



April 15, 2013

Ms. Katharine Kaplan
U.S. Environmental Protection Agency
1200 Pennsylvania Ave., N.W.
Washington, DC 20460

Re: ENERGY STAR® Version 4.1 Set-Top Box Specification

Dear Ms. Kaplan:

Thank you for this opportunity to comment on the issues raised regarding the ENERGY STAR® Version 4.1 Set-Top Box (“STB”) specification (“STB Specification”).¹ Motorola Mobility LLC (“Motorola”) appreciates EPA’s efforts to refine the STB Specification based on engagement with stakeholders over the last year.² As Motorola recently explained to the Department of Energy (“DOE”), manufacturers and service providers continue to offer consumers the functionality they demand from their STBs while increasing energy efficiency: “Whole-home experiences, thin-clients and Digital Transport Adapters that consume less power, all-digital systems, cloud-based approaches to service delivery, and ‘system-on-a chip’ advanced power management are all examples of innovations that deliver more capabilities and flexibility to consumers while improving overall household energy efficiency.”³

The EPA has an opportunity to ensure that the STB Specification supports this type of innovation. Consistent with that goal, Motorola provides below specific comments and suggestions relating to the STB Specification.

1) DOE Test Procedure (Page 1, Lines 4-8; Pages 11-12, Lines 409-18 & Table 3)

The STB Specification replaces the reference to the 2011 ENERGY STAR test method with a reference to the “Proposed DOE Test Procedure,” and the EPA’s presentation regarding the STB specification says that harmonization with the “latest test procedures” from DOE and the Consumer Electronics Association (“CEA”) is one of EPA’s goals.⁴ Motorola supports a standard, industry-wide test procedure,⁵ but there are a number of reasons why the EPA should

¹ See Letter from Katharine Kaplan, Manager, ENERGY STAR Product Development and Program Administration (Mar. 18, 2013) (“*Review Announcement*”); ENERGY STAR® Product Specification for Set-top Boxes, Eligibility Criteria, Draft 1 Version 4.1 (“STB Specification”).

² See *Review Announcement* at 1.

³ Comments of Motorola Mobility LLC, Docket No. EERE-2012-BT-TP-0040, at 3 (Apr. 8, 2013) (“*Motorola DOE Test Procedure Comments*”).

⁴ See, e.g., ENERGY STAR® Set-Top Boxes Draft 1 Version 4.1 Specification Stakeholder Meeting Presentation, slide 11 (Apr. 1, 2013).

⁵ See Letter from Jason E. Friedrich, Motorola Mobility, to Katharine Kaplan, EPA, at 3 (April 13, 2012) (“*Motorola Energy Star Comments*”).

refrain, at this time, from referencing the DOE's proposed test procedure. First, DOE's proposed test procedure is not even close to final; in fact, public comment on the proposed test procedure was only received last week, on April 8, 2013. Second, as Motorola and others explained to the DOE, a government-mandated test procedure for set-top boxes is both unwise and, arguably, contrary to law.⁶ As such, it would be premature and inappropriate for EPA to reference DOE's *proposed* test procedure in the STB Specification as the test method of choice.

EPA should rely instead on the marketplace-driven consensus standard, CEA-2043. DOE, EPA, industry, and energy advocates all participated in the working group to develop CEA-2043, and it was developed pursuant to ANSI-based requirements for consensus-based standards.⁷ EPA should cross-reference CEA-2043 as its preferred test method, and refrain from referencing DOE's proposed test procedure unless and until it is adopted.

2) Displayless Video Gateway (Page 1, Lines 18-21)

The STB Specification's proposed definition of "Displayless Video Gateway" is overly restrictive and risks locking into place certain technologies (like QAM, MoCA, and DLNA) that may be replaced as technology advances. Gateways are an innovative new class of devices that will be an invaluable tool to reducing whole-home energy consumption, and EPA should ensure that its definition does not limit gateway innovation going forward. Motorola recommends that EPA remove all references to specific technologies, and define "Displayless Video Gateways" to cover gateway devices that have the primary purpose of receiving television services and provide video output *without using a direct video connection*. Additionally, Motorola recommends that multi-service gateways that provide voice, broadband, and video services be excluded from the definitions of "Displayless Video Gateway" and "STB." Such devices are not yet widely deployed but have the potential to consolidate multiple devices and services, and greatly increase whole-home energy efficiency. Including multi-service gateways in the STB Specification would be premature, hindering further advancement and innovation at a time when such devices are still in their infancy.

