February 5, 2021

Mr. Ryan Fogle
Manager, ENERGY STAR for IT and Data Center Products
Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

Via e-mail: networking@energystar.gov

Re: Joint Comments of the Consumer Technology Association, NTCA – The Internet & Television Association, and CableLabs Regarding Small Network Equipment ENERGY STAR Specifications and Testing

Dear Mr. Fogle:

The Consumer Technology Association™ (CTA), NTCA – The Internet & Television Association, and Cable Television Laboratories, Inc. (CableLabs®) are providing these comments regarding the Environmental Protection Agency's (EPA's) Discussion Guide and its questions pursuant to the exploration of the development of a draft Version 2.0 ENERGY STAR specification for Small Network Equipment (SNE).

Introduction

CTA® is North America's largest technology trade association. CTA's members are the world's leading innovators – from startups to global brands – helping support more than 18 million American jobs. CTA owns and produces CES® – the most influential tech event in the world. Its members span the breadth of the consumer tech industry, including many of the world's leading manufacturers of small network equipment. For many years, CTA has supported and advanced energy efficiency in consumer electronics as part of the industry's broader commitment to environmental sustainability. CTA's comprehensive approach to energy efficiency includes extensive support for the ENERGY STAR program, a foundational role in award-winning industry Voluntary Agreements to improve the energy efficiency of set-top boxes and SNE in the United States[1] and in Canada,[2] and a lead role in the development of consensus

[1] The U.S. Voluntary Agreements and associated reports issued by the independent auditor are posted at https://www.energy-efficiency.us.

[2] The Canadian Voluntary Agreements and associated reports issued by the independent auditor are posted at https://www.energyefficiency-va.ca.

standard test methods for several categories of consumer electronics, including the American National Standards Institute (ANSI) approved test method for small network equipment, ANSI/CTA-2049-A, Determination of Small Network Equipment Average Energy Consumption (revised December 2020).

NCTA – The Internet & Television Association is the principal trade association of the cable industry in the United States. Its members include cable operators that deliver the majority of all wired broadband connections to U.S. households, more than 200 cable program networks, and manufacturers of SNE used in cable systems, including equipment used to access the internet such as cable modems and routers. Cable operators have invested more than $300 billion over the last two decades to deploy and continually upgrade networks and other infrastructure, and have prioritized energy efficiency in their networks and in the devices they provide to their customers. NCTA has supported these member efforts as a founding signatory and leader of the above Voluntary Agreements in the United States.

CableLabs is the leading innovation and R&D lab for the cable industry. Originally established in the United States in 1988 pursuant to the National Cooperative Research Act, CableLabs now has members around the world. CableLabs has played a leading role in the operation of the aforementioned Voluntary Agreements and in the development of the ANSI/CTA-2049-A test method for SNE. CableLabs has also been engaged with the European Code of Conduct (CoC) for Broadband Equipment on behalf of its European cable operator members.

We welcome EPA's consideration of an update to its SNE specification. CTA and its members are long-time supporters of the ENERGY STAR program in a variety of product categories and commend the program as a successful partnership between government and industry to recognize innovation in energy efficiency. The ENERGY STAR brand is greatly valued and used to market products to retailers and consumers. However, to be successful, it is essential that any new specification be based upon a well-vetted test method that has been proven to produce accurate and repeatable test results and that is reasonably efficient to administer.

Unfortunately, the EPA's Discussion Guide veers from that course by favoring a flawed and insufficiently vetted and verified testing approach employed by the CoC. The Discussion Guide proposes to "harmonize with the testing requirements in the EU CoC," which it characterizes as having "a more comprehensive list of setup instructions with a wider scope covering more up to date network protocols, but with reduced number of tests required."[3] It is clear from the Discussion Guide that EPA has overestimated the suitability of the CoC approach as a model and has underappreciated the scientific reasons that the ANSI-approved consensus test method for SNE, and the U.S. and Canadian SNE Voluntary Agreements, have rejected the CoC approach.

ANSI/CTA-2049-A stands in contrast to the CoC approach as a proven consensus method for gathering realistic, efficient, and repeatable test results. The test method was initially developed in 2015 by the CTA R7 Consumer Electronics Networking Committee, which involves representative experts from across the industry as well as non-industry stakeholders.

[3] Discussion Guide at 1.

The standard was adopted later that year by ANSI, the nationally recognized forum for standards and the official U.S. representative to the International Organization for Standardization (ISO). The test method is regularly reviewed under the standards process to assure that these procedures continue to reflect best practices and changes in technology and therefore enable consistent and repeatable results. A revision was adopted and published as ANSI/CTA-2049-A in December 2020.

