September 28, 2010

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

Subject: EchoStar Comments - ENERGY STAR Set-top Box V3 DRAFT 2 Documents

Dear Katherine,

EchoStar Technologies L.L.C. is pleased to provide comments on the recently proposed
Version 3.0 Draft 2 documents. I look forward to further discussion with you and your
team at the October online meeting. EchoStar remains disappointed that many of our
Dual TV STB models provide the same functionality and use less energy than other
Version 3.0 Draft 2 qualified configurations, but they do not qualify under the recent
draft. EchoStar has proposed changes, for the EPA's consideration, to the Multi-Room
criteria to address this anomaly.

I am hopeful we can resolve this and other issues identified with the current documents
before the program is finalized. Please contact me if there are any questions or if there is
a need for additional information concerning our comments. I would be glad to meet with
the EPA staff in Washington, DC or over the phone.

Sincerely,

Gary Langille
Alliance and Standards Management
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303-706-5409

A. Product Specification for Set-top Boxes - Eligibility Criteria Draft 2, Version 3.0

1. Home Network Interface (page 2, section B, 2, vi)
   a. EchoStar proposes adding HomePlug as a permitted HNI technology.
   b. EchoStar's experience is that HomePlug typically adds 1.2 to 2.4 Watts or between 10.5 and 21 KWh/y to STB annual energy consumption. Other manufacturers may be able to provide additional data points.
2. Deep Sleep State (page 3, section E-3):
   a. EchoStar recommends the EPA specify a minimum percent reduction of On Mode to qualify as a Deep Sleep State to prevent abuse of the 1.5X credit incentive. For example, an STB with On Mode = 30W, Sleep Mode = 20W, and Deep Sleep Mode= 19W should not qualify for the 1.5X incentive however it's $TEC_{PRIMARY}$ calculation should use equation 4 since it does have a Deep Sleep mode. EchoStar proposes Deep Sleep power consumption must be at least 85% less than On Mode to qualify for the 1.5X credit incentive.
   b. Does an On/Off power switch located on an STB qualify or not qualify for the Deep Sleep incentives?
   c. Must Deep Sleep Mode be automatic or can it be initiated by a user?

3. Product Family (page 4, section G):
   EchoStar supports the EPA adding the Product Family section as it will simplify applications and reduce costs for identical products for multiple customers.
   a. EchoStar proposes a change to the last sentence of the section
   b. From: …aesthetic housing changes that do not affect the thermal characteristics of the device…
   c. To: …aesthetic housing changes only (e.g., color, labeling, or other cosmetic modifications). All features and options of the product family must be identical.
   d. Any changes to the product housing will affect a thermal characteristic however that is up to the manufacturer and service provider to manage.
   e. The energy usage will only be affected by feature or option changes.

4. Table 2: Base Type TEC Allowance (page 9, section 3.3.3, i.)
   a. EchoStar proposes changing base type "Cable/Satellite DTA" to "Cable DTA" since we are not aware of any Satellite DTA product currently on the market. If EPA is aware of a Satellite DTA product then we agree it is fine, as is.
   b. Version 4 Base Type allowances have been reduced at very different rates depending on the base type. EchoStar understands that there has been new information and data obtained over the last several years creating the need for some adjustment to Version 3 allowances however the disparity of reductions for Version 4 appears too large. Since all of these base types use similar electronic components and in many cases use similar SOCs (System-On-a-Chip) integrated technologies, EchoStar proposes that the reductions should be more equitable between base types.
   c. Version 4 allowances for Cable, Satellite, Cable/Satellite DTA, Internet Protocol (IP), Terrestrial, and Thin-client/Remote have been reduced 16.7%, 21%, 31%, 22%, 18%, and 28.6% respectively from the Version 3 allowances. EchoStar

proposes all base types are reduced by 18% from the Version 3 allowances and that these allowances be reviewed by the EPA and industry at least 9 months before the Version 4 program becomes effective.

