



ENERGY STAR[®] Program Requirements for Small Network Equipment

Partner Commitments Draft 1 Version 1.0

1 Following are the terms of the ENERGY STAR Partnership Agreement as it pertains to the manufacture
2 and labeling of ENERGY STAR qualified products. The ENERGY STAR Partner must adhere to the
3 following partner commitments:
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5 **Qualifying Products**

- 6 1. Comply with current ENERGY STAR Eligibility Criteria, which define performance requirements and
7 test procedures for Small Network Equipment. A list of eligible products and their corresponding
8 Eligibility Criteria can be found at www.energystar.gov/specifications.
- 9 2. **Prior to associating the ENERGY STAR name or mark with any product**, obtain written
10 certification of ENERGY STAR qualification from a Certification Body recognized by EPA for Small
11 Network Equipment. As part of this certification process, products must be tested in a laboratory
12 recognized by EPA to perform Small Network Equipment testing. A list of EPA-recognized
13 laboratories and certification bodies can be found at www.energystar.gov/testingandverification.

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15 **Using the ENERGY STAR Name and Marks**

- 16 3. Comply with current ENERGY STAR Identity Guidelines, which define how the ENERGY STAR name
17 and marks may be used. Partner is responsible for adhering to these guidelines and ensuring that its
18 authorized representatives, such as advertising agencies, dealers, and distributors, are also in
19 compliance. The ENERGY STAR Identity Guidelines are available at www.energystar.gov/logouse.
- 20 4. Use the ENERGY STAR name and marks only in association with qualified products. Partner may not
21 refer to itself as an ENERGY STAR Partner unless at least one product is qualified and offered for
22 sale in the U.S and/or ENERGY STAR partner countries.
- 23 5. Provide clear and consistent labeling of ENERGY STAR qualified Small Network Equipment.
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- 25 5.1. Partner must use the ENERGY STAR mark in all of the following ways:
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- 27 5.1.1. On the top or front of the product. Labeling on the top or front of the product may be
28 permanent or temporary. All temporary labeling must be affixed to the top or front of the
29 product with an adhesive or cling-type application;
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- 31 5.1.2. In product literature (i.e. user manuals, spec sheets, etc.);
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- 33 5.1.3. On product packaging for products sold at retail; and
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- 35 5.1.4. On the Partner's Internet site where information about ENERGY STAR qualified models is
36 displayed;
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- 38 5.2. If additional information about the ENERGY STAR program(s) or other products provided by the
39 Partner on its Web site, Partner must comply with the *ENERGY STAR Web Linking Policy*, which
40 can be found at www.energystar.gov/partners.

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43 **Verifying Ongoing Product Qualification**

- 44 6. Participate in third-party verification testing through a Certification Body recognized by EPA for Small
45 Network Equipment, providing full cooperation and timely responses, EPA/DOE may also, at its
46 discretion, conduct tests on products that are referred to as ENERGY STAR qualified. These products
47 may be obtained on the open market, or voluntarily supplied by Partner at the government's request.

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49 **Providing Information to EPA**

- 50 7. Provide unit shipment data or other market indicators to EPA annually to assist with creation of
51 ENERGY STAR market penetration estimates, as follows:

52 7.1. Partner must submit the total number of ENERGY STAR qualified Small Network Equipment
53 shipped in the calendar year or an equivalent measurement as agreed to in advance by EPA and
54 Partner. Partner shall exclude shipments to organizations that rebrand and resell the shipments
55 (unaffiliated private labelers).

56 7.2. Partner must provide unit shipment data segmented by meaningful product characteristics (e.g.,
57 type, capacity, presence of additional functions) as prescribed by EPA.

58 7.3. Partner must submit unit shipment data for each calendar year to EPA or an EPA-authorized third
59 party, preferably in electronic format, no later than March 1 of the following year.

60 Submitted unit shipment data will be used by EPA only for program evaluation purposes and will be
61 closely controlled. If requested under the Freedom of Information Act (FOIA), EPA will argue that the
62 data is exempt. Any information used will be masked by EPA so as to protect the confidentiality of the
63 Partner;

- 64 8. Report to EPA any attempts by recognized laboratories or Certification Bodies (CBs) to influence
65 testing or certification results or to engage in discriminatory practices.

