

Topic	Subtopic	Comment	EPA Response
Digital Front Ends (DFEs)		<p>One stakeholder commented that lowering the requirement for Category B Type 1 DFEs to 624 kWh/yr (equivalent to 71 watts in Idle State) would mean that OEMs will consider the use of lower performance DFEs that will not keep up with the engine, which will cause the total system energy usage to increase. The stakeholder suggested that EPA add a third category for high performance systems based on dual server processors.</p>	<p>EPA has defined high performance DFE systems based on dual server processors as a "Professional Digital Front End" in the specification. Due to an inability to differentiate based on limited data within the niche professional DFE market, professional DFEs will not be subject to TEC_{DFE} requirements in Version 3.0. Their energy consumption will still be reported in the same way energy is reported for all other DFEs in the specification.</p>
Duplexing		<p>One stakeholder opposed the proposal to require duplexing at lower speeds (Color at 16-20 images per minute (ipm) and Monochrome at 11-25 ipm) because:</p> <ul style="list-style-type: none"> - It does not harmonize with Blue Angel; - Half of affected products do not meet the proposed requirements; - Moreover, for these products, customers do not need Automatic Duplexing. <p>Another stakeholder commented that low-end, low-speed TEC products have low print volumes, which limit the amount of energy to be saved with duplexing.</p> <p>Both stakeholders asked for clarification on how EPA determined the proposed thresholds for the duplexing requirement, including analysis/methodology.</p>	<p>Following further review, EPA determined that while the unit savings of embedded energy due to a more stringent duplexing requirements are significant, only five color and 15 monochrome models would be affected, reducing the total savings.</p> <p>Furthermore, after reviewing product literature for eight of these models, EPA found similar duplex models in four of the cases. For the remaining four, there were no similar duplex models available or the upgrade would incur significant cost.</p> <p>To achieve greater savings at less cost, EPA is proposing to revise the duplexing requirement in line with Blue Angel, by requiring duplexing by default over the current speed bins. EPA is also proposing to require that imaging equipment at intermediate speed bins (20–34 ipm color; 25–36 ipm monochrome) provide duplexing as part of the base product, rather than an optional accessory.</p>
External Power Supply (EPS)		<p>Two stakeholders argued that harmonizing with U.S. Federal energy conservation standards for EPSs (Level VI on the International Efficiency Marking Protocol) was inappropriate because:</p> <ul style="list-style-type: none"> - The scope differs. Federal standards cover consumer products only, while ENERGY STAR covers commercial, industrial, and consumer products; and - ENERGY STAR is recognized internationally, but the U.S. is the only country to adopt the strict Level VI requirements. 	<p>Further research indicates that this issue appears to mainly impact scanners and small-format printers, which constitute the majority of ENERGY STAR models with EPSs (672 out of 683 certified models). EPA evaluated the concern regarding commercial products, but does not see a particular reason that commercial applications would have difficulty meeting these requirements as Federal Communication Commission (FCC) electromagnetic emission limits are lower for commercial applications. Furthermore, when DOE evaluated the Level VI standard in 2014, it did not find differential impacts on commercial users.</p> <p>DOE found that per-unit costs of the Level VI standard across a range of applications would be between \$0.47–0.89 more expensive than Level V at the 18–60 W power levels representative of the majority of Imaging Equipment EPSs, but would generate \$1.35–1.61 in savings. International users should see similar benefits. Therefore, EPA is continuing to propose this requirement.</p>