3) Transcoding under Advanced Video Processing (Page 2, Lines 52-53)

The STB Specification includes transcoding capability as part of the definition of "Advanced Video Processing," along with encoding and decoding. However, as Motorola previously explained, transcoding consumes more power than either encoding or decoding and the EPA must include a higher power allowance to properly account for these features.⁸ Transcoding is a critical component for many multi-room devices, and ensuring a sufficient allowance for transcoding capabilities is crucial to facilitating the deployment of such devices

⁶ See *Motorola DOE Test Procedure Comments* at 10-15; see generally *Comments of National Cable & Telcomms. Ass'n*, Docket No. EERE-2012-BT-TP-0040 (Apr. 8, 2013); *Comments of the Consumer Elecs. Ass'n*, Docket No. EERE-2012-BT-TP-0040 (Apr. 8, 2013) ("*CEA Comments*"); *Comments of AT&T Inc.*, Docket No. EERE-2012-BT-TP-0040 (Apr. 8, 2013); *Comments of Cisco Systems, Inc.*, Docket No. EERE-2012-BT-TP-0040 (Apr. 8, 2013); *Comments of Verizon*, Docket No. EERE-2012-BT-TP-0040 (Apr. 8, 2013).

⁷ See *CEA Comments* at 2, 3-4.

⁸ See *Motorola Energy Star Comments* at 2.

and realizing the energy savings that would result from widespread adoption of whole-home approaches. Therefore, Motorola recommends increasing the allowance for Advanced Video Processing by an additional 10 kWh/year to 18 kWh/year. Alternatively, EPA could apply the Advance Video Processing allowance multiple times if more than one channel is processed simultaneously. For example, if two channels are decoding or transcoding, two 8 kWh/year allowances – or 16 kWh/year – would apply, one for each channel.

4) Exclusion of Cable DTAs (Page 5, Lines 161-64)

EPA removed Cable DTAs from the STB Specification, stating that Cable DTAs “are being phased out of the market over the next couple of years and none are expected to ship in 2013.” This is incorrect. Motorola will continue to ship and deploy Cable DTAs beyond 2013, and therefore recommends that EPA retain such devices under the STB Specification.

5) Auto Power Down (Page 6, Lines 205-11)

Like many features on a STB, support for Auto Power Down is implemented through an Application Programming Interface (“API”) that is controlled by application software. In the vast majority of cases, this software is provided by a third party, *not* by the STB manufacturer. The application software, which displays the user interface and controls scheduled recordings, determines when the STB is ready to enter a low-power state.

Given this typical approach, it is difficult, if not impossible, for a STB manufacturer to comply with Section 3.2.3(ii) of the STB Specification, which states that *all energy-related default settings shall persist until an end-user chooses to disable or modify the default settings*. This requirement applies, more correctly, to the party that supplies or provisions the STB application software. Most STBs ship from the manufacturer with no application software installed; application code is installed by the service provider, or an intermediary, prior to deployment. As a result, the STB manufacturer has no ability to ensure that default energy-related settings are preserved.

To avoid this issue, Motorola recommends that Section 3.2.3(ii) be modified by either (i) deleting the requirement in its entirety, or (ii) clarifying that the requirement applies to the party that supplies or provisions the STB application software that is necessary to enable Auto Power Down capability.

6) Multi-Stream Allowances Generally (Page 8, Lines 314-15)

EPA’s increase in the allowance for multi-room configurations in the STB Specification is an important step in the right direction. However, EPA should take the additional step of amending the STB Specification such that multi-stream allowances are *not* restricted to only one additional tuner per STB. As Motorola previously suggested, the allowance should be applicable for each *additional* tuner the STB supports.⁹ For example, if the STB supports six tuners, the multi-stream allowance should be applied five times, because there are five additional tuners.

⁹ See *Motorola Energy Star Comments* at 1.

This change would be consistent with the overall goals of ENERGY STAR because it would encourage the incorporation of multiple tuners into a single device and thereby facilitate the reduction of energy consumption in client STBs, as well as the overall home.

