

# Required Test Methods for EPA-Recognized Laboratories

## Introduction

This document outlines the test methods that must appear in a laboratory's scope of accreditation before the lab can be recognized by EPA to test products for ENERGY STAR<sup>®</sup> qualification. All test methods must be accredited by an EPA-recognized Accreditation Body.

Each of the test methods and standards are organized by product type on the following pages and a table of contents can be found in the next page. In addition, important acronyms listed in the tables can be found below.

## Acronyms Used in This Document

<b>AC</b>	=	Air Conditioning	<b>DFE</b>	=	Digital Front End (imaging equipment)
<b>AHAM</b>	=	Association Of Home Appliance Manufacturers: <a href="http://www.aham.org">www.aham.org</a>	<b>DGX</b>	=	Direct geexchange (geothermal heat pumps)
<b>ANSI</b>	=	American National Standards Institute: <a href="http://www.ansi.org">www.ansi.org</a>	<b>EPRI</b>	=	Electric Power Research Institute: <a href="http://www.epri.com">www.epri.com</a>
<b>ASHRAE</b>	=	American Society of Heating, Refrigerating, and Air-Conditioning Engineers: <a href="http://www.ashrae.org">www.ashrae.org</a>	<b>HVAC</b>	=	Heating, cooling, and air conditioning
<b>ASSIST</b>	=	Alliance for Solid-State Illumination Systems and Technologies: <a href="http://www.lrc.rpi.edu/programs/solidstate/assist/index.asp">www.lrc.rpi.edu/programs/solidstate/assist/index.asp</a>	<b>HVI</b>	=	Home Ventilating Institute: <a href="http://www.hvi.org">www.hvi.org</a>
<b>ASTM</b>	=	American Society for Testing and Materials International: <a href="http://www.astm.org">www.astm.org</a>	<b>IEC</b>	=	Commission Electrotechnique Internationale: <a href="http://www.iec.ch">www.iec.ch</a>
<b>CEA</b>	=	Consumer Electronics Association: <a href="http://www.ce.org">www.ce.org</a>	<b>IESNA</b>	=	Illuminating Engineering Society of North America: <a href="http://www.iesna.org">www.iesna.org</a>
<b>CFR</b>	=	Code of Federal Regulations: <a href="http://www.gpoaccess.gov/cfr">www.gpoaccess.gov/cfr</a>	<b>ISO</b>	=	International Organization for Standardization: <a href="http://www.iso.org">www.iso.org</a>
<b>CRRC</b>	=	Cool Roof Rating Council: <a href="http://www.coolroofs.org">www.coolroofs.org</a>	<b>NFRC</b>	=	National Fenestration Rating Council: <a href="http://www.nfrc.org">www.nfrc.org</a>
<b>CSA</b>	=	CSA International: <a href="http://www.csa-international.org">www.csa-international.org</a>	<b>NSF</b>	=	NSF International: <a href="http://www.nsf.org">www.nsf.org</a>
<b>DAM</b>	=	Download Acquisition Mode (televisions test)	<b>NVLAP</b>	=	National Voluntary Laboratory Accreditation Program: <a href="http://www.nist.gov/pml/nvlap">www.nist.gov/pml/nvlap</a>
			<b>STB</b>	=	Set-Top Box
			<b>UL</b>	=	Underwriters Laboratories: <a href="http://www.ul.com">www.ul.com</a>

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## Test Methods/Standards by ENERGY STAR Product & Sub-Product Type

