Ref. #	Topic	Subtopic	Stakeholder Comment	EPA Response
1	Definitions		One stakeholder suggested clarifying whether larger, professional Access Points are excluded from scope. The stakeholder also noted that Figure 1: Product Type Assignment could be revised to make clear where a box with a Router, Switch, and Access Point (and possibly more functions) belongs.	Due to limited data on this type of access point, EPA has added an exclusion which removes products marketed as enterprise network equipment and are; (1) shipped without a power supply, and/or (2) cannot operate without a separate external access point controller. EPA welcomes stakeholder feedback on this exclusion. EPA intends to cover these types of products in the future when more data on their power consumption is available .
2	Scope		One stakeholder commented that service providers are likely to integrate broadband capability (e.g., high speed internet) and potentially routing capability into their set top boxes (STB) that currently provide consumers with access to live pay TV. The stakeholder suggested that EPA carefully review the scope and definitions of its SNE and STB specifications to ensure that these multi-function "gateway" devices are appropriately covered and remain within the scope of the ENERGY STAR program. Another stakeholder recommended that equipment with hardware to support security functions, such as firewall and VPN, should be included in scope if they meet Small Network Equipment definition.	Products with broadband modem capability and TV functionality will be covered by the ENERGY STAR Set Top Box (STB) Specification. Broadband modem products that do not have TV functionality and meet the definitions within scope of the ENERGY STAR Small Network Equipment (SNE) specification are considered SNE products. EPA agrees that products with security functions shall be included in scope if they meet the SNE definition.
3	Base Power Allowances	Broadband Modem - Cable	Two stakeholders commented that test results indicate that the current Cable allowances are not taking DOCSIS bonded cable configurations into consideration and suggested the Broadband Model – Cable allowance be raised to 6.7 W to allow for higher density channel bonding. One stakeholder recommended that a 0.5 W allowance should be given to each additional 4 downstream channels. This stakeholder also requested a 1.0 W allowance for a 4DS x 1US channel DOCSIS 3.0 IAD – Cable over the DOCSIS 2.0 IAD – Cable and specified that the maximum number of channels provided by the design be configured during testing. The other stakeholder explained that the DOCSIS 3.0 specification (standardized in ANSI/SCTE 135 and ITU J.222) requires cable modems to support channel bonding, with a minimum of 4x4 channels. Deployed DOCSIS 3.0 cable modems support an 8x4 channel configuration, but products are being developed with channel densities of up to 24x8 channels. However, the stakeholder commented that it is premature to provide accurate measurements for cable modems with greater than 8 downstream channels at this time and suggested instead that a note below Table 2 indicate that the Base Power Allowance for the Broadband Modem – Cable applies to cable modems that support bonding of 8 or less downstream channels.	EPA has analyzed the Broadband Modem - Cable data and observed that several DOCSIS 1.0 and 2.0 products have a higher adjusted average power values than the DOCSIS 3.0 products in the dataset. Furthermore the only 8x4 channel DOCSIS 3.0 cable modem in the dataset is the second lowest power consuming cable modem in the dataset. Without additional product data, EPA cannot justify allowances for additional DOCSIS 3.0 downstream channels. A similar situation occurs in the Cable - IAD product category, where a DOCSIS 3.1 modem with 8x4 channel configuration has one of the lowest adjusted average power values in the product category, EPA has not received data on cable modems or IADs with greater than 8x4 channel configuration and therefore cannot investigate the need for functional adders for additional DOCSIS 3.0 channel support beyond 8 downstream channels.
4	Base Power Allowances	IAD - Cable	Stakeholders noted that the IAD – Cable Draft 2 allowance of 6.0 W allotted only 0.1 W for additional functions (wired network routing, multi-port Ethernet port functions) compared to the Broadband Modem – Cable Draft 2 allowance of 5.9 W. To be more in line with the DSL Broadband Modem and IAD Draft 2 allowance differential of 1.5 W and product data, stakeholders suggested the following revisions for the Cable IAD base allowance: • CABLE IAD – 7.4 W (Broadband Modem allowance + 1.5 W) • CABLE IAD – 7.7 W (Broadband Modem of 6.7 W + 1 W for IAD functionality) • At least a 2.5 W difference between a core Cable Modem and a Cable Modem + Wireless Gateway	The proposed base power allowances for the Broadband Modem - Cable and Cable - IAD product categories, along with the functional adders present in the Draft 3 specification, yield 25% or higher pass rates in both product categories, and allow several DOCSIS 3.0 products (including those with 8x4 channel configuration) to qualify. Thus EPA sees the Draft 3 levels as appropriate.