ANSI/CTA-2049-A is the only test method for SNE that has been adopted by a consensus standards body and that is widely used in North America by SNE purchasers, manufacturers, and third-party certification laboratories. Since 2015, all new SNE models purchased by the service providers representing nearly 90 percent of the U.S. residential broadband Internet access market, or sold at retail by most major manufacturers, have been tested under the ANSI test method and reported in public annual reports issued by an independent auditor, D+R International, pursuant to the SNE Voluntary Agreement. The public has access to data for more than 800 tests reported under the US SNE Voluntary Agreement in its first five reports, which are readily available at www.energy-efficiency.us. Additional test results will become available this year under the Canadian Energy Efficiency Voluntary Agreement for Small Network Equipment, under which the Canadian federal regulator, Natural Resources Canada, endorsed the use of the ANSI/CTA-2049-A test method. The Voluntary Agreements' audit and verification programs supervised by D+R include accredited third-party testing, which has validated that ANSI/CTA-2049-A is being implemented in a transparent, uniform manner that produces public, verifiable and repeatable test results. In addition, third-party laboratories are accredited to conduct the ANSI/CTA 2049-A tests.

The CoC uses a different approach to testing. Testing is conducted by manufacturers (or they can choose to outsource), and results are self-reported and not verified. There is not a separate, explicit test method documented for the CoC; instead, its test approach is subtly intertwined within the CoC document, with many ambiguities left open for interpretation. Unlike ANSI/CTA-2049-A, the CoC test approach has never been adopted by a consensus standards organization, nor has it been vetted and verified to universal consistent implementation that can produce accurate and repeatable test results.

The EPA Discussion Guide appears to reflect a misperception that the CoC test approach more accurately reflects real-world energy usage than ANSI/CTA-2049-A because the former includes an "On-state" power measurement while the latter only measures "idle" mode. While we appreciate that at first blush it may sound more realistic to include an "On-state" test as part of an energy evaluation of SNE, the CoC's perceived advantage is one of better cosmetics, not better science. EPA's Discussion Guide suggests that the ANSI/CTA-2049-A test method is "inadequate for the purposes of ENERGY STAR" because "there is no transfer of data (i.e., the data rate is 0 kb/s)."[4] The ANSI/CTA-2049-A idle mode is in fact a type of on mode that includes data transfer through live connections to the WAN, half of the LAN ports, and a Wi-Fi client connected at the highest data rate. The CoC "On-state" approach intends to measure a different, more active on mode with an induced simulation of user-generated traffic. For the

[4] Discussion Guide at 1.

reasons discussed below, the reality is that ANSI/CTA-2049-A is the superior method over the CoC test approach for comparing the real-world energy usage across a variety of SNE devices:

a. The Flawed CoC Test Approach is Unusable by ENERGY STAR.

i. The CoC test approach is riddled with ambiguity and inconsistency. We queried four participants in the CoC program to seek interpretations of the CoC test approach and received four inconsistent opinions of how exactly to test its "On-state" mode, which would likely result in different power measurements. CoC participants self-test their own devices and the CoC does not require third-party verification, which has enabled inconsistencies in the test methodology to continue unchecked and unverified.

ii. EPA-approved labs can't verify tests using unclear, non-standardised documentation. ENERGY STAR requires testing by EPA-approved third-party labs. We are not aware of any such lab that is ISO-17025 accredited to perform and certify tests using the current CoC test approach given its lack of clear, uniform interpretation. The CoC does not require any official accredited third-party laboratory testing.[5]

iii. EPA cannot use the CoC as an effective model due to lack of transparency and public data. Unlike the SNE Voluntary Agreement, the CoC does not issue public reports with verified test results for each model. There are no public data points available about any devices that actually are tested using the CoC test approach and that supposedly meet CoC levels. CableLabs participates in the CoC working group meetings and has some visibility into the types of devices that are reported. CableLabs has found that the CoC has attracted only limited participation covering a set of models that is not representative of the SNE market in the United States. Partly as a result of limited participation, the CoC working group has not even defined a testing approach for approximately one-quarter of the technologies for which the CoC nominally establishes allowances. The lack of public data also prevents EPA, CTA, NCTA or CableLabs from properly evaluating the efficacy of the CoC program or the suitability of its test approach or allowances for use in an ENERGY STAR program.

