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Subject: Comments Regarding Draft ENERGY STAR Program Requirements for Set-top Boxes Version 3

Please consider this input as follow-up to comments Cisco had previously submitted regarding Draft ENERGY STAR Set-top Box (STB) Specification Version 2 Tier 2, now renamed, “Draft ENERGY STAR STB Version 3 Tier 1.”

Cisco appreciates the opportunity to participate in the revision of the ENERGY STAR STB specification. We would like to follow up on information disseminated at the Draft 1 Stakeholder meeting, hosted by EPA, on March 19, 2010.

Specifically, EPA presentation materials included a proposed Version 3 Tier 1 Total Energy Consumption (TEC) allowance for Internet Protocol (IP) STBs, which we understand was based on data from twelve Version 2 Tier 1 qualified IP STBs and data from eight independently tested IP STBs (referred to as “ENERGY STAR supplemental data collection”). It appears that Cisco IP STBs, meeting Version 2 Tier 1 requirements, accounted for data from five of the twelve qualified IP STB models.

Accordingly, Cisco is encouraged by the finding in EPA’s presentation, “All ‘pre-market’ 2010 STBs in the ENERGY STAR data set are capable of meeting the proposed Version 3.0 Tier 1 limits”, and we would appreciate receiving more information from EPA about the supplemental test methodology and procedures used to support this finding.

In addition to our interest in meeting current ENERGY STAR requirements for IP STBs, Cisco is focused on meeting the ENERGY STAR requirements for the next generation of IP STBs, the ISB7000 Series, which we anticipate will be in full deployment in June 2011, when the Version 3 Tier 1 requirements are slated to go into effect. In this context, Cisco would appreciate EPA’s assistance in providing the details of the ENERGY STAR supplemental data collection test methodology and procedures used to obtain the supplemental data that supports EPA’s finding about 2010 STBs and their ability to meet Version 3.0 Tier 1 requirements. Access to the supplemental data test method and procedures would assist Cisco’s product compliance team in verifying that the Cisco IP STBs tested would qualify, in fact, under the draft Version 3.0 Tier 1 proposal, which in turn, would facilitate Cisco’s ability to provide additional substantive comments on the proposed draft Version 3.0 Tier 1 TEC requirements.

Please see additional Cisco comments and questions below. Thank you again for considering our request for additional information and for providing Cisco the opportunity to participate in the Version 3 Tier 1 revision process.

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Additional Comments/Questions:

1) Please provide additional clarification of the definition of **Additional Tuners – Terrestrial / IP**. Specifically, does an IP set-top with a single Ethernet input capable of decoding and displaying (via PIP) multiple input streams qualify for this allowance?
2) While in sleep mode, does a set-top that outputs a screen saver still fulfill the non-primary function requirement for APD?
3) A rather large share of STBs that ship into the leased Service Provider market do not have middleware or application software loaded on them at the factory. These STBs receive their software loads from the Service Provider prior to being deployed into the field. This allows for flexibility on the part of the Service Provider, since they purchase STBs for various markets. Because of this industry standard practice, we ask that the phrase in lines 293/294, "…the STB must be shipped from the manufacturer with APD enabled by default…" be clarified to indicate "for units shipped to retail". We believe that a design which takes advantage of APD is a win-win, but the current wording in the draft requirements makes this requirement incompatible with industry practice.
4) Please provide the rationale for the statement below excerpted from the Draft ENERGY STAR Program Requirements for Set-top Boxes Version 3:

- Given recent STB technology trends, the Home Network Interface and Advanced Video Processing allowances that were included for Tier 2 in the Version 2.0 specification (10kWh/year and 12 kWh/year, respectively) have been removed from the list of additional functionality allowances for Version 3.0, and added to the base type allowances for Cable STBs in Tier 1 of this specification.

Aggregating the home network interface allowance and advanced video processing allowance into the base allowance is inadvisable for network architecture and business use case reasons, and would have unintended consequences on consumers, innovators and the environment. From a technical perspective, home networks require STBs that support multiple technologies in order to optimize the distribution of video services. Users often choose to view video on multiple media devices, which requires that the set top incorporate multiple interfaces in order to deliver video to separate user-defined end points (such as TV, computer monitor, mobile phone). Moreover, not all set-tops incorporate identical home networking technologies because home networks differ architecturally and are based on evolving user demands. For instance, Cisco is introducing a product that supports three network interfaces in a single set-top: One network interface is standard Ethernet/CAT5, another is Ethernet over coax (HPNA), and the third interface is Wi-Fi (802.11n). Intuitively, one might ask, "If only one network interface is used, why keep all three interfaces active?" In practice the answer is not that simple. Since the hardware and application software cannot be aware of which network interface a particular end user has decided, or may decide, to use, all three interfaces must be active and available in order to accommodate evolving user choice. In addition, certain use cases can call for all three interfaces to be used simultaneously. The

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implication is that additional allowances should be given to set-tops that incorporate multiple network interfaces.

Related and nontrivial consequences of removing the Home Network allowance are that STB designers and manufacturers would be driven to use separate external devices to uncouple the burden on the set-top power consumption. However, a separate external solution would result in additional power consumption, increased cost, increased manufacturing waste, etc., placing unnecessary and further economic and natural resource burdens on consumers and the environment.

5) EPA mentioned during the March 19th Stakeholders meeting that the IP power consumption allowance was too high and should be similar to the thin client. However, Cisco's technical information suggests that with the exception of how video services enter the set-top, satellite and cable set-tops are architecturally identical to an IP set-top. Furthermore, an IP set-top has the additional burden of dealing with existing home wiring network architectures not optimized for Ethernet delivery systems. Particularly, most homes built in the U.S. are either wired for coax or have no existing network wiring at all. In most cases, instead of rewiring the customer's home with CAT-5 wire, the existing coax network is utilized. In order to use the prewired coax network, active electronic devices must be used to convert IP Ethernet signals to signals appropriate for coax. Regardless of the technology used (HPNA or MoCA), the power consumption associated with this technology is generally higher than a cable tuner. The net effect is that the power dissipation of an IP set-top with a coax-based home network interface is similar to the power dissipation of a dual tuner satellite set-top (not including the LNB) or cable set-top.

6) Please provide the test method and procedures used to find that, "All pre-market 2010 STBs in the ENERGY STAR data set are capable of meeting the proposed Version 3.0 Tier 1 limits".

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	EnergyStar V2 TEC Allowance (kwh/year)	EnergyStar V3 TEC Allowance (kwh/year)
Base Functionality		
Cable	70	72
Satellite	88	72
IP	45	58
Terrestrial	27	22
Thin-Client/Remote	27	22
Cable / Satellite DTA		35
Additional Functionalities		
Additional Tuners	53	16
Additional Tuners – Terrestrial /IP	14	8
Adv. Video Processing	18	
DVR (hard drive)	60	45
High Definition	35	25
Removable Media Player	12	8
Removable Media Player/Recorder	23	10
Multi-Room	44	25
CableCARD	15	15
DOCSIS	20	20
Home Network Interface	20	
TEC Allowance		
IP, HPNA, Non-DVR (IPN330 & ISB7000)	118	83
IP, HPNA, DVR (IPN430MC, IPN4320 & ISB7320)	178	128
TEC Actual		
IP, HPNA, Non-DVR (ISB7000)	114	114
IP, HPNA, DVR (ISB7320)	135	135

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