the section heading, and paragraph (b)(2) to read as follows:

§429.37 External power supplies.

* * * * *

(b) * * *

(2) * * *

(i) External power supplies: The average active mode efficiency as a percentage (%), no-load mode power consumption in watts (W), nameplate output power in watts (W), and, if missing from the nameplate, the output current in amperes (A) of the basic model or the output current in amperes (A) of the highest- and lowest-voltage models within the external power supply design family.

(ii) Switch-selectable single-voltage external power supplies: The average active mode efficiency as a percentage (%) value, no-load mode power consumption in watts (W) using the lowest and highest selectable output voltages, nameplate output power in watts (W), and, if missing from the nameplate, the output current in amperes (A).

(iii) Adaptive single-voltage external power supplies: The average active-mode efficiency as a percentage (%) at the highest and lowest nameplate output voltages, no-load mode power consumption in watts (W), nameplate output power in watts (W) at the highest and lowest nameplate output voltages, and, if missing from the nameplate, the output current in amperes (A) at the highest and lowest nameplate output voltages.

(iv) External power supplies that are exempt from no-load mode requirements under §430.32(w)(1)(iii): A statement that the product is designed to be connected to a security or life safety alarm or surveillance system component, the average active-mode efficiency as a percentage (%), the nameplate output power in watts (W), and if missing from the nameplate, the certification report must also include the output current in amperes (A) of the basic model or the output current in amperes (A) of the highest- and lowest-voltage models within the external power supply design family.

PART 430—ENERGY CONSERVATION PROGRAM FOR CONSUMER PRODUCTS

3. The authority citation for part 430 continues to read as follows:

Authority: 42 U.S.C. 6291–6309; 28 U.S.C. 2461 note.

4. Section 430.2 is amended adding a definition for "adaptive external power supply (EPS)" in alphabetical order to read as follows:

§ 430.2 Definitions.

* * * * *

Adaptive external power supply (EPS) means 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.

* * * * *

5. Section 430.3 is amended by:

   a. Removing paragraph (l);

   b. Redesignating paragraphs (m) through (w) as paragraphs (l) through (v) respectively; and

   c. Revising newly redesignated paragraph (p)(4) to read as follows:

§ 430.3 Materials incorporated by reference.

* * * * *

(p) * * *

(4) IEC 62301 ("IEC 62301"), *Household electrical appliances—Measurement of standby power,* (Edition 2.0, 2011-01), IBR approved for appendices C1, D1, D2, G, H, I, J2, N, O, P, X, X1 and Z to subpart B.

* * * * *

6. Appendix Z to Subpart B of Part 430 is amended:

    a. By revising the introductory text to Appendix Z;

    b. By revising section 1., Scope;

    c. In section 2, Definitions, by:

        i. Redesignating paragraphs (f) and (g) as (g) and (h), and paragraphs (h) through (x) as paragraphs (i) through (z)

        ii. Adding paragraph (f) and (g);

    d. In section 3, Test Apparatus and General Instructions, by:

        i. Revising paragraphs (a) and (b)(i)(A); and

        ii. Adding new paragraphs (a)(i) through (a)(iv);

        iii. Removing paragraphs (b)(i)(B) and (b)(i)(C).

    e. In section 4, Test Measurement, by:

        i. Revising paragraphs 4(a)(i), 4(a)(i)(A) through 4(a)(i)(C); and

        ii. Adding new paragraphs (a)(i)(D) through (a)(i)(I), (a)(i)(A)(1), (a)(i)(C)(1), and (a)(i)(C)(2).

The revisions and additions read as follows:

Appendix Z to Subpart B of Part 430—Uniform Test Method for Measuring the Energy Consumption of External Power Supplies

NOTE: Starting on **[INSERT DATE 180 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**, any representations made with respect to the energy use or

efficiency of external power supplies must be made in accordance with the results of testing pursuant to this appendix. Prior to **[INSERT DATE 180 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER],** representations made with respect to the energy use or efficiency of external power supplies must be made in accordance with this appendix or Appendix Z as it appeared at10 CFR Part 430, Subpart B, Appendix Z as contained in the 10 CFR parts 200 to 499 edition revised as of January 1, 2015. Because representations must be made in accordance with tests conducted pursuant to this appendix as of **[INSERT DATE 180 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**, manufacturers may wish to begin using this test procedure as soon as possible.

