



ENERGY STAR⁷ Qualified Set-top Boxes
Energy-Efficiency Specification
September 6, 2000



Below is the product specification for ENERGY STAR qualified set-top boxes. A product must meet all of the identified criteria if it is to be labeled as ENERGY STAR by its manufacturer.

- 1) Definitions: Below is a brief description of a set-top box and its common operational modes as relevant to ENERGY STAR. The ENERGY STAR specification focuses on reducing energy consumption while the product is in the Standby/Low-power Mode.
 - A. Set-top Box: A commercially available electronic product encased in a single housing whose purpose is to receive, send, process, translate, and/or record signals that are then sent to a television or similar display device for viewing or to a computer for processing. Products currently covered under the TV/VCR and Home Audio/DVD specifications are not eligible to qualify for the ENERGY STAR label under Set-top Boxes. As the TV/VCR and Home Audio/DVD specifications are revised, EPA will make a concerted effort to coordinate and/or consolidate, as appropriate, the energy-efficiency specifications across TV/VCRs, Home Audio/DVDs, and Set-top Boxes.
 - B. Standby/Low-power Mode: A low-power state that the set-top box product model enters while connected to a power source. In this mode, the product usually appears to be “OFF” to the user, but may be capable of responding to a signal (e.g., a signal sent from a head end or data provider) and may continue to perform some functions (e.g., remote control sensing, time readout, and hard drive spinning).
 - C. Active Mode: The mode in which the product has been turned “ON” by the user. The product is connected to a power source and is receiving, sending, processing, translating, and/or recording signals. The power requirement in this mode is typically greater than the power requirement in Standby/Low-power Mode.
 - D. Disconnect: The mode in which the product is disconnected from all external power sources.
- 2) Qualifying Products: For the purposes of ENERGY STAR, set-top box products include the following: analog cable TV set-top boxes, advanced analog cable TV set-top boxes, digital TV converter set-top boxes, Internet access devices, video game consoles, videophone set-top boxes, set-top boxes with cable modems, digital cable TV set-top boxes, satellite TV set-top boxes, wireless TV set-top boxes (e.g., MMDS and LMDS), personal video recorders (e.g., TiVo and Replay TV), and multifunction devices. For the purposes of ENERGY STAR, a multifunction device is defined as a physically integrated device that has the core function of a satellite TV set-top box, digital cable TV set-top box, wireless TV set-top box, or personal video recorder plus one or more additional functionalities, such as an Internet access device or video game console.
- 3) Energy-Efficiency Specifications for Qualifying Products: Only those products listed in Section 2 that meet the criteria below (see items A through C and Table 1) may qualify as ENERGY STAR. For

convenience, EPA has developed its specification based on Standby/Low-power Mode. However, if a product model meets all of the criteria below in Active Mode, it may qualify for the label.

- A. If the product is designed for a network environment, then it must retain network connectivity (e.g., communication with a head end or service provider) and the ability to be awakened by a remote source in the Standby/Low-power Mode.
- B. Products with a hard off “standby” mode may qualify for the ENERGY STAR label. If a particular model has multiple standby/low-power modes and one of them is a hard-off “standby” mode, the power measurement must be taken with the unit in the most energy consumptive standby/low-power mode.
- C. The manufacturer must ensure that the energy-saving features or design of the ENERGY STAR qualified product do not interfere with or adversely impact the performance of the product.
- D. The average power needs during the Standby/Low-power Mode must not exceed the values in Table 1 below.

