



# 2017 Annual Report

## Voluntary Agreement for Ongoing Improvement to the Energy Efficiency of Small Network Equipment

Prepared on behalf of the  
Steering Committee by:  
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## EXECUTIVE SUMMARY

In 2015, the largest U.S. residential broadband Internet service providers and manufacturers of small network equipment, such as modems and routers used by consumers to access such services, led by the NCTA - The Internet & Television Association and the Consumer Technology Association (CTA), signed the [Voluntary Agreement for Ongoing Improvement to the Energy Efficiency of Small Network Equipment](#). This agreement is modeled on the successful Voluntary Agreement for Ongoing Improvement to the Energy Efficiency of Set-Top Boxes. The primary objective of the agreement is to increase the energy efficiency of small network equipment while promoting rapid innovation and timely introduction of new and improved features. The service provider signatories served 94.8 million residential U.S. Internet subscribers at the end of 2017, accounting for 89.1% of the market.

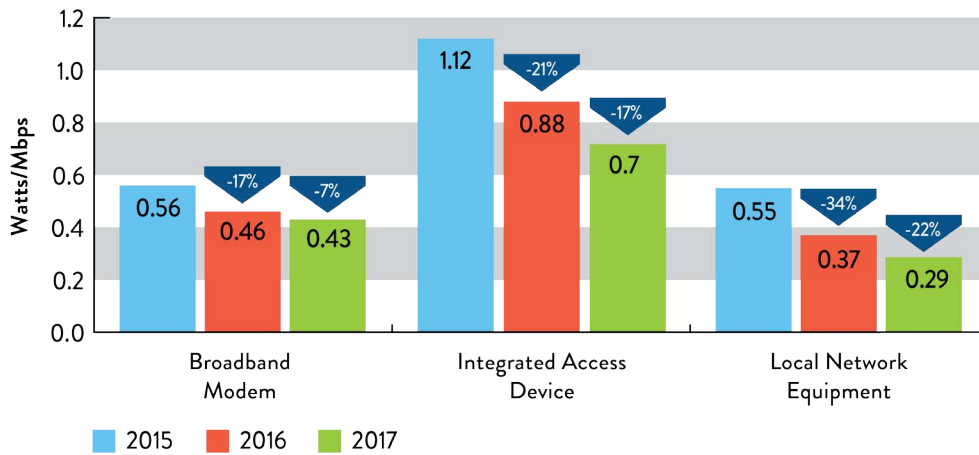
One of the requirements of the Voluntary Agreement is the publication of an annual report that summarizes developments for the previous calendar year. This third annual report has been prepared by the Independent Administrator and Auditor, D+R International, Ltd. ("D+R").

Under the Voluntary Agreement, signatories commit that at least 90% of all small network equipment purchased by each service provider or sold by each manufacturer at retail after December 31, 2015 will meet the energy efficiency levels established under the Voluntary Agreement. Overall, in 2017, 99.2% of small network equipment purchased or sold by the signatories met these levels, up from 98.3% in 2016, and all of the signatories met the 90% commitment individually. These findings are supported by additional lab verification testing of a randomly selected model from each commercial signatory, and by a successful audit of one randomly selected signatory's records, which D+R found to be consistent with the annual report data submitted by the party.

The Voluntary Agreement expired at the end of 2017, with provisions for this annual report to be issued in 2018. In July 2018, the signatories unanimously amended the Voluntary Agreement and extended its term for an additional four years through the end of 2021. The revised Voluntary Agreement includes new, more rigorous Tier 2 energy levels that will become applicable to the signatories' 90% procurement and sales commitments in 2020. These new levels are on average 11% more efficient than the current Voluntary Agreement levels that have already improved the efficiency of small network equipment by nearly 20% compared to typical, previously deployed devices used by signatories.

The signatories' improvement in 2017 compared to 2016, and their commitment to even greater efficiency by 2020, are significant in light of consumer demands for faster broadband services and improved Wi-Fi signal strength and capacity for more devices at higher speeds within the home. While products that provide more functionality to meet these increased consumer demands sometimes use more energy than less capable devices, this report finds that the signatories are delivering these more advanced functionalities more efficiently. Even as consumers demanded more robust devices to support higher speed services and better Wi-Fi coverage, the signatories nonetheless increased the percentage of devices meeting the target energy levels of the Voluntary Agreement in every category. Moreover, while the demand for small network equipment to support higher speeds and better Wi-Fi coverage resulted in slightly higher overall energy usage in 2017, the average energy usage of the equipment relative to broadband speed delivered once again decreased significantly from 2016 to 2017, as shown in Figure 1.

