



# **Broadcom Comments**

on

**ENERGY STAR<sup>®</sup>**

**Product Specification  
for  
Set Top Boxes  
Version 4.1  
Memo**

Ref: ENERGY\_STAR\_Version 4\_1\_STB\_Proposal\_Memo\_Aug2013.pdf

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Stakeholder,

Broadcom is a leading chip manufacturer of multiple technologies covered by the upcoming v4.1 Set Top Box specification. We implement SoCs (System on Chips) that integrate Cable, Satellite, Wide-Band tuners, MoCA, Ethernet, Wi-Fi and/or numerous other technologies covered in the upcoming specification. As such, we play an integral role in the end products ability to meet the proposed energy consumption levels. To that end, we provide power and capabilities of our SoC to many STB manufactures so they can adequately respond to the request for comments.

Broadcom would like to share a few comments regarding the August 2013 Memo of Version 4.1 ENERGY STAR® Product specification for Set Top Boxes.

On the following pages, you will find proposed changes and some general comments on the memo and the overall specification document.

We would appreciate that you consider Broadcom's comments as you finalize the ENERGY STAR® Product specification for Set Top Boxes.

Best regards,

Broadband Communications Group  
Broadcom Corporation

## Comments on the August 2013 of the v4.1 STB specification

We appreciate the EPA's considerations that were made during the draft 2 comment period and the changes to the energy allocations. Additionally, we believe the recovery time changes will also lead to higher energy savings. We would ask that you please continue to consider all of our comments from the draft 2 specification as you finalize this STB specification.

We have 2 new comments specific to the August memo that are shown below:

*Additionally, the addition of the Ultra HD allowance is expected to also offset power needs for High Efficiency Video Processing as the two features are very much related to each other.*

We agree with the assessment that STB systems providing Ultra HD (4Kx2K) capability will very likely require the improved video compression provided by HEVC. This is why you are seeing the advent of both technologies in the next generation of our devices. Although UltraHD depends on HEVC, the assumption does not work the other way. HEVC benefits are independent of UltraHD. We believe that HEVC will find its way into the market much sooner and more broadly than UltraHD. HEVC will allow broadcasters and IP providers to distribute today's content in roughly ½ the bandwidth of currently deployed AVC (H.264) systems. This bandwidth efficiency is independent of UltraHD, and thus, requires a separate allowance. A suitable allowance for HEVC would be 10 KWhr/yr. Given your 20 KWhr/yr allocation for UltraHD included the HEVC component, we would recommend that you can reduce the UltraHD slightly but only to 15 KWhr/yr. This would be a net increase of only 5 KWhr/yr for a system deploying both technologies.

*2) Presence of EM 1x1 mode in the DOCSIS specification that is designed to save energy and capacity when the system is lightly used. While EPA acknowledges that this functionality has not yet been widely implemented, it is available and can deliver savings.*

Energy Star stated that the EPA decided not to provide a separate allowance for DOCSIS 3.0 because of the presence of EM 1x1 Mode in the DOCSIS specification: "While EPA acknowledges that this functionality has not yet been widely implemented, it is available and can deliver savings." This statement is not accurate. There is a difference between implementation and deployment. In order to be deployed, EM 1x1 Mode has to be implemented by two devices: a DOCSIS 3.0 CM and a DOCSIS 3.0 CMTS. EM 1x1 Mode has been implemented in DOCSIS 3.0 CMs. However, EM 1x1 Mode has not been implemented by DOCSIS 3.0 CMTSs. Until EM 1x1 Mode is implemented on both devices, EM 1x1 Mode cannot be deployed. It is anticipated that EM 1x1 Mode will not be deployed in the field until the 2015 timeframe. The European Union Code of Conduct on Energy Consumption of Broadband Equipment took this into account and maintained the DOCSIS power targets for Tier 2011-2012 into Tier 2013-2014.

We previously made a comment in response to the Small Network Equipment specification that speculated that a very low-power consuming device, which was included in submitted data by a vendor, was being measured in an EM 1x1 mode. At least for test and measurement purposes,

a DOCSIS CM device that has EM 1x1 implemented can be put into EM 1x1 mode manually, for example, through a test control port. However, in actual operation with available CMTSs (whether in the field or in a lab test), the CM cannot go into EM 1x1 mode without a CMTS that has the EM 1x1 feature supported and enabled.

We continue to recommend that an additional allowance be provided for DOCSIS 3.0 of 11 kWhr/yr. Comments in the NOTES section on page 9 (lines 343 to 348) of the 4.1 draft 2 specification state that DOCSIS 3.0 power needs that are above DOCSIS 2.0 power needs are accounted for in the Multi-Room adder. If not specifically given to DOCSIS 3.0 then an increase to the Multi-Room by this same amount is needed.