

ENERGY STAR Program Requirements for Imaging Equipment (Version 1.0) Frequently Asked Questions (FAQs)

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This document was developed with the intention of clarifying aspects of the Imaging Equipment (Version 1.0) Program Requirements, in particular the Functional Adder (FA) portion of the specification, in response to stakeholder feedback. For greater detail regarding the specification, please visit www.energystar.gov/productdevelopment and follow the links for Product Development Archives and Imaging Equipment. This Web site includes copies of all final documents related to this specification, data that supports decisions made regarding this specification, and logs all comments received on the document over the course of its development.

Functional Adder (FA) FAQs

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Partner Commitment and Other FAQs

- *What are the Web-Based Tools for Partners and when will they be available?*
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- *What date should partners reference when considering the qualification of accompanying EPS, telephony, and digital front-end (DFE)/computer accessories?*
- *In the Version 3.0 Printer, Fax, Printer/Fax, and Mailing Machine Memorandum of Understanding (MOU), Section IV.E.5.a directs manufacturers to exclude the power consumed by an integrated computer for a period of one year. Are manufacturers expected to report this power now when qualifying products under Version 3.0?*

FA FAQs

- *What is the philosophy underlying the FA approach?*

Products that have enhanced functionality may require more power while in Sleep mode than products with less functionality. The FA approach allows the ENERGY STAR specification to better recognize the power needs of products while in Sleep, while neither being too lenient nor too strict for products across the full range of functionality.

- *Where did the FA concept come from?*

The FA approach for Operational Mode (OM) products was first proposed at the October 14, 2005, imaging equipment stakeholder meeting, and subsequently developed through collaboration between EPA and stakeholders during the months following the meeting. In past ENERGY STAR specifications, the power limits for imaging equipment products were linked to product speed, where a faster product had a higher power allowance than a slower product in the same category. However, a correlation between product speed and actual power used in Sleep was not evident in the OM dataset used when developing the Version 1.0 specification. Looking beyond a speed-based approach, EPA investigated other factors that affect power consumption in imaging equipment, such as functionality.

The FA approach evolved as a way to recognize that more feature-rich products may require more power in low-power modes than those with fewer features. The development process involved a series of proposals and comment exchanges addressing the types of adders to recognize in the specification and the appropriate power levels for each of them. Materials from the specification development process provide additional detail about the development of this approach, and are accessible on the ENERGY STAR Product Development site at www.energystar.gov/productdevelopment by following the links for Product Development Archives and Imaging Equipment.

- *How were the marking-engine levels developed?*

The marking-engine levels provided in OM Tables 1 through 8 were derived from a dataset of partner-reported Sleep levels and FA details provided by manufacturers for imaging products currently in the market. To obtain the marking-engine criteria, the FA allowances for each model, corresponding to the known FAs for that model, were subtracted from the model's Sleep consumption value, leaving the "marking engine" value in watts. The resulting marking-engine values underwent an analysis to determine the top 25% performance level for setting the criteria in OM Tables 1 through 8. The details of this process are provided in the Draft 3 **Supplemental Rationale for EPA Decisions Informed by Manufacturer-submitted Functional-adder Data**, dated March 24, 2006, and reproduced below:

1. Determine the FAs and associated power allowances.

EPA received stakeholder proposals on functions that merit additional energy in Sleep and specific power requirements for these functions. EPA used these proposals to arrive at a draft FA set. Stakeholder input identified other functions that might merit power allowances in addition to those proposed in the draft.

2. Obtain the Sleep Power and FA presence for existing products.

EPA collected information on the availability of various functions on currently ENERGY STAR qualified product models using the information provided on manufacturer Web sites and specification sheets. Manufacturers assisted EPA by providing details on the presence of the various functions in their existing qualified and, in some cases, unqualified products. Manufacturers indicated the presence (or absence) of specific functions, the number of functions, or specific values, such as the amount of on-board memory or the dc-output rating of the product's power supply.

3. Subtract allowances from each product to determine the base marking engine Sleep value.

Using the OM dataset, the FA allowances were subtracted from each product's Sleep power value where these adders were confirmed present by manufacturers. This resulted in a marking-engine power-value in Sleep for each product in the dataset.

4. Identify the 25% marking engine Sleep specification level.

When determining the top 25% specification criteria for each OM table, EPA included the Standby and external power adapter requirements. A considerable number of products in the OM dataset failed the external power adapter and/or Standby criteria, and thus, higher Sleep marking-engine criteria were used to ensure that 25% of products met all three criteria. In terms of power alone, this resulted in well over 25% of the models in the dataset meeting the Sleep marking-engine criteria.

