



Subject: Comments Regarding ENERGY STAR Tier 2

Cisco is working closely with its partners and suppliers to develop and implement energy reduction technology and features in our set-top products (STBs).

While providing expected user features and functionality, we are also working to offer our Service Provider customers flexible control of energy usage corresponding to their user requirements.

Several factors affect the total energy consumption footprint of the current and next generations of set-top products:

1. DVR as a Total Home DVR server streams to multiple (lower power) non-DVR STBs.
 - a. The multi-stream capability of the DVR server provides DVR services to multiple rooms using lower power client set-tops. This eliminates the need for multiple DVR's for program playback.
2. DVR records multiple programs simultaneously removing the need for additional DVR STBs in the home
 - a. This eliminates the need for multiple DVRs for recording programs.
3. The next generation of STBs that will be manufactured under Tier 2 in 2011 and beyond will differ from the current generation of STBs manufactured in 2009 under Tier 1. Here are examples with the corresponding power usage shown if that power usage is known at this time:
 - a. CPU DMIPS will significantly increase
 - b. Memory footprints will be doubled from 128MB to 256MB (~1watt per 128MB)
 - c. Higher resolution 1080p60 support vs. 1080i/720p support
 - d. 3D graphics capabilities supported (~1/2watt)
 - e. 3D Television support
 - f. Advanced home networking technologies with increased PHY rates
 1. HPNA (~2.5watts)
 2. G.hn
 3. MoCA 2.0 (~3watts)
 4. Powerline Carrier (~2.5watts)
 5. 802.11x Wireless (~4-6watts)
 - g. Advanced audio decoding and playback
 - h. Transcoding (~2.5watts)
 - i. Femtocell (~7watts)
 - j. Wireless HDMI (~5watts)
 - k. Home automation/smart grid

- I. 2-way RF Remote Control (Power ~1watt)
 1. Zigbee
 2. Z-wave
 3. RF4CE
 4. Bluetooth
 5. UHF

As the above mentioned features are added to STBs, there is also corresponding software development and integration required to power down these features where possible. The timing of this development and integration from a system perspective will need to be taken into consideration as Tier 2 requirements are discussed further over the next few months.

With regard to the two items listed as 'TBD' in Table 2 of the Version 2.0 STB Requirements, Cisco believes that neither of these technologies has changed with respect to functionality or performance, and thus should remain at the Tier 1 levels.

Further, Cisco believes that the draft Tier 2 allowance targets have been significantly reduced from the Tier 1 requirements without the requisite improvements in technology that simultaneously meet the upcoming market needs for functionality. An example of this is the 50% reduction in the allowance for Home Networking. While the core technologies have not improved in efficiency, STB Home Networking interfaces will use newer technologies that will have higher functionality and increased power needs in the Tier 2 timeframe.

Cisco looks forward to further discussions on Tier 2 requirements and the opportunity to achieve energy consumption reductions while also meeting the market functional requirements.