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US Environmental Protection Agency

Greetings

HP is submitting the following comments on the proposed ENERGY STAR® (ES) program requirements for Imaging Equipment, Version 2.0. These comments are related to the proposed changes to the test methodology and related changes identified recently by the EPA in their July 8, 2011 email.

Functional Adders/Network Connection

HP's understanding of the original approach for Operational Mode (OM) products included the following:

- The overall goal of the OM approach was to accurately capture the power used in products. In addition, the EPA respected in the development of this approach that a broad range of products, with a wide range of features (few to many, simple to complex), could be represented by coupling the functional adder (FA) power allowances with a base engine allowance.
- The outcome of this approach was to establish seven primary functional adders (PFA) and five secondary functional adders (SFA). The EPA recognized they could not easily identify or account for every possible current and future feature allowance, so they wisely provided a power supply (PS) FA that acted as a surrogate for these other features. It also accounted for products with greater performance (e.g., higher print speeds, more computing power). The PS FA allowance increases as the PS output power increases. This step ensured recognition for a wide range of features and performance levels of OM products.
- The EPA also reasonably accounted for the use of up to three PFA and any number of SFA that existed on the device. The PFA had to be active in Sleep mode and SFA could be either active or inactive in Sleep. This decision demonstrated deference to the fact that some FA cannot be turned off and other FA should not be turned off in Sleep mode as that would harm the customer's experience with the product.

EPA is proposing significant changes to the OM products, including:

- Elimination of all secondary functional adders (SFA).
- Significant decreases in the power allowance for the primary functional adders (PFA).
- Allowance for only one PFA.



HP has the following concerns with the EPA's OM proposal:

- Failure to recognize some adders that must be active in Sleep: There is no question the PS must remain active, and thus use power, in Sleep mode. As described above, the EPA correctly identified the PS output power as being representative of the extra power needed by a product for additional features and/or performance that are not directly accounted for by the base engine allowance.
- Degradation of customer experience: Assuming product manufacturers have to disable features in Sleep mode to effectively compete and qualify to ES, this will damage the customer's experience with the product. Examples include:
 - Photo/memory card, camera interfaces: If these features are disabled, the customer will walk up to the device and when the connection is made the product will not wake to implement the task desired by the customer.
 - Internal memory: Powering off the memory would lead to long delays for the product to recovery and become ready for full operation. This delay could take a few minutes, thus frustrating customers.
 - Fax: disabling fax in Sleep would ensure customer frustration since a core product function would no longer be enabled.
 - Short Sleep delay times: EPA has historically pursued moving into Sleep mode more quickly for all products. The consequence is products will typically experience more frequent Sleep events and thus customers may experience even greater frustration due to the longer recovery times associated with the elimination of several FA.
- Fax connections:
 - At line 100 in the EPA's document it states there will be only one network or data connection to the product during testing. However, the note at Line 114 indicates products including fax devices must now attach the telephone line during testing. These requirements seem inconsistent, please clarify.
 - What is the EPA's motivation for now requiring the telephone line connection? If there is no additional power use when the line is connected (which EPA implies), then there should be no reason to now require the connection. If there is additional power use, then the EPA should recognize that and provide a FA power allowance for fax.
- Bias toward simple products:
 - By eliminating over 90% of the current FA that currently provide power allowances in Sleep mode, simpler products will tend to qualify at higher rates than products with greater features or performance. This would create an unfair situation and would seem to violate a basic tenet of the ES program for promoting a broad and inclusive product program.
 - Slower products would have a higher likelihood of qualifying than faster products.
 - Printers would have a higher likelihood of qualifying than MFDs, which typically include scan, fax, and copy capabilities.
 - Less featured products would have a higher likelihood of qualifying than more featured products; for example higher featured MFDs may include:
 - Additional processors
 - Use of page description languages which require more memory size



