

TABLE II.1—SUMMARY OF CHANGES IN THE AMENDED TEST PROCEDURE

Current DOE test procedure	December 2019 NOPR	November 2021 SNO PR	Amended test procedure	Attribution
Defines EPS as a power supply circuit used to convert household electric current into DC current or lower-voltage AC current to operate a consumer product.	Proposed to define a “commercial and industrial power supply” that would apply specific characteristics to distinguish these power supplies from EPSs; and amend the definition of “external power supply” to expressly exclude any “commercial and industrial power supply.”.	Proposed to maintain the current definition of an EPS and instead use the proposed definition of a “commercial and industrial power supply” to exclude such products from the scope of appendix Z.	Defines a “commercial and industrial power supply” that will apply specific characteristics to distinguish these power supplies from EPSs; amends the definition of “external power supply” to expressly exclude any “commercial and industrial power supply.” 10 CFR 430.2.	Better define scope of test procedure in response to stakeholder inquiries.
Requires adaptive EPSs that meet the IEC 62680–1–2 specification to test at 3 amps for the 100% loading condition at the lowest operating output voltage of 5 volts.	Proposed to define an adaptive EPS that meets the voltage/current specifications of IEC 62680–1–2 as a “USB–PD EPS” and require that it be tested at 2 amps for the 100% loading condition at the lowest operating output voltage of 5 volts. Also proposed to define a USB Type-C connector.	Proposed to define an adaptive EPS that meets the voltage/current specifications of IEC 62680–1–2 as a “USB–PD EPS” and require that it be tested at 2 amps for the 100% loading condition at the lowest operating output voltage, which can be as low as 3.3 volts. Also proposed to define a USB Type-C connector.	Defines an adaptive EPS that meets the voltage/current specifications of IEC 62680–1–2 as a “USB–PD EPS” and requires that it be tested at 2 amps for the 100% loading condition at the lowest operating output voltage, which can be as low as 3.3 volts. Also defines a USB Type-C connector. 10 CFR part 430, subpart B, appendix Z, sec. 3, 6(a)(1)(iii)B, 6(b)(1)(iii)B.	Address waivers for adaptive EPSs and update to industry test standard.
Adaptive EPS instructions are currently a subsection within the single-voltage EPS testing instructions in section 4(a)(i)(E) of appendix Z.	Proposed to move instructions for non-adaptive EPSs to section 5 of appendix Z and add a new section 6 for testing all adaptive EPSs, with two sub-sections for single-voltage and multiple-voltage adaptive EPSs.	Not supplemented	Moves instructions for non-adaptive EPSs to section 5 of appendix Z and adds a new section 6 for testing all adaptive EPSs, with two sub-sections for single-voltage and multiple-voltage adaptive EPSs. 10 CFR part 430, subpart B, appendix Z, sec. 6.	Address waivers for adaptive EPSs, address stakeholder inquiries, and improve the readability of the test procedure.
Does not explicitly provide instructions for testing single-voltage EPSs with multiple-output busses.	Proposed to provide explicit instructions for testing single-voltage EPSs with multiple-output busses.	Not supplemented	Provides explicit instructions for testing single-voltage EPSs with multiple-output busses. 10 CFR part 430, subpart B, appendix Z, sec. 5(a)(1)(iv).	Address innovation in the marketplace and stakeholder inquiries.
Does not provide instructions for allowing functions unrelated to the external power supply circuit to be disconnected during testing.	Proposed to provide explicit instructions for disconnecting non-EPS functions during testing.	Not supplemented	Provides explicit instructions for disconnecting non-EPS functions during testing. 10 CFR part 430, subpart B, appendix Z, sec. 4(i).	Improve reproducibility of test results.
Does not explicitly exclude devices for which the primary load of the converted voltage within the device is not delivered to a separate end-use product.	Not discussed	Proposed to exclude devices for which the primary load of the converted voltage within the device is not delivered to a separate end-use product.	Excludes devices for which the primary load of the converted voltage within the device is not delivered to a separate end-use product. 10 CFR part 430, subpart B, appendix Z, sec. 2.	Address stakeholder inquiries.

