

Dear Sir or Madam;

The following presents our comments for the section “Test Procedures for Products with a Digital Front End (DFE)”, page 15, of the proposed “Test Method for Determining Imaging Equipment Energy Use Rev. Jul-2011”.

- **Ability to Release Test Data** – As a third party DFE manufacturer, Electronics For Imaging (EFI) creates systems with custom interfaces that enable Digital Copiers manufactured and marketed by a number of well known imaging equipment manufacturers to become digital printers. These Digital Front End systems manufactured by EFI contain the markings and model numbers of the purchasing original equipment manufacturer, and as such we are bound by our contracts and non-disclosure agreements to not release performance information related to our customer’s products. Therefore while we would like to submit DFE power consumption information, we were not able to obtain clearance from our customer’s in time to meet the data submission deadline. Please note that all EFI Digital Front End systems are based on a few internal models (i.e., a common platform) where the primary difference between these base platforms and the unit sold to an imaging equipment manufacturer is the computer-to-copier interface card and the software required to customize our platform to the specific features supported by the digital copier. Now it is possible for EFI to supply DFE power consumption information for our base platforms, since only ready and sleep power consumption is being recorded (i.e., active power which would include the computer-to-copier interface card is not being measured). If EPA feels this generic platform DFE information would be useful, we could provide it under separate cover.
- **Ability to Enter Sleep** – While we are currently not able to release specific DFE power measurements, we can provide some internal test observations related to a DFE entering sleep mode. On some units we observed that the DFE never entered sleep mode. An investigation into this behavior revealed sleep mode was disable in the DFE due to a contract requirement (i.e., the imaging equipment manufacturer specified that the DFE never enter sleep). In another case the DFE would delay entering sleep until the imaging equipment itself entered sleep. The cause of this delayed sleep is due to a signal on the computer-to-copier interface that is designed to wake the DFE when the copier has work for the DFE to perform. In this case though, the copier would continue to drive the wake signal (even when the copier was idle) until it entered sleep. While the proposed DFE test procedure does not specify a time limit for the DFE to enter sleep, the new ENERGY STAR Imaging Equipment Specification may need to contain language that allows a DFE to enter sleep independent of the imaging equipment (i.e., the imaging equipment will only issue a wake event to the DFE when the imaging equipment requires the DFE to perform some task, such as receiving and distributing scan data).
- **Separate Internal from External DFE Testing** – In the current ENERGY STAR Imaging Equipment Specification Version 1.1, imaging equipment manufacturers are able to subtract the power consumed by an internal DFE from the equipment’s TEC value. With the inclusion of DFE power consumption measurement procedures into the proposed follow-on ENERGY STAR Imaging Equipment Specification, we are concerned that an internal DFE may appear more energy efficient than an external DFE due to possible non-inclusion of shared resources (e.g., common power supply, shared hard disk drive, cooling fans, etc.) that the internal DFE may utilize; but are not reported in the internal DFE power consumption data. A potential external DFE buyer may decide not to purchase an external DFE favoring instead to use the copier’s internal DFE

due to its perceived power cost savings, even if the external DFE is actually more energy efficient when all factors are taken into account. We recommend that DFE power consumption information only be collected and reported for external DFEs and that internal DFEs get measured as part of the imaging equipment's TEC (i.e., no subtraction of DFE power), and that if the DFE can be turned off when an external DFE is connected to the imaging equipment, then the imaging equipment manufacturer can report both internal DFE on and DFE off TEC values (though technically if the internal DFE enters a low power sleep state when not in use, the DFE being enabled but not used should have minimum impact on TEC and therefore only one TEC value needs to be reported).

- **Ability to Measure External DFE Power Consumption without Imaging Equipment Connection**
 - While the proposed DFE test procedure does not require the DFE to be connected to the targeted imaging equipment (i.e., ready and sleep mode power measurements do not require the DFE to be connected to the target imaging equipment, only an active power measurement test would require the DFE to be connected to its target device), we want to provide amplifying information as to why requiring an external DFE to be connect to the target imaging equipment would create challenges and potentially limit competition. Third party DFE manufacturers don't always have access to the target imaging equipment during product development (e.g., initial development is performed on a simulator or prototype engine, while final feature testing is usually performed at the imaging equipment manufacturer's site). If a DFE manufacturer were required to perform the final ENERGY STAR certification test, then the DFE manufacturer would have to acquire the target engine, ship it to an authorized test facility, and conduct the test (a series of costs that could drive a DFE manufacturer out of business). Please note that relying on the imaging equipment manufacturer to conduct DFE tests at the same time they certify their imaging equipment for ENERGY STAR also has potential drawbacks. For example, the imaging equipment is only tested once when it enters production so if a third party DFE vendor does not have a DFE ready for the targeted system when the imaging equipment is tested, then the opportunity to supply a third party DFE to that engine is lost forever. Given this, it is important to construct any DFE power consumption test so that it does not require the DFE to be connected to its targeted imaging equipment (i.e., ready and sleep power consumption measurement as specified in the proposed test procedure).

Since the purpose of EPA's request for obtaining DFE ready and sleep mode power consumption information was to enable EPA to determine whether DFEs should face additional testing/requirements under the new ENERGY STAR Imaging Equipment Specification, and at present we are unable to supply the data EPA requires to make such a determination, we fully understand that the next ENERGY STAR Imaging Equipment Specification may include DFE power consumption testing. If the new ENERGY STAR Imaging Equipment Specification does contain DFE power consumption testing we hope it will be limited to ready and sleep power measurements and takes into account the comments provided above. This includes allowing third party DFE manufacturers the ability to certify under ENERGY STAR by reporting the ready and sleep mode power consumption of their base model units (which would require the ENERGY STAR Imaging Equipment database to allow a "many-to-many" referential link between each DFE model and the imaging equipment that is capable of using that model DFE). Please note that even if EPA does not allow base model test data, the referential "many-to-many" database link will still be required given that some imaging equipment supports DFEs from multiple vendors.

I hope that you found the above information useful. Should you have any questions concerning the above, please let me know and I try and provide additional information as quickly as possible.

Regards,

Brett

Brett A. Serene
Senior Principal Engineer and System Architect

Electronics For Imaging, Inc. (EFI)
Voice: (650) 357-3474
Fax: (650) 357-3766