1. Scope.

This appendix covers the test requirements used to measure the energy consumption of direct operation external power supplies and indirect operation Class A external power supplies subject to the energy conservation standards set forth at §430.32(w)(1).

2. Definitions.

* * * * *

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

(g) *IEC 62301* means the test standard published by the International Electrotechnical Commission, titled "Household electrical appliances—Measurement of standby power," Publication 62301 (Edition 2.0 2011-01) (incorporated by reference; see §430.3).

* * * * *

3. *Test Apparatus and General Instructions*

(a) Single-Voltage External Power Supply.

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

(ii) As is specified in IEC 62301 (incorporated by reference; see §430.3), the tests shall be carried out in a room that has an air speed close to the unit under test (UUT) of ≤ 0.5 m/s. The ambient temperature shall be maintained at 20 ± 5°C throughout the test. There shall be no intentional cooling of the UUT by use of separately powered fans, air conditioners, or heat sinks. The UUT shall be tested on a thermally non-conductive surface. Products intended for outdoor use may be tested at additional temperatures, provided those are in addition to the conditions specified above and are noted in a separate section on the test report.

(iii) If the UUT is intended for operation on AC line-voltage input in the United States, it shall be tested at 115 V at 60 Hz. If the UUT is intended for operation on AC line-voltage input but cannot be operated at 115 V at 60 Hz, it shall not be tested. The input voltage shall be within ±1 percent of the above specified voltage.

(iv) The input voltage source must be capable of delivering at least 10 times the nameplate input power of the UUT as is specified in IEEE 1515-2000 (Referenced for guidance only, see §430.4). Regardless of the AC source type, the THD of the supply voltage when supplying the UUT in the specified mode must not exceed 2%, up to and including the 13th harmonic (as specified in IEC 62301). The peak value of the test voltage must be within 1.34 and 1.49 times its RMS value (as specified in IEC 62301 (incorporated by reference; see §430.3)).

(v) Select all leads used in the test set-up as specified in Table B.2— "Commonly used values for wire gages and related voltage drops" in IEEE 1515-2000.

(b) Multiple-Voltage External Power Supply. * * *

(i) Verifying Accuracy and Precision of Measuring Equipment

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

* * * * *

4. *Test Measurement:*

(a) Single-Voltage External Power Supply.

(i) Standby Mode and Active-Mode Measurement.

(A) Any built-in switch in the UUT controlling power flow to the AC input must be in the "on" position for this measurement, and note the existence of such a switch in the final test report. 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; however, the actual test setup may vary pursuant to the requirements of this paragraph.

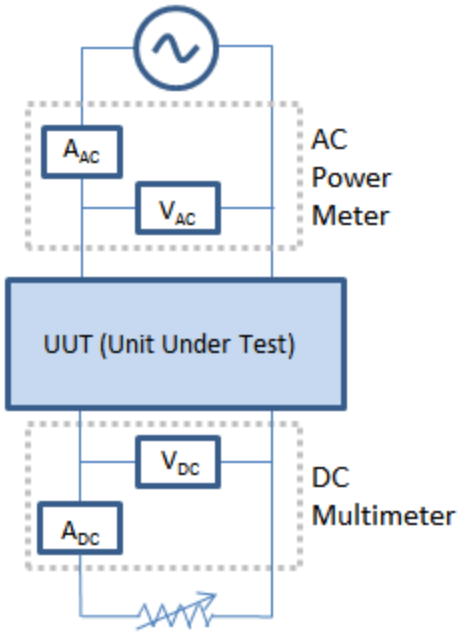

Figure 1. Example Connection Diagram for EPS Efficiency Measurements

(B) External power supplies must be tested in their final, completed configuration in order to represent their measured efficiency on product labels or specification sheets. Although the same procedure may be used to test the efficiency of a bare circuit board power supply prior to its incorporation into a finished housing and the attachment of its DC output cord, the efficiency of the bare circuit board power supply may not be used to characterize the efficiency of the final product (once enclosed in a case and fitted with a DC output cord). For example, a power supply manufacturer or component manufacturer may wish to assess the efficiency of a design that it intends to provide to an OEM for incorporation into a finished external power supply, but these results may not be used to represent the efficiency of the finished external power supply.