- 66 9. Notify EPA of a change in the designated responsible party or contacts within 30 days using the My
67 ENERGY STAR Account tool (MESA) available at www.energystar.gov/mesa.

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70 **Performance for Special Distinction**

71 In order to receive additional recognition and/or support from EPA for its efforts within the Partnership, the
72 ENERGY STAR Partner may consider the following voluntary measures, and should keep EPA informed
73 on the progress of these efforts:

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- 75 ▪ Provide quarterly, written updates to EPA as to the efforts undertaken by Partner to increase
76 availability of ENERGY STAR qualified products, and to promote awareness of ENERGY STAR and
77 its message.

- 78 ▪ Consider energy efficiency improvements in company facilities and pursue benchmarking buildings
79 through the ENERGY STAR Buildings program.

- 80 ▪ Purchase ENERGY STAR qualified products. Revise the company purchasing or procurement
81 specifications to include ENERGY STAR. Provide procurement officials' contact information to EPA for
82 periodic updates and coordination. Circulate general ENERGY STAR qualified product information to
83 employees for use when purchasing products for their homes.

- 84 ▪ Feature the ENERGY STAR mark(s) on Partner website and other promotional materials. If
85 information concerning ENERGY STAR is provided on the Partner website as specified by the
86 ENERGY STAR Web Linking Policy (available in the Partner Resources section of the ENERGY
87 STAR website), EPA may provide links where appropriate to the Partner website.

- 88 ▪ Ensure the power management feature is enabled on all ENERGY STAR qualified displays and
89 computers in use in company facilities, particularly upon installation and after service is performed.

- 90 ▪ Provide general information about the ENERGY STAR program to employees whose jobs are relevant
91 to the development, marketing, sales, and service of current ENERGY STAR qualified products.
- 92 ▪ Provide a simple plan to EPA outlining specific measures Partner plans to undertake beyond the
93 program requirements listed above. By doing so, EPA may be able to coordinate, and communicate
94 Partner's activities, provide an EPA representative, or include news about the event in the ENERGY
95 STAR newsletter, on the ENERGY STAR website, etc. The plan may be as simple as providing a list
96 of planned activities or milestones of which Partner would like EPA to be aware. For example,
97 activities may include: (1) increasing the availability of ENERGY STAR qualified products by
98 converting the entire product line within two years to meet ENERGY STAR guidelines; (2)
99 demonstrating the economic and environmental benefits of energy efficiency through special in-store
100 displays twice a year; (3) providing information to users (via the website and user's manual) about
101 energy-saving features and operating characteristics of ENERGY STAR qualified products; and (4)
102 building awareness of the ENERGY STAR Partnership and brand identity by collaborating with EPA
103 on one print advertorial and one live press event.
- 104 ▪ Join EPA's SmartWay Transport Partnership to improve the environmental performance of the
105 company's shipping operations. The SmartWay Transport Partnership works with freight carriers,
106 shippers, and other stakeholders in the goods movement industry to reduce fuel consumption,
107 greenhouse gases, and air pollution. For more information on SmartWay, visit
108 www.epa.gov/smartway.
- 109 ▪ Join EPA's Green Power Partnership. EPA's Green Power Partnership encourages organizations to
110 buy green power as a way to reduce the environmental impacts associated with traditional fossil fuel-
111 based electricity use. The partnership includes a diverse set of organizations including Fortune 500
112 companies, small and medium businesses, government institutions as well as a growing number of
113 colleges and universities. For more information on Green Power, visit www.epa.gov/greenpower.



ENERGY STAR[®] Product Specification for Small Network Equipment

Eligibility Criteria Draft 1 Version 1.0

114 Following is the ENERGY STAR product specification for Small Network Equipment. A product shall meet
115 all of the identified criteria if it is to earn the ENERGY STAR.

116 1 DEFINITIONS

117 A) Product Classifications:

- 118 1) Network Equipment: A device whose primary function is to pass Internet Protocol traffic
119 among various network interfaces / ports.
- 120 2) Small Network Equipment (SNE): Network Equipment that is intended to serve users in either
121 small networks or a subset of a large network. SNE includes a) all Network Equipment with
122 integral wireless capability and b) other Network Equipment meeting **all** of the following
123 criteria:
- 124 a) Designed for stationary operation;
 - 125 b) Contains no more than eleven (11) wired Physical Network Ports;
 - 126 c) Primary configuration for operation outside of standard equipment racks;
 - 127 d) Meets the definition of one or more of the Product Types defined below.

