

Required Test Methods for EPA-Recognized Laboratories

Introduction

Per [Directive #2011-02, EPA Policy on Laboratory Scopes of Accreditation for the ENERGY STAR Program](#), for a laboratory to be recognized by the U.S. Environmental Protection Agency (EPA) to test products for ENERGY STAR® certification, the laboratory's scope of accreditation must include *at a minimum* the title of the relevant [ENERGY STAR product specification](#). If the laboratory is not accredited to the required test methods for every product subtype within the relevant product specifications, the Accreditation Body should also list the specific product subtypes to which it has accredited the laboratory. The scope may also include the title of the test methods for the product subtypes such as those listed in this document.

Please note that the test methods listed below may be required only for a subtype of the product category. Each of the test methods and standards are listed by product specification, as enumerated in the table of contents on the next page. If you have any questions about this document, please contact Certification@energystar.gov.

Acronyms Used in This Document

AC	Air Conditioning	HVI	Home Ventilating Institute: www.hvi.org
AHAM	Association of Home Appliance Manufacturers: www.aham.org	IEC	International Electrotechnical Commission: www.iec.ch
ANSI	American National Standards Institute: www.ansi.org	IES	Illuminating Engineering Society: www.ies.org
ASHRAE	American Society of Heating, Refrigerating, and Air-Conditioning Engineers: www.ashrae.org	ISO	International Organization for Standardization: www.iso.org
ASTM	ASTM International: www.astm.org	NEMA	National Electrical Manufacturers Association: www.nema.org
CEA	Consumer Electronics Association: www.ce.org	NFRC	National Fenestration Rating Council: www.nfrc.org
CIE	International Commission on Illumination: www.cie.co.at	NVLAP	National Voluntary Laboratory Accreditation Program: www.nist.gov/pml/nvlap
CFR	Code of Federal Regulations: www.gpoaccess.gov/cfr	UL	Underwriters Laboratories: www.ul.com
DOE	Department of Energy: www.energy.gov	UPS	Uninterruptible Power Supply
HVAC	Heating, ventilation, and air conditioning		

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Test Methods by ENERGY STAR Product & Sub-Product Type

ENERGY STAR Product Category	Test Method/Standard
Appliances	
Residential Clothes Dryers ENERGY STAR Program Requirements Product Specification for Clothes Dryers Version 1.1	- 10 CFR 430, Subpart B, Appendix D2
Residential & Commercial Clothes Washers ENERGY STAR Program Requirements Product Specification for Clothes Washers Version 8.1	- 10 CFR 430, Subpart B, Appendix J2
Residential Dishwashers ENERGY STAR Program Requirements Product Specification for Residential Dishwashers Version 7.0	- 10 CFR 430, Subpart B, Appendix C1
Residential Refrigerators ENERGY STAR Program Requirements Product Specification for Consumer Refrigeration Products Version 5.1	- 10 CFR 430, Subpart B, Appendix A
Residential Freezers & Coolers ENERGY STAR Program Requirements Product Specification for Consumer Refrigeration Products Version 5.1	- 10 CFR 430, Subpart B, Appendix B
Room Air Cleaners ENERGY STAR Program Requirements Product Specification for Room Air Cleaners Version 2.0	- ANSI/AHAM AC-1-2020: Method of Measuring the Performance of Portable Household Electric Room Air - UL 867 Ed. 5.0, Electrostatic Air Cleaners - IEC 62301 Ed. 2.0 Household electrical appliances – Measurement of standby power

