April 13, 2012

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

Subject: EchoStar Comments on ENERGY STAR V4 STB Program

Dear Katharine,

EchoStar Technologies L.L.C. appreciates EPA's effort to review the V4 STB program to assure the program goals remain current with available technologies and state-of-the-art product features. In our comments we are recommending several new emerging features that EPA should consider for the V4.1 program. EchoStar is also recommending a review of Base Type and Additional Functionality allowances. Our recommendations are primarily due to the short timeframe between the V3 effective date and the currently planned V4 effective date.

The V4 STB Program documents indicate a mandatory Deep Sleep mode will be considered for the V4.1 program. EchoStar satellite STBs cannot support a Deep Sleep mode due to limitations of a satellite broadcast system. Also under consideration is the inclusion of CPE equipment and in particular satellite LNBs. LNBs energy use is per household, not per STB, and therefore the LNB energy consumption should not be included as part of STB power consumption. We refer EPA to additional information on this subject as submitted jointly by EchoStar, DISH, and DIRECTV in response to the recent US DOE RFI on STB Energy.[1]

EchoStar's major US satellite customer, DISH, recently released "Hopper", a whole-home DVR STB that networks to "Joey", a low power client for each TV. This configuration offers total household energy savings of up to 40% for the average U.S. household (2.9 TVs) over and above using today's ENERGY STAR Version 3.0 products. EchoStar will continue to innovate and develop new energy saving STB solutions as we work with EPA to continue this valuable partnership into the future.

Sincerely,

Gary Langille
Technology and Standards Management
gary.langille@echostar.com
303-706-5409

[1] http://www.regulations.gov/#!documentDetail;D=EERE-2011-BT-NOA-0067-0030

1. V4 new "functional adders" needed for Multi-Room STBs:
    a. Network Router –A MR STB that supports Client STBs with a home network may imbed an IP Network Router (with DHCP) to assign IP addresses to the connected devices (e.g. Thin-Clients, Broadband Routers, and directly connected TVs).
    Proposed functional adder: 10kWh/y
    b. Network Switch – Some MR STBs also contain a network bridge. For instance, an MR STB using a MoCA home network, that also includes a standard Ethernet port(s), may manage the IP traffic between the MoCA network and the customer's broadband router, and other customer home network devices (e.g. PCs).
    Proposed functional adder: 10kWh/y
    c. Multi-TV – Currently the V3 program allows an adder of ½ of a base Thin-client STB (17.5kWh/y) for STBs that can provide independent content to two displays, communicate with two remotes, and share a DVR without the need for a home network or any hardware located at the second display. This is an inadequate allowance since a multi-TV STB essentially contains all of the functions of two STBs within a single STB product resulting in increased household level energy savings.
    Proposed functional adder: 56kWh/y

2. V4 new "functional adders" needed for Thin-Client STBs:
    a. Network Switch – A Thin-Client STB may contain a network bridge. For instance, a Thin-Client STB using a MoCA home network that also has a standard Ethernet port, may bridge IP traffic between the customers' Ethernet connected device (e.g. PC, TV) and the MoCA network.
    Proposed functional adder: 10kWh/y

3. V4 new "functional adders" needed for all STB types:
    a. Transcoding – New STB System-on-Chip (SOC) products from Broadcom (BRCM 7425) and others planned for availability in late summer 2012 add transcoding technology to support content delivery for up to two non-TV devices.
    Proposed functional adder: 13kWh/y (per transcoder)
    b. Multi-Decode – STBs that can decode more than a single program. Picture-in-Picture (PiP) is the most common feature that requires multi-decode
    Proposed functional adder: 10kWh/y
    c. Shared-DVR – Whole-home STBs that can share DVR content with multiple clients generally require a larger HDD, a higher performing HDD, and additional computation capability to manage the video streams to clients.
    Proposed functional adder: 20kWh/y
    d. Full High Definition – An STB capable of a minimum output resolution of 1920×1080 pixels in progressive scan mode at minimum frame rate of 24 fps (abbreviated 1080p24).
    Proposed functional adder: 20kWh/y
    e. Ultra High Definition –An STB capable of minimum output resolution of 3840×2160 pixels in progressive scan mode at minimum frame rate of 24 fps (abbreviated 2160p24).
    Proposed functional adder: 30kWh/y

f. High Efficiency Video Processing (HEVP) – High efficiency methods for video decoding, giving compression efficiency significantly beyond H.264/AVC. This includes, but is not limited to, the example of HEVC, also known as H.265 and MPEG-H Part 2.
Proposed functional adder: 20kWh/y

g. 3D Advanced Processing (3DAP) – An STB that provides a 3D output by using a method that requires the processing of some form of difference signal. This includes, but is not limited to, MPEG MVC. It excludes frame compatible representation of 3D.
Proposed functional adder: 20kWh/y

4. Current V4 "functional adder" proposed changes:

Table 4: Additional Functionality TEC Allowance

Additional Functionality	**Current Version 4.0 Allowance (kWh/year)**	**Proposed Version 4.0 Allowance (kWh/year)**	**Comment**
Advanced Video Processing	8	-	
CableCARD	15	-	
Digital Video Recorder (DVR)	36	-	
DOCSIS®	15	-	
High Definition (HD)	16	-	
Home Network Interface	8	12	Increased due to insufficient allowance for HNI technology (e.g. MoCA) available in V4 timeframe.
Multi-room	30	-	Multi-room needs improved definition. Perhaps this should be redefined as a Multi-Client OR Multi-TV STB only.
Multi-stream – Cable/Satellite	8	8 per input stream	Whole-home and multi-tuner STBs require a scalable allowance for each tuner added. Advanced low power tuner technology is already used in current V3 products reduction is not justified.
Multi-stream – Terrestrial/IP	6	-	
Removable Media Player	8	-	
Removable Media Player / Recorder	10	-	

5. Current V4 "base allowance" proposed changes:

Table 3: Base Type TEC Allowance

Base Functionality	Version 4.0 Allowance (kWh/year)	Proposed Version 4.0 Allowance (kWh/year)	Comment
Cable	45	48	V4 allowance reductions from the V3 levels vary dramatically across STB types; however STB types share many of the same technologies so realizable energy savings need better balance. Proposal reflects moving from current V4 reductions of; 25%, 29%, 50%, 29%, and 43% respectively to a 20% reduction across all STB types.
Satellite	50	56	
Cable DTA	25	28	
Internet Protocol (IP)	25	40	
Terrestrial	18	18	
Thin-client / Remote	20	28	