128 **Note:** EPA was initially considering a definition of Small Network Equipment that included devices with a
129 maximum wired port count of nine. In response to stakeholder input, EPA is proposing to include devices
130 with less than or equal to 11 ports with the expectation that this provides a natural break point between
131 devices intended for small networks and larger devices. EPA added an additional provision regarding
132 primary operation outside of standard equipment racks.

- 133 3) Large Network Equipment: Network Equipment that is rack-mounted, intended for use in
134 standard equipment racks, or contains more than eleven (11) ports for wired network.

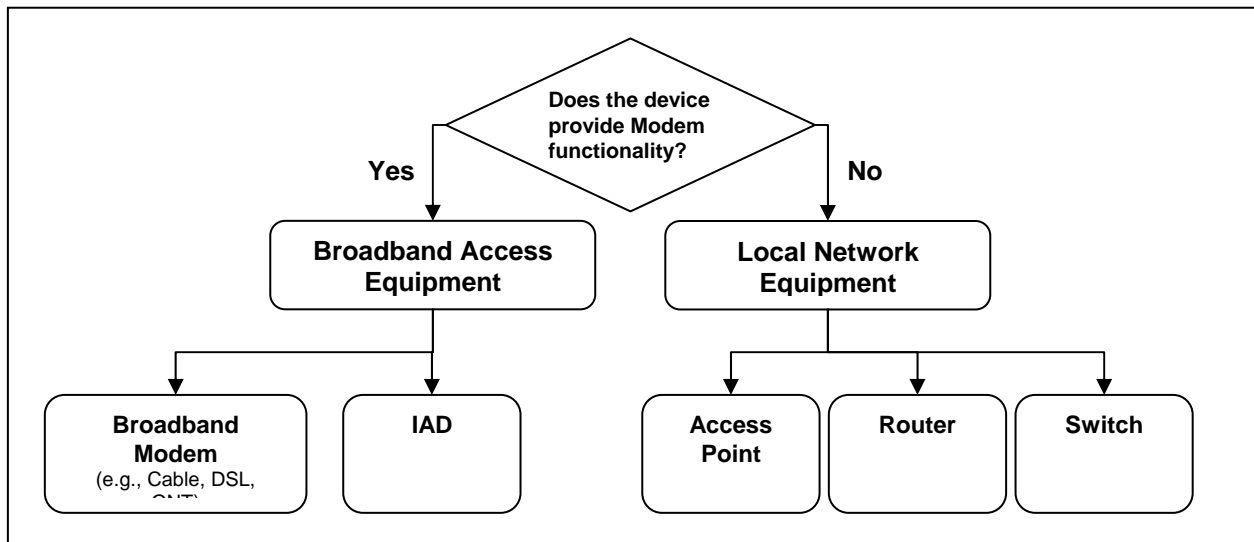
135 B) Small Network Equipment Types:

136 **Note:** The product types appear under two overall categories: Broadband Access Equipment and Local
137 Network Equipment. This delineation is intended to align with testing considerations, dividing products
138 requiring an interface with service provider head-end equipment from those functioning within a network
139 user's internal network.

140 1) Broadband Access Equipment

- 141 a) Broadband Modem: A device that transmits and receives digitally-modulated analog
142 signals over a wired or optical network as its primary function. The Broadband Modem
143 category does not include devices with integrated Router, Switch, or Access Point
144 functionality.
- 145 (1) Optical Network Termination Device (ONT): A type of Broadband Modem that
146 converts signals between copper (wired) or wireless connections and an optical fiber
147 connection. ONTs are available in either desktop or building-mounted versions with
148 different connectivity options.

- 149 b) Integrated Access Device (IAD): A network device with a modem and one or more of the
 150 following functions: wired network routing, multi-port Ethernet switching and/or access
 151 point functionality.
- 152 2) Local Network Equipment
- 153 a) Access Point: A device that provides IEEE 802.11 (Wi-Fi) connectivity to multiple clients
 154 as its primary function.
- 155 b) Router: A network device that determines the optimal path along which network traffic
 156 should be forwarded as its primary function. Routers forward packets from one network to
 157 another based on network layer information. Devices fitting this definition may provide
 158 both Router functionality and wireless network capability.
- 159 c) Switch: A network device that filters, forwards, and floods frames based on the destination
 160 address of each frame as its primary function. The switch operates at the data link layer of
 161 the OSI model.
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 165 **Figure 1: Product Type Assignment**

166 **Note:** Figure 1 provides an overview of the product classification system represented by the definitions in
 167 1.B).