5	Base Power Allowances	General	One stakeholder commented that the stringency of most of the base power allowances appears adequate for the first version of this specification; however, more stringent base allowances for products on the EPA data set with pass rates greater than 30% including Broadband Modem – ADSL (50%), ONTs (38%), and ADSL IADs (45%) should be considered.	After receiving additional stakeholder submitted data in the final dataset assembly effort in March 2013, EPA has revised the base power allowances for several product categories to achieve qualification rates at or slightly above 25% wherever possible.

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6	Base Power Allowances	ONT	One stakeholder commented that the EPA dataset includes some ONT models that appear to have only modem capability, but other models appear to have additional functionality such as data and phone signal routing. Therefore, EPA should classify the former as Broadband Modem – ONT and the latter as IAD – ONT and include the following base power allowances: - Broadband Modem - ONT : 4.3 W , Pass Rate: 22% - IAD- ONT: 5.5 W, Pass Rate: 29% The stakeholder further noted that all IAD – ONTs listed in the EPA dataset that would qualify with a 5.5 Watt base allowance are devices that have modem and phone functionality only (i.e., they do not include data routing or Wi-Fi). Two IAD - ONTs with Wi-Fi, however, are within 0.1 Watts of qualifying.	EPA has relocated and revised the Optical Network Termination Device (ONT) definition to clarify that it will not be treated as a type of modem or IAD, but rather a separate distinct product type which may have variable connectivity options. This change is consistent with the analysis of ONT data in both Draft 2 and Draft 3 of the specification. ONT qualification rates based on the proposed base power allowances and functional adders in the Draft 3 specification are roughly 25%.
7	Additional Functional Adders	General	One stakeholder recommended that EPA to be very selective and limiting, when including adders in product specifications since it is difficult to distinguish between general and brand specific functions and there are available products that provide extensive functionality with low power consumption: a fully integrated IAD with a consumption of 6-8 W. The stakeholder suggested excluding adders for MoCA, HPNA, integrated storage and VOIP, as well as a Wi-Fi adder for each Wi-Fi interface present, as data do not indicate additional power demand required for these features nor is there explanation for why these features cannot be turned off during testing. The stakeholder also recommends a ceiling limit be applied to the adders to avoid excessive allowance being applied. For example, there is an ONT modem in the data set that would currently gain an additional 7.2 W through the Gigabit Ethernet adder – which is more than the base allowance for this product. The stakeholder also suggested that Ethernet allowance be only applied to ports that are active under test since unused ports should always power down to a minimum power level. Similarly, another stakeholder suggested that EPA consider applying a 0.6 Watt Gigabit Ethernet allowance to half the number of Gigabit ports present rather than 0.3 Watts to all ports present. This stakeholder also recommended that EPA eliminate the fast Ethernet functional adder since most, if not all, devices on the market today are capable of Fast Ethernet. Because a Gigabit Ethernet port draws about 0.6 Watts more than a fast Ethernet port, the stakeholder does agree that Gigabit Ethernet warrants an additional power allowance.	EPA creates functional adders when the dataset supports the need to compensate for additional power consumption created by a feature which benefits the end-user. EPA received additional data which warranted new functional adders explained in Index #8 and Index #9 below. The product mentioned which gains a 7.2W Gigabit Ethernet adder is out of scope as it contains 24 ports. This product was not included in the analysis to create base power allowances and functional adders for Draft 2 or Draft 3, and has been removed from the most recent version of the dataset to avoid confusion. EPA will maintain the current adder structure and base power allowances, which are currently constructed to allow at least the top quartile of each product type in the dataset to meet the energy efficiency criteria. Removal of the Fast Ethernet functional adder call for an increase in base power allowances across all product types to arrive at similar qualification rates.
8	Additional Functional Adders		Stakeholders commented that the Draft 2 0.7W Wi-Fi allowance does not effectively capture high performance with multiple bands and chains. One stakeholder noted that only 13% (2 of 15) of Routers with in the EPA data set met the draft limit and no routers with dual-band meet the draft limit. When data are normalized to remove applicable allowances, there is a 4W difference in average power between dual-band and single-band routers (normalized data) whereas the there is only a 0.1W difference in average power between single-band routers and routers without Wi-Fi. The stakeholder proposed separate Wi-Fi allowances for 2.4 GHz and 5.0 GHz radios based on number of chains (1-3) to accommodate high performance routers that allow devices to connect at the optimal frequency for the environment, improve data transfer speed and integrity, and replace multiple single radio routers. Another stakeholder similarly commented that their product data indicates that the actual power for a Wi-Fi module is 1.5W for each band provided in the product. The Access Point may require more power than a Wi-Fi module, but not as much additional power as represented by the difference between 2.0W for the Access Point (Table 1) and 0.7W for the Wi-Fi feature (Table 2). This stakeholder noted that both the use of 20MHz or 40MHz channel bonding and the number of antennas used in a MIMO configuration also affects the required power. Another stakeholder stated that since tests are based on a low data rate the receive power will dominate the overall increase of 0.35W per additional antenna whereas the power consumption for channel bonding increases at higher data traffic. Based on these points, the stakeholder suggested a Wi-Fi (802.11a/b/g/n) allowance per band present, an additional allowance per bonded pair; and an allowance for each extra antenna for Wi-Fi MIMO Capabilities (802.11 n).	Based on stakeholder feedback on the Draft 2 specification, as well as additional product data received in the final data assembly effort in March 2013, EPA has created new Wi-Fi adders to account for products with simultaneous dual band Wi-Fi and multiple chains. EPA conducted an analysis on the expanded dataset and developed an adder structure which results in qualification rates at or above 25% for single and dual band simultaneous Wi-Fi products. Please note that the new Wi-Fi adders are in addition to the existing base Wi-Fi adder, and that all products with Wi-Fi functionality may still claim the base adder. EPA welcomes feedback on this proposed adder.