b. ANSI/CTA-2049-A Idle Mode is the Most Representative Real-World State. As noted above, EPA misunderstands the "idle state" measured by ANSI/CTA 2049-A. EPA's Discussion Guide asserts that ANSI/CTA 2049-A idle mode testing state measures devices while traffic is fixed at 0 kb/s. That is incorrect - the "idle state" definition in the ANSI/CTA 2049-A test procedure directs that a "device is

[5] It was suggested at the EPA webinar that there would be an advantage to aligning ENERGY STAR with the Green Electronics Council EPEAT program, which apparently at present intends to launch an SNE program that utilizes the CoC test approach. However, EPEAT's standards also require certified test results from an accredited third-party laboratory, so it too would face an inability to attract participation if interested parties are unable to secure third-party certified testing.

powered on and ready to pass traffic, but no user-generated traffic is initiated during the test." In the ANSI/CTA 2049-A test method, devices are configured in their "as-deployed" state, connected to the WAN, half of the LAN ports, and a Wi-Fi client connected at the highest data rate link. This configuration is an accurate reflection of how most SNE devices spend a significant amount of time throughout the day, in contrast to the CoC's unrealistic "On-state" test. It is also more realistic than the CoC's idle mode test which does not include a connected Wi-Fi client and is thus unrepresentative of typical use cases today.

c. The ANSI/CTA-2049-A Test Results Yield Sufficient Information to Inform Effective Efficiency Targets. The establishment of efficiency targets based upon idle mode measurements is an effective and appropriate methodology because the key known power reduction techniques used to improve efficiency in idle mode are the same measures that can be used to improve efficiency in other active states, such as more efficient power supplies, adaptive voltage scaling, and transistor geometry. The goal of ENERGY STAR is to accurately designate the more energy efficient models on the market, and that objective would be best met with energy targets based upon ANSI/CTA-2049-A idle mode measurements.

d. Idle Power Measurement under ANSI/CTA-2049-A is the Most Reliable Available Metric to Estimate Power in Other Real-World Usage States.

   i. Idle and active power usage are highly correlated. While SNE devices do use more power when passing user-generated traffic, the increased can be readily estimated from idle mode power levels because power usage in active and idle modes are highly correlated. We have based this statement upon our research and analysis with leading SNE and component manufacturers, however *reliable* active mode data on current SNE models is elusive due to a lack of consensus regarding how active mode power usage should be measured, and a dearth of actual test data due to the absence of public reporting and third-party verification under the CoC.

   ii. Suggestions that idle and active power are not highly correlated for a handful of devices are unsupported. In the discussions at the EPA's webinar, it was suggested that some active and idle power measurements taken of Wi-Fi devices using the ENERGY STAR SNE 1.0 test approach were not highly correlated. In fact, our analysis of the EPA data set referenced in the EPA webinar indicated a very strong correlation of idle and active modes based on the ENERGY STAR SNE 1.0 tests of idle and active states, as demonstrated in the charts below and the resultant correlation coefficients between 0.986 and 1.000.[6] This data validates the

[6] Correlation Coefficient measures the strength and direction of the linear relationship between two variables and ranges from -1 to 1. A correlation coefficient of 1.0 represents a perfect positive relationship when an increase in one variable results in a relative increase in the second variable, and a -1.0 represents a perfect negative relationship when an increase in one variable results in a relative decrease in the second variable. A correlation coefficient at or near 0 represents no linear relationship. A correlation coefficient with an absolute value of 0.9 or greater represents a very strong relationship.

determination in the ANSI/CTA-2049-A that additional active mode testing is unnecessary.