Table 1: Energy-Efficiency Criteria for ENERGY STAR Qualified Set-top Boxes

Product Category	Tier 1: Standby/Low-power Mode	Tier 2: Standby/Low-power Mode
Category 1 <ul style="list-style-type: none"> • Analog Cable TV Set-top Box • Advanced Analog Cable TV Set-top Box • Digital TV Converter Set-top Box • Internet Access Device • Video Game Console • Videophone Set-top Box • Set-top Box (e.g., Internet access device) with Cable Modem for enhanced communications in Standby/Low-power Mode 	# 3 Watts	One specification for all set-top boxes: # 7 Watts (for satellite systems, add # 5 Watts for each LNB)
Category 2 <ul style="list-style-type: none"> • Digital Cable TV Set-top Box • Satellite TV Set-top Box* • Wireless TV Set-top Box • Personal Video Recorder 	# 15 Watts (for satellite systems, add # 5 Watts for each LNB)	
Category 3 <ul style="list-style-type: none"> • Multifunction Device (i.e., a physically integrated device that has the core function of a satellite TV set-top box, digital cable TV set-top box, wireless TV set-top box, or personal video recorder plus one or more additional functionalities, such as an Internet access device or video game console) 	# 20 Watts (for satellite systems, add # 5 Watts for each LNB)	

*NOTE: The ENERGY STAR Tier 1 specification for each stand-alone satellite receiver is 15 Watts or less; manufacturers may add an additional 5 Watts or less to the specification for each LNB sold with a receiver. For example, a model sold with one receiver and a single LNB must consume 20 Watts or less to qualify for the ENERGY STAR label. Similarly, a model sold with one receiver and a dual LNB must consume 25 Watts or less, and a model with two receivers and a dual LNB must consume 40 Watts or less. Please note that LNBs sold separately may *not* qualify for the label.

- 4) Power Measurement: Manufacturers are required to perform tests and self-certify those product models that meet the ENERGY STAR guidelines. While this is a self-certifying process, EPA reserves the right to conduct tests on ENERGY STAR labeled products obtained from the open market, the manufacturer, or other available sources. The power requirement shall be measured from the outlet or power supply source to the product under test. The product manufacturer (i.e., ENERGY STAR Partner) shall measure the average true power (in Watts) of the product. When performing measurements to self-certify a product model, the products under test must be in the condition (e.g., configuration and settings) shipped to the customer. In addition, if a product is designed for a network environment, it must be tested while connected to the network to ensure that all power consumption and performance criteria are met. **Refer to the Testing Guidelines for ENERGY STAR® Qualified Set-top Boxes for additional information.**

- 5) Effective Date: The date that manufacturers may begin to qualify products as ENERGY STAR will be defined as the *effective date* of the Agreement. Similar to the other ENERGY STAR Home Electronics specifications, a manufacturer has **two years** after signing the Partnership Agreement to ensure that the ENERGY STAR label appears directly on at least one ENERGY STAR qualified set-top box model.
 - A. Tier 1

The first phase of this specification, Tier 1, shall commence on January 1, 2001 and conclude on December 31, 2003. Upon signing the Agreement, the Partner may begin to use the ENERGY STAR logo on product models, packaging, or other product-related materials that meet the Tier 1 specification. (Refer to the ENERGY STAR Logo Use Guidelines for more information.) Marketing and promotional activities in support of ENERGY STAR labeled set-top boxes (e.g., product launch) will be conducted by EPA, with assistance from Partners and the Electronics Industry Alliance/Consumer Electronics Association (EIA/CEA), at the 2001 Consumer Electronics Show (CES7).
 - B. Tier 2

The second phase of this specification, Tier 2, shall commence on January 1, 2004. The specification for Tier 2 shall apply to products that the Partner begins to ship after December 31, 2003. However, once an individual product model is qualified by the Partner as ENERGY STAR, the model, packaging, or other product-related materials may continue to bear the ENERGY STAR logo until the model is phased out of the market (i.e., the Tier 2 specification will not apply retroactively to models previously qualified under the Tier 1 specification).

- 6) Future Specification Revisions: EPA reserves the right to change the specification should technological and/or market changes affect its usefulness to consumers, industry, or the environment. In keeping with current policy, revisions to the specification are arrived at through industry discussions. EPA believes that new technologies are already available to further reduce Standby/Low-power Mode power requirements in set-top boxes and that future levels will be consistent with those levels recently negotiated for other home electronics.