ENERGY STAR Product Category	ENERGY STAR Test Method/Standard
<b>Appliances</b>	
<b>Residential Clothes Washers</b> ENERGY STAR Program Requirements Product Specification for Clothes Washers Version 5.1	- 10 CFR 430, Subpart B, Appendix J1 (Electronic Code of Federal Regulations)
<b>Residential Dishwashers</b> ENERGY STAR Program Requirements Product Specification for Residential Dishwashers Version 4.1	- 10 CFR 430, Subpart B, Appendix C (Electronic Code of Federal Regulations)
<b>Residential Refrigerators</b> ENERGY STAR Program Requirements Product Specification for Residential Refrigerators and Freezers Version 4.1	- 10 CFR 430, Subpart B, Appendix A1 (Electronic Code of Federal Regulations)
<b>Residential Freezers</b> ENERGY STAR Program Requirements Product Specification for Residential Refrigerators and Freezers Version 4.1	- 10 CFR 430, Subpart B, Appendix B1 (Electronic Code of Federal Regulations)
<b>Room Air Conditioners</b> ENERGY STAR Program Requirements Product Specification for Room Air Conditioners DRAFT Version 2.1	- 10 CFR 430, Subpart B, Appendix F (Electronic Code of Federal Regulations)
<b>Room Air Cleaners</b> ENERGY STAR Program Requirements Product Specification for Room Air Cleaners Version 1.1	- ANSI/AHAM AC-1-2006, Method of Measuring the Performance of Portable Household Electric Room Air Cleaners - UL 867 Ed. 4.0, Electrostatic Air Cleaners - IEC 62301 Ed. 1.0, Household electrical appliances – Measurement of standby power
<b>Commercial Clothes Washers</b> ENERGY STAR Program Requirements Product Specification for Clothes Washers Version 5.1	- 10 CFR 430, Subpart B, Appendix J1 (Electronic Code of Federal Regulations)

ENERGY STAR Product Category	ENERGY STAR Test Method/Standard
<b>Vending Machines</b> ENERGY STAR Program Requirements Product Specification for Refrigerated Beverage Vending Machines Version 2.1	<i>See Below</i>
For Indoor Use Only	- ASHRAE Standard 32.1-2004, Methods of Testing for Rating Vending Machines for Bottled, Canned, and Other Sealed Beverages
Suitable for Outdoor Use	
Suitable For Protected Locations	
<b>Water Coolers</b> ENERGY STAR Program Requirements Product Specification for Water Coolers Version 1.3	- ENERGY STAR Test Method for Water Coolers, ENERGY STAR Program Requirements Product Specification for Water Coolers, page 6.
<b>Commercial Food Service Equipment</b>	
<b>Commercial Dishwashers</b> ENERGY STAR Program Requirements Product Specification for Commercial Dishwashers Version 1.2	<i>See Below</i>
Under Counter, Stationary Rack	- NSF/ANSI 3-2007, Standard Commercial Warewashing Equipment (gallons per rack) - ASTM F1696, Standard Test Method for Energy Performance of Single-Rack Hot Water Sanitizing, Door-Type Commercial Dishwashing Machines (Idle Energy Test only and includes low temp)
Single Tank	
Door Type	
Single Tank Rack Conveyor	- NSF/ANSI 3-2007, Standard Commercial Warewashing Equipment (gallons per rack) - ASTM F1920 Standard Test Method for Energy Performance of Rack Conveyor, Hot Water Sanitizing Commercial Dishwashing Machines (Idle Energy Test only and includes low temp)
Multiple Tank Rack Conveyor	
<b>Commercial Fryers</b> ENERGY STAR Program Requirements Product Specification for Commercial Fryers Version 1.1	<i>See Below</i>
Open Deep-Fat Gas Fryers	- ASTM F1361-99, Standard Test Method for the Performance of Open Deep Fat Fryers
Open Deep-Fat Electric Fryers	
<b>Commercial Griddles</b> ENERGY STAR Program Requirements Product	<i>See Below</i>

ENERGY STAR Product Category	ENERGY STAR Test Method/Standard
Specification for Commercial Griddles Version 1.1	
Single and Double Sided Commercial Gas Griddles	<ul style="list-style-type: none"> <li>- ASTM F1275-03, Standard Test Method for the Performance of Griddles</li> <li>- ASTM F1605-01 , Standard Test Method for the Performance of Double-Sided Griddles</li> </ul>
Single and Double Sided Commercial Electric Griddles	
<b>Commercial Hot Food Holding Cabinets</b> ENERGY STAR Program Requirements Product Specification for Commercial Hot Food Holding Cabinets Version 1.1	<ul style="list-style-type: none"> <li>- ASTM F2140-01, Standard Test Method for the Performance of Hot Food Holding Cabinets</li> </ul>
<b>Commercial Ice Machines</b> ENERGY STAR Program Requirements Product Specification for Commercial Ice Machines Version 1.1	<ul style="list-style-type: none"> <li>- ARI Standard 810-2006, Performance Rating of Automatic Commercial Ice Makers</li> </ul>
<b>Commercial Ovens</b> ENERGY STAR Program Requirements Product Specification for Commercial Ovens Version 1.1	<i>See Below</i>
Gas – Full Size	<ul style="list-style-type: none"> <li>- ASTM F1496-99 (Reapproved 2005), Standard Test Method for the Performance of Convection Ovens</li> </ul>
Electric – Half-size	
Electric – Full-size	
<b>Commercial Refrigerators &amp; Freezers</b> ENERGY STAR Program Requirements Product Specification for Commercial Refrigerators and Freezers Version 2.1	<i>See Below</i>
Solid Door Cabinets	<ul style="list-style-type: none"> <li>- ANSI/ASHRAE Standard 72-2005, Method of Testing Commercial Refrigerators and Freezers</li> </ul>
Glass Door Cabinets	
<b>Commercial Steam Cookers</b> ENERGY STAR Program Requirements Product Specification for Commercial Steam Cookers Version 1.2	<i>See Below</i>
Electric Steam Cookers	<ul style="list-style-type: none"> <li>- ASTM F1484-99, Standard Test Method for the Performance of Steam Cooker</li> </ul>
Gas Steam Cookers	
<b>Home Electronics</b>	