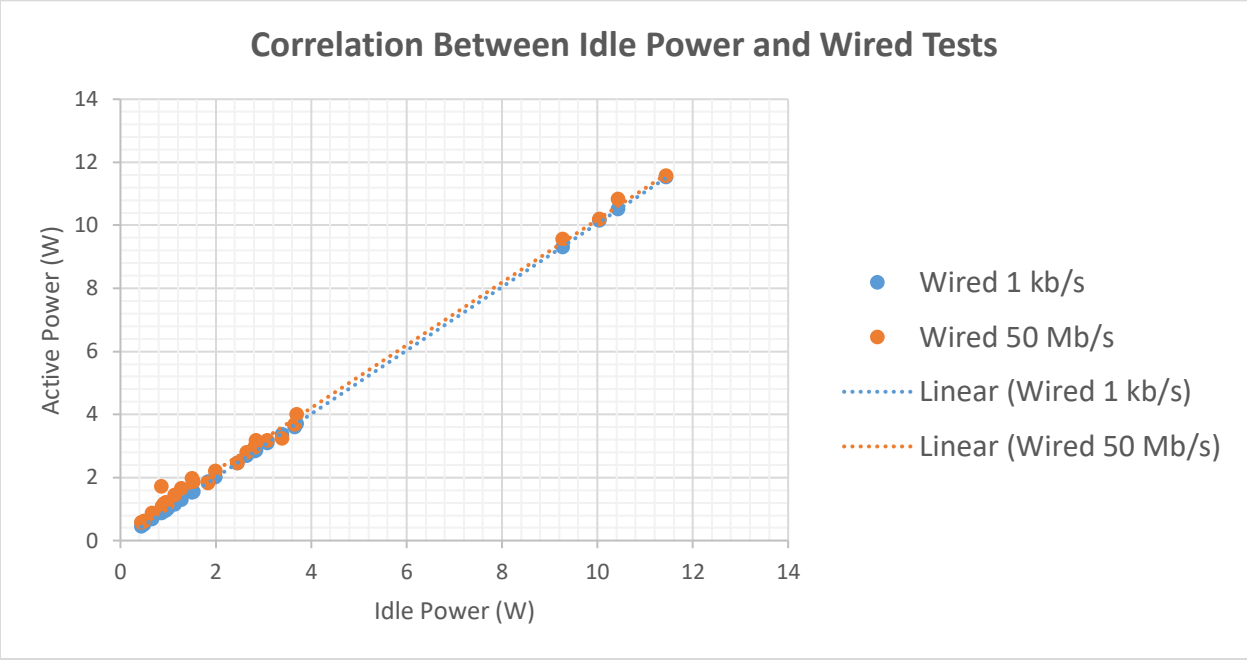

Figure 1 – Correlation between Idle Power and Wired Tests Based on EPA's Data Set

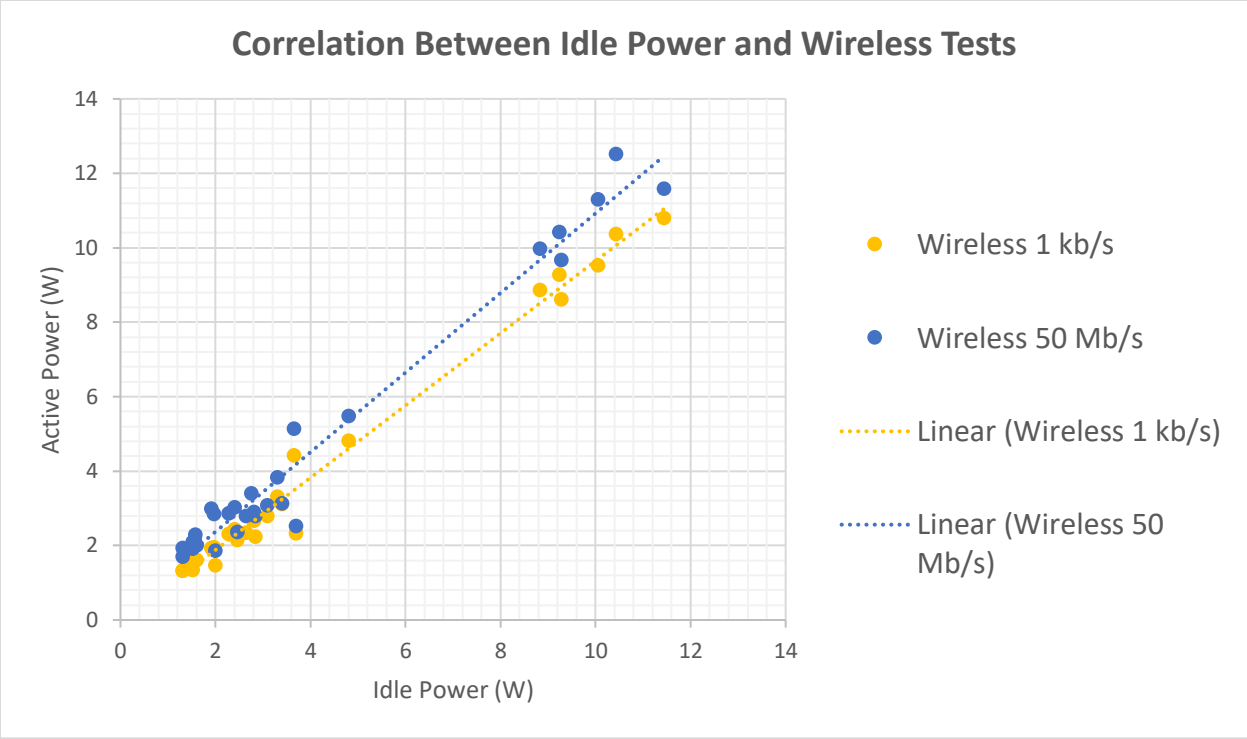

Figure 2 – Correlation between Idle Power and Wireless Tests based on EPA's Data Set