5. Additional Functionality TEC Allowances (page 9-11):
    a. EchoStar proposes requirement h. (page 9) be deleted and the Home Network Interface allowance be granted for a Multi-Room device. The HNI allowance is now limited to only high performance network technologies including Wi-Fi, MoCA, and HPNA. All of these technologies require dedicated energy consuming RF (radio frequency) hardware that is not associated with Multi-Room capabilities. The Multi-Room allowance covers the added energy consumption for additional hardware and increased processing for the support of multiple users. The MR allowance typically covers additional hardware such as; decoders, encoders, multiple AV output interfaces, conditional access for multiple users, increased CPU processing, and modulators for N/ATSC signals and/or additional communication channels to support multiple thin clients. Multi-Room covers the incremental energy for multiple users, not high performance network technologies. MR has included HNI energy consumption in past versions of the program because the only HNI typically supported was standard wired Ethernet which was very low power. Now that HNI is limited to only high performance (and higher energy consumption) technologies it is unreasonable to expect HNI to be included as part of the MR allowance.
    b. Table 3 – EchoStar supports the elimination of allowances for Removable Media Player and Removable Media/Player Recorder from Table 3. EchoStar assumes that a player or gaming console with removable media (e.g. Blue-ray Disc) that is used as a STB would be qualified under a different EPA program. If those products must qualify under the STB program in addition to another program then these allowances should be retained.
    c. EchoStar proposes the Home Network Interface retain the V2 allowance of 20 KWh/y. Similar to DOCSIS and CableCARD allowances, HNI technologies, other than wireless, have not changed their energy consumption profiles significantly since the V2 timeframe. MoCA 1, the leading multi-room HNI technology, has been adopted or deployed by many Service Providers in the US market (e.g. DirecTV, Dish Network, Verizon, COX, Comcast, Time Warner Cable, etc.). MoCA 1 does not have any power management features thereby requiring 24/7 network connectivity. MoCA 1 will be the primary technology in use through the ENERGY STAR V3 program life. MoCA 2 technology, which contains power management features, has just completed its draft specification phase and clearly will not be available for volume product shipments until 2013 or later. In addition, HNI has been redefined, in the V3 Draft, to include only high performance network technologies that generally draw increased energy. EchoStar does not see any justification for lowering the HNI allowance in the V3 timeframe.

6. Products with Multi-Room Capability (Page 12, 3.4.1):

a. <u>EchoStar proposes new qualification criteria for Multi-Room (MR) STBs (with and without the need for a Thin-client (TC) base type).</u>
   i. The current criteria are not adequate to support the various designs being deployed for MR STBs. MR STBs are a preferred solution for reducing future total home energy consumption. MR STBs must be supported equitably regardless of specific design, HNI technology, or configuration. EchoStar believes the proposed criteria meets ENERGY STAR goals to reduce energy consumption but also permits design flexibility.
b. <u>The first criterion (paragraph i.) is supported by EchoStar as is.</u>
c. <u>The EchoStar proposed second criterion (paragraph ii.) is:</u>
   For MR STB products that can support a second user without requiring a client STB at the second display; if the measured MR STB $TEC_{COMBINED}$ as tested in dual output configuration is less than or equal to the MR STB TEC_{MAX} plus the relevant TC STB TEC_{MAX} the product may be qualified for ENERGY STAR for a MR configuration only. Partner shall clearly indicate in product literature that the product qualifies for ENERGY STAR only when providing content to more than one display.
d. <u>The EchoStar proposed third criterion (paragraph iii.) is:</u>
   For MR STB products that require a client STB at the second display; if the measured MR STB $TEC_{COMBINED}$ plus the measured TC STB $TEC_{COMBINED}$ as tested in dual output configuration is less than or equal to the MR TEC_{MAX} plus the relevant TC TEC_{MAX} the products may be qualified for ENERGY STAR in a MR configuration only. Partner shall clearly indicate in product literature that the product is ENERGY STAR certified only when providing multi-room services with the following STBs (list of STBs tested that meet the criteria).
e. <u>The EchoStar proposed fourth criterion (paragraph iv.) is:</u>
   The measured $TEC_{COMBINED}$ for a TC STB base type must be less than or equal to the relevant TC STB TEC_{MAX} (TC base type allowance plus relevant additional functionality allowances) to qualify a TC STB for ENERGY STAR.
f. Justification for changes to MR criteria:
   i. The proposed criteria provide incentive to solutions that allow adding additional users (displays) without the need for another energy consuming STB located at the additional displays.
      1. The most energy efficient household solutions generally use an existing TV input for adding additional users
         a. Using the N/ATSC or Ethernet input on a TV
         b. Using a network adaptor from the home network (e.g. MoCA, HPNA, Wi-Fi) to an existing input on a TV and using a TV based UI
         c. Using a TVs integrated home network input (e.g. MoCA, HPNA, Wi-Fi) and using a TV based UI
      2. MR STB installations that do not require a client STB do not duplicate the existing advanced video processing, high definition (HD), channel tuning, and home network interface already contained in the additional displays, thereby saving energy. These configurations should be rewarded with increased TEC allowances.

    ii. The proposed criteria incentivize innovative solutions that lower total configuration energy use.