ENERGY STAR Product Category	ENERGY STAR Test Method/Standard
<b>Audio/Video</b> ENERGY STAR Program Requirements Product Specification for Audio/Video Version 2.1	<ul style="list-style-type: none"> <li>- ENERGY STAR Test Method for Audio/Video, ENERGY STAR Program Requirements Product Specification for Audio/Video, Version 2.1, page 13</li> </ul>
<b>Battery Chargers</b> ENERGY STAR Program Requirements Product Specification for Battery Charging Systems Version 1.1	<ul style="list-style-type: none"> <li>- ENERGY STAR Test Method, ENERGY STAR Program Requirements for Battery Charging Systems, page 12</li> <li>- IEC Standard 61951-1: Secondary cells and batteries containing alkaline or other non-acid electrolytes – Portable sealed rechargeable single cells – Part 1: Nickel-cadmium. Ed. 2.1. January 2006</li> <li>- IEC Standard 61951-2: Secondary cells and batteries containing alkaline or other non-acid electrolytes – Portable sealed rechargeable single cells – Part 2: Nickel-metal hydride. Ed. 2.0. April 2003</li> <li>- IEC Standard 61960: Secondary cells and batteries containing alkaline or other non-acid electrolytes – Secondary lithium cells and batteries for portable applications. Ed. 1.0. December 2003</li> </ul>
<b>Set-top Boxes &amp; Cable Boxes</b> ENERGY STAR Program Requirements for Set-top Boxes Version 2.0	<ul style="list-style-type: none"> <li>- ENERGY STAR Test Method for Set-top Boxes (Testing Products for ENERGY STAR) ENERGY STAR Program for Set-top Boxes, Version 2.0, Section 4, page 11</li> </ul>
<b>Telephony</b> ENERGY STAR Program Requirements Product Specification for Telephony Version 2.2	<ul style="list-style-type: none"> <li>- ENERGY STAR Test Method for Telephony, ENERGY STAR Program Requirements for Telephony, Section 4, page 9</li> </ul>
<b>Televisions</b> ENERGY STAR Program Requirements Product Specification for Televisions Version 4.2	<ul style="list-style-type: none"> <li>- ENERGY STAR Test Method for Televisions, ENERGY STAR Program Requirements for Televisions, Version 4.2</li> <li>- IEC 62087, Ed 2.0: Methods of Measurement for the Power Consumption of Audio, Video and Related Equipment</li> <li>- CEA-2037: Determination of Television Average Power Consumption (December 2009)</li> <li>- IEC 62301, Ed 1.0: Household Electrical Appliances – Measurement of Standby Power.</li> <li>- CEA: Procedure for DAM Testing</li> </ul>
<b>Heating, Ventilation, and AC Products</b>	
<b>Boilers</b> ENERGY STAR Program Requirements Product Specification for Boilers Version 2.1	<ul style="list-style-type: none"> <li>- 10 CFR Part 430, Appendix N (Electronic Code of Federal Regulations)</li> <li>- ANSI/ASHRAE 124-1991, Methods of Testing for Rating Combination Space-Heating and Water-Heating Appliances</li> </ul>