The EPA data set is based on the ENERGY STAR SNE 1.0 Test Method, which defines "idle mode" as "The product is in On Mode and the data rate is 0 kb/s." The ANSI/CTA-2049-A idle mode, by contrast, is more akin to the ENERGY STAR "low data rate" test with 1 kb/s data than its idle mode test, since the live connections in the ANSI/CTA-2049-A idle mode typically are passing low level traffic to maintain connectivity. The comparison between the wireless low-data rate 1.0 kb/s and the 50 Mb/s high-data rate tests shown in Figure 3 resulted in a correlation coefficient of 0.996.

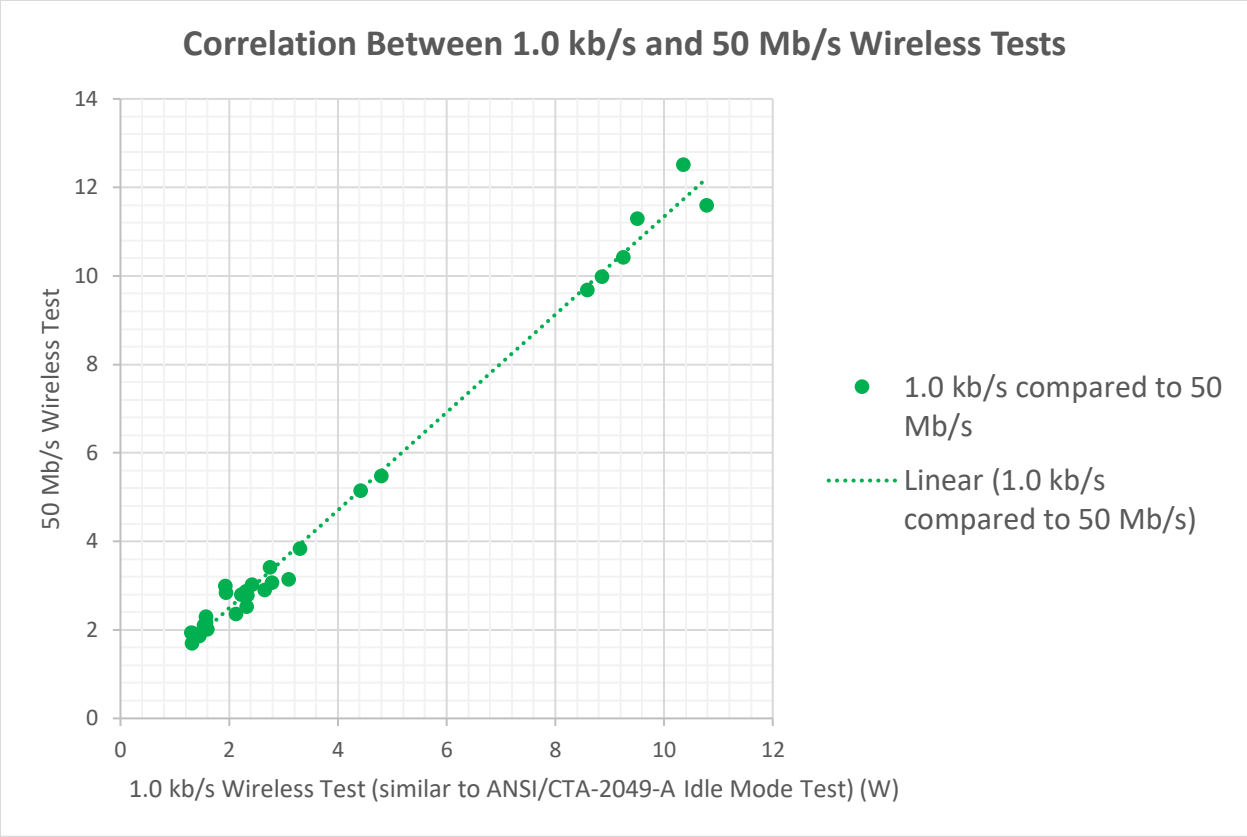

Figure 3 – Correlation between Wireless 1.0 kb/s and 50 Mb/s based on EPA's Data Set