Maximum Delay Times to Sleep Adjustable by the User		<p>Two stakeholders commented against the proposed Maximum Delay Times to Sleep Adjustable by the User requirement of either 60 minutes or 120 minutes, depending on product speed, and argued for keeping the 4 hour requirement in V2.0 as shortening could impact business operations. Harmonization with Blue Angel and the EU was not necessary as:</p> <ul style="list-style-type: none"> - Unlike ENERGY STAR, Blue Angel does not cover scanners; - EU's Energy-related Products (ErP) Lot 6 Ecodesign requirements for standby power do not specify Maximum Delay Times to Sleep or Maximum Delay Times to Sleep Adjustable by the User. <p>According to the stakeholders, the new requirement would inconvenience users and impact businesses; furthermore, the stakeholders argued the adjustable range should not be limited significantly.</p>	<p>EPA continues to propose shortening both Default and Maximum Delay Times to Sleep Adjustable by the User. While EPA understands that the Blue Angel requirements apply only to TEC products and ErP regulation does not specify default delay time, there is significant energy savings from faster transitions between Ready State and Sleep Mode for OM products (e.g., 9 W for standard format scanners, 3 W for standard format ink jet printers, 4 W for standard format ink jet MFDs, and 13 W for mailing machines).</p> <p>In response to the concern that shorter delay times could potentially impact software applications that depend on long delay times, EPA invites manufacturers to provide case studies of any past transitions and further notes that service technicians may override these settings if necessary.</p>

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Off Mode Requirement		<p>Several stakeholders opposed the Off Mode Power Requirement of 0.3 Watt and requested that EPA increase the limit to 0.4 watts, harmonizing with Blue Angel. The stakeholders commented that the EU has not finalized the new criteria of 0.3 watts and even when finalized, the effective date would be two years after publication.</p> <p>One stakeholder commented against harmonizing the Sleep Mode Power Requirement with other programs, because ENERGY STAR covers more products than Blue Angel (i.e. large format printers) and the ErP directive (EC) No 1275/2008 (which covers electronic household and office equipment only).</p>	<p>According to data on the ENERGY STAR Certified Product List, 1077 of 1168 ENERGY STAR OM products with data would meet a 0.3 W requirement, including 123 large format printers and MFDs. EPA therefore continues to propose this requirement.</p>
Paper Size	Taiwan Market	<p>One stakeholder urged EPA to remove the separate paper requirement for Taiwan, as that would create another test with a paper type which is uncommon in the US.</p> <p>Two stakeholders commented that, in addition to the now-specified A4/70g/m2 for the paper size and weight for the Taiwan market, ENERGY STAR should also include letter-size/75g/m2 paper, which is used in Taiwan government offices.</p>	<p>EPA is proposing to allow models intended for the Taiwanese market to be tested with either A4/70 g/m2 or 8.5"×11"/75 g/m2 paper. This will allow manufacturers to use the same conditions as in North America for models sold in both Taiwan and North America, while allowing others with models specific to Taiwan to test them with more typical paper.</p>
Professional Imaging Products	Definition	<p>Two stakeholders asked EPA to revise the definition of Professional Imaging Products to differentiate clearly from office equipment, recommending criteria for the weight of the base engine at greater than either 180 or 200 kg.</p>	<p>EPA shares stakeholders' concerns that there may not be clear differentiation between office and Professional Imaging Products, and therefore proposes to adopt the additional weight requirement at 180 kg.</p> <p>EPA also welcomes further suggestions for ways to differentiate these products, including whether to remove some of the criteria that are often shared with office equipment.</p>
Professional Imaging Products	Test Method Structure	<p>One stakeholder requested that the Professional Imaging Products test method be placed in one discrete section of the specification as "this will better allow accredited labs to limit the scope of their accreditation to exclude Professional Product testing if such products are not tested in the lab."</p>	<p>EPA has drafted a separate test method for Professional Imaging Products to help ease laboratory accreditation.</p>
Professional Imaging Products	Excluded Products	<p>Two stakeholders requested that EPA clarify whether Professional Imaging Products are within the scope of ENERGY STAR V3.0. If not, the stakeholder also requested that EPA clarify how Professional Imaging Products will be included in V3.1.</p>	<p>EPA confirms that Professional Imaging Products remain in scope of the Version 3.0 specification. They will be tested as TEC products and compared to the other TEC product types when setting requirements, as they were in V2.0. Then, under V3.1, new Professional Imaging Products will be tested with the new Professional Imaging Equipment test method and meet requirements based on that test method.</p>