ENERGY STAR Product Category	ENERGY STAR Test Method/Standard
<p><b>Central ACs and Air-Source Heat Pumps</b> ENERGY STAR Program Requirements Product Specification for Air Source Heat Pump (ASHP) and Central Air Conditioner Equipment Version 4.1</p>	<ul style="list-style-type: none"> <li>- ANSI/AHRI 210/240-2008, Performance Rating of Unitary Air-Conditioning &amp; Air-Source Heat Pump Equipment</li> <li>- ARI Standard 210/240-94, Operating Condition A: 95°F outdoor air temperature, 80°F dry bulb/67°F wet bulb indoor coil air entering conditions</li> </ul>
<p><b>Dehumidifiers</b> ENERGY STAR Program Requirements Product Specification for Dehumidifiers Eligibility Criteria Version 2.1</p>	<ul style="list-style-type: none"> <li>- CAN/CSA-C749-94 (Reaffirmed 2000), Performance of Dehumidifiers</li> <li>- ANSI/AHAM Standard DH-1-2003, Clauses 4, 5, and 7 (using a watt-hour meter)</li> </ul>
<p><b>Furnaces</b> ENERGY STAR Program Requirements for Furnaces Partner Commitments Version 2.0</p>	<ul style="list-style-type: none"> <li>- 10 CFR Part 430, Appendix N (Electronic Code of Federal Regulations)</li> </ul>
<p><b>Geothermal Heat Pumps</b> ENERGY STAR Program Requirements Product Specification for Geothermal Heat Pumps Version 3.1</p>	<p><i>See Below</i></p>
<p style="text-align: center;">Water-to-air (Open or Closed systems)</p>	<ul style="list-style-type: none"> <li>- ISO 13256-1-1998, Water-source heat pumps – Testing and rating for performance – Part 1: Water-to-air and brine-to-air heat pumps</li> </ul>
<p style="text-align: center;">Water-to-water (Open or Closed systems)</p>	<ul style="list-style-type: none"> <li>- ISO 13256-2-1998, Water-source heat pumps – Testing and rating for performance – Part 2: Water-to-water and brine-to-water heat pumps</li> </ul>
<p style="text-align: center;">DGX Systems</p>	<ul style="list-style-type: none"> <li>- ANSI/AHRI 870-2005, Performance Rating of Direct Geexchange Heat Pumps</li> </ul>
<p><b>Light Commercial HVAC</b> ENERGY STAR Program Requirements Product Specification for Light Commercial HVAC Version 2.1</p>	<p><i>See Below</i></p>
<p>&lt;65,000 Btu/h: 3 phase, single package, or split systems - Air-Source Central Air Conditioner - Air-Source Heat Pump</p>	<ul style="list-style-type: none"> <li>- ANSI/AHRI 210/240-2008, Performance Rating of Unitary Air-Conditioning &amp; Air-Source Heat Pump Equipment</li> </ul>
<p>≥65,000 Btu/h – &lt;240,000 Btu/h - Air-Source Central Air Conditioner - and Air-Source Heat Pump</p>	<ul style="list-style-type: none"> <li>- ANSI/AHRI 340/360-2007, Performance Rating of Commercial and Industrial Unitary Air Conditioning and Heat Pump Equipment</li> </ul>

ENERGY STAR Product Category	ENERGY STAR Test Method/Standard
Variable Refrigerant Flow (VRF) Equipment	- AHRI 1230-2010, Performance Rating of Variable Refrigerant Flow (VRF) Multi-Split Air-Conditioning and Heat Pump Equipment
<b>Residential Ceiling Fans</b> ENERGY STAR Program Requirements Product Specification for Residential Ceiling Fans Version 2.4	To improve clarity, ceiling fan test methods are broken into three sections: Section A) ceiling fans with no light source; Section B) ceiling fans with a fluorescent light source; and Section C) ceiling fans with a LED light source. Note that the test methods in Section A is required in both Sections B and C. For additional details, check the ENERGY STAR Program Requirements for Residential Ceiling Fans
Residential Ceiling Fans (no light source)	<b>Section A:</b> The test method below is required - ENERGY STAR Testing Facility Guidance Manual: Building a Testing Facility and Performing the Solid State Test Method for ENERGY STAR Qualified Ceiling Fans
Residential Ceiling Fans with Fluorescent light source	The relevant test methods for this product will be included in this document in the coming weeks.
Residential Ceiling Fans with LED light source	The relevant test methods for this product will be included in this document in the coming weeks.
<b>Residential Ventilating Fans</b> ENERGY STAR Program Requirements Product Specification for Residential Ventilating Fans Version 2.3	Similar to the ceiling fan list above, ventilating fans are broken into three sections: Section A) ventilating fans with no light source; Section B) ventilating fans with a fluorescent light source; and Section C) ventilating with a LED light source. Note that the test methods selected in Section A is required in both Sections B and C. For additional details, check the ENERGY STAR Program Requirements for Residential Ventilating Fans
Ventilating Fans (no light source)	<b>Section A:</b> choose one of the following options from both the airflow rating and sound rating tests below  <u>Airflow Rating</u> Option 1) ANSI/AMCA 210-07, Laboratory Methods of Testing Fans for Certified Aerodynamic Performance Rating Option 2) HVI 916, HVI Airflow Test Procedure. Fan testing setup shall conform to HVI 916, Section 6, Test Setups and Diagrams  <u>Sound Rating</u> Option 1) HVI 915 HVI (Home Ventilating Institute) Procedure for Loudness Rating of Residential Fan Products; Option 2) This option requires both of the following tests are performed:



ENERGY STAR Product Category	ENERGY STAR Test Method/Standard
	<ul style="list-style-type: none"> <li>➤ ANSI/AMCA Standard 300-08 Reverberant Room Method for Sound Testing of Fans</li> <li>➤ AMCA Publication 311-05, Certified Ratings Program – Product Rating Manual for Fan Sound Performance.</li> </ul>
Vent Fans that utilize a fluorescent light source	The relevant test methods for this product will be included in this document in the coming weeks.
Vent Fans that utilize LED light sources	The relevant test methods for this product will be included in this document in the coming weeks.
<b>Home and Building Envelope Products</b>	
<b>Roof Products</b> ENERGY STAR Program Requirements Product Specification for Roof Products Version 2.2	EPA-Recognized Laboratories can test roofing products by using the mandatory ENERGY STAR test methods, with various options, outlined in Section 1, as well as using one of the four test methods described in Section 2 below.
	<b>Section 1:</b> required test methods for all roofing products <ul style="list-style-type: none"> <li>- ENERGY STAR Test Method for Roof Products: Maintenance of Solar Reflectance, ENERGY STAR Program Requirements Product Specification for Roof Products</li> <li>- CRRC Product Rating Program Manual CRRC-1, 2009, tested to Hunter “L”, “a”, and “b” color values</li> <li>- Plus one of the following two options: <ul style="list-style-type: none"> <li>Option 1) ASTM C1371-04a, Standard Test Method for Determination of Emittance of Materials Near Room Temperature using Portable Emitters</li> <li>Option 2) ASTM E408-71(1996) e1, Standard Test Method for Total Normal Emittance ENERGY STAR</li> </ul> </li> </ul> <i>Variegated roof products</i> <ul style="list-style-type: none"> <li>- CRRC-1 Test Method #1, Standard Practice for Measuring Solar Reflectance of a Flat, Opaque, and Heterogeneous Surface Using a Portable Solar Reflectometer</li> </ul>