In sum, the correlation of the ENERGY STAR SNE 1.0 test results in the EPA data set of idle and active states are shown below in Table 1:

Active Test	Correlation Coefficient
Idle compared to Wired Half Port 1.0 kb/s	1.000
Idle compared to Wired Half Port 50 Mb/s	0.998
Idle compared to Wireless 1.0 kb/s	0.994
Idle compared to Wireless 50 Mb/s	0.986
Wireless 1.0 kb/s compared to Wireless 50 Mb/s	0.996

Table 1 – Summary of Correlation Coefficients in EPA Data Set

iii. The CoC On-state test configuration does not reflect real-world usage. The CoC test configuration directs the pumping of simulated traffic through all of the available ports when in reality, most traffic today for Wi-Fi enabled devices is through Wi-Fi. Defining an active-mode test that pushes generated traffic through every interface and every component of a system is nowhere near a real-world use scenario. Therefore, even if some sort of active-mode power levels were eventually determined to be an essential metric for some category of SNE devices, the current CoC test approach is not a suitable model because its test results do not reflect a typical real-world use case in consumer homes. ANSI/CTA-2049-A, by contrast, directs devices to be tested in their realistic "as deployed" configurations.

e. The CoC Test Approach is Too Costly to Incentivize Voluntary Participation in ENERGY STAR. The CoC test approach requires a special-purpose traffic generator and additional costly test equipment. These requirements limit the locations where testing can be performed and increase the time and expense of testing. The CoC test is even more difficult for third-party test laboratories to test modems with service provider WAN interfaces such as DOCSIS, DSL, and PON, and interface to the WAN with a prescribed set of traffic (data rate and traffic pattern). This factor has discouraged participation in the CoC, in contrast to the SNE Voluntary Agreement which has attracted broad participation. The ENERGY STAR SNE Version 1.0 specification already suffered from low participation, and EPA's Discussion Guide specifically recognizes that because "stakeholders find the existing ENERGY STAR Version 1.0 SNE test method burdensome," "EPA and DOE are seeking alternate, industry test methods for SNE that may be less burdensome."[7] Adoption of another burdensome ENERGY STAR test for Version 2.0, instead of the consensus ANSI/CTA-2049-A test method standard that is already widely in use in North America, would undermine EPA's objectives by limiting voluntary participation and thereby making it more difficult for consumers to identify the devices in the market that are actually the most energy efficient.

For these reasons, the consensus R7 Consumer Electronics Networking Committee working group that has developed and updated the ANSI/CTA-2049-A test method over the years has repeatedly reaffirmed that its idle mode measurement is the optimal method for securing realistic, consistent, and repeatable test results for SNE. The parties to the US and Canadian SNE Voluntary Agreements chose to employ the ANSI/CTA-2049-A test method for these same reasons.

Federal agencies and departments are required under the National Technology Transfer Act of 1995 (NTTA) to use technical standards that are developed or adopted by voluntary consensus standards bodies such as ANSI in lieu of government-unique standards in their

[7] Discussion Guide at 1.

regulatory activities, except where inconsistent with law or otherwise impractical.[8] Consensus standards bodies are favored out of recognition for their openness, balance of interests, due process, and consensus framework for receiving input and fairly resolving differences among interested parties.[9] CTA is expressly recognized as a consensus standards body, and the ANSI/CTA-2049 standard development process has been open to DOE and EPA throughout the project under CTA's R7 Consumer Electronics Networking Committee working group R7WG15.

EPA cannot satisfy this Congressional directive by claiming that the use of ANSI/CTA-2049-A is impractical because it produces an unsuitably different type of measurement than the CoC approach. It may be that an agency seeking to measure oranges can decide that it is impractical to use a standard designed to measure apples. But in this case, the objective of EPA and ANSI/CTA-2049-A in selecting a test method is the same: to enable the collection of data that can be used to establish appropriate energy efficiency targets that can be applied consistently across SNE devices with varying capabilities. The experts in the ANSI/CTA standards process specifically considered active mode testing and determined that approaches such as the CoC's failed to produce the most realistic, repeatable and meaningful test results. Furthermore, they found that the results of idle and active mode tests would be highly correlated, and that the addition of an active state test would be unnecessary and overly burdensome. If EPA wishes to comply with the requirements of NTTA, attract widespread industry voluntary participation in a new ENERGY STAR SNE specification, and provide meaningful information to consumers, it should do the same and elect to use the ANSI/CTA-2049-A consensus test method.