Professional Imaging Products	Product Speed	<p>Two stakeholders asked to change the Professional Imaging Product definition to clarify that the monochrome product speed requirement shall not apply to color products, as follows.</p> <ul style="list-style-type: none"> • Change "Monochrome product speed equal to or greater than 86 ipm" to "Monochrome product: Monochrome print speed equal to or greater than 86 ipm"; and, • Change "Color product speed equal to or greater than 50 ipm (if product is color capable)" to "Color product: Color print speed equal to or greater than 50 ipm". 	<p>EPA has clarified the monochrome speed criterion to only apply to monochrome products. The color speed requirement will apply to color products.</p>
Professional Imaging Products	Test Method	<p>Several stakeholders asked that the Test Method of Professional Imaging Products be customized for ENERGY STAR when necessary. ISO 21632 covers a wide range of products beyond Professional Imaging Products, so test condition provisions may be inappropriate for ENERGY STAR.</p>	<p>EPA has incorporated the proposed departures from ISO 21632 to make the test method more comparable to ENERGY STAR into the separate Draft 1 Professional Imaging Product test method. EPA has attempted to include as much of ISO 21632 as appropriate to maintain consistency between the test methods.</p>

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Professional Imaging Products	Testing in Accordance with ISO 21632	One stakeholder asked that the proposed test method for Professional Imaging Products be as specified in Section 4.5.4 of ISO 21632. In particular, the test method should include Job 1 energy and the average of Jobs 2 and 3, along with Off Mode and Sleep Mode. The stakeholder also commented that a streamlined test procedure is necessary and that ENERGY STAR keep the main provisions of ISO 21632 (e.g., skip test print/sleep/5% consistency check between jobs).	To simplify the test, EPA proposes to reference Section 4.5.4 of ISO 21632, which in turns references specific preceding sections; also, certain previously-referenced sections, including 4.4 Measuring Conditions, no longer need to be referenced as these requirements have been brought over from the non-Professional Imaging Product ENERGY STAR test method.
Professional Imaging Products: General Configuration	As-Shipped Condition	One stakeholder commented that under ISO 21632, Professional Imaging Products can be tested under one Best Quality/Best Picture (BQ/BP) condition, which makes two separate tests (one BQ and one BP) unnecessary. Following this, the stakeholder commented that testing with different speeds for BQ and BP combinations would be unnecessary.	To simplify the test, EPA has proposed this departure from ISO 21632. This will also make the test method more comparable to the existing ENERGY STAR test.
Professional Imaging Products: General Configuration	Color	Two stakeholders commented that Professional Imaging Products be tested with the default (As-shipped) setting. One stakeholder further specified that for color products, the default will be four colors, which may be fewer than what is available in the Best Quality (BQ) setting required to be tested under ISO 21632.	To simplify the test, EPA has proposed this departure from ISO 21632. This will also make the test method more comparable to the existing ENERGY STAR test.
Professional Imaging Products: General Configuration	Network Connections	One stakeholder agreed with EPA's proposal to require the same network configuration for Professional Imaging Products as for other products.	EPA thanks the stakeholder for the comment and will not set a separate provision for the network configuration of Professional Imaging Products.
Professional Imaging Products: General Configuration	Product Speed for Calculations and Reporting	One stakeholder opposed EPA's proposal of measuring and calculating product speed for Professional Imaging Products based on productivity and commented that product speed should be declared as is the case under Version 2.0.	To simplify the test, EPA has proposed this departure from ISO 21632. This will also make the test method more comparable to the existing ENERGY STAR test.
Professional Imaging Products: General Configuration	Service/Maintenance Modes	One stakeholder commented that Professional Imaging Products be tested with default settings and without disabling the automatic adjustment function of color or registration, if it is incorporated in the default setting. The stakeholder commented Professional Imaging Products require daily maintenance, though this includes human involvement and should not be counted in the energy consumption amount.	EPA proposes to keep measuring the energy consumption of any automatic adjustments that happen by default, but has added clarification that any manual processes shall be excluded to ensure repeatability of the test method.