- 168 C) Operational Modes:
- 169 1) Idle State: The product is connected to a power source, is booted and ready for use, and is
 170 providing one or more primary functions. The common terms “active”, “in-use” and “normal
 171 operation” also describe this mode.
- 172 D) Components:
- 173 1) External Power Supply (EPS): A component contained in a separate physical enclosure from
 174 the SNE product designed to convert line voltage ac input into lower voltage ac or dc output(s)
 175 for the purpose of powering the SNE product. An EPS must connect to the SNE product via a
 176 removable or hard-wired male/female electrical connection, cable, cord or other wiring.
- 177 E) Marketing or Shipment Terminology:
- 178 1) Cable, Satellite, and Telecom Service Provider (“Service Provider”): An entity that provides

- 179 content to subscribers with whom it has an ongoing contractual relationship.
- 180 2) Manufacturing Partner: An entity that manufactures, or markets OEM-manufactured SNE for
181 sale to either end customers or Service Providers.
- 182 3) SOHO: Small Office / Home Office.
- 183 F) Additional Terms:
- 184 1) End Point Device: A device that functions as either an originator or destination for network
185 traffic passed through Network Equipment. Examples of end point devices include computers,
186 servers, set-top boxes, IP-capable televisions, IP Phones, etc. For the purposes of this
187 specification, an end point device is not considered network equipment.
- 188 2) Energy Efficient Ethernet (EEE): A technology which enables reduced power consumption of
189 Ethernet interfaces during times of low data throughput. Specified by IEEE 802.3az.
- 190 3) Link Rate: The maximum raw bit rate possible on a particular link (e.g., 1000BASE-T Ethernet
191 supports 1 Gb/s in each direction [2 Gb/s total]; IEEE 802.11g supports 54 Mb/s total).
- 192 4) Physical Data Port: An integrated physical connection point primarily intended to accept non-
193 IP data. For the purposes of this specification, a port must support one of the following media
194 types to fit this definition:
- 195 a) Universal Serial Bus (USB);
- 196 b) Firewire;
- 197 c) Thunderbolt;
- 198 d) SATA;
- 199 e) SCSI; or
- 200 f) RS-232.
- 201 5) Physical Network Port: An integrated physical connection point primarily intended to accept IP
202 or similar traffic via a cable. For the purposes of this specification, a port must support one of
203 the following media types to fit this definition:
- 204 a) Ethernet;
- 205 b) Coaxial Cable;
- 206 c) Twisted Pair Copper; or
- 207 d) Fiber Optic.
- 208 6) Power over Ethernet (PoE): A technology which enables transfer of electrical power, along
209 with data, to network end point devices through an Ethernet cable. Currently specified by
210 IEEE 802.3af and IEEE 802.3at.
- 211 7) Standard Equipment Rack: An equipment enclosure commonly seen in data centers or
212 managed facilities and intended to house a variety of information technology equipment. Front
213 panel width is typically 19 inches (482.6 mm) in width. Standard Equipment Racks are defined
214 by EIA-310, IEC 60297, or DIN 41494.
- 215 8) Unit Under Test (UUT): The network equipment device being tested.
- 216 9) WLAN Test Client: A device that is capable of establishing an 802.11x link with an Access
217 Point (AP) and transmitting data to and receiving from the AP.

218 G) Product Family: A group of product models that are (1) made by the same manufacturer, (2)
219 subject to the same ENERGY STAR qualification criteria, and (3) of a common basic design.
220 Product models within a family differ from each other according to one or more characteristics or
221 features that either (1) have no impact on product performance with regard to ENERGY STAR
222 qualification criteria, or (2) are specified herein as acceptable variations within a product family.
223 For Small Network Equipment, acceptable variations within a product family include:

224 1) TBD.

225 **Note:** Consistent with other ENERGY STAR electronics specifications, the concept of a Product Family
226 dictates the structure of representative testing under the ENERGY STAR program. As development of this
227 specification continues, EPA encourages stakeholder input on variations that might be allowed within a
228 product family that would preserve the goals set forth in items (1), (2), and (3), and ensure data remains
229 representative.