ENERGY STAR Product Category	Test Method/Standard
Heating, Cooling and Water Heating	
Boilers ENERGY STAR® Program Requirements for Boilers Eligibility Criteria Version 3.0	<ul style="list-style-type: none"> - 10 CFR part 430 Subpart B, Appendix N
Central ACs and Air-Source Heat Pumps ENERGY STAR Program Requirements Product Specification for Air Source Heat Pump (ASHP) and Central Air Conditioner Equipment Version 6.1	<ul style="list-style-type: none"> - 10 CFR part 430 Subpart B Appendix M1, including the optional H4 very low temperature condition. - Controls Verification Procedure for Residential Heat Pump Low Ambient Performance
Commercial Packaged Boilers ENERGY STAR Program Requirements Product Specification for Commercial Packaged Boilers Version 1.0	<u>Thermal Efficiency:</u> <ul style="list-style-type: none"> - 10 CFR Part 431.86 <u>Turndown ratio:</u> <ul style="list-style-type: none"> - UL 795 OR ANSI Z21.13-2014/CSA 4.9
Commercial Water Heaters ENERGY STAR Program Requirements Product Specification for Commercial Water Heaters Version 2.0	<u>Thermal Efficiency/Standby Loss:</u> <ul style="list-style-type: none"> - 10 CFR Part 431.106 <u>Coefficient of Performance:</u> <ul style="list-style-type: none"> - 10 CFR Part 431.106, Subpart G, Appendix E (Electronic Code of Federal Regulations)
Connected Thermostats ENERGY STAR® Program Requirements for Connected Thermostats Eligibility Criteria Version 1.0	<ul style="list-style-type: none"> - ENERGY STAR Method to Demonstrate Field Savings - Version 1.0 Connected Thermostat Products specification, section 4 and - IEC 62301, Ed. 2.0, 2011-01
Dehumidifiers ENERGY STAR Program Requirements Product Specification for Dehumidifiers Eligibility Criteria Version 5.0	<ul style="list-style-type: none"> - 10 CFR 430, Subpart B, Appendix X1

ENERGY STAR Product Category	Test Method/Standard
<p>Furnaces</p> <p>ENERGY STAR Program Requirements for Furnaces Eligibility Criteria Version 4.1</p>	<ul style="list-style-type: none"> - 10 CFR Part 430, Appendix N - ANSI/ASHRAE 193-2010
<p>Geothermal Heat Pumps</p> <p>ENERGY STAR Program Requirements Product Specification for Geothermal Heat Pumps Version 3.2</p>	<ul style="list-style-type: none"> - ISO 13256-1-1998, Water-source heat pumps – Testing and rating for performance – Part 1: Water-to-air and brine-to-air heat pumps - ISO 13256-2-1998, Water-source heat pumps – Testing and rating for performance –Part 2: Water-to-water and brine-to-water heat pumps - ANSI/AHRI 870-2016, Performance Rating of Direct Geothermal Heat Pumps
<p>Light Commercial HVAC</p> <p>ENERGY STAR Program Requirements Product Specification for Light Commercial HVAC Version 4.0</p>	<ul style="list-style-type: none"> - 10 CFR part 431, Subpart F §431.96 - ENERGY STAR Controls Verification Procedure for Residential Heat Pump Low Ambient Performance
<p>Room Air Conditioners</p> <p>ENERGY STAR Program Requirements Product Specification for Room Air Conditioners Version 5.0</p>	<ul style="list-style-type: none"> - 10 CFR 430, Subpart B, Appendix F - ENERGY STAR Room Air Conditioners Test Method to Validate Demand Response, Rev. June-2017 (Optional)
<p>Residential Water Heaters</p> <p>ENERGY STAR Program Requirements Product Specification for Residential Water Heaters Version 5.0</p>	<ul style="list-style-type: none"> - 10 CFR Part 430, Subpart B, Appendix E¹ - 10 CFR Part 430, Subpart G, Appendix E¹ - ICC 900/SRCC 300-2020 Solar Thermal System Standard, Appendix A: Solar Uniform Energy Factor Procedure for Solar Water Heating Systems - ENERGY STAR Connected Residential Water Heaters Test Method to Validate Demand Response, Version 1.2

¹ Includes any applicable guidance that DOE has issued regarding the testing of these products (See <https://www.energy.gov/eere/buildings/appliance-standards-guidance-and-frequently-asked-questions-faqs>).