1. A MR STB that <u>does not</u> require client STBs should be given a higher allowance than an MR STB that requires client STBs. This is logical since an MR STB that <u>does not</u> require client STBs must do all processing for all displays supported since there are no clients to share the additional processing.

2. A MR STB that requires client STBs should be evaluated on the total energy use of the combination, not just the MR and client STBs individually.

    a. $TEC_{COMBINED}$ may be lowered by allowing clients to enter Deep Sleep modes not attainable by the main MR STB. The criterion proposed above (d.) allows the manufacturer to manage the energy consumed from a total configuration perspective since it is evaluated against the combined TEC of the MR plus the TC.

    b. The $TEC_{COMBINED}$ of the MR and Client STB should be emphasized. The configuration is critical in realizing household energy savings. For example, if the primary TV (most watched) is connected to a client STB instead of the MR STB directly, then the energy use for the most watched TV is TEC_{MR} plus TEC_{CLIENT}. If the most watched TV is used 70-90% of the time then it is unlikely energy savings would be realized over individual STBs at each TV. By basing the TEC on the combination emphasizes the reduction of total configuration energy use, thereby minimizing the impact of installation configurations on energy consumption.

    iii. Using these proposed criteria eliminates the need to qualify every possible combination of MR and multiple client STBs together. All that is required is to test an MR with one of each type of client STB that is supported. The product labeling could simply state "This STB is ENERGY STAR certified only when providing multi-room services with the following list of STBs".

    iv. If a manufacturer desires to provide an ENERGY STAR MR solution consisting of an MR STB networked to another STB base type (non-TC) then the criteria (d.) still works. As long as the total energy consumption of the combination is less than or equal to the MR TEC_{MAX} plus the relevant TC TEC_{MAX} then the combination should be ENERGY STAR qualified since it uses no more energy than if a TC base type was used at the second TV. If a manufacturer desires to qualify an existing Cable, Satellite, or IP STB with an MR STB they may; choose to lower the power of the MR to compensate for slightly higher energy use by the existing STB, shut down those components not needed anymore on the existing STB to directly communicate with the Service Provider, or allow the

existing STB to enter a Deep Sleep state when not in use (not possible when it was configured as a full Cable, Satellite or IP STB).

B. Product Specification for Set-top Boxes – Test Method

1. Source Signals (page 4, line 53 and 58):
   a. <u>EchoStar proposes that Reference Channel A and Reference Channel C can be either SD or HD format.</u>

2. Head-end System Interaction (page 5, line 83):
   a. <u>EchoStar proposes new language for the satellite requirement</u>: Satellite STBs shall interact with CA system via LNB, POTS modem, or applicable HNI technology (e.g. IEEE-802.3, MoCA, HomePlug, etc.).

3. Tune to Reference Channel C (page 6, line 145):
   a. <u>EchoStar proposes the deletion of this criterion</u>. The base level Watching TV scenario should not include a recording action.

4. Watching Live TV (page 7, line 149):
   a. <u>EchoStar proposes the deletion of a specific place-shifting test</u>.
      i. Place-Shifting, also known in the industry as "TV Everywhere", is an emerging technology and is too immature to be included in the current Energy Star program.
      ii. Place-Shifting is being implemented by Service Providers using many different methods and technologies. Some solutions use the home STB as a content server, some solutions use content servers located in a Service Provider data center, and others propose using the "cloud" ecosystem for content.
      iii. The market penetration of Place-Shifting services is very low and it is not yet possible to obtain use statistics to determine an additional feature allowance for the current V3 program.
      iv. A Place-Shifting service, if implemented as part of the STB device, could use the current Multi-Room STB test as is, since it is basically an alternative method for providing content to a secondary user without the requirement of a client STB.