Responses to Specific Discussion Guide Questions

Question 1: Do stakeholders recommend adding any of the following equipment to the scope of the ENERGY STAR Version 2.0 SNE specification?

- Cable and ONT service provider equipment (CCAP, CMTS, Edge-QAM)
- G.fast DSL
- MSAN where POTS interface is combined with DSL broadband interface
- VoIP gateways and VoIP telephones
- Powerline adapters
- HPNA, MoCA, and optical LAN adapters
- GSM/EDGE, WCDMA/HSDPA and LTE focused cellular network equipment

Response 1: The purpose of the ENERGY STAR program is to inform purchasing decisions by providing a simple-to-understand indicator of energy efficiency into their decision-making. An ENERGY STAR SNE program for the benefit of consumers should therefore focus on equipment that is typically purchased by consumers via retail, namely local network such as Wi-Fi routers.

[8] See 15 U.S.C. § 272 (nt), incorporating Pub. L. 104–113, § 12(d), Mar. 7, 1996, 110 Stat. 783, as amended by Pub. L. 107–107, div. A, title XI, § 1115, Dec. 28, 2001, 115 Stat. 1241.

[9] Office of Management and Budget, OMB Circular A-119: Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities (2016).

Service provider equipment (such as CCAP, CMTS, Edge-QAM and ONTs for wireline Internet service providers and GSM/EDGE, WCDMA/HSDPA and LTE network equipment for mobile Internet service providers) are not "small network equipment" and in any event are not purchased by consumers that would rely upon an ENERGY STAR label. Service provider equipment is used for different purposes than small network equipment purchased by consumers and would require different allowances and testing protocols. These additional complications would not deliver comparable benefit, so EPA should not consider adding these devices.

Question 2: Are DSL modems and DSL based IAD products still sufficiently relevant in the U.S. market that they should continue to be included in scope for the ENERGY STAR Version 2.0 SNE specification?

Response 2: DSL technology remains relevant in the U.S. market. In 2019, there were fourteen different DSL models reported under the SNE Voluntary Agreement. However, DSL modems and IADs are typically only purchased and provided by service providers rather than consumers. While we do not object to the inclusion of service-provider purchased home equipment in ENERGY STAR (as opposed to service provider equipment, which should be excluded as discussed in Response 1 above), EPA may wish to focus its efforts on devices purchased by consumers for which the ENERGY STAR label is more likely to affect purchasing decisions.

Question 3: EPA aims to significantly reduce the number of adders from those included in the EU CoC without negatively affecting functionality. With this in mind, what are the most ripe targets for simplifying functional adders compared to what is presented in the EU CoC? This could include consolidating ONT adders or reducing the variation and/or duplicity of Wi-Fi radio configuration adders among other options.

Response 3: The signatories of the U.S. SNE Voluntary Agreements found that including too few functional adders, or attempting to define all-encompassing adders, can lead to testing methods that do not correlate well with real-world device performance and targets that do not adequately incentivize designers to pursue the most efficient implementation of a given technology. The U.S. Voluntary Agreement's current set of functional adders and targets, the culmination of hundreds of hours of discussions, device testing and research during its six years of development and implementation, should be leveraged for the Version 2.0 ENERGY STAR specification. Of course, the allowance levels for an ENERGY STAR program should be set lower than the Voluntary Agreement since ENERGY STAR seeks to distinguish the most efficient devices, generally in the top quartile of the market, while the Voluntary Agreement commitments are based on 90 percent compliance.

Question 4: EPA and DOE request stakeholder comments on all aspects of the aforementioned test setup differences between the current ENERGY STAR Version 1.0 SNE test method requirements and EU CoC. In particular, comments are welcomed on whether the ENERGY STAR Version 2.0 SNE test method should align with all the set up requirements of the EU CoC, or if there are any requirements that should be different for the ENERGY STAR Version 2.0 SNE Program (either retaining the current ENERGY STAR requirements or specifying requirements different from those in the EU CoC)?

Response 4: For the reasons set forth in the introduction, any new ENERGY STAR specification should utilize the ANSI/CTA 2049-A consensus test method that is already employed by the SNE Voluntary Agreements in the United States and Canada.