230 **2 SCOPE**

231 **2.1 Included Products**

232 2.1.1 Products that meet one of the following Small Network Equipment type definitions are eligible for
233 ENERGY STAR qualification, with the exception of products listed in Section 2.2:

234 i. Broadband Modems (ONT, Cable, DSL);

235 ii. Integrated Access Device (IAD);

236 iii. Router;

237 iv. Switch; and/or

238 v. Access Point.

239 **Note:** EPA has limited data in two proposed categories: the standalone Broadband Modem category (with
240 the exception of ONTs) and Access Points. EPA welcomes feedback on sources of data that could be
241 drawn upon to support creation of efficiency criteria in these areas. Further, EPA welcomes stakeholder's
242 thoughts on the standalone DSL and Cable Broadband Modem market; specifically if it is anticipated that
243 such products will be subsumed into multifunction Integrated Access Devices as the predominant SNE
244 product or if such products will remain a large part of the market.

245 **2.2 Excluded Products**

246 2.2.1 Products that are covered under other ENERGY STAR product specifications are not eligible for
247 qualification under this specification. The list of specifications currently in effect can be found at
248 www.energystar.gov/products.

249 2.2.2 The following products are not eligible for qualification under this specification:

250 i. Network Equipment with one or more Small Form-factor Pluggable (SFP) network ports;
251 and

252 ii. Network Equipment with greater than eleven (11) wired Physical Network Ports.

253 3 QUALIFICATION CRITERIA

254 3.1 Significant Digits and Rounding

255 **Note:** Section 3.1 is standard for ENERGY STAR electronics product categories and provides guidance
256 for the qualification process.

257 3.1.1 All calculations shall be carried out with directly measured (unrounded) values.

258 3.1.2 Unless otherwise specified, compliance with specification limits shall be evaluated using directly
259 measured or calculated values without any benefit from rounding.

260 3.1.3 Directly measured or calculated values that are submitted for reporting on the ENERGY STAR
261 website shall be rounded to the nearest significant digit as expressed in the corresponding
262 specification limit.

263 3.2 Power Supply Requirements

264 3.2.1 External Power Supplies (EPSs): EPSs (single- and multiple-voltage) shall meet the level V
265 performance requirements under the International Efficiency Marking Protocol and include the
266 level V marking. Additional information on the Marking Protocol is available
267 at www.energystar.gov/powersupplies.

268 i. External Power Supplies shall meet level V requirements when tested using the *Test*
269 *Method for Calculating the Energy Efficiency of Single-Voltage External Ac-Dc and Ac-Ac*
270 *Power Supplies, Aug. 11, 2004*.

271 3.3 Efficiency Criteria

272 **Note:** Presented in Section 3.3 is the Average Power Consumption structure that will serve as the primary
273 energy efficiency metric in the Small Network Equipment specification. Equation 1 describes the derivation
274 of Average Power Consumption from measurements taken, as applicable to the Small Network Equipment
275 product under test, in the WAN, LAN, and Wireless LAN portions of the ENERGY STAR test method. The
276 ENERGY STAR requirement is calculated for each product using Equation 2.

277 3.3.1 Average Power Consumption (P_{AVG}): Calculated Average Power Consumption (P_{AVG}) per
278 Equation 1 shall be less than or equal to the maximum requirement for Average Power
279 Consumption (P_{AVG_MAX}), as calculated per Equation 2.

280 **Equation 1: Average Power Calculation (P_{AVG}) for Small Network Equipment**

$$281 P_{AVG} = Average[P_{WAN_TEST} + P_{LAN_TEST} + P_{WIRELESS_TEST}]$$

282 *Where:*

- 283 ▪ $Average[x_i]$ = Average of terms (x_i) applicable to the UUT;
- 284 ▪ P_{WAN_TEST} = Measured power consumption in Wired Network –
285 WAN test, at 1.0 kb/s (W);
- 286 ▪ P_{LAN_TEST} = Measured power consumption in Wired Network –
287 LAN test, half of available wired LAN ports populated, at 1.0 kb/s
288 (W);

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EPA focused on power consumption at low data rates. P_{AVG} was calculated by averaging all non-zero values of P_{WAN_TEST} , P_{LAN_TEST} , and $P_{WIRELESS_TEST}$. To allow for an appropriate evaluation of base consumption, adder values were subtracted from this average. This adjusted value was used to set the base product type requirements.