5. Consider alternative adders and power levels.

In many cases, industry stakeholders proposed power allowances for the FAs that greatly exceeded the allowances provided in the final specification. Generally, any increase to FA allowances was found to reduce the overall base marking-engine level for each OM Table. When a set of adders based on the higher manufacturer-proposed levels was applied to the OM dataset, many products were found to result in negative marking-engine power values. The list of FAs and corresponding allowances went through several iterations before they were finalized in Version 1.0.

- *What is an example of applying FAs?*

Consider a Standard-size, color Ink Jet printer with a USB 2.0 data interface and two memory card interfaces. The printer is powered by an internal power supply with a rated dc output of 40 W, and is shipped with 16 MB of internal memory (i.e., RAM). The printer consumes 3.2 W in Sleep. The manufacturer expects that the product typically will have the USB 2.0 interface connected continuously in the field, with the memory card interfaces used only occasionally. Therefore, the USB 2.0 connection would be considered a Primary interface and the memory-card interfaces would be considered Secondary interfaces. The specified marking-engine criterion for this type of printer, as provided in OM Table 2, is 3 W. Functional allowances would be applied as follows: 1.5 W for the power supply; 0.016 W for the internal RAM; 0.5 W for the Type B USB 2.0 interface; 0.1 W for the first Type E flash memory card; and 0.1 for the second Type E flash memory card. Thus, the total criterion that this model must meet is the sum of the marking-engine criterion plus the FA allowances, totaling 5.2 W as the final limit. Since the product is metered as consuming 3.2 W in Sleep, this model meets the specification. Because 3.2 W is outside of the 15% range for unit accuracy, the manufacturer is not required to submit data for two additional units of the model. If the product were metered between 4.42 and 5.2 W, the manufacturer would be required to submit this additional data.

- *What distinguishes Primary from Secondary FAs?*

The OM test procedure states that products shall be configured as shipped and recommended for use, particularly for key parameters such as power management default-delay times, print quality, and resolution. As such, interfaces defined as Primary interfaces are expected to be active during Sleep when the product is used in field as designed, and, thus, these interfaces also will be active or awake during the ENERGY STAR OM test procedure. Secondary interfaces are expected to be active only occasionally during Sleep, if at all, when the product is used in the field as designed and shipped. As a result, Secondary interfaces are expected to be inactive during testing. Determination of which interfaces are Primary should reflect common usage, subject to a maximum of three Primaries. If more than three interfaces are active during Sleep when the product is used as designed, the choice of the three that are considered Primary is at the discretion of the manufacturer.

A Primary USB port will have an electronic data source at the other end of the cable; a Primary 802.11 interface will cause the product to be visible and connected to at least one other 802.11 product in the vicinity; and a Primary memory card interface will have a memory card inserted. Since Infrared (IR) communications are assumed to be transient, the only condition needed for an IR interface to be considered Primary is the ability to wake the system from Sleep, thus, this FA allowance is the same regardless of whether it is considered a Primary or Secondary function.

Values for Secondary adders reflect the fact that the feature or interface is expected to be inactive or asleep while the imaging product is in Sleep. Secondary interfaces have no active connection (e.g., no cable is attached if it is a wired interface) and Secondary features are assumed to be inactive (e.g., disk storage drives are spun down; scanners are not being used).

Example: A Standard-size color Ink Jet MFD has four interfaces that are awake in Sleep and ready to use. These include a USB 2.0 connection, a 1 G Ethernet connection, an 802.11 wireless connection, and a memory-card connection. This product is powered by an external power supply with a rated dc output of 40 W. The product is designed to be fully stand-alone, with no significant reliance on an

external PC. It uses two CCFL bulbs for its scanner functionality. It contains an internal disk drive and also has enhanced memory at 0.5 GB.

The manufacturer expects this product to be connected via its USB 2.0 and 1 G Ethernet connections as standard practice in the field; therefore these two interfaces are considered Primary. Based on user data, the manufacturer expects that the 802.11 wireless connection will be used more commonly in the field than the memory-card connection; therefore the wireless connection also is treated as a Primary connection. Because the manufacturer has already applied three Primary FAs to this imaging product, which is the maximum number of Primaries allowed, the memory-card connection is treated as a Secondary interface for the purposes of testing and ENERGY STAR qualification. Therefore, when testing the imaging product, no memory card is inserted into the memory-card slot.

