

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460



OFFICE OF  
AIR AND RADIATION

September 19, 2013

Dear ENERGY STAR Large Network Equipment Manufacturers and Other Interested Parties:

With this letter, the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Energy (DOE) are launching an effort to create a dataset to inform the development of the Version 1.0 ENERGY STAR Specification for Large Network Equipment (LNE). Attached you will find the Draft 1 ENERGY STAR Test Method and the complementary Test Reporting Template. Additional test setup guidance is provided below. This guidance reflects an update to the testing requirements and shall take precedence over the Draft 1 Test Method.

The goal of this effort is to understand the energy efficiency of LNE products currently being sold. EPA is striving to assemble a data set that reflects the market today and will use all data submitted on the Test Reporting Template via email to [largenetwork@energystar.gov](mailto:largenetwork@energystar.gov) by **December 20th, 2013**.

DOE and EPA are interested in data on the following products:

- Products with fixed port configurations
- Products with both fixed ports and expandable ports with the expandable ports left unpopulated

**Additional Test Setup Guidance:**

- Packet Format (Section 4.E.2): For all products, the test shall be performed with Internet Protocol (IP) version 4 (IPv4) test data that is correctly formatted for processing by the UUT. The generated IP packet data values shall be randomized.
- Generated Packet Size Statistical Distribution (Section 4.E.3): The following table (Table 1: Simple IMIX Packet Distribution) describes the packet size distribution that shall be used during testing. This table is consistent with the Draft 1 Test Method, but has been included to clarify Ethernet frame and IP packet sizing. All indicated Ethernet frame sizes include frame preamble, start of frame delimiter, frame check sequence, and minimum interframe gap. All indicated IP packet sizes include IP header.

**Table 1: Simple IMIX Packet Distribution**

IP Packet Size (Bytes)	Ethernet Frame Size (Bytes)	Proportion of Total Generated IP Packets	Proportion of Total Generated Ethernet Throughput
40	84	7 parts (~58.3%)	12.833%
576	614	4 parts (~33.3%)	53.601%
1500	1538	1 part (~8.33%)	33.566%

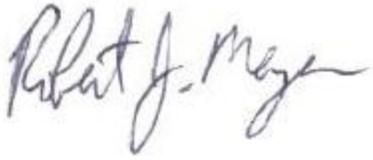
- Idle-link Period Distribution (Section 4.E.4): All traffic shall be generated so that the same interframe gap separates each transmitted Ethernet frame. In other words, there should be a fixed spacing in time between Ethernet frames. However, frames shall not be sent to all ports simultaneously (i.e. the fixed spacing in time should not occur simultaneously on all ports).
- Multiple Power Supply Units (PSUs) (Section 5.1.A.4.a): All PSUs must be connected to the ac or dc power source during testing. The total power shall be determined by either connecting each PSU to a separate power meter and then summing the resulting measurements, or by connecting all PSUs to a single power meter using a power distribution unit (PDU) that has minimal overhead.
- Half-port Testing (Section 5.1.A.5.a.ii): When performing half-port testing, only half of the downlink ports need to be connected for testing. All of the uplink ports shall be connected with traffic flowing through all of the connected ports.
- Dual-group versus Full-mesh (Section 5.2.A.4): The dual-group partial mesh configuration shall be used (Section 5.2A.4.ii of the Test Method) if there are clear designations between downlink and uplink ports listed on the product. For any other case, including products with programmable groupings, the full-mesh configuration shall be used (Section 5.2.A.4.i).
- PoE Load Testing (Section 6.2): The following PoE Load Test shall be used instead of the test described in the Section 6.2 of the Draft 1 Test Method:
  - 1) Class 1 PoE Load:
    - a) For each port on the UUT capable of providing PoE, configure and connect a corresponding port on the PoE Test Load that indicates a Class 1 PoE device and draws 2.14 W of power per port. If the UUT is unable to provide 2.14 W of Class 1 PoE to all ports simultaneously, connect the maximum number of ports that can be simultaneously supported. All other ports on the UUT shall remain disconnected.
    - b) Allow the unit to stabilize the power consumption.
    - c) Record the measured UUT power consumption and total power received by the PoE Test Load over a five minute period
    - d) Calculate and report the average measured UUT power consumption ( $PoE_{1PSE}$ ) and total power drawn by the PoE Test Load ( $PoE_{1PD}$ )
  - 2) Class 2 PoE Load (if applicable): Repeat above with Class 2 PoE loads that draw 5.17 W per port and report  $PoE_{2PSE}$  and  $PoE_{2PD}$ .
  - 3) Class 3 PoE Load (if applicable): Repeat above with Class 3 PoE loads that draw 9.72 W per port and report  $PoE_{3PSE}$  and  $PoE_{3PD}$ .
  - 4) Class 4 PoE Load (if applicable): Repeat above with Class 4 PoE loads that draw 19.23 W per port and report  $PoE_{4PSE}$  and  $PoE_{4PD}$ .

EPA will develop efficiency requirements based on data developed using this Test Method and submitted via the Test Reporting Template. Products may be tested by in-house laboratories and do not require third-party certification. Please submit all data to EPA via e-mail to [largenetwork@energystar.gov](mailto:largenetwork@energystar.gov).

To view all materials related to the Test Method and Specification development, visit [www.energystar.gov/NewSpecs](http://www.energystar.gov/NewSpecs). Please direct any specific questions to RJ Meyers, EPA, at [Meyers.Robert@epa.gov](mailto:Meyers.Robert@epa.gov), or 202-343-9923. Please direct any testing questions to Bryan Berringer, DOE, at [Bryan.Berringer@ee.doe.gov](mailto:Bryan.Berringer@ee.doe.gov), or 202-586-0371.

Thank you for your continued support of ENERGY STAR.

Sincerely,

A handwritten signature in black ink that reads "Robert J. Meyers". The signature is written in a cursive style with a large, prominent initial "R".

RJ Meyers  
U.S. EPA Product Manager  
ENERGY STAR for Large Network Equipment