Professional Imaging Products: General Initialization	Pre-conditioning	One stakeholder agreed with EPA's proposal of applying 2 hours or more for pre-conditioning for Professional Imaging Products.	EPA has incorporated the proposed departure from ISO 21632 to make the test method more comparable to the ENERGY STAR test method for non-Professional imaging Products.
Professional Imaging Products: General Test Setup	Ambient Temperature and Relative Humidity	One stakeholder agreed with EPA's proposal to keep with current ENERGY STAR requirements for ambient temperature and relative humidity conditions when testing Professional Imaging Products. The temperature and humidity conditions in ISO 21632 are more stringent than current ENERGY STAR requirements to accommodate larger, three-phase equipment. However, three-phase equipment is not in the scope of ENERGY STAR, therefore the current requirements should be sufficient. The stakeholder also agreed with EPA's proposal of leaving identifying the energy consumption by air-conditioning equipment as unspecified, though ISO 21632 factors it in.	EPA has incorporated the proposed departure from ISO 21632 to make the test method more comparable to the ENERGY STAR test method for non-Professional imaging Products.
Professional Imaging Products: General Test Setup	Ac Input Power	One stakeholder agreed with EPA's proposal to continue excluding three-phase products, such as three-phase Professional Imaging Products.	EPA thanks the stakeholder for the comment and continues to propose to exclude all three-phase products.

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Professional Imaging Products: General Test Setup	Measurement Uncertainty	One stakeholder commented that the change in the measurement uncertainty from 2% to 3% was unnecessary, since the large equipment with three-phase power connection is out of scope for Professional Imaging Products.	EPA has incorporated the proposed departure from ISO 21632 to make the test method more comparable to the ENERGY STAR test method for non-Professional imaging Products. However, EPA also relaxed the uncertainty between 0.5 W and 1 W to equal 0.02 W, for all Imaging Equipment (including Professional). This is consistent with IEC 62301 Ed. 2.
Professional Imaging Products: General Test Setup	Paper Specifications	One stakeholder asked EPA to add the standard test paper of Professional Imaging Products to Table 4: Paper Size and Weight Requirements, which is 127.9g/m ² , 85lb, or equivalent.	To simplify the test and ensure consistency across tests of different models, EPA has proposed to add this information to the Professional Imaging Products Test Method.
Professional Imaging Products: General Test Setup	Power Meter: Minimum Frequency Response	One stakeholder agreed EPA's proposal of 3.0 kHz for the sampling rate of power meters when testing Professional Imaging Products instead of 5 kHz (ISO 21632's specification). EPA's proposal is more stringent than ISO 21632, and the stakeholder agreed with EPA's reasoning that the difference would not be significant as most power meters would easily surpass 3.0 or 5.0 kHz.	EPA has incorporated the proposed departures from ISO 21632 to make the test method more comparable to ENERGY STAR into the separate Draft 1 Professional Imaging Product test method.
Professional Imaging Products: General Test Setup	Power Meter: Minimum Resolution	One stakeholder agreed with EPA's proposal to keep less stringent minimum meter resolution requirements from Version 2.0 when testing Professional Imaging Products.	EPA has incorporated the proposed departures from ISO 21632 to make the test method more comparable to ENERGY STAR into the separate Draft 1 Professional Imaging Product test method.
Recovery Time	Equation	Two stakeholders proposed a change to the Recovery Time equation (Equation 6). The time subtracted from tActive1 shall be tActive0, not tActive2. The stakeholder suggested the equation to be revised as: $tR = tActive1 - tActive0$	EPA revised the equation for recovery time to refer to t_Active0 rather than t_Active2. The quantity t_Active0 is measured immediately after the TEC model is placed in Ready State, so is a more reliable measure of response time from that State.