TABLE II.1—SUMMARY OF CHANGES IN THE AMENDED TEST PROCEDURE—Continued

Current DOE test procedure	December 2019 NOPR	November 2021 SNOBR	Amended test procedure	Attribution
Does not explicitly provide instructions for testing EPSs that are not supplied with output cords.	Not discussed	Proposed to require EPSs that are not supplied with an output cord to test with an output cord recommended for use by the manufacturer.	Requires EPSs that are not supplied with an output cord to test with an output cord. 10 CFR part 430, subpart B, appendix Z, sec. 4(g).	Improve representativeness of the test procedure.
Defines “nameplate output power” as the value on the product’s nameplate or manufacturer’s documentation.	Proposed to redefine “nameplate output power” to provide an exception for USB–PD EPSs, which are tested at 10W. The exception permits adaptive EPSs meeting this specification to be tested using the same 10W level.	Proposed to further amend the definition of “nameplate output power” to specify that USB–PD EPSs must be tested at the lowest nameplate output voltage, which can be as low as 3.3 volts for PPSs, rather than at 5 volts.	Amends the definition of “nameplate output power” to specify that USB–PD EPSs must be tested at the lowest nameplate output voltage, which can be as low as 3.3 volts for PPSs, rather than at 5 volts. 10 CFR part 430, subpart B, appendix Z, sec. 3.	Address adaptive EPS waivers and stakeholder comments.
Contains redundant definitions that had been carried over from previous revisions of the test procedure but are no longer referenced.	Proposed to remove redundant definitions that are no longer referenced.	Not supplemented	Removes redundant definitions that are no longer referenced. 10 CFR part 430, subpart B, secs. 2e., h., l., m., y.	Improve ease of reference and readability.
Numerous EPS related definitions are spread across multiple locations in the CFR.	Proposed to consolidate all EPS related definitions in appendix Z.	Proposed to retain all EPS related definitions at 10 CFR 430.2 except “adaptive external power supply”.	Retains all EPS related definitions at 10 CFR 430.2 except “adaptive external power supply”. 10 CFR part 430, subpart B, appendix Z, sec. 3.	Improve readability and applicability of the test procedure.
Does not include the definition of Class A EPSs in appendix Z.	Proposed to include the Class A EPS definition in appendix Z.	Proposed to retain the Class A EPS definition in 10 CFR 430.2 only and not include it in appendix Z.	Retains the Class A EPS definition in 10 CFR 430.2 only and not include it in appendix Z. 10 CFR 430.2.	Improve readability and applicability of the test procedure.
Defines “average active-mode efficiency” as the average of the loading conditions for which a unit can sustain output current.	Proposed to redefine “average active-mode efficiency” to explicitly reference the average of the active mode efficiencies measured at the loading conditions for which a unit can sustain output current.	Not supplemented	Redefines “average active-mode efficiency” to explicitly reference the average of the active mode efficiencies measured at the loading conditions for which a unit can sustain output current. 10 CFR part 430, subpart B, appendix Z, sec. 3.	Improve readability of the test procedure.
Contains repetitive instructions across multiple sections on uncertainty and resolution requirements for power measurements, room air speed and temperature conditions, input voltage source, product configuration, and wire gauge requirements for leads.	Proposed to consolidate these requirements that are applicable to all EPSs into a single section within appendix Z.	Not supplemented	Consolidates these requirements that are applicable to all EPSs into a single section within appendix Z. 10 CFR part 430, subpart B, appendix Z, sec. 4.	Improve readability of the test procedure.
Incorporates by reference IEC 62301 Ed. 2.0 in its entirety.	Proposed to specify sections of IEC 62301, applicable to the test procedure and to update the shorthand notation.	Not supplemented	Creates a new section 1 in appendix Z to note the particular sections from IEC 62301 that are applicable to appendix Z. 10 CFR part 430, subpart B, appendix Z, sec. 1.	Improve readability.