5. Multi-Room STB (page 9, lines 239 to 249)
   a. <u>EchoStar proposes changing line 239 to "7.9 Multi-Room STB and Client STB Testing"</u>
   b. <u>EchoStar proposes revised text for line 240 to 241:</u> A) At the completion of testing of a multi-room capable UUT in a single-display (user) configuration, per Sections 7.1 through 7.8, the UUT shall be tested in a multi-room configuration. A client STB, if required by the multi-room STB, shall also be tested in a multi-room configuration, as follows:
   c. <u>EchoStar proposes revised text for testing MR configurations:</u>

1. If a MR STB requires a client STB for an additional user, attach a single client to a MR STB using the Service Providers recommended HNI. If the MR STB does not require a client for an additional user, proceed to step 2.
2. Select and Record (if DVR available) Reference Channel A using the MR STB remote control. Ensure that Reference Channel A is visible on the display device connected directly to the MR STB.
3. If there is no client STB proceed to step 5.
4. Test the client STB completing tests 7.1 through 7.8 and record the results. Ensure that Reference Channel A is visible on the display device connected directly to the MR STB throughout the duration of the test.
5. Select and Record (if DVR available) Reference Channel A using the client STB or additional display device remote control. Ensure that Reference Channel A is visible on the additional display device.
6. Test the MR STB completing tests 7.1 through 7.5 and record the results. Ensure that Reference Channel A is visible on the additional display device throughout the duration of the MR STB test.
7. Turn off the client STB or additional display device using the remote control. Initiate Deep Sleep if available. Allow sufficient time for the client STB or display device to enter its lowest power state.
8. Test the MR STB completing tests 7.6 through 7.8 and record the results.
9. The Multi-Room tests are now completed for the MR STB and the client STB.

d. The revised text supports the testing of MR STBs and client STBs while both are operating in a multi-room configuration. The test also supports testing of a MR STB that does not require a client STB.
e. An assumption was made that a client STB or additional display device will be required to be turned off in order for a MR STB to enter its sleep states as tested by 7.6 to 7.8. EPA should review if this is an appropriate assumption for a multi-room configuration.

C. Program Requirements for Set-top Boxes – Partner Commitments

1. No Comments

D. Program Requirements for Service Providers – Partner Commitments

1. Deploying Qualified Products (page 1):
   a. Paragraph 2 – EchoStar proposes the following new text:
   At every opportunity install ENERGY STAR qualified Multi-Room set-top boxes, for whole-home DVR configurations, to minimize the number of DVRs deployed to a subscriber.

   b. Paragraph 3.1.4 item 1 – EchoStar proposes the following new text:
      i. Purchases of Multi-Room set-top boxes receive a 50% premium…
      ii. Each qualified Multi-Room set-top box counts as…

2. EchoStar concludes that if incentives are provided, they should be for Multi-Room STBs and not TCs. The deployment of Multi-Room STBs will lead to reduced whole home energy consumption. The deployment of Thin-clients creates more energy consumption in the home, not less.
    a. Adding users without adding more energy should be promoted.
    b. The most energy efficient solutions generally use an existing TV input for adding additional users
        i. Using the N/ATSC or Ethernet input on a TV
        ii. Using a network adaptor from the home network (e.g. MoCA, HPNA, Wi-Fi) to an existing input on a TV and using a TV based UI
        iii. Using a TVs integrated home network input (e.g. MoCA, HPNA, Wi-Fi) and using a TV based UI
    c. TC-less MR solutions do not duplicate the existing advanced video processing, high definition (HD), channel tuning, and home network interface of the TV thereby saving energy.
    d. The incentive should be aligned with deployment of MR devices
        i. MR based solutions use less total home energy than individual STBs at each user
        ii. MR based solutions have the largest potential for future energy savings (elimination of client STBs/TCs)

3. If the EPA disagrees with EchoStar's view that Multi-Room STBs should have incentives instead of TCs, then EchoStar would prefer that no STBs base types are provided incentives.

4. Training and Consumer Education (page 3, 10.1.2):
    a. EchoStar suggest removing: …and frequent electronic program guide downloads… and adding …and auto power down timers.
    b. Users normally do not have control over EPG downloads so use auto power down timers as an example instead.