**Figure 1: Energy Usage by Equipment Type, Weighted by Broadband Speed**



The above figures were calculated by dividing the average idle power of each equipment type as verified by D+R in this report by the average broadband speed for that year reported the Akamai State of the Internet reports.

This trend of greater efficiency in the delivery of increasingly robust broadband services and functionalities is expected to continue as the signatories work toward meeting the more rigorous Tier 2 energy levels by 2020. Consumers and other stakeholders can monitor the parties' progress at [www.energy-efficiency.us](http://www.energy-efficiency.us), which includes links to energy efficiency information for small network equipment purchased or sold at retail since January 1, 2015, as well as all previously published annual reports.

## OVERVIEW OF THE VOLUNTARY AGREEMENT

Guided by the objective of improved energy efficiency, the signatories crafted the [Voluntary Agreement for Ongoing Improvement to the Energy Efficiency of Small Network Equipment](#) in 2015 to reduce energy consumption and environmental impact, save their customers money, increase the reliability of their networks, and preserve flexibility conducive to rapid innovation and timely introduction of new features. The Voluntary Agreement provides a framework for the broadband Internet industry to deliver market-based energy efficiency gains that keep pace with technological innovation, and is modeled on the successful Voluntary Agreement for Ongoing Improvement to the Energy Efficiency of Set-Top Boxes that was signed in 2012.

The agreement sets rigorous requirements that have improved the efficiency of small network equipment by nearly 20% compared to typical, previously deployed devices used by signatories. The signatories are committed to meet even more strict “Tier 2” energy efficiency levels by 2020 that are on average an additional 11% lower than the levels under the current commitments, as part of an extension of the Voluntary Agreement through 2021 that was adopted unanimously by the signatories in July 2018.

The Internet service provider signatories offered services to approximately 94.8 million U.S. residential customers, or 89.1% of U.S. broadband households in 2017, an increase of 16.3 million customers since 2015.<sup>1</sup>

The Voluntary Agreement classifies small network equipment into three categories:

- **Broadband Modems:** A simple network device that enables high speed data service with a WAN (Wide Area Network) interface to a service provider wired or optical network, and typically a single LAN (Local Area Network) interface for the customer premise network. The Broadband Modem category does not include devices with integrated router or IEEE 802.11 (Wi-Fi) wireless access point functionality.
- **Integrated Access Devices (IAD):** Broadband network devices with a Wide Area Network interface to a service provider wired or optical network and one or more of the following functions on the Local Area Network interface: multiport routing, Wi-Fi wireless access point functionality, and/or Voice over Internet Protocol (VoIP).
- **Local Network Equipment (LNE):** Devices that do not have a direct interface to a service provider wired or optical network. This category consists principally of routers, but also includes wireless access points, switches, and network extenders that bridge or extend a local area network beyond its physical limitations.<sup>2</sup>

### Voluntary Agreement Objectives

The objectives of the Voluntary Agreement are to continue improvements in the energy efficiency of small network equipment and to foster device and service functionality, while encouraging innovation and competition. By improving small network equipment energy efficiency, the Voluntary Agreement also aims to further reduce potential negative environmental impacts and increase benefits to consumers in a flexible manner that allows for high-quality services and takes advantage of rapidly changing technologies and new features.

<sup>1</sup> - Based on data provided by the NCTA and the Consumer Technology Association. Part of the increase is attributable to the addition of Frontier Communications as a signatory in 2017.

<sup>2</sup> - For the full definitions of these categories, see Appendix A of this report or Annex 1 of the Voluntary Agreement.

## Voluntary Agreement Signatories and Steering Committee

The signatories and participants in the Voluntary Agreement are listed below. Signatories that currently have a voting member serving on the Steering Committee are indicated with an asterisk; all signatories may participate in Steering Committee meetings.

### Service Provider Signatories

- AT&T Services, Inc.\*
- Cablevision Systems Corp. d/b/a Optimum\*
- CenturyTel Broadband Services, LLC d/b/a CenturyLink\*
- Charter Communications, Inc.\* d/b/a Spectrum (includes Bright House Networks and Time Warner Cable\*)
- Comcast Cable Communications, LLC\*
- Cox Communications, Inc.\*
- Frontier Communications Corp.\* (signed in 2017)
- Verizon Communications, Inc.\*

### Vendor Signatories

- Actiontec Electronics, Inc.
- ARRIS Group, Inc.\*
- D-Link Systems, Inc.
- Netgear, Inc.\*
- Technicolor Connected Home USA LLC
- Ubee Interactive, Inc.