The manufacturer tests the imaging product according to the OM test procedure and finds that the product consumes 10 W in Sleep. For this imaging product, the following FAs apply:

	FA Allowance (W)
Primary Adders	
USB 2.0 interface	0.5
1 G Ethernet interface	1.5
802.11 wireless interface	3.0
Secondary Adders	
Memory-card interface	0.1
Internal storage	0.2
CCFL lamp presence	2.0
0.5 GB Memory	0.5
40 W power supply	1.5
Total:	9.3

When considering the ENERGY STAR eligibility of this product, the manufacturer sums the total power allowance for the various adders with the base marking engine allowance, which in this case is 3 W. Therefore, the product must consume no more than a total of $3\text{ W} + 9.3\text{ W} = 12.3\text{ W}$ to meet the ENERGY STAR power requirements. Since this model is metered to consume 10 W, it meets this criterion. Because 10 W is outside of the 15% threshold (i.e., for a level of 12.3, the 15% threshold would be 10.45 W), the manufacturer is not required to test any additional units of this model.

- *Is greater imaging speed considered a FA?*

Not directly. For products addressed by the OM approach, there is no clear correlation between product speed and Sleep power and no commonly-accepted procedure for measuring the product speed of all OM products. However, the FA provided in recognition of power-supply (PS) size, based on PS output rating (OR), indirectly recognizes the power needs of higher-speed products.

- *Does a product get credit for more than one data interface of the same type?*

Any physical connector on a product may count as only one interface. For example, a USB connection that supports 1.x and 2.x may be counted only once. Similarly, a memory-card reader interface that supports multiple formats may be counted only once, and a system that supports more than one type of 802.11 may count as only a single wireless interface.

Primary interfaces must be active simultaneously with all other Primary interfaces during the OM test procedure. For example, a manufacturer who has an imaging product with two memory-card interfaces that only is capable of reading from one card at a time may not count both interfaces as Primary, but should count one as Primary and one as Secondary.

In cases where there are several instances of a wired interface (e.g., two USB ports), these interfaces are treated separately. For example, a product might have two USB 2.0 ports with one tested as Primary and the other as Secondary during the test, with power allowances provided accordingly (in this case 0.5 W and 0.2 W for a total of 0.7 W for the two interfaces).

A PictBridge interface is mechanically and electrically a USB interface, but as it is designed to be used with cameras, these are to be classified as a Type E and not a Type B interfaces.

- *My USB 2.0 interface also supports USB 1.1. My wireless 802.11 interface supports a/g or b/g. In both instances, can I claim credit for two?*

No. Any physical interface may count as only one FA. A 802.11 interface is considered a single FA. Note that a product with both 802.11 and Bluetooth would have an FA for each.

- *What does the data rate on interfaces refer to (e.g., Wired < 20 MHz)?*

For wired interface types, the data rate is the raw bit rate of the interface; useful data transfer is generally lower than this due to packet overheads and other factors.

- *Can I draw power from computer through the USB port to reduce imaging product consumption?*

A product may draw power from a combination of means, but this will not reduce the net power consumption of the product as a whole, which is the value used for ENERGY STAR qualification purposes. According to the ENERGY STAR Version 1.0 Imaging Equipment Program Requirements, Section 4, page 17, manufacturers are directed to consider the **net** ac electrical power consumed by the product, taking into account ac-to-dc conversion losses, as specified in the OM test procedure.

- *The power-supply adder isn't targeted to a specific product function; why was it included?*

Typically, FAs address energy consumption required to maintain that function while the product is in Sleep. However, some functions require no energy during Sleep but considerable power while the product is in Active, requiring a larger power supply, which does impact the level of Sleep power the product consumes. All else being equal, a larger power supply will have a no/low-load loss that is greater than a smaller power supply. Power supply size is also an indirect indication of product speed and/or monthly expected capacity, both of which can require more, or more power-intensive, components. Given that the cost of power supplies increase with size, there is a disincentive for manufacturers to over-size the product power supply. Assuming that manufacturers size the product power supply appropriate to the level of power needed by the product, EPA does not expect power supplies that are disproportionately large for the products they serve.

- *What is a "PC-based system"?*

Imaging products reliant on a PC for most functionality require less power than do standalone products. PC-based imaging products typically have smaller processors, less memory, less user-interface hardware, etc. With a PC-based system, computer-intensive processes such as rasterization are performed on the PC, not on the printer. As such, PC-based systems have an allowance of -0.5 W — the only negative FA allowance in the OM specification. This adder applies to low-cost systems and does not apply to much larger systems sold with DFEs.