ENERGY STAR Product Category	Test Method/Standard
Commercial Food Service Equipment	
Commercial Electric Cooktops ENERGY STAR Program Requirements Product Specification for Commercial Electric Cooktops Version 1.0	<ul style="list-style-type: none"> - ASTM F-1521-22, <i>Standard Test Methods for Performance of Range Tops</i>
Commercial Coffee Brewers ENERGY STAR Program Requirements Product Specification for Commercial Coffee Brewers Version 1.1 (Rev. Dec – 2020)	<ul style="list-style-type: none"> - ASTM F-2990-12(2018), <i>Standard Test Method for Commercial Coffee Brewers</i>
Commercial Dishwashers ENERGY STAR Program Requirements Product Specification for Commercial Dishwashers Version 3.0 (Rev. – September 2021)	<ul style="list-style-type: none"> - ASTM F1696-20, <i>Standard Test Method for Energy Performance of Stationary-Rack, Door-Type Commercial Dishwashing Machines</i> - ASTM F1920-20, <i>Standard Test Method for Energy Performance of Rack Conveyor Commercial Dishwashing Machines</i>
Commercial Fryers ENERGY STAR Program Requirements Product Specification for Commercial Fryers Version 3.0 (Rev. December – 2020)	<ul style="list-style-type: none"> - ASTM F1361-20, <i>Test Method for the Performance of Open Deep Fat Fryers</i> - ASTM Standard F2144-17, <i>Test Method for Performance of Large Open Vat Fryers</i>
Commercial Griddles ENERGY STAR Program Requirements Product Specification for Commercial Griddles Version 1.2 (Rev. Dec – 2020)	<ul style="list-style-type: none"> - ASTM F1275-14 (reapproved 2020), <i>Standard Test Method for the Performance of Griddles</i> - ASTM F1605-14 (reapproved 2019), <i>Standard Test Method for the Performance of Double-Sided Griddles</i>
Commercial Hot Food Holding Cabinets ENERGY STAR Program Requirements Product Specification for Commercial Hot Food Holding Cabinets Version 2.0 (Rev. Dec – 2020)	<ul style="list-style-type: none"> - ASTM F2140-11(2019), <i>Standard Test Method for the Performance of Hot Food Holding Cabinets</i>

ENERGY STAR Product Category	Test Method/Standard
<p>Automatic Commercial Ice Makers</p> <p>ENERGY STAR Program Requirements Product Specification for Automatic Commercial Ice Makers Version 3.0</p>	<ul style="list-style-type: none"> - 10 CFR Part 431.134 - AHRI Standard 810-2007 with Addendum 1, (AHRI 810) Performance Rating of Automatic Commercial Ice-Makers
<p>Commercial Ovens</p> <p>ENERGY STAR Program Requirements Product Specification for Commercial Ovens Version 3.0</p>	<ul style="list-style-type: none"> - ASTM F2861-20, <i>Standard Test Method for Enhanced Performance of Combination Oven in Various Modes</i> - ASTM F1496-13(2019), <i>Standard Test Method for Performance of Convection Ovens</i> - ASTM F2093-18, <i>Standard Test Method for Performance of Rack Ovens</i>
<p>Commercial Refrigerators and Freezers</p> <p>ENERGY STAR Program Requirements Product Specification for Commercial Refrigerators and Freezers Version 5.0</p>	<ul style="list-style-type: none"> - 10 CFR Part 431, Subpart C, Appendix B
<p>Commercial Steam Cookers</p> <p>ENERGY STAR Program Requirements Product Specification for Commercial Steam Cookers Version 1.2</p>	<ul style="list-style-type: none"> - ASTM F1484-99, <i>Standard Test Method for the Performance of Steam Cookers</i>
Electronics and Office Equipment	
<p>Audio/Video</p> <p>ENERGY STAR Program Requirements Product Specification for Audio/Video Version 3.0</p>	<ul style="list-style-type: none"> - ENERGY STAR Test Method for Audio/Video, ENERGY STAR Program Requirements Product Specification for Audio/Video, Rev. July-2012
<p>Computers</p> <p>ENERGY STAR Program Requirements Product Specification for Computers Version 8.0</p>	<ul style="list-style-type: none"> - ENERGY STAR Computer Draft Test Method, ENERGY STAR Program Requirements Product Specification for Computers, Rev. July 2022

ENERGY STAR Product Category	Test Method/Standard
<p>Data Center Storage</p> <p>ENERGY STAR Program Requirements Product Specification for Data Center Storage Version 2.1</p>	<ul style="list-style-type: none"> - ENERGY STAR Test Method for Data Center Storage Equipment, Rev. May 2020
<p>Displays</p> <p>ENERGY STAR Program Requirements Product Specification for Displays Version 8.0</p>	<ul style="list-style-type: none"> - ENERGY STAR Test Method for Determining Display Energy – Rev. Feb-2020 - International Committee for Display Metrology (ICDM) Information Display Measurements Standard – Version 1.03 - CEA-2037-A, Determination of Television Set Power Consumption - VESA High-performance Monitor and Display Compliance Test Specification (Display HDR CTS) Version 1.0
<p>Enterprise Servers</p> <p>ENERGY STAR Program Requirements Product Specification for Computer Servers Version 3.0</p>	<ul style="list-style-type: none"> - ENERGY STAR Test Method for Computer Servers, Rev. Sep- 2018 - Standard Performance Evaluation Corporation (SPEC) Server Efficiency Rating Tool (SERT), most current version²
<p>Imaging Equipment</p> <p>ENERGY STAR Program Requirements Product Specification for Imaging Equipment Version 3.2</p>	<ul style="list-style-type: none"> - ENERGY STAR Test Method for Determining Imaging Equipment Energy Use, Rev. Dec-2018 - ENERGY STAR Test Method for Determining Professional Imaging Product Energy Use, Rev. Feb-2020
<p>Large Network Equipment</p> <p>ENERGY STAR Program Requirements Product Specification for Large Network Equipment Version 1.1</p>	<ul style="list-style-type: none"> - ENERGY STAR Test Method for Large Network Equipment, Rev. December-2015
<p>Telephony</p> <p>ENERGY STAR Program Requirements Product Specification for Telephony Version 3.0</p>	<ul style="list-style-type: none"> - ENERGY STAR Test Method for Telephony, ENERGY STAR Program Requirements for Telephony, Rev. Nov-2013