Question 5: Are any additional requirements in the EU CoC that should be considered for inclusion in the ENERGY STAR Version 2.0 SNE test method?

Response 5: For the reasons set forth in the introduction, any new ENERGY STAR specification should utilize the ANSI/CTA 2049-A consensus test method that is already employed by the SNE Voluntary Agreements in the United States and Canada.

Question 6: Are there any additional industry SNE standards that should be considered, either in part or as a whole?

Response 6: For the reasons set forth in the introduction, any new ENERGY STAR specification should utilize the ANSI/CTA 2049-A consensus test method and the allowance structure of the SNE Voluntary Agreement.

Question 7: Is it appropriate to change the highest data rate selection criteria used in the ENERGY STAR Version 1.0 SNE test method to be the individually defined data rates based on different ports as specified in EU CoC section B.1.36. In other words, are the individually defined per port data rates from the EU CoC sufficient to mimic high data rate usage scenarios?

Response 7: This question is unnecessary because any new ENERGY STAR specification should utilize the ANSI/CTA 2049-A consensus test method that is already employed by the SNE Voluntary Agreements in the United States and Canada. In fact, the challenge of determining an optimal data rate for active-mode testing for various types of devices is one of the reasons that the EU Code of Conduct test approach has failed to demonstrate reliability in producing a data set that enables meaningful, apples-to-apples comparisons between devices.

Question 8: Should the ENERGY STAR Version 2.0 SNE test method also align its unit link rate, channel, and WAN profile (i.e., ADSL/VDSL, DOCSIS) selection requirements from Table 1 to that of the EU CoC's on state test? If not, what unique value do stakeholders see in the current ENERGY STAR Version 1.0 SNE test method setup requirements that prevents this alignment?

Response 8: This question is unnecessary because any new ENERGY STAR specification should utilize the ANSI/CTA 2049-A consensus test method that is already employed by the SNE Voluntary Agreements in the United States and Canada, which provides that a "device is powered on and ready to pass traffic, but no user-generated traffic is initiated during the test."

Question 9: Do stakeholders agree with the approach to retain both the low data rate and idle state tests in the ENERGY STAR Version 2.0 SNE test method?

Response 9: No. Any new ENERGY STAR specification should utilize the ANSI/CTA 2049-A consensus test method that is already employed by the SNE Voluntary Agreements in the United States and Canada.

Question 10: Would a separate half ports test be required if the ENERGY STAR Version 2.0 SNE test method incorporates the EU CoC's on state test instead? If so, what needs are not addressed by the on state test?

Response 10: Any new ENERGY STAR specification should utilize the ANSI/CTA 2049-A consensus test method that is already employed by the SNE Voluntary Agreements in the United States and Canada. The ANSI/CTA 2049-A test configuration includes establishing a link on half the LAN ports.

Question 11: EPA and DOE request comment on their consideration of simplifying the wireless setup requirements. Are there scenarios that stakeholders could foresee that would cause interference with test results under this approach?

Response 11: EPA and DOE should use the existing ANSI/CTA 2049-A wireless setup requirements.

Question 12: Are there any updated network protocols other than IEEE 802.11ax that should be considered for inclusion in the ENERGY STAR Version 2.0 SNE test method?

Response 12: The ANSI/CTA 2049-A test method has been written to be future proof, as the 802.11 protocols are continuously evolving. Specifically, section 7.3.3 of the test method provides that for devices "supporting single or multiple 802.11 wireless interfaces, only a single 802.11 client shall be associated to the UUT using the highest data rate option (802.11 version, band and channel width) supported by the UUT." In addition, the ANSI/CTA 2049-A test method has provisions for testing devices in a network extender or mesh configuration.

Question 13: Are the data transfer requirements included in the ENERGY STAR Version 1.0 necessary if the program adopts the EU CoC test?

Response 13: EPA should not adopt the CoC test. The ANSI/CTA 2049-A test method does not require the artificial simulation of any user generated traffic, thereby avoiding the need for complicated traffic generation profiles that may be handled differently by different devices.

Question 14: In addition to the topics discussed in this guide, are there any other alternative requirements that stakeholders recommend be considered when developing the ENERGY STAR Version 2.0 SNE test method?

Response 14: CTA, NCTA and CableLabs cannot overstate the foundational importance of the selection of the ANSI/CTA 2049-A test method for use in any new ENERGY STAR SNE specification. The CoC test approach is not the right model for ENERGY STAR for the reasons stated above.

Respectfully submitted,

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