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9	Additional Functional Adders	Telephony Service	One stakeholder commented that additional power is required to support the generation of Ringing Voltage and Loop Current for the telephones as well as the interface processing to the DOCSIS channel even when idle or not configured for use. Based on its own data the stakeholder thus recommends an allowance of 1.0W for the Telephone service (1 or 2 phone) and an additional 1.0W per each additional 2 lines. Another stakeholder suggested only a single additional allowance of 1.5W for VOIP configurations as indicated by its own test data.	EPA has reviewed the feedback and data provided by stakeholders on this issue and has developed a Plain Old Telephone Service (POTS) functional adder as a result. When analyzing the dataset, EPA did observe an increase in power consumption between 1 POTS port and 2 POTS ports, but did not see additional power consumption when analyzing similar products with 4 POTS ports. For this reason, the telephony adder is capped at 2 ports. EPA welcomes feedback on this proposed adder.
10	Additional Functional Adders	VDSL	One stakeholder commented that based on their own test results the current allowances do not account for Bonded VDSL2 configurations. Thus, it suggested that an additional adder of 1.4 W be applied to the additional VDSL2 lines for bonded configurations. The stakeholder also noted that the current allowances do not account for VDSL 30a functionality based on a product's test result.	EPA has not received enough product data to support a higher base allowance or functional adders for bonded VDSL2 or VDSL 30a.
11	Optional Performance Reporting		To ensure EPA has all the raw data needed during its revision process to create Version 2.0, and for all relevant information to be readily available to consumers and other interested stakeholders, one stakeholder encouraged EPA to develop a data entry reporting form that clearly spells out the exact data that must be reported and revise the existing language in the specification (Section 4.4) and test method (Section 9.1-9.2) that could result in inconsistent and potentially incomplete data reporting. The stakeholder noted that the ENERGY STAR Qualified Product List could have two layers, one for the high level data that consumers would be interested in followed by a more complete set of data that would include raw power measurements, test unit features (speed, number of ports, standards (including wireless, EEE, DOCSIS and DSL information), external proxy capability), etc.	EPA is currently developing the Qualified Product eXchange (QPX) document which will be used to collect all reported test data for ENERGY STAR certification. Manufacturers, CBs, and labs will have an opportunity to review this document prior to finalization. All data the EPA intends to publish will be displayed on the Qualified Product List (QPL) on the ENERGY STAR website. A subset of high level consumer friendly information will be presented in the new ENERGY STAR Product Finder Tool, which can be found at: http://www.energystar.gov/productfinder/
12	Energy Efficiency Ethernet		One stakeholder suggested EPA require that devices be shipped with EEE enabled, particularly if the specification effective date is pushed back from March 2013, for the following reasons: - a broad range of stakeholders have worked together to develop the EEE protocol (IEEE 802.3az standard), - per unit annual EEE energy savings are 20 to 30%, - there is little to no incremental cost associated with adding EEE to new chips, and - the share of models with EEE is expected to increase significantly in 2013. If a requirement is not possible, the stakeholder recommended EPA: - require manufacturers report whether or not their models ship with EEE enabled, - commit to a timely revision process to update the specification so that it includes this requirement; and - add language that requires devices with EEE capability to be shipped enabled (opt-in not needed) and encourages simple and easy-to-use set-up menus Another stakeholder acknowledges the need to encourage EEE but suggests that an upper limit be placed on the total allowance that can be gained via this incentive to avoid disproportionate energy allowances being allocated.	EPA thanks the stakeholder for this comment but will maintain its current approach on the EEE incentive, as discussions with manufacturers have shown that EEE is not yet widely adopted in the SNE market. Furthermore, only a few products in the SNE dataset have EEE capability. EPA encourages the adoption of EEE by all stakeholders and believes that the current approach supports this position.