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The following table summarizes the units evaluated for each product type. Further notes on data analysis is included in Section 3.3.1.

Product Type	Products in Dataset	Unique Manufacturers or Sources
Broadband Modem – ONT	25	2
Broadband Modem – Cable or DSL	4	2
Integrated Access Device	17	5
Router	23	5
Switch	29	3
Access Point	5	3

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Table 2: Additional Functional Adders

Feature	Power Allowance (P_{ADD}) in watts	Notes
Fast Ethernet (100Base-T)	0.1	Allowance applied once per port present in the UUT.
Gigabit Ethernet (1000Base-T)	0.3	Allowance applied once per port present in the UUT.
Wi-Fi (802.11a/b/g/n)	0.7	Applied once for the UUT for availability of Wi-Fi connectivity.

326 3.4 Efficiency Techniques and Power Management

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3.4.1 Power over Ethernet (PoE) Supply Management: All SNE capable of delivering PoE to end point devices shall be capable of disabling PoE functionality upon user request.

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Note: EPA recognizes the potential for network equipment offering IEEE 802.3az Energy Efficient Ethernet (EEE) to not only save Ethernet link power on the network equipment itself but also in end point devices. EPA wants to encourage inclusion of EEE functionality in SNE through the ENERGY STAR program. As such, EPA welcomes feedback from stakeholders on ways this specification can best encourage such EEE adoption .

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In addition to EEE, EPA is aware of products implementing Full Network Connectivity (also referred to as “network proxying” and covered by the *Ecma-393* standard), another efficient networking technique. EPA welcomes stakeholder input on the prevalence of this feature in current and emerging products.

337 **3.5 Toxicity and Recyclability Requirements**

338 3.5.1 Small Network Equipment products shall contain restricted levels of the following materials, where
339 the maximum concentration values tolerated by weight in homogeneous materials are: lead
340 (0.1%), mercury (0.1%), cadmium (0.01%), hexavalent chromium (0.1%), polybrominated
341 biphenyls (PBB) (0.1%), or polybrominated diphenyl ethers (PBDE) (0.1%). Batteries are exempt.

342 3.5.2 Recyclability requirements to be determined.

343 3.5.3 For purposes of ENERGY STAR third-party certification, toxicity requirements shall not be
344 reviewed when products are initially qualified or during subsequent verification testing. Instead,
345 consistent with the RoHS Directive, manufacturers shall maintain documentation on file that
346 products meet these requirements. EPA reserves the right to request this documentation at any
347 time.

348 3.5.4 To the extent product models are sold in countries other than the U.S., they are not subject to
349 requirements in 3.5.1, **Error! Reference source not found.**3.5.2, and 3.5.2.

350 **Note:** While energy efficiency remains the basis upon which top performers are selected, EPA has a
351 longstanding practice of including criteria related to other aspects of product performance in ENERGY
352 STAR specifications to ensure that overall product performance is maintained relative to a non-qualifying
353 product. To the extent these types of requirements are included, the Agency leverages existing standards
354 and looks to achieve a minimally acceptable level of performance (i.e. not one that is overly
355 stringent/difficult to achieve). By including additional criteria, the ENERGY STAR program seeks to avoid
356 associating the label with poor quality or otherwise undesirable product models, thereby preserving the
357 influence of the label in the market.

358 In developing these requirements, EPA drew from existing standards for toxicity. EPA looked to the RoHS
359 Directive for a toxicity limit because Small Network Equipment products manufacturers have extensive
360 experience with designing products free from certain toxic materials in compliance with the RoHS
361 Directive. The RoHS Directive, formally known as Directive 2002/95/EC of the European Parliament and of
362 the Council on the restriction of the use of certain hazardous substances in electrical and electronic
363 equipment, was amended by 2005/618/EC and went into effect in 2006. Most global manufacturers have
364 been in compliance with RoHS since 2006, when the directive first took effect. Products that currently
365 meet the EU RoHS Directive would satisfy this toxicity requirement. In some cases, the RoHS Directive
366 allows for specific, limited exemptions for specific materials and provides expiration dates for these
367 exemptions. EPA intends to harmonize with the RoHS Directive by adding language in Section 3.5
368 allowing the same exemptions as those outlined in the current RoHS Directive.