表II.1——修正后的测试程序中的变化总结

当前 DOE 测试程序	2019 年 12 月 NOPR	2021 年 11 月	修改后的测试程序	归因
EPS定义为用于将家用电流转换为直流电流或低压交流电流以运行消费产品的电源电路。	建议定义“商业和工业电源”，应用特定特性来区分这些电源与EPS；并修改“外部电源”的定义，明确排除任何“商业和工业电源”供应。”。	建议保留 EPS 的当前定义，并改为使用“商业和工业电源”的拟议定义将此类产品排除在附录范围之外 Z。	定义“商业和工业电源”，将应用特定特性来区分这些电源与EPS；修改“外部电源”的定义，明确排除任何“商业和工业电源”。 10 CFR 430.2。	更好地定义测试程序的范围以响应利益相关者查询。
需要符合 IEC 62680-1-2 规范的自适应 EPS，以在 5 伏的最低工作输出电压下以 3 安培测试 100% 负载条件。	建议将满足 IEC 62680-1-2 电压/电流规范的自适应 EPS 定义为“USB-PD EPS”并要求在 5 伏的最低工作输出电压下以 2 安培的 100% 负载条件对其进行测试。还提议定义一个 USB Type-C 连接器。	建议将满足 IEC 62680-1-2 电压/电流规范的自适应 EPS 定义为“USB-PD EPS”并要求它在 100% 负载条件下以 2 安培的电流在最低工作输出电压下进行测试，该电压可低至 3.3 伏。还提议定义一个 USB Type-C 连接器。	将符合 IEC 62680-1-2 电压/电流规范的自适应 EPS 定义为“USB-PD EPS”，并且要求在最低工作输出电压（可低至 3.3 伏）下以 2 安培测试 100% 负载条件。还定义了一个 USB Type-C 连接器。10 CFR 第 430 部分，B 小节，附录 Z，第 3 部分。 6(a)(1)(iii)B, 6(b)(1)(iii)B。	解决EPS的豁免问题和更新行业测试标准。
附录 Z 第 4(a)(i)(E)节中单电压 EPS 测试说明中的一个小节。	建议将非自适应 EPS 的说明移至附录 Z 的第 5 节，并添加一个新的第 6 节以测试所有自适应 EPS，其中包括单电压和多电压自适应 EPS 的两个子部分。	未补充.....	非自适应 EPS 的说明移至附录 Z 的第 5 节，并添加新的第 6 节以测试所有自适应 EPS，其中包括单电压和多电压自适应 EPS 的两个子部分。10 CFR part 430, subpart B, 附录 Z, 第 6 部分。	EPS 的豁免，解决利益相关者的询问，并提高测试过程的可读性。
未明确提供测试具有多输出总线的单电压 EPS 的说明。	建议为测试具有多输出总线的单电压 EPS 提供明确的说明。	未补充.....	多输出总线的单电压 EPS 的明确说明。10 CFR 第 430 部分，B 小节，附录 Z，5(a)(1)(iv) 部分。	解决市场创新和利益相关者的询问。
不提供允许在测试期间断开与外部电源电路无关的功能的说明。	建议为在测试期间断开非 EPS 功能提供明确的说明。	未补充.....	断开非 EPS 功能的明确说明。10 CFR 第 430 部分，B 小节，附录 Z，4(i) 部分。	提高测试结果的重现性。
不明确排除设备内转换电压的主要负载未提供给单独的最终用途产品的设备。	不讨论.....	建议排除设备内转换电压的主要负载未提供给单独的最终用途产品的设备。	不包括设备内转换电压的主要负载未提供给单独的最终用途产品的设备。10 CFR part 430, subpart B, 附录 Z, 第 2 部分。	处理利益相关者的询问。

