



July 3, 2013

Ms. Katharine Kaplan, EPA
ENERGY STAR Set Top Box Program
U.S. Environmental Protection Agency
1310 L Street, NW
Washington, DC 20460

Subject: Comments on DRAFT #2 ENERGY STAR V4.1 Set-Top Box Program

Dear Katharine,

Thank you for the opportunity to review and submit comments for the DRAFT #2 ENERGY STAR V4.1 Product Specification for Set-top Boxes. The comments we provide represent the collective views of EchoStar Technologies L.L.C., EchoStar Global B.V., and DISH Network L.L.C., all current ENERGY STAR Set-top Box or Service Provider Partners. Submitted in addition to this letter is a commented version of the “Draft 2 Version 4.1 Set top Box Dataset” document recently distributed to stakeholders by the EPA. We have provided additional comments on the important issues we would like to bring to your attention:

1. Home Network Interface (HNI)

V4.1 DRAFT #2 retains the HNI additional functionality allowance of 8 kWh/y. This allowance is insufficient for either MoCA 1.x or MoCA 2.x implementations. Our most recent (and refined) estimate of the energy use attributable to a MoCA node, including RF and silicon components, and adjusted for the duty cycle indicated is:

HNI	Power	Duty Cycle	PS Eff.*	AEC
MoCA 1.x	2W	Always ON	0.8	21.9 kWh/y
MoCA 2.x	4W ON 1W SLEEP	7h ON/17h SLEEP	0.8	20.5 kWh/y

* Assumes 90% main PS with 90% point of load regulator for a total 80% efficiency.

The data indicates that MoCA2, even with new low power sleep modes, essentially uses the same annual energy as MoCA1.x at the node level. We recommend a specific allowance be created for MoCA HNI that is additive to either the HNI or MR allowances and be set at 12 KWh/y.

2. New Feature Functionality Allowances

We continue to believe that the EPA must either allow partners to subtract the energy use of emerging energy consuming STB features not covered by the current specification or provide allowances and test procedures for emerging energy consuming features. We appreciate EPAs addition of definitions for Ultra HD, High Efficiency Video Processing, and 3D

Capability. However without assigned allowances they provide little value over the timeframe that V4.1 is to be in effect. As we previously recommended, a better solution would be to either assign fair values to these allowances or allow partners to declare the additional energy consumption of a new feature and subtract this from the AEC. The EPA could collect data about the new feature from industry and analyze an appropriate allowance to be introduced for the next version of the program or an addendum to the current program.

We recommend retaining the definitions and assigning allowances matching the EU Voluntary Agreement of the following:

- Ultra HD Proposed allowance: 30 kWh/y
- High Efficiency Video Processing Proposed allowance: 20 kWh/y

3. Transcoding

Transcoding of MVPD content is required for each mobile or non-TV device concurrently supported by a set-top box. Transcoding exists in the DISH Hopper WH DVR w/Sling that is on the market today. Transcoding capabilities are expected to be available in several new products before the end of this year and numerous products over the duration of the V4.1 program. A transcoder function may be provided as; a feature of a System-on-Chip (SOC) product, an independent Transcoder IC product, or even done by a general purpose processor. Transcoding actually involves transcoding (e.g. MPEG2 to H.264), transrating (e.g. HD bitrate to Mobile bitrate), transcaling (e.g. HD resolution to Mobile resolution), and audio conversions required for each device. An STB that includes transcoding eliminates the need for an external transcoder device and thereby saving total household energy. Current Transcoder IC products, including but not limited to devices from Zenverge and ViXS, consume significant power even when in Idle (ready to transcode) and SLEEP (non-functional). Transcoding provided as a feature of a SOC product adds similar energy use to the STB SOC. The following table calculates minimum energy use with no transcoding of actual streams taking place:

Transcoder SOC	On	Sleep	Total	PS Eff.*	AEC
Hours	7	17			
Watts	1.5	1.1			
TEC	3.83	6.83	10.66	0.8	13.3

* Assumes 90% main PS with 90% point of load regulator for a total 80% efficiency.