### Other Organizations

- Consumer Technology Association (CTA)\*
- NCTA - The Internet & Television Association (NCTA)\*
- Cable Television Laboratories (CableLabs)

The Voluntary Agreement obligates the Steering Committee to designate an Independent Administrator and publish an annual report. The Steering Committee designated D+R as the Independent Administrator and Auditor in 2015, and D+R has continued in this role. This report is the third annual report.

The Voluntary Agreement requires that the Steering Committee meet at least once each year. The Steering Committee met twice in 2017, on June 28 and August 24. Additional responsibilities of the Steering Committee include the following:

- Managing the Voluntary Agreement
- Hiring the Independent Administrator
- Reviewing proposals for energy allowances based on new features, which the Steering Committee can approve, reject, or add to the Voluntary Agreement as appropriate
- Evaluating the effectiveness of the Voluntary Agreement in achieving its purposes
- Adopting new or revised efficiency measures, courses of action, and amendments to the Voluntary Agreement as technologies and services change

## Signatory Commitments

The primary commitment is to procure and sell energy-efficient small network equipment. Specifically, beginning January 1, 2016, 90% of new small network equipment purchased by service providers or sold at retail by vendors had to meet the energy efficiency levels established in the Voluntary Agreement.

## Independent Administrator and Auditor Role

The Independent Administrator is a third party appointed by the Steering Committee. Under the Voluntary Agreement, the Independent Administrator must aggregate and compile confidential procurement and sales data submitted by the signatories. If the Voluntary Agreement procurement or sales commitments are not met, the Independent Administrator is responsible for working with the signatory to develop a remedial plan under procedures set out in the Voluntary Agreement.

The Independent Administrator is charged with conducting an audit of one randomly-selected service provider's procurement figures or one vendor's sales figures each year. The results of the 2017 audit are presented in Appendix C. The Independent Administrator also randomly selects one model from each service provider and retail vendor that must be independently tested in an accredited third-party lab or supervised by an accredited independent observer to verify the reported idle power values. The successful results of that lab verification testing are described below.

## New Feature Process for Small Network Equipment

The New Feature Process is intended to encourage innovation and competition by service provider and vendor signatories and to encourage energy efficiency by design. This process provides a path for signatories to innovate and add new features, including features with no assigned allowances and features in the early stages of design, without being treated as being in violation of Voluntary Agreement energy allowances or commitments. If a service provider signatory deploys, or a vendor signatory sells, small network equipment that includes a new feature with no allowance, and the presence of the feature causes the device to exceed the prescribed allowances, the signatory may set and report an appropriate initial allowance for the power consumption of that feature when it reports the device under the Voluntary Agreement. When such information is reported, the Steering Committee will propose appropriate allowances and effective dates. Any allowances established by the Steering Committee for new features will be publicly reported. The signatories adopted new allowances for DOCSIS 3.1 IADs and modems as part of its amendment of the Voluntary Agreement. There were no other new feature allowances proposed during this reporting period.

## Remediation and Alternative Energy Efficiency Strategies

A signatory that fails to meet its procurement or sales commitment must either seek advance credits for alternative energy efficiency measures or must undertake a remedial plan that secures energy savings that offset the incremental energy associated with devices purchased or sold in excess of the commitment.

In the prior annual report, D+R found that one signatory had fallen just short of the 90% commitment, with 88% of its new devices meeting the applicable energy allowances. Upon further subsequent review, D+R recommended that the party be deemed in substantial compliance with its 2016 commitment, because not only did it barely miss the 90% mark, but it did so with devices that were barely over the allowable Voluntary Agreement levels, while its much greater number of other small network equipment devices measured significantly lower than the applicable allowances. The extra energy saved above and beyond the Voluntary Agreement levels by these latter devices was nearly 100 times more than the energy associated with the devices comprising the 2% shortfall on its commitment. This recommendation was approved by the Steering Committee.



## REPORT ON 2017 PROCUREMENT AND SALES COMMITMENTS

Under the Voluntary Agreement, 90% of small network equipment purchased or sold at retail by commercial signatories after December 31, 2015 must meet specified energy efficiency levels. Data was collected from the service provider and retail vendor signatories to measure satisfaction of these commitments in 2017.<sup>3</sup> Overall, 99.2% of reported units satisfied the energy efficiency levels of the Agreement in 2017, up from 98.3% in 2016.

All twelve reporting signatories met the 90% threshold, and seven of those signatories had 100% of their new purchases/sales meet the energy efficiency levels of the Agreement.