² For the purposes of this document, the most current SERT version is listed in the most recently published Servers 3.0 Clarification Memo, located on the Enterprise Servers Specification Version 3.0 website (https://www.energystar.gov/products/spec/enterprise_servers_specification_version_3_0_pd)

ENERGY STAR Product Category	Test Method/Standard
Televisions ENERGY STAR Program Requirements Product Specification for Televisions Version 9.1	<ul style="list-style-type: none"> - Uniform Test Method for Measuring the Energy Consumption of Television Sets incorporated in Appendix H to Subpart B of 10 CFR Part 430
Uninterruptible Power Supplies ENERGY STAR Program Requirements Product Specification for Uninterruptible Power Supplies Version 2.0	<ul style="list-style-type: none"> - Uniform Test Method for Measuring the Energy Consumption of Battery Chargers incorporated in Appendix Y to Subpart B of 10 CFR 430, Section 4: Testing Requirements for Uninterruptible Power Supplies All other UPSs ENERGY STAR - ENERGY STAR Test Method for Uninterruptible Power Supplies, Rev. Dec-2017
Lighting and Fans	
Ceiling Fans ENERGY STAR Program Requirements Product Specification for Residential Ceiling Fans Version 4.1	<ul style="list-style-type: none"> - 10 CFR Part 430, Subpart B, Appendix U
Residential Ventilating Fans ENERGY STAR Program Requirements Product Specification for Residential Ventilating Fans Version 4.2	<u>Airflow Rating</u> <ul style="list-style-type: none"> - Option 1) ANSI/AMCA 210-16 Laboratory Methods of Testing Fans for Aerodynamic Performance Rating - Option 2) HVI Publication 916 Airflow Test Procedure© (2015) <u>Sound Rating</u> <ul style="list-style-type: none"> - Option 1) ANSI/AMCA Standard 300-14 Reverberant Room Method for Sound Testing of Fans and AMCA Publication 311-16 Certified Ratings Program – Product Rating Manual for Fan Sound Performance (spherical sones method only) - Option 2) HVI Publication 915 Procedure for Loudness Rating of Residential Fan Products© (2015)
Decorative Light Strings ENERGY STAR Program Requirements Product Specification for Decorative Light Strings Version 1.5	<ul style="list-style-type: none"> - ENERGY STAR Test Method for Decorative Light Strings, December 2011 (Annex A) - CIE 081-1989, The Measurement of Luminous Flux - ASTM G 154 – 06, Standard Practice for Operating Fluorescent Light Apparatus for UV Exposure of Nonmetallic Material - UL 588, Standard for Seasonal and Holiday Decorative Products OR CSA C22.2 No. 37, Christmas Tree and Other Decorative Lighting Outfits