ENERGY STAR Product Category	ENERGY STAR Test Method/Standard
	<p><b>Section 2:</b> Test Methods A, B, C, &amp; D—one of the following options is required</p> <p><u>Test Method A:</u> choose one of the following two ASTM methods:</p> <p>Option 1) ASTM E 1918-06, Standard Test Method for Measuring Solar Reflectance of Horizontal and Low Sloped Surfaces in the Field</p> <p>Option 2) ASTM C 1549-09, Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer</p> <p><u>Test Method B:</u> choose one of the following two ASTM methods:</p> <p>Option 1) ASTM E 903-96, Standard Test Method for Solar Absorptance, Reflectance, and Transmission of Materials Using Integrating Spheres</p> <p>Option 2) ASTM C 1549-09, Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer</p> <p><u>Test Method C:</u> same choices as Test Method B, but with the mandatory addition of the following:</p> <ul style="list-style-type: none"> <li>- ASTM G 7-05, Standard Practice for Atmospheric Environmental Exposure Testing of Nonmetallic Materials</li> <li>- ISO/IEC 17025:1999, General Requirements for the Competence of Testing and Calibration Laboratories (weathering farm accredited to this standard)</li> </ul> <p><u>Test Method D:</u> Both of the test methods below are mandatory:</p> <ul style="list-style-type: none"> <li>- ASTM C 1549-09, Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer</li> <li>- CRRC-1 Test Method #1, Standard Practice for Measuring Solar Reflectance of a Flat, Opaque, and Heterogeneous Surface Using a Portable Solar Reflectometer</li> </ul>
<p><b>Windows, Doors, and Skylights</b></p> <p>ENERGY STAR Program Requirements for Residential Windows, Doors, and Skylights – Version 5.0</p>	<ul style="list-style-type: none"> <li>- NFRC procedures for U-Factor (NFRC 100)</li> <li>- Solar Heat Gain Coefficient (NFRC 200)</li> <li>- Skylight U-factor criteria using U-factor ratings certified under the NFRC computer simulation procedure (for tubular daylighting devices only)</li> </ul>
<p><b>Insulation Products</b></p>	<p>Specification currently under development; for updates visit:  <a href="http://www.energystar.gov/index.cfm?c=revisions.insulation_spec">www.energystar.gov/index.cfm?c=revisions.insulation_spec</a></p>
<p><b>Lighting Products</b></p>	
	<p>ENERGY STAR Decorative Light Strings Test Procedure, ENERGY STAR Program Requirements for Decorative Light Strings, Appendix A, page 12—Includes the following test</p>

ENERGY STAR Product Category	ENERGY STAR Test Method/Standard
<b>Decorative Light Strings</b> ENERGY STAR Program Requirements for Decorative Light Strings Criteria Version 1.4	methods: <ul style="list-style-type: none"> <li>- ASTM G 154 – 05, Standard Practice for Operating Fluorescent Light Apparatus for UV Exposure of Nonmetallic Materials</li> <li>- CSA-22.2 No.37-M1989 (R2004) Christmas Tree and Other Decorative Lighting Outfits</li> <li>- CIE 84-1989, The Measurement of Luminous Flux</li> <li>- CIE 127-1997, Measurement of LEDs</li> <li>- IESNA TM-16-05, IESNA Technical Memorandum on Light Emitting Diode (LED) Sources and Systems</li> <li>- UL 588-2004, Standard for Seasonal and Holiday Decorative Products</li> </ul>
<b>Screw-Based CFLs</b>	The relevant test methods for this product will be included in this document in the coming weeks.
<b>Solid State Lighting</b>	
<b>Integral LED Lamps</b>	
<b>Residential Light Fixtures</b>	
<b>Office Equipment</b>	
<b>Computers</b> ENERGY STAR Program Requirements Product Specification for Computers Version 5.2	<ul style="list-style-type: none"> <li>- ENERGY STAR Computer Test Method, ENERGY STAR Program Requirements Product Specification for Computers, Version 5.2, page 22</li> <li>- EPRI Generalized Test Protocol for Calculating the Energy Efficiency of Internal Ac-Dc and Dc-Dc Power Supplies. (for products that have internal, multi-output, or single output with integral cooling power supplies; available at: <a href="http://www.efficientpowersupplies.org">www.efficientpowersupplies.org</a>)</li> <li>- IEC 62301: Household Electrical Appliances - Measurement of Standby Power</li> </ul>
Internal Power Supplies <sup>1</sup>	<ul style="list-style-type: none"> <li>- EPRI Generalized Test Protocol for Calculating the Energy Efficiency of Internal Ac-Dc and Dc-Dc Power Supplies. Available at <a href="http://www.efficientpowersupplies.org">www.efficientpowersupplies.org</a>.</li> </ul>
<b>Displays</b> ENERGY STAR Program Requirements Product Specification for Displays Version 5.1	<i>See Below</i>
< 30 inch diagonal viewable area	<ul style="list-style-type: none"> <li>- ENERGY STAR Test Method for Displays, ENERGY STAR Program Requirements Product Specification for Displays, page 11</li> <li>- VESA FPDM Standard 2.0</li> </ul>

<sup>1</sup> Internal Power Supplies are not eligible to earn the ENERGY STAR. This subcategory is listed separately for purposes of labs testing only the internal power supply for these products.

ENERGY STAR Product Category	ENERGY STAR Test Method/Standard
	<ul style="list-style-type: none"> <li>- IEC 62301 Ed 1.0: Household Electrical Appliances – Measurement of Standby Power</li> </ul>
30–60 inch diagonal viewable area	<ul style="list-style-type: none"> <li>- ENERGY STAR Test Method for Displays, ENERGY STAR Program Requirements Product Specification for Displays, page 11</li> <li>- IEC 62087, Ed 2.0: Methods of Measurement for the Power Consumption of Audio, Video and Related Equipment</li> <li>- IEC 62301 Ed 1.0: Household Electrical Appliances – Measurement of Standby Power</li> </ul>
<b>Computer (Enterprise) Servers</b> ENERGY STAR Program Requirements Product Specification for Computer Servers Version 1.1	<ul style="list-style-type: none"> <li>- ENERGY STAR Test Method for Computer Servers, ENERGY STAR Test Procedure for Determining the Power Use of Computer Servers at Idle and Full Load (Appendix A of specification)</li> <li>- EPRI Generalized Test Protocol for Calculating the Energy Efficiency of Internal Ac-Dc and Dc-Dc Power Supplies. Available at <a href="http://www.efficientpowersupplies.org">www.efficientpowersupplies.org</a>.</li> <li>- IEC 62301: Household Electrical Appliances - Measurement of Standby Power</li> </ul>
Internal Power Supplies <sup>2</sup>	<ul style="list-style-type: none"> <li>- EPRI Generalized Test Protocol for Calculating the Energy Efficiency of Internal Ac-Dc and Dc-Dc Power Supplies. Available at <a href="http://www.efficientpowersupplies.org">www.efficientpowersupplies.org</a>.</li> </ul>
<b>Imaging Equipment</b> ENERGY STAR Program Requirements Product Specification for Imaging Equipment Version 1.2	<i>See Below</i>
DFE with Internal Power Supply or Multiple-Voltage External Power Supply	<ul style="list-style-type: none"> <li>- ENERGY STAR Imaging Equipment Test Method, ENERGY STAR Program Requirements Version 1.2, Product Specification for Imaging Equipment, page 20</li> <li>- IEC 62301 Ed 1.0: Household Electrical Appliances – Measurement of Standby Power</li> <li>- EPRI Generalized Test Protocol for Calculating the Energy Efficiency of Internal Ac-Dc and Dc-Dc Power Supplies. Available at <a href="http://www.efficientpowersupplies.org">www.efficientpowersupplies.org</a>.</li> </ul>
Internal Power Supplies <sup>3</sup>	<ul style="list-style-type: none"> <li>- EPRI Generalized Test Protocol for Calculating the Energy Efficiency of Internal Ac-Dc and Dc-Dc Power Supplies. Available at <a href="http://www.efficientpowersupplies.org">www.efficientpowersupplies.org</a>.</li> </ul>
DFE with Single Voltage External Power Supply	<ul style="list-style-type: none"> <li>- ENERGY STAR Imaging Equipment Test Method, ENERGY STAR Program Requirements Version 1.2, Product Specification for Imaging Equipment, page 20</li> <li>- IEC 62301 Ed 1.0: Household Electrical Appliances – Measurement of Standby Power</li> <li>- Test Method for Calculating the Energy Efficiency of Single-Voltage External AC-DC and AC-AC Power Supplies, Rev. August 11, 2004. Available at <a href="http://www.efficientpowersupplies.org">www.efficientpowersupplies.org</a>.</li> </ul>

<sup>2</sup> Internal Power Supplies are not eligible to earn the ENERGY STAR. This subcategory is listed separately for purposes of labs testing only the internal power supply for these products.

<sup>3</sup> Ibid.

ENERGY STAR Product Category	ENERGY STAR Test Method/Standard
<b>Plumbing</b>	
<b>Water Heaters</b> ENERGY STAR Program Requirements Product Specification for Residential Water Heaters Version 1.1	<i>See Below</i>
Storage Type Units	- 10 CFR 430, Subpart B, Appendix E (Electronic Code of Federal Regulations) - ASHRAE 118.2, Section 11.2 <sup>4</sup>
Tankless Type Units	
Heat Pump Type Units	
Water Heaters, Solar	- Solar Rating and Certification Corporation (SRCC) OG-300 certification

<sup>4</sup> **Note on recovery efficiency:** For thermostatically-controlled water heaters that do not completely recover or do not undergo a recovery cycle prior to the start of the second draw of the simulated-use test, the recovery efficiency shall be determined as specified in Section 11.2 of ASHRAE 118.2.