The success of the procurement commitment spanned every category of small network equipment, with at least 99% of every category meeting the levels of the Agreement, as shown in Table 1.

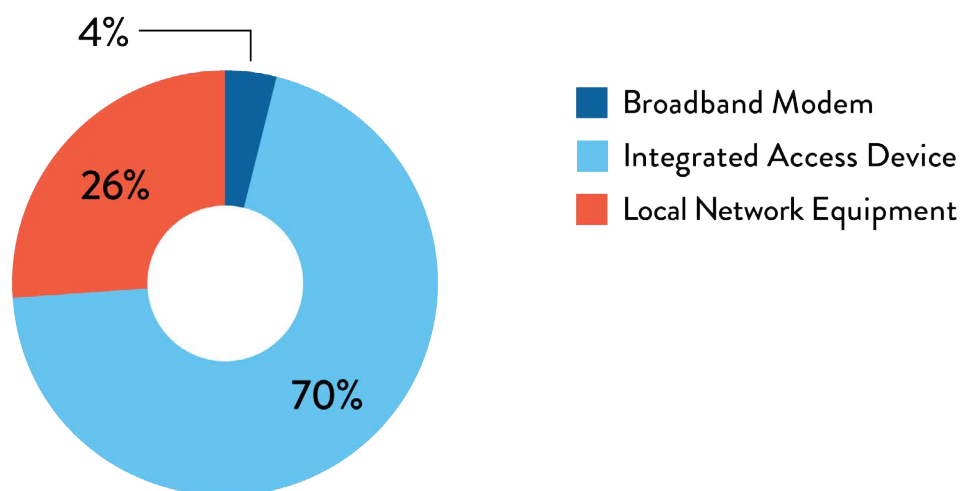
**Table 1: Total Number of Units and Number of Units Meeting Energy Efficiency Levels, by Equipment Type**

Category	Reported Units	Number Meeting Levels	Percent Meeting Levels
<b>Broadband Modem</b>	1,317,245	1,317,245	100.0%
<b>Integrated Access Device</b>	24,254,951	24,007,926	99.0%
<b>Local Network Equipment</b>	9,146,156	9,112,281	99.6%
<b>Total</b>	<b>34,718,352</b>	<b>34,437,452</b>	<b>99.2%</b>

Integrated access devices (IADs) represented more than two-thirds of reported products, followed by local network equipment (principally routers) and broadband modems.

Figure 2 shows the category breakdown, by percentage, of the units purchased or sold.

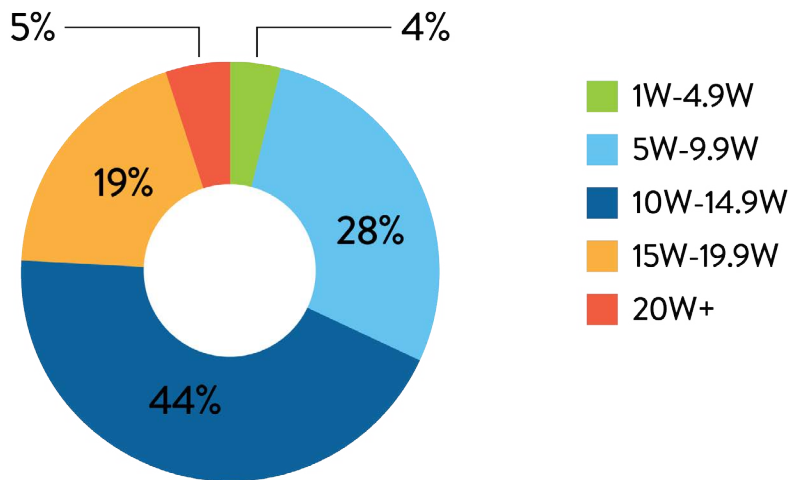
**Figure 2: Small Network Equipment, by Equipment Type**



<sup>3</sup> - Two vendor Signatories had no retail sales of small network equipment in 2017 and therefore did not need to submit sales data.

More than three-fourths (77%) of IAD models report idle power of less than 15 watts, but there is wide variation in capabilities and features of these products.<sup>4</sup> The distribution of IAD power is shown in Figure 3.

