



January 27, 2010

Ms. Kathleen Vokes
U.S. Environmental Protection Agency
ENERGY STAR for Set-Top Boxes
1200 Pennsylvania Ave., N.W.
Washington, DC 20460

Re: ENERGY STAR Program Requirements for Set-Top Boxes.

Dear Ms. Vokes:

Thank you for inviting Motorola to discuss issues relating to the December 3, 2009 Set-Top Box Specification Revision Kick-off conference call. Motorola is strongly committed to manufacturing energy-efficient set-top boxes, and has been actively involved in EPA's ENERGY STAR program for set-top boxes. Motorola has already built 12 set-top box models that meet ENERGY STAR Tier 1 specifications, and plans to have all new models ENERGY STAR-qualified going forward.

We are supportive of EPA's efforts to develop Tier 2 specifications for set-top boxes. Based on our review of the December 3, 2009 presentation, there are three main issues that we wish to address in these comments with respect to Tier 2 specifications: (1) the date of enforcement, (2) energy allowances for DOCSIS tuners and CableCARDS; and (3) accommodations for new features. Motorola also attaches a copy of the draft Tier 2 test procedure document, which includes two embedded comments in Section 5.2.3.

Tier 2 Enforcement Date

Motorola is working hard to build an entire line of set-top boxes that are ENERGY STAR qualified. We are working with our hardware and software teams to meet the current Tier 1 specifications. We also are currently engaged with service providers and their application vendors working through the various elements of Tier 1 that impact the end user experience of the set-top boxes, such as: Auto Power Down, and the fact that there is limited-to-no-access to the hard disk drive when the set-top box is in an ENERGY STAR mode of operation.

During our work to meet the Tier 1 specifications, it has become clear that the changes necessary for Tier 2 compliance will have an even greater impact on the end user and thus require more extensive interaction with the service providers and their application vendors. Building a Tier 2 set-top box does not simply involve the manufacturing of hardware with the capability to power down various components as necessary. It also requires, among other things:

- Middleware to call on the various hardware elements and command them to power down;

- The application layer interface, which provides the upper layer applications (*e.g.*, Electronic Program Guide), to have the ability to command various components to be powered back up when they are needed by the applications; and,
- Development by application vendors of tools to understand the various application layer interface commands and integrate support for those commands into their applications.

All of this interaction requires very detailed and extensive testing and debugging and, therefore, a considerable amount of time before the work can be accomplished correctly. In addition, because there are numerous application vendors involved in any such effort, additional time would be required to organize and manage the effort. In light of the foregoing, the proposed Tier 2 enforcement date of January 1, 2011 is probably unrealistic, and Motorola respectfully asks that the EPA work with various stakeholders on an enforcement schedule that accounts for the significant work yet to be done on Tier 2 requirements.

Energy Allowances for DOCSIS tuners and CableCARDS

Motorola believes that the energy allowance for a DOCSIS tuner should either be increased or kept the same as the allowance already specified in Tier 1. The original Tier 1 DOCSIS allowance was based on DOCSIS 2.0 technology, which uses a single tuner and a single transmitter. In contrast, Tier 2 set-top boxes will include DOCSIS 2.0+ or DOCSIS 3.0 technologies, which use multiple tuners and transmitters. The data rate also increases with DOCSIS 2.0+/3.0, which in turn requires more CPU and memory and thereby results in more power consumption. For these reasons, we suggest raising the allowance for DOCSIS to a value of 30 kWhr/year. This will account for the additional tuners, transmitters, CPU, and memory requirements highlighted above. In the alternative, the allowance defined for Tier 1, *i.e.*, 20 kWhr/year, should be carried over and used for Tier 2.

We also believe that the energy allowance for the CableCARD should stay the same as the allowance already specified in Tier 1. The CableCARD is a relatively simple device that, as currently designed, uses a minimum amount of energy. No more energy savings can feasibly be extracted from the device. The only possible way to decrease the energy consumption of the CableCARD would be to completely power down the device. However, powering down the CableCARD is not an option as it is an always-on device that requires constant connectivity to the service provider's conditional access system in order to function.

Accommodations for New Features

As with any other consumer electronics product, Motorola anticipates increased integrated functionality into our set-top boxes in the next few years. Motorola expects that next generation set-top boxes are likely to include the following features:

- More processing power (*i.e.*, a higher CPU) to run advanced applications;
- More memory to run advanced applications;

- Increased storage capacity, including bigger integrated hard disk drives and support for external drives;
- Ability to transcode content to different resolutions, bit-rates, and formats for applications like moving DVR content to a mobile phone;
- Support for peripherals. such as keyboards, Bluetooth accessories, and webcams;
- Support for different home networking technologies. such as 802.11n WiFi, next generation HPNA, G.hn, and next generation MoCA;
- Support for higher/better resolution, such as full 1080p/60 HD resolution;
- 3D TV and 3D graphics support; and
- Different, more powerful, RF remote control interfaces.

As these features are incorporated into next-generation set-top boxes, such increased functionality will have an impact on energy consumption. Motorola believes that the Tier 2 process should aim to accommodate these technological changes.

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Motorola appreciates this opportunity to comment on Tier 2 issues. We are strongly committed to the ENERGY STAR program, and look forward to further discussions with the EPA about Tier 2 requirements.

Please contact me if you have any questions regarding this matter.

Sincerely,

/s/ Jason E. Friedrich
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Attachment