(C) All single voltage external AC-DC power supplies have a nameplate output current. This is the value used to determine the four active-mode load conditions and the no load condition required by this test procedure. The UUT shall be tested at the following load conditions:

Table 1—Loading Conditions for a Single-Voltage Unit Under Test

Percentage of Nameplate Output Current	
Load Condition 1	100 % of Nameplate Output Current ± 2%
Load Condition 2	75% of Nameplate Output Current ± 2%
Load Condition 3	50% of Nameplate Output Current ± 2%
Load Condition 4	25% of Nameplate Output Current ± 2%
Load Condition 5	0%

The 2% allowance is of nameplate output current, not of the calculated current value. For example, a UUT at Load Condition 3 may be tested in a range from 48% to 52% of rated output current. Additional load conditions may be selected at the technician's discretion, as described in IEEE 1515-2000 (Referenced for guidance only, see §430.4), but are not required by this test procedure. For Loading Condition 5, place the UUT in no-load mode, disconnect any additional signal connections to the UUT, and measure input power.

1. Where the external power supply lists both an instantaneous and continuous output current, test the external power supply at the continuous condition only.
2. If an external power supply cannot sustain output at one or more of loading conditions 1 – 4 as specified in Table 1, test the external power supply only at the loading conditions for which it can sustain output.

In these cases, the average active mode efficiency is the average of the loading conditions for which it can sustain the output.

(D) Test switch-selectable single-voltage external power supplies twice—once at the highest nameplate output voltage and once at the lowest.

(E) Test adaptive external power supplies twice – once at the highest achievable output voltage and once at the lowest.

(F) 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.

(G) As noted in IEC 62301 (incorporated by reference; see §430.3), instantaneous measurements are appropriate when power readings are stable in a particular load condition. Operate the UUT at 100% of nameplate current output for at least 30 minutes immediately prior to conducting efficiency measurements. After this warm-up period, 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 is considered stable and the measurements should be recorded at

the end of the 5-minute period. Measure subsequent load conditions under the same 5-minute stability parameters. Note that only one warm-up period of 30 minutes is required for each UUT at the beginning of the test procedure. If the AC input power is not stable over a 5-minute period, follow the guidelines established by IEC 62301 for measuring average power or accumulated energy over time for both AC input and DC output. Conduct efficiency measurements 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.

(H) Calculate efficiency by dividing the UUT's measured DC output power at a given load condition by the true AC input power measured at that load condition. Calculate average efficiency as the arithmetic mean of the efficiency values calculated at Test Conditions 1, 2, 3, and 4 in Table 1, and record this value. Average efficiency for the UUT 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.

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

(ii) Off-Mode Measurement—If the external power supply UUT incorporates manual on-off switches, place the UUT in off-mode, and measure and record its power consumption at "Load Condition 5" in Table 1. The measurement of the off-mode energy consumption must conform to the requirements specified in paragraph 4(a)(i), except that all manual on-off switches must be placed in the "off" position for the off-mode measurement. 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.

*** * * * ***

7. Section 430.32 is amended by revising paragraph (w)(1)(iii) to read as follows:

§ 430.32 Energy and water conservation standards and their compliance dates.

(w) * * *

(1)* * *

(iii) Except as provided in paragraphs (w)(5), (w)(6), and (w)(7) of this section, all external power supplies manufactured on or after February 10, 2016, shall meet the following standards:

	Class A EPS	**Non-Class A EPS**
Direct Operation EPS	Level VI: 10 CFR 430.32(w)(1)(ii)	Level VI: 10 CFR 430.32(w)(1)(ii).
Indirect Operation EPS	Level IV: 10 CFR 430.32(w)(1)(i)	No Standards.

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