**Figure 3: Distribution of Reported Idle Power of Integrated Access Device Models**



### Energy Efficiency of Small Network Equipment

Details of the small network equipment purchased or sold by the signatories in 2017 are provided in Appendix A. The energy efficiency of each model is assessed based upon its particular suite of functions and capabilities, which vary widely among small network equipment. For example, of the three categories of small network equipment defined by the Voluntary Agreement, IADs, on average, use the most energy, as shown in Table 2. However, IADs perform multiple functions that in the past may have been performed by multiple separate devices, such as a modem, router, VoIP telephone modem, and/or home security controller that in the aggregate likely used more energy. This consolidation of functions in one device is made possible by the structure of the Voluntary Agreement, which assigns energy allowances for the various functionalities of each device to tailor appropriate energy efficiency levels.

**Table 2: Average Typical Weighted Idle Mode Power Consumption for Small Network Equipment Categories<sup>5</sup>**

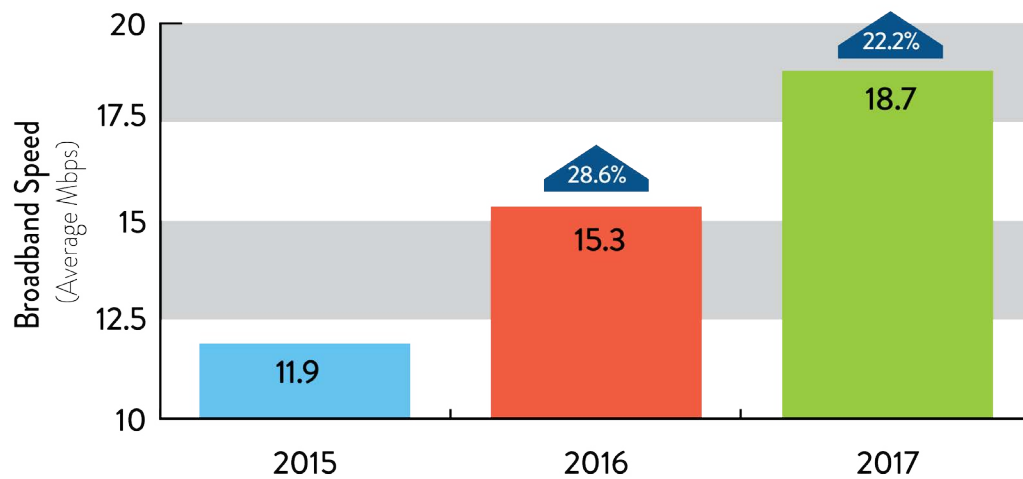
SNE Category	Average Weighted Power 2017 (in watts)
Broadband Modem	8.12
Integrated Access Device	13.72
Local Network Equipment	5.33

4 - These numbers are reflective of the models reported and are not based on quantity sold of each model.

5 - Average weighted power was calculated by multiplying the weighted power of each unit type (by signatory) by the total number of units. These totals were all added and then divided by the total number of units in each category.

Even within these categories, there is wide variation. The idle mode power for these models across all categories spans from less than 1 watt to 27 watts. This distribution is affected by the wide variation in the specific capabilities of models as they are adjusted to meet changes in consumer demand with the rise in broadband speeds, devices, and usage. The average broadband connection speed for U.S. residential households has increased by 57% in just two years, as shown in Figure 4. Consumers are bringing an increasing number and variety of connected devices into their homes and streaming an increasing amount of video content to mobile devices. In 2017, the time spent watching video content on mobile devices, including laptops, tablets and smartphones is now equal to - within the sampling margin of error - time consumers spent watching video content on TVs.<sup>6</sup> In the home, this streamed content is typically delivered through the customer's modem and router. To meet consumers' increased demands for robust modems and routers to support higher-speed broadband services and increased Wi-Fi capacity in the home, the design and features of small network equipment have changed.

**Figure 4: Annual Growth of Broadband Speeds<sup>7</sup>**



These figures are from a series of annual reports by Akamai measuring average connection speeds connected to Akamai's streamed video content. The final measurement was reported for the first quarter of 2017. These measurements used a consistent methodology and accordingly should reasonably reflect the *proportionate* increase in year-over-year speeds, which is the purpose of this data for this report. However, the actual top speeds supported by SNE as of the end of 2017 are reportedly significantly higher than 18.7 mbps. D+R will consider alternative sources of data on broadband speeds for future reports.

The signatories nonetheless increased the percentage of devices meeting the energy levels of the Voluntary Agreement in every category, even as consumers demanded increasingly robust devices to support higher speed services and increased Wi-Fi capacity within their homes. As noted above, at least 99% of the devices in each category, and 99.2% of devices overall, met the energy efficiency levels of the Agreement in 2017. This achievement reflects the Voluntary Agreement's objective to promote energy efficiency in a manner