- More connectivity options (e.g., LAN, wireless, USB-device, USB-host, wireless access point functionality, etc.)
- Larger control panel displays with added features (e.g., touch screen)
- Greater number of optional accessories (e.g., input/output devices)
- More sensors and LEDs to monitor and communicate product status to the customer
- One primary functional adder: HP has the following concerns:
 - Products today often contain multiple interface connections and they are not typically turned off in Sleep mode. Testing with only one interface does not mean the others are disabled.
 - Up until recently the EPA's expressed requirement was that all interface connections be available to reactivate the product from Sleep mode. This means they would need to be on and using power in Sleep mode. Now the EPA is proposing to only provide a power allowance for only one communication interface. In order to qualify to ES in the future, this would mean products likely must turn off the other interfaces in Sleep. This is a significant change. It is not clear all manufacturers have products with the basic architecture to accomplish this task. If not, given ES's minimal implementation period (9 months), those manufacturers very likely would be unable to roll their product line to a new architecture that would meet this requirement. This does not seem to be a reasonable request by EPA, especially for products which have longer product development cycles.
- Stifle innovation: The elimination of so many existing functional adders, no recognition of a surrogate adder, and the significant power allowance reductions for the remaining adders will likely inhibit product innovation for future products seeking ES qualification.
- Unintended negative outcomes: As discussed above, customers may become dissatisfied due to longer Sleep delay times. This could lead customers to increase the Sleep delay time, or disable Sleep entirely. This outcome may end up using more power than if EPA retained the current OM methodology allowing a wide range of FA for product features and product performance differences.
- HP recommendations:
 - EPA should retain a larger number of functional adders. Three PFA should be retained. SFA for three data/network connections should be retained as well as a FA for memory and PS.
 - EPA should consider whether separate base product allowances should be considered for products with lower vs. higher performance, and/or for those with lower vs. higher features.

Network Connections

EPA's proposed power allowances for the interface primary adders are very aggressive. In particular we are concerned three of these are much too low: wired (20-500MHz), wired (≥ 500 MHz), and wireless LAN.



HP Recommendations:

- EPA should explain in their upcoming stakeholder meeting how these values were determined?
- Does EPA think these numbers reflect the power use for current technology?
- Do these numbers include the system level aspects of these interfaces (e.g., the interface, and control electronics to run them)?
- Consider providing greater power for the three interfaces we have identified.

IEC 62301 Ed 2.0

HP has significant concerns with the use of the new edition of this standard for the following reasons:

- This standard is specifically defined as applying to “household electrical appliances”. This effectively means it was defined for consumer electronics and therefore is not necessarily well adapted for information technology products.
- HP understands the EPA wishes to use the uncertainty calculations for all power measurements associated with the OM and TEC processes. This standard specifically states it was developed to apply to Standby and low power modes. Hence it would be inappropriate to use for all measurements.
- HP is concerned the new edition of the standard is overly complex. We think it could lead to increased test time and the need for additional test resources with little tangible benefit for the overall testing process.
- HP recommends EPA continue to the use of IEC 62301 Ed 1.0. If the EPA disagrees with us, then we request the EPA run some side-by-side tests on TEC and OM products using Ed 1.0 vs. 2.0 and identify key differences in the tests (test time, test costs, differences in numerical results, etc.).

Other

Line 128, Pre-test initialization: HP believes there is a step missing in this section that indicates the unit under test should be turned off once the initialization process is completed. The OM and TEC product test procedures begin in Off mode, which presumably requires turning off the product after initialization and before testing.

Line 134, Driver settings: HP finds the EPA’s language a bit confusing. The text at line 134 and the following note suggest EPA does not expect the product manufacture to use the exact driver type used at product release for the product testing. We think the EPA wants manufacturers to use the same settings (page size, simplex/duplex, etc.) within the driver to run the test that we expect to set on the final product when it ships.



The EPA has always required product manufacturers to test the products in the configuration they would be shipped in. Also, the test procedure explicitly dictates use of a number of characteristics that are typical selections in drivers (page size, simple/duplex, monochrome/color use, etc.). Assuming our interpretation of your intent is correct; we do not see why EPA wishes to take this step. We think it would be redundant and unnecessary. We also wonder if it would lead to extra documentation requirements by lab accreditation bodies and/or certification bodies which would provide little or no benefit. We do not support this suggestion.

Line 150, Pre-test initialization period: In the note here the EPA suggests they wish to extend the pre-test initialization period for 2 hours. The stated goal is to ensure the product returns to ambient air temperature. HP does not think 2 hours is required to accomplish this, especially for products not user higher heat levels for printing processes. We have the following recommendations:

- Require 15 minutes for products not using higher heat levels.
- Require 60 minutes for products using higher heat levels.
- Provide an option for manufacturers to mechanically cool (e.g., fans) the products more quickly to ambient temperature. In this case the manufacturer should not be required to have the product sit for 15 or 60 minutes. They should be able to end the initialization process whenever the product reaches ambient temperature.

Line 307, Appendix A: EPA included Appendix A with no explanation. What is the purpose of this listing?

TEC time to reach Sleep mode: HP agrees EPA should allow manufacturers to specify the time it takes to reach the final Sleep or Auto Off mode.

DFE Testing: HP already provided comments on this topic. Please refer to those inputs.

HP appreciates this opportunity to comment.

Regards,

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