Recovery Time	Harmonization	Two stakeholders were concerned with harmonizing with Blue Angel on Recovery requirements because: -The introduction of a new test which would be burdensome, and -The print speed difference between letter and A4 is not considered in setting speed limits, which makes the ENERGY STAR requirement more stringent than Blue Angel. One stakeholder mentioned the industry is aware of the importance of controlling recovery time, but the proposed requirement would not make the customer experience better. The other stakeholder commented that the Recovery Time requirement should not be harmonized with Blue Angel because: - In order to meet those requirements, manufacturers would need to develop new technologies, and - Blue Angel focuses on the European market, where operating conditions are consistent (for example, same input voltage). The stakeholder noted that, "if Recovery Time requirements were adopted as it is proposed in V3.0, this will, depending on region, lead to lower usability and productivity for customers."	EPA reviewed the Blue Angel Recovery Time test (Annex E-M, Section 5), and expects there will not be a need to change the proposed Recovery Time requirements, from Blue Angel, as the differences between the ENERGY STAR and Blue Angel Recovery Time test method are small: - Blue Angel requires that the measurement of time from Ready Mode shall be initiated 2 minutes after the end of another print, thereby ensuring the unit is warmed up. In contrast, ENERGY STAR requires measurement of Active 0 when the unit "has entered Ready" (i.e., "can enter Active State with minimal delay"). - Blue Angel requires tests be conducted in the simplex mode. In contrast, ENERGY STAR testing permits duplex if faster. - Blue Angel requires testing with A4 paper at 230 V. EPA reviewed ENERGY STAR tests conducted at 230 V (presumably with A4 paper, as the two are combined for EU testing), and saw a 1 second median difference in recovery times (Active1 - Active 0) compared to products tested at 115 V. However, EPA welcomes further feedback and data from manufacturers. Regarding other feedback, EPA does not believe this requirement would be burdensome as: - It would not require new testing; and - Seventy-five percent of currently certified unique TEC models (717 of 962) meet the criteria.
Recovery Time	Maximum Requirement	One stakeholder requested clarification as to why the Table 7: Determination of Maximum Recovery time differs from Blue Angel, though EPA has harmonized the Maximum Recovery Time requirement with Blue Angel.	Table 7 in the Draft 1 specification was equivalent to Table 15 in the Blue Angel specification and has been retained in Draft 2.

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Recovery Time	OM Products	<p>Several stakeholders commented that OM products be excluded from the scope of the Recovery Time requirement because:</p> <ul style="list-style-type: none"> -The test method that includes Active Times does not apply to OM products, -Energy savings cannot be achieved with the proposed Recovery Time requirement for OM products, -Blue Angel sets forth a different measurement method, and -The scope of products for ENERGY STAR differs from that of Blue Angel. <p>Furthermore, several stakeholders commented that, if the Recovery Time requirement is applied to OM products, then scanners should not be added to OM products.</p>	EPA confirms that OM products are excluded from the recovery time requirement.
TEC Calculation	Conversion to Yearly Measure	One stakeholder commented against reporting TEC a yearly basis (kWh/year). Historically, many stakeholders measured TEC using kWh/week. To avoid customer confusion and enable historical comparisons, the stakeholder requested EPA to revert the measure to kWh/week.	EPA has reverted back to kWh/wk for level setting purposes, but will continue to show both kWh/wk and kWh/yr on the ENERGY STAR website.