13	External Proxy Incentive		One stakeholder acknowledged the need to encourage adoption of external proxy capability so that end point devices can maintain full network connectivity whilst in a sleep state, and expressed support for the proposed levels.	EPA thanks the stakeholder for this comment.
14	Future Revisions		One stakeholder suggested including a discussion around how power management might be considered in future specifications, listing out the following: - Powering down at low traffic volume - Scheduling WLAN on and off periods - Automatic switch off of unused interfaces	EPA thanks the stakeholder for this comment and will look to address these issues in the Version 2.0 SNE specification.

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15	Specification Effective Date		One manufacturer commented that the effective date of March 2013 is too early considering the current debate and changes in Draft 2 and suggested a one year period from the release of requirements to allow manufacturers time to design to the requirements and complete all testing and be consistent with other documents. Another stakeholder noted that the immediate effective date cannot be implemented in the European Union and instead 6 to 8 months are required to allow for appropriate administrative processes.	EPA will issue a Final Draft after this Draft 3 and expects to complete the specification development process in the coming few months. Partners will be invited to certify products to Version 1.0 as soon as it is published. EPA's dataset demonstrates that there are already products on the market that meet the Draft 3 levels, making a near term effective date appropriate.
16	Dataset		One stakeholder commented that the EPA dataset on routers is limited: - data on only 15 routers with capability is available - 80% of routers with are from the same vendor - Additional test data is necessary from a larger diversity of vendors	EPA conducted a final data assembly effort in March 2013 and received significant additional product data on routers. EPA has used this information to revise the router base power allowances, and also create new simultaneous dual band Wi-Fi functional adders for products with multiple chains.
17	Savings Potential		Recent analysis performed by one stakeholder and its consultant found that SNE equipment consumes roughly 4 power plants worth of electricity and costs consumers more than $1billion/yr to operate, and that more efficient designs could reduce their annual energy use by 30% or more. As such, the stakeholder expressed strong support for EPA's decision to establish a specification for small network equipment.	EPA thanks the stakeholder for this comment.
18	DSL Testing		One stakeholder commented that the Draft 2 requirement to test products with both ADSL and VDSL capability only in ADSL mode does not limit power consumption for the native VDSL2 mode and the allowance for the whole product is based only on the non-native ADSL mode. Since it is better to test and impose a total allowance on the native mode of the product, the stakeholder suggested that "Products that have both ADSL and VDSL functionality shall be tested using their VDSL functionality" which is similar to the European Code of Conduct for Broadband approach.	EPA agrees with the stakeholder feedback and is proposing that products with both ADSL and VDSL functionality be tested using VDSL connections. EPA welcomes feedback on this revision
19	Test Configuration		One stakeholder commented that it is difficult to understand how many ports need to be connected for each test. As such, it suggested revising Section 6.6-6) of the Test Method to clarify that the first connected port may be a WAN port, not an Ethernet port, and that the number of connected ports during the test is not defined by this figure since IADs do not need multiple Ethernet ports connected. Further it suggested that Section 7.1 be revised to state "If additional Ethernet ports are required during testing, they shall be connected sequentially..." The stakeholder also noted that the line #223 contradicts line #147: - Line 223: "Note: MoCA, HPNA and WiMAX (802.16e) connection types have been removed from Table 6, due to limited data and inability to test them in the current test method. These protocols should be turned off during testing." - Line 147: "Peripheral Devices: Non-Ethernet wired ports (e.g., HPNA, MoCA, USB, analog connections, POTS, audio) shall not be connected". For consistency, the stakeholder suggested line 147 be revised to: "Peripheral Devices: Non-Ethernet wired ports (e.g., HPNA, MoCA, USB, analog connections, POTS, audio) shall be turned off during testing".	EPA feels that the current language in Section 6 and Section 7 of the SNE Test Method is unambiguous when addressing IAD testing. EPA will maintain the language "should be turned off" in line 223 of the test method as it may not be possible for all products to accomplish at this time. In those cases, any additional power consumption caused by not powering down those features will count towards the power consumption used for qualification.
20	Active Ports		One stakeholder expressed support for the methodology proposed by EPA that has half or fewer of the available ports connected during power measurement testing for two reasons: a) while there does not appear to be any field data, anecdotal evidence suggests that most consumers only use zero, one or two of the available ports and rarely populate all of the available ports, b) it will reward those manufacturers who deploy designs that power down any unused ports.	EPA thanks the stakeholder for this comment.
21	Test Labs		One stakeholder commented that third-party test labs with the capability to test small network equipment per the ENERGY STAR Test Procedure could not be identified. Labs cited the expense of test equipment as a concern.	EPA will clarify in the Final SNE Test Method that commercially available traffic generators are not required for ENERGY STAR SNE testing. Any combination of hardware and software used to generate traffic must meet all of the requirements in Section 5.C of the Final SNE Test Method.