- *What if our company introduces a product with a function that requires a significant level of Sleep energy that is not included in the adder table? How does EPA intend to keep this list of adders relevant as technologies evolve?*

EPA developed, in concert with stakeholders, a forward-thinking list of adders that is intended to reflect product features and functionalities available today as well as those expected to be available in the

market during the life of the Version 1.0 specification. The Version 1.0 specification has now been finalized, pending adoption by the European Commission, and as such, the comment period is now closed. However, manufacturers who have questions about functions that are not currently specified in Version 1.0 as FAs, or who would like to propose other interface types or capabilities for this table should contact Katharine Kaplan Osdoba, EPA, at osdoba.katharine@epa.gov.

Partner Commitment and Other FAQs

- *What are the Web-Based Tools for Partners and when will they be available?*

In the near future, imaging equipment partners will be receiving a letter from EPA about the ENERGY STAR Web-Based Tools, clarifying the requirements for both labeling qualified products on the Web as well as how to comply with the ENERGY STAR Web linking policy. The letter and its accompanying files will also provide additional recommendations and tools to help partners promote ENERGY STAR on their Web sites. EPA shortly will have a Web-Based Tools link from the ENERGY STAR Web site at www.energystar.gov where partners will have easy access to all of this information. The letter providing additional clarification will be distributed to imaging equipment stakeholders as soon as it is available.

- *Will the Web-Based Tools for Partners apply to resellers?*

Initially, the Web-Based Tools for Partners will apply to ENERGY STAR partner manufacturers. EPA expects to next work with retailers regarding how the ENERGY STAR mark should be applied to retailer Web sites.

- *Will the Web-Based Tools for Partners apply to international Web sites?*

No, the Web-Based Tools for Partners will apply to ENERGY STAR partner Web sites targeting a U.S. audience. Applying the labeling guidance provided in the Web-Based Tools for Partners on international Web sites is optional.

- *What if a product meets the specification requirements in one region of the world but not others? Should the mark include a disclaimer on the partner Web site, product packaging, or product manual?*

If a product is tested to the regional voltage/frequency combinations provided in the **ENERGY STAR Test Conditions and Equipment for ENERGY STAR Imaging Equipment Products**, and found to not meet the Version 1.0 specification in one or more of the regions where it will be sold, the partner must ensure that the product does not bear the ENERGY STAR mark in that market, and partners need to clearly convey this to consumers. This may mean that a product will bear the ENERGY STAR in one market and not in another. If only one type of product packaging is used to ship a product or one Web site is used to display information about a product that meets ENERGY STAR requirements in one market and not in another, the packaging and/or Web site need to have clear language identifying the markets where the product meets ENERGY STAR. Partners are encouraged to work with EPA to determine acceptable means to convey this information. Partners also are encouraged to contact the international program implementer for the region concerned to determine the labeling requirements of that region. A list of international ENERGY STAR program implementers is available on the ENERGY STAR Web site at www.energystar.gov/partners. Manufacturers may also contact Rachel Schmeltz, EPA, at schmeltz.rachel@epa.gov with questions about international implementation.

- *What date should partners to reference when considering the qualification of accompanying EPS, telephony, and DFE/computer accessories?*

When qualifying imaging products with accompanying EPS, telephony, and/or DFE/computer accessories, partners will need to meet the requirements of the current specifications for these accompanying accessories as well as those of the imaging specification. For example, if a manufacturer

submits an imaging equipment model for qualification on April 1, 2007, the manufacturer must meet the imaging and EPS, telephony, and/or DFE/computer specification that will be in effect on that date. If the imaging specification or accompanying accessory specifications are revised, the Partner is responsible for ensuring that the product continues to meet all relevant ENERGY STAR specifications. When revising specifications or implementing subsequent tiers, EPA will carefully consider the impact on other specifications and will make every attempt to time revisions or the effective date of future tiers of specifications such that partners can consider all changes relevant to their products at one time. In addition, EPA will also engage interested partners well before the effective date of relevant specifications.

- *In the Version 3.0 Printer, Fax, Printer/Fax, and Mailing Machine Memorandum of Understanding (MOU), Section IV.E.5.a directs manufacturers to exclude the power consumed by an integrated computer for a period of one year. Are manufacturers expected to report this power now when qualifying products under Version 3.0?*

No, this clause was extended until the expiration date of Version 3.0, on March 31, 2007. Manufacturers may exclude power consumed by integrated DFEs when considering the eligibility of their imaging equipment products, in accordance with the guidance provided in the Imaging Equipment Program Requirements, Version 1.0.