TEC Calculation	Lower Page Volume	One stakeholder opposed the change to the TEC calculation, in which variables EJOB_daily and NJOBS are divided by 4, because users would not be able to compare with past products.	<p>While EPA welcomes additional data on paper consumption (including from outside the U.S.), EPA proposes to keep the revised TEC calculation where the job energy is quartered.</p> <p>In addition, EPA proposes to continue publishing TEC results under the Version 2.0 usage assumptions to enable historical comparisons.</p>
TEC Requirement		Two stakeholders are concerned with the proposed TEC requirements. Using EPA's dataset, one stakeholder found a 21% pass rate across 11 models. One stakeholder is waiting for the updated dataset to analyze and expected a change to the proposed requirements. One stakeholder also wanted clarification of where speed bins were divided and where criteria lines were drawn.	<p>EPA has revised the TEC requirements based on the updated dataset. As before, EPA conducted the analysis as follows:</p> <ul style="list-style-type: none"> • Speed bins roughly follow the visible distribution of models of each product type this was roughly 20 ipm, but not always • Analysis for each product type (e.g., mono printers) was conducted separately, so bins could be slightly different between types, and requirements would be different, but the goal was to achieve an even pass rate across product types and speed bins.
TEC Test Procedures	Measurement	Two stakeholders commented that the measurements of Active Times in the TEC Test Procedures should be in seconds, not in minutes.	EPA proposes to revise the measurement of Active0, Active1, and Active2 times in the TEC test methods in Table 8 and Table 9, above, to be reported in seconds, as the time is typically shorter than 1 minute and is furthermore displayed in seconds in the ENERGY STAR public dataset.
TEC Requirement	A3 Adder	Two stakeholders asked to maintain the current A3 adder, since A3 models require more power than A4 "due to device configuration".	After updating the dataset, EPA did see a difference in pass rates between A3 and non-A3 models, and proposes a 0.05 kWh/week adder allowance to account for the additional energy consumption.

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TEC Requirement	Data Set	<p>Two stakeholders commented that the TEC requirement be reconsidered using a dataset not filtered based on the registration year; while another expressed support for including Version 2.0 (V2.0) models and non-certified products into EPA's dataset and would provide supplemental industry data to strengthen EPA's analysis.</p> <p>The stakeholder noted that the current dataset excludes models that have the same print speed, TEC, and other data of existing models, and argued that it is possible for different models to have the same TEC value (potentially due to rounding) and each models should be counted separately. However, another stakeholder commented that there are duplicates in the dataset, and these models should be removed.</p>	<p>EPA revised the dataset to include the latest ENERGY STAR certified model data, across all years. EPA then removed models that are:</p> <ol style="list-style-type: none"> 1. OM, or TEC copiers and fax machines 2. Members of the same product family based on Product Type, Speed, Color, Size, and TEC test procedure measurements (i.e., not just the final TEC result) 3. Sold only outside the United States 4. With document width reported less than standard (210 mm) 5. With no color information <p>EPA continued to remove multiple entries for product family models as some Brand Owners qualify product family models separately while others do so under one parent model, so removing the multiples ensures fairness between brands.</p> <p>EPA also coordinated with 13 manufacturers, who reviewed the dataset and provided some corrections:</p> <ol style="list-style-type: none"> 1. Removed models no longer being sold; 2. Added several models that are not ENERGY STAR certified. As most of these models did not have energy test data, EPA assumed that these models do not meet the current ENERGY STAR requirements and would not meet the more stringent proposed V3.0 ENERGY STAR requirements.
Wifi Adder for TEC Products		<p>One stakeholder commented that, since Wi-Fi uses more power than USB, ENERGY STAR should include a Wi-Fi adder for TEC products.</p>	<p>Because the current ENERGY STAR test method prioritizes USB over Wi-Fi, the current dataset does not fully reflect the performance of Wi-Fi models. Based on an analysis of 20 TEC models with Wi-Fi, EPA observed that models with Wi-Fi and USB (tested with Wi-Fi disconnected under the current test method) were able to meet the proposed requirements at a higher rate than models with Wi-Fi and no USB (tested with Wi-Fi connected), indicating that the Wi-Fi interface does require more power on average.</p> <p>A 0.1 kWh/wk allowance (equivalent to 0.6 W continuous) provided to the Wi-Fi-only models resulted in equivalent pass rates and is within the range of Wi-Fi allowances in other ENERGY STAR specifications.</p>