ENERGY STAR Product Category	Test Method/Standard
<p>Downlights</p> <p>ENERGY STAR Program Requirements Product Specification for Downlights Version 1.0</p>	<ul style="list-style-type: none"> - ANSI C82.77-10:2014 or ANSI C82.77-10-2021, American National Standard for Lighting Equipment - Harmonic Emission Limits—Related Power Quality Requirements - CIE Pub. No. 15:2004, Colorimetry - CIE Pub. No. 13.3-1995, Method of Measuring and Specifying Color Rendering of Light Sources - ANSI/IES LM-58-20, Approved Method: Spectroradiometric Measurement Methods for Light Sources or IES LM-58-13, Method for Spectroradiometric Measurement Methods for Light Sources - ANSI/IES LM-79-19, Approved Method: Optical and Electrical Measurements of Solid-State Lighting Products or IES LM-79-08, Approved Method: Optical and Electrical Measurements of Solid-State Lighting Products - ANSI/IES LM-80-21, Approved Method: Measuring Maintenance of Light Output Characteristics of Solid-State Light Sources or ANSI/IES LM-80-15, Measuring Luminous Flux and Color Maintenance of LED Packages, Arrays and Modules or IES LM-80-08 and its Addendum A, Measuring Lumen Maintenance of LED Light Sources - ENERGY STAR Start Time Test Method or ANSI C82.16-2022, sections 3.7 and 13, Light Emitting Diode Drivers—Methods of Measurement - IEC 62301 ED.2.0 B-2011, Household electrical appliances - Measurement of standby power or ANSI C82.16-2022, section 15, Light Emitting Diode Drivers—Methods of Measurement - ANSI C82.18, Light Emitting Diode Drivers—Performance Characteristics - NEMA 77-2017, Temporal Light Artifacts: Test Methods and Guidance for Acceptance Criteria or ANSI C82.18, Light Emitting Diode Drivers—Performance Characteristics

ENERGY STAR Product Category	Test Method/Standard
Home Building Products	
Storm Windows ENERGY STAR Program Requirements for Residential Storm Windows Version 1.0	<ul style="list-style-type: none"> - Emissivity – National Fenestration Rating Council (NFRC) 301 - Solar Transmission – NFRC 300 - Air Leakage – Attachments Energy Rating Council (AERC) 1.2 in accordance with ASTM E283
Windows, Doors, and Skylights ENERGY STAR Program Requirements for Residential Windows, Doors, and Skylights Version 7.0	<ul style="list-style-type: none"> - U-Factor – NFRC 100 - Solar Heat Gain Coefficient (SHGC) – NFRC 200 - Air Leakage – ASTM E283 in accordance with NFRC 400 OR AAMA/WDMA/CSA 101/I.S.2/A440-11
Other	
Electric Vehicle Supply Equipment ENERGY STAR Program Requirements Product Specification for Electric Vehicle Supply Equipment Version 1.2	<ul style="list-style-type: none"> - ENERGY STAR Level 1 and Level 2 Electric Vehicle Supply Equipment Test Method (Rev. Apr-2017) - ENERGY STAR DC-output Electric Vehicle Supply Equipment Test Method (Rev. Mar-2021) - ENERGY STAR Test Method for Determining Display Energy – Rev. Sep-2015 - Section 6.7.5.2 of Consumer Electronics Association (CEA) 2037 A, Determination of Television Set Power Consumption
Laboratory Grade Refrigerators & Freezers ENERGY STAR Program Requirements Product Specification for Laboratory Grade Refrigerators & Freezers Version 1.1	<ul style="list-style-type: none"> - ENERGY STAR Test Method for Laboratory Grade Refrigerators, Freezers, and Ultra- Low Temperature Freezers, Rev. July 2014
Pool Pumps ENERGY STAR Program Requirements Product Specification for Pool Pumps Version 3.1	<ul style="list-style-type: none"> - DOE Test Procedure for Dedicated Purpose Pool Pumps (See 10 CFR 431.464(b)) - Section 6.3 of ENERGY STAR Pool Pumps Test Method (Rev. Jan-2013) - ENERGY STAR Pool Pumps Test Method to Validate Demand Response (Rev. May-2021)

ENERGY STAR Product Category	Test Method/Standard
<p>Smart Home Energy Management Systems</p> <p>ENERGY STAR Program Requirements Product Specification for Smart Home Energy Management Systems Version 1.0</p>	<ul style="list-style-type: none"> - ENERGY STAR SHEMS Method to Demonstrate Field Performance - IEC 62301, Ed. 2.0, 2011-01, Household electrical appliances – Measurement of standby power - Test instructions in section 5F) of the ENERGY STAR SHEMS Version 1.0 Eligibility Criteria
<p>Vending Machines</p> <p>ENERGY STAR Program Requirements Product Specification for Refrigerated Beverage Vending Machines Version 4.0</p>	<ul style="list-style-type: none"> - 10 CFR Part 431 Subpart Q, Appendix B
<p>Water Coolers</p> <p>ENERGY STAR Program Requirements Product Specification for Water Coolers Version 3.0</p>	<ul style="list-style-type: none"> - ENERGY STAR Test Method for Water Coolers (Rev. May - 2013) - ANSI/ASHRAE 18-2008 (RA 2013) 5.8 Hot-Water-Dispenser Capacity Test