An allowance should be established for Transcoding of 13 kWh/y and should be used once for devices that include any transcoding function. This allowance assumes that there is no transcoding of streams during the ON and Multi Stream test procedures and that the Transcoder IC is in its lowest power non-functional SLEEP mode when the STB is in SLEEP mode.

4. Elimination of HD and AVP Allowances

EPA should reconsider the elimination of HD and AVP allowances in DRAFT #2. EPA eliminated total allowances of 24 kWh/y for all STB types but did not compensate for this

change in any of the base allowances except possibly for Cable. This has the effect of biasing allowances toward fully featured DVR and WH DVR devices at the expense of basic devices. A basic satellite device such as the DISH ViP211z (TEC=62) remains very popular and is expected to continue shipping in large volumes for the foreseeable future. The DISH ViP211z has the lowest ON power of any subscription Satellite STB listed on both the US EPA QPL and the EU Voluntary Agreement Independent Inspectors report.¹ The ViP211z appears to be the lowest power consuming basic satellite STB in both the US and the EU, if not the world (at this point in time) but yet does not pass the DRAFT #2 TEC allowance of 50. Making matters worse is that we expect basic devices to exhibit a moderate increase in power consumption over the next few years due to the following new or improved features:

- Increased graphics processing and graphics memory capacity is required to match graphics rich user interfaces recently introduced with new WH DVR/Client devices and OTT devices.
- Increased system memory to either support more than the current 2-day electronic programming guides or support access to on-line guides or a combination of both.
- Increased system memory and processing to support operation of popular applications such as Facebook, Pandora, Twitter, etc. as well as future 3rd party applications.
- Implementation of the mandated FCC 21st Century Communications and Video Accessibility Act (CVAA)² over the next few years.

We believe that a minimum TEC level of 70 for a Basic Satellite Single Tuner, HD, AVP STB is the correct V4.1 level to achieve the EPA's 25% goal by the end of the V4.1 program (late 2016/early 2017 timeframe). The EPA has various options to achieve this level such as reinstating both HD and AVP allowances, adjusting the satellite base allowance, or both.

5. Thin Client Allowances

The DRAFT #2 program proposes a total TEC for popular MoCA Thin Clients of 15 (TC base) + 10 (HNI) = 25. The current best-in-class device on the V3 QPL ranges from a TEC of 40 to 44. There is a large gap in DRAFT #2 goals and devices introduced as recently as early 2013. Additionally some Thin Clients have differing energy consuming features such as HDMI repeaters, Channel 3/4 modulators, Ethernet Ports, IR Blasters, Remote Control Interfaces, etc. that are not at the level of justifying a new allowance, but when taken in total account for a significant percentage of the total energy use. We ask that EPA review the Thin Client Base levels, along with consideration for reinstating the HD and AVP allowances, to arrive at a fair TEC/AEC level that would encourage partners to pursue compliance versus abandoning the ENERGY STAR program altogether.

6. Draft 2 Version 4.1 Set top Box Dataset

We attached a commented version of the dataset being used by the EPA to derive new base levels for the V4.1 STB Program. Numerous discrepancies and possible equation errors have been identified which EPA will need to review and correct. We suspect that some of the product feature errors have been introduced over the past year as the new process of using EPA Certification Bodies, who bear the responsibility to provide the information to the EPA, has been implemented. There are also noticed numerous errors on the STB QPL document from the EPA website. The recent detailed analysis performed by the EPA to arrive at new

¹ See <http://cstb.eu/home/wp-content/uploads/2013/04/2013-04-16-Report-Independent-Inspector-2011-2012.2.pdf>

² See <http://www.fcc.gov/guides/21st-century-communications-and-video-accessibility-act-2010>

STB base levels and allowances for this program will need to be reassessed in light of this information. We would like to suggest that EPA offer a one-time opportunity for current ENERGY STAR Partners to correct errors in these documents, without the need to work with the CB. After corrected versions are available, CBs could then review any discrepancies with partners and EPA staff.

I am available to answer any questions you may have about our comments and requests. We look forward to continuing our ENERGY STAR partnership with the EPA.

Sincerely,



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cc:

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Attachment –

File Name: ECHOSTAR COMMENTS to Draft_2_Version_4_1_Set_top_Box_Dataset_130703