

ENERGY STAR Set-top Box Specification

Proposed Changes for Deep Sleep State

December 14, 2010

Note: Proposed changes from the Final Draft text are highlighted in blue.

Service Provider Partner Commitment References

3. Meet or exceed one of the following fleet/purchase requirements for each year of partnership:
 - 3.1. Purchase Requirement: Ensure that 50% of all new set-top box purchases in a calendar year are ENERGY STAR qualified.
 - 3.1.4. Purchases of qualified set-top boxes with advanced energy saving features or capabilities are counted towards the purchase requirement at a premium, as follows. The following premiums cannot be combined for a single set-top box:
 - 2) Purchases of STBs with Deep Sleep capability (as defined by the satisfaction of all Deep Sleep requirements specified in the ENERGY STAR Set-top Box Eligibility Criteria) receive a 50% premium towards the purchase requirement. Each qualified set-top box with Deep Sleep capability counts as 1.5 ENERGY STAR purchases.

Eligibility Criteria References

1. DEFINITIONS

E) Operational Modes:

- 3) Deep Sleep State: A power state within Sleep Mode characterized by reduced power consumption and increased time required to return to full On Mode functionality.

3. QUALIFICATION CRITERIA

3.2 General Qualification Criteria

3.2.4 Deep Sleep:

- i. For a power state to qualify as a Deep Sleep, measured power consumption ($P_{\text{DEEP_SLEEP}}$) shall be less than or equal to 15% of the power consumption in On Mode (as measured per the ENERGY STAR test procedure for "Watching Live TV" [P_{TV}]), or 3.0 watts, whichever is greater.
- ii. For STBs with a user interface, a means of manually activating Deep Sleep shall be accessible to the end user via a clearly marked button or switch on the remote control and/or the front face of the STB. Alternative button configurations will be acceptable with written approval from EPA.
- iii. For STBs with no user interface (e.g., "set-back boxes") and for STBs that can switch between power states only via external network stimuli (e.g., thin client remote STBs) to qualify for ENERGY STAR Deep Sleep benefits; Deep Sleep functionality shall be enabled by default upon shipment to the end user, and shall be initiated automatically via timer or other means not requiring direct end user manipulation of the device (e.g., detecting demand of a downstream device via HDMI link, network message). Alternate means of detection/communication must be broadly applicable and not limited to a specific brand of TV or downstream device.
- iv. If Deep Sleep capability is enabled in the as-shipped default product configuration, an override function may be provided to allow the end-user to disable Deep Sleep functionality.

3.3 Typical Energy Consumption (TEC) Requirements

i. Primary TEC ($TEC_{PRIMARY}$) shall be calculated per Equation 2.

Equation 1: Calculation of Primary TEC ($TEC_{PRIMARY}$)

$$TEC_{PRIMARY} = 0.365 \times ((T_{TV} \times P_{TV}) + (T_{SLEEP} \times P_{SLEEP}) + (T_{APD_1} \times P_{APD}) + (T_{APD_2} \times P_{DEEP_SLEEP}))$$

Where:

- T_{TV} is the time coefficient for On Mode, as determined per Table 1;
- P_{TV} is the measured power in On Mode (W);
- T_{SLEEP} is the time coefficient for Sleep Mode, as determined per Table 1;
- P_{SLEEP} is the measured power in Sleep Mode (W);
- T_{APD_1} is the time coefficient for APD, as determined per Table 1;
- P_{APD} is the measured power after APD (W);
- T_{APD_2} is the time coefficient for Deep Sleep State, as determined per Table 1;
and
- P_{DEEP_SLEEP} is the measured power in Deep Sleep State (W).

Table 1: Primary TEC Equation Time Coefficients

APD to Sleep Enabled by Default	APD to Deep Sleep Enabled by Default	T_{TV}	T_{SLEEP}	T_{APD_1}	T_{APD_2}
NO	NO	14	10	0	0
NO	YES	14	6	0	4
YES	NO	7	10	7	0
YES	YES	7	6	7	4

Note: The equation and table above will replace Equations 2, 3, and 4 from the Final Draft specification.