7) Multi-Stream – Cable/Satellite Allowance (Page 9, Table 2)

The allowance for Multi-stream – Cable/Satellite has been reduced from 16 kWh/year (Version 3.0) to 8 kWh/year (Version 4.1). Motorola previously pointed out that this 50 percent reduction in the power allowance is larger than the reductions that were applied to any of the other additional functionalities.¹⁰ For example, the allowance for Multi-stream – Terrestrial/IP was reduced by only 25 percent, from 8 kWh/yr to 6 kWh/yr. Motorola recommends that EPA modify the allowance for Multi-Stream – Cable/Satellite to bring it in line with the reductions applied to other functionalities. In this case, a 25 percent reduction – from 16 kWh/yr to 12 kWh/yr – is much more appropriate. This would be particularly important if the EPA maintains its position that the multi-stream allowance should only apply once per device, regardless of the number of streams supported by the device.¹¹

8) MIMO Wireless HNI Allowance (Page 9, Table 2)

The STB Specification includes a new allowance for wireless STBs with MIMO WiFi HNI. Motorola appreciates EPA's addition of this allowance "to reflect the higher functionality of new servers STBs." However, the proposed allowance is insufficient to meet these STBs' energy needs. A STB using a MIMO Wireless HNI consumes significantly more energy than a STB using, for example, HPNA: HPNA generally consumes 3.5 watts, whereas WiFi can consume as much as 8.5 watts. Motorola recommends that the base allowance for WiFi be set at 25 kWh/year, plus $2 \times N$ (where N is the number of spatial streams) to ensure that the functionality of wireless STBs continues to increase.

9) DOCSIS Allowance (Page 9, Table 2)

Today, more and more STBs are equipped with embedded DOCSIS 3.0 cable modems that support higher data rates and, thus, consume more power. Yet EPA proposes to *decrease* the DOCSIS allowance from 20 kWh/year to 15 kWh/year in the STB Specification. This reduced allowance is insufficient to meet the increased deployment and processing needs of DOCSIS STBs. Motorola recommends that the EPA retain the 20 kWh/year allowance. Embedding this high-bandwidth functionality in the STB creates significant opportunities for innovation in video devices, including both improving energy efficiency and driving greater broadband adoption and utilization, consistent with policies set forth by Congress and implemented by the Federal Communications Commission.¹² Any requirements the EPA adopts

¹⁰ See *id.* at 1-2.

¹¹ Alternatively, the 8 kWh/year allowance may be acceptable if the EPA adopts the approach, described above, in which the allowance would be applicable to each additional tuner the STB supports.

¹² See, e.g., FCC, *Connecting America: The National Broadband Plan*, Executive Summary (2009) (discussing goal of increased broadband adoption).

that discourage the inclusion of DOCSIS capabilities in STBs would be contrary to those important national goals.

10) Manual Activation of Deep Sleep (Page 10, Lines 342-45)

The STB Specification proposes to “increase the accessibility of Deep Sleep mode” by requiring that the STB respond to a user-initiated deep sleep request (e.g., pressing the power button on the face of the STB) within two seconds. While consumer adoption of deep sleep functionality is important, the inclusion of a specific time (e.g., two seconds) limits manufacturers’ ability to innovate. Deep sleep is still being developed, and EPA should ensure that the STB Specification does not hinder innovation. Motorola’s deep sleep-capable boxes enter standby mode after the user holds the power button down for two seconds, and enter deep sleep after the user holds the power button down for five seconds. Motorola recommends that EPA revise the STB Specification to allow manual deep sleep initiation per the manufacturers’ instruction. This will provide manufacturers with leeway and incentive to innovate and develop functionality as a point of competitive differentiation.

11) Recycling and Toxicity (Page 11, Lines 400-401; Draft Partner Commitments)

The STB Specification cross references Draft Partner Commitments in which EPA proposes to adopt toxicity and recyclability requirements for set-top boxes.¹³ Motorola urges EPA not to do so. There are already various regulatory regimes in place, both domestically and internationally, that address EPA’s concerns.

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Motorola is strongly committed to the ENERGY STAR program, and looks forward to further discussions with the EPA about the STB Specification. Please contact me if you have any questions regarding this matter.

Sincerely,

/s/ Jason E. Friedrich
Jason E. Friedrich
Head of U.S. Government and
Regulatory Affairs
Motorola Mobility LLC
1101 New York Ave., NW
Suite 210
Washington, DC 20005

¹³ ENERGY STAR® Program Requirements for Set-top Boxes, Draft Partner Commitments, § 3.