

To whom it may concern:

As part of the formal comment process, I would typically provide an opening statement describing the products manufactured by us, Electronics For Imaging, Inc. (EFI), and then provide a narrative on possible specification changes. To keep this correspondence as short as possible, I will forgo the introductory statement, though if anyone is interested in a description of EFI's products, they are welcome to visit our [website](#) or read the introductory statements on our previously posted ENERGY STAR Imaging Equipment Specification comments.

The following comments are narrative in nature and apply to how a "Digital Front End" (DFE) should be treated in the ENERGY STAR Product Specification for Imaging Equipment Version 2.0.

- **DFE Categories** – As part of the new ENERGY STAR Imaging Equipment specification, a new DFE category type was introduced (i.e., Type 3) which has the potential to exclude all third party DFE manufacturers from any ENERGY STAR imaging equipment testing requirements. According to the draft specification, the primary difference between a Type 3 and Type 1 DFE is that a Type 3 DFE "is not shipped with the imaging equipment it supports." And during the DFE stakeholders conference call, a further clarification of a Type 3 DFE was that the Type 3 DFE had a separate SKU from the imaging equipment its supports. The primary issue EFI has with these possible Type 3 DFE definitions, as a third party DFE manufacturer who ships its products through the imaging equipment manufacturers' distribution channel, is that we have no control or knowledge of how the DFE is delivered to the end-user (i.e., shipped in the same load as the imaging equipment or separately), nor do we know how our DFE appears in the imaging equipment manufacturers' price book. The only thing we know is that when the DFE shipped from our factory it was separate from the imaging equipment and in its own distinct packaging. For reference, EFI in most cases cannot sell the DFEs we design and manufacture directly to the end-user, instead we must sell our products to the imaging equipment manufacturer who in turn offers the unit to the end-user via their distribution/sales channel. This requirement to sell through the imaging equipment manufacturers' distribution channel is due to the proprietary interfaces employed on the imaging equipment which enables a DFE to connect and send jobs to the imaging unit (i.e., the interfaces are protected intellectual property (IP) and can only be used with the permission and requirements of the IP holder, with the primary requirement being that we can only sell the DFE to their distribution channel). The creation of the Type 3 DFE category within the proposed ENERGY STAR Imaging Equipment specification implies that sufficient competition exists within the third party/OEM DFE manufacturer community (i.e., this group develops and releases new DFE models based on the latest computer industry technology, where each new computer generation tends to use less power than the previous), that no additional energy savings can be achieved through the ENERGY STAR brand. Except in the case of our highest performance DFE, which will be discussed below, all EFI DFEs that will ship during the timeframe of the version 2.0 Imaging Equipment specification easily meet the power requirements set forth in draft specification, and due to market competition we have no choice but to create high performance/energy efficient systems. In other words, we truly believe our DFE products meet the spirit of the Type 3 DFE definition; but due to the wording of the Type 3 DFE definition (not shipped with or bundled in the price book with the imaging equipment) we cannot be certain we can claim Type 3

status. It is our recommendation that EPA either change the wording of the Type 3 DFE to cover companies such as EFI that have to ship their DFEs through the imaging equipment manufacturers' distribution/sales channel (i.e., remove the ship with or SKU requirement, and instead add terms such as separate factory or packaging), or instead of broadening the Type 3 DFE definition which may be "gamed", that third party/OEM DFE companies instead apply for Type 3 DFE status from the EPA (i.e., we submit some forms, provide documentation/block diagrams that shows we are following the industry "state of the art" for low power consumption, and once this information is reviewed, the EPA can either grant or deny Type 3 DFE designation to the manufacturer).

- **Maximum Ready Mode Power** – In previous ENERGY STAR Imaging Equipment Specification Version 2.0 correspondence, EFI has documented the concept of "performance matching" the DFE to the imaging equipment it supports. In brief, no one is going to purchase a DFE that does not maximize the print performance of their imaging equipment, since mismatching DFE to imaging equipment performance can result in the system taking longer to print a job (i.e., the imaging equipment remains in high power idle while the slower DFE generates pages to print) which can result in higher total power consumption. At present, Table 2 of the draft specification combines multiple core CPUs into the same category as multiple CPU systems, and limits the power consumption for Type 1 DFEs to 65 watts. In order to create "performance matched" DFEs for high print page performing imaging equipment, we are forced to design systems with multiple physical CPUs each containing multiple cores, with greater than 8 GB of memory, and a RAID disk system with over 4 TB of capacity. The current specification does not accommodate these higher performance DFE systems, even though they are constructed using the lowest power Intel Xeon processors and other components that meet the performance requirements of the imaging equipment. What we recommend is that Table 2 be modified so that each multi-core CPU within a system be allowed to consume 65 watts (i.e., a system with two multi-core CPUs can consume a maximum of 130 watts). Please note that adding additional CPUs into a design requires a lot of circuitry duplication (e.g., each CPU has its own DC power supply, each CPU has its own memory controller and associated memory DIMMs, etc.) which almost doubles the system's power consumption. While it may be possible to determine the true amount of power that should be added for each additional multi-core CPU (e.g., 50 or 45 watts compared to 65 watts, which can vary depending on the number of memory DIMMs connected to each CPU memory controller) having a single number of 65 watts would seem the best to cover all possible multi-CPU designs.

There are potentially other DFE related areas we could comment on; but given the stakeholder discussions currently taking place to further define the DFE portion of the ENERGY STAR Imaging Equipment Specification, we will defer making those comments, if still required, after the "in-person" stakeholder meeting on March 7, 2012. Should you have any questions concerning the above, please let me know.

Regards,  
Brett

Brett A. Serene - Senior Principal Engineer and System Architect