表II. 1——修正后的测试程序中的变化总结——续

当前 DOE 测试程序- 持续时间	2019 年 12 月 NOPR	2021 年 11 月	修改后的测试程序	归因
未明确提供测试未提供输出线的 EPS 的说明。	不讨论.....	建议要求未提供输出线的 EPS 使用制造商推荐的输出线进行测试。	要求不提供输出线的 EPS 使用输出线进行测试。 10 CFR part 430, subpart B,附录Z, 4(g)部分。	过程的代表性。
将“铭牌输出功率”定义为产品铭牌或制造商文档上的值。	建议重新定义“铭牌输出功率”，为 USB-PD EPS 提供一个例外，它在 10W 下进行测试。例外情况允许满足此规范的自适应 EPS 使用相同的 10W 级别进行测试。	建议进一步修改“铭牌输出功率”的定义，以指定 USB-PD EPS 必须在最低铭牌输出电压下进行测试，对于 PPS，该电压可低至 3.3 伏，而不是 5 伏。伏特。	修改了“铭牌输出功率”的定义，以指定 USB-PD EPS 必须在最低铭牌输出电压下进行测试，对于 PPS，该电压可以低至 3.3 伏，而不是 5 伏。10 CFR 第 430 部分，B 小节，附录 Z，第3部分。	解决自适应 EPS 豁免和利益相关者意见。
从测试过程的先前版本中继承但不再引用的冗余定义。	建议删除不再引用的冗余定义。	未补充.....	不再引用的冗余定义。10 CFR 第 430 部分，B 小节，2e., h., l., m.,y 部分	提高参考性和可读性。
许多与 EPS 相关的定义分布在 CFR。	建议在附录中合并所有与 EPS 相关的定义 Z。	建议保留 10 CFR 430.2 中的所有 EPS 相关定义，“自适应外部电源”除外。	在 10 CFR 中保留所有与 EPS 相关的定义 430.2 除了“自适应外部电源”。10 CFR 第 430 部分，B 小节，附录 Z，第 3 部分	提高测试程序的可读性和适用性。
不包括附录 Z 中 A 类 EPS 的定义。	建议在附录 Z 中包含 A 类 EPS 定义。	建议仅保留 10 CFR 430.2 中的 A 类 EPS 定义，而不将其包含在附录 Z 中。	保留 10 CFR 中的 A 类 EPS 定义仅适用于 430.2，不包括在附录 Z. 10 CFR 430.2 中。	提高测试程序的可读性和适用性。
将“平均有源模式效率”定义为单元可以维持输出电流的负载条件的平均值。	建议重新定义“平均主动模式效率”，以明确参考在单元可以维持输出的负载条件下测量的主动模式效率的平均值。	未补充	重新定义“平均主动模式效率”以明确参考在单元可以维持输出电流的负载条件下测量的主动模式效率的平均值。10 CFR 第 430 部分，B 小节，附录 Z，第3部分。	提高测试程序的可读性。
包含跨多个部分的重复说明，内容涉及功率测量的不确定性和分辨率要求、室内空气速度和温度条件、输入电压源、产品配置和引线的线规要求。	建议将适用于所有 EPS 的这些要求合并到附录中的一个部分 Z。	未补充	适用于所有 EPS 的要求合并到附录 Z 中的单个部分中。10 CFR 第 430 部分，B 子部分，附录 Z，第 2 节，第 4 部分。	提高测试程序的可读性。
通过引用纳入 IEC 62301 Ed.2.0 整体。	建议指定适用于测试程序的 IEC 62301 部分并更新简写符号。	未补充	在附录 Z 中创建一个新的第 1 部分，以记录 IEC 62301 中适用于附录 Z 的特定部分。10 CFR 第 430 部分，B 子部分，附录 Z，第 2 节，第 1 部分。	提高可读性。