369 **EPA welcomes feedback from stakeholders to understand if any materials exempted for a given**
370 **period of time under the RoHS Directive currently apply to components typically found in Small**
371 **Network Equipment products.** EPA does not intend to require documentation of the need for exemption
372 beyond what is needed by the Partner to demonstrate compliance with the RoHS Directive.

373 EPA has clarified (Section 3.5.4) that these requirements are exempt from the ENERGY STAR third-party
374 certification process. Further, EPA added language making clear that the non-energy requirements
375 proposed here are not intended for international adoption. EPA continues to anticipate that existing
376 reporting efforts and maintenance of relevant quality assurance documentation would be sufficient to
377 demonstrate compliance with these requirements.

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EPA has not identified any standards that address recyclability and/or including recycled content for this product category and, therefore, seeks additional feedback from stakeholders on whether any existing standards that address recycled content in and/or design for recyclability of products could apply to Small Network Equipment products.

382 **4 TESTING**

383 **4.1 Test Methods**

384 4.1.1 Test methods identified in Table 3 shall be used to determine qualification for ENERGY STAR.

385 **Table 3: Test Methods for ENERGY STAR Qualification**

Product Type	Test Method
All	ENERGY STAR Test Method for Small Network Equipment, Rev. [TBD]

386 **4.2 Number of Units Required for Testing**

387 4.2.1 Representative Models shall be selected for testing per the following requirements:

- 388 i. For qualification of an individual product model, a product configuration equivalent to that
389 which is intended to be marketed and labeled as ENERGY STAR is considered the
390 Representative Model;
- 391 ii. For qualification of a product family, the highest energy using configuration within the
392 family shall be considered the Representative Model. If models in a product family span
393 multiple categories, product configurations that represent the worst-case power
394 consumption for each product category within the family are considered Representative
395 Models. When submitting product families, manufacturers continue to be held accountable
396 for any efficiency claims made about their products, including those not tested or for which
397 data was not reported.

398 4.2.2 A single unit of each Representative Model shall be selected for testing.

399 **4.3 International Market Qualification**

400 4.3.1 Products shall be tested for qualification at the relevant input voltage/frequency combination for
401 each market in which they will be sold and promoted as ENERGY STAR.

402 **5 USER INTERFACE**

403 5.1.1 Manufacturers are encouraged to design products in accordance with the user interface standard
404 IEEE P1621: Standard for User Interface Elements in Power Control of Electronic Devices
405 Employed in Office/Consumer Environments. For details, see <http://eetd.LBL.gov/Controls>.

406 **6 EFFECTIVE DATE**

407 6.1.1 Effective Date: The Version 1.0 ENERGY STAR Small Network Equipment specification shall take
408 effect on the dates specified in Table 4. To qualify for ENERGY STAR, a product model shall meet
409 the ENERGY STAR specification in effect on its date of manufacture. The date of manufacture is
410 specific to each unit and is the date (e.g., month and year) on which a unit is considered to be
411 completely assembled.

412 6.1.2 Future Specification Revisions: EPA reserves the right to change this specification should
413 technological and/or market changes affect its usefulness to consumers, industry, or the
414 environment. In keeping with current policy, revisions to the specification are arrived at through
415 stakeholder discussions. In the event of a specification revision, please note that the ENERGY
416 STAR qualification is not automatically granted for the life of a product model.

417 **Table 4: Specification Effective Date**

Effective Date
TBD

418 **Note:** Since this is a new specification, EPA will make it effective immediately upon completion – inviting
419 manufacturers to qualify products as ENERGY STAR and providing consumers with differentiation
420 immediately.

421 **7 CONSIDERATIONS FOR FUTURE REVISIONS**

422 **Note:** In this section, EPA intends to identify out-year requirements for future versions of the program. The
423 goal of this section is to identify areas of future review for the program and roadmap for industry and the
424 efficiency community areas requiring further consideration.

425 In Draft 1, EPA has included a placeholder for modifications to the program scope and mandatory EEE.

426 **7.1 Product Scope**

427 TBD

428 **7.2 Energy Efficiency Criteria**

429 TBD

430 **7.3 Energy Efficient Ethernet**

431 7.3.1 All ports for PHYs addressed by IEEE 802.3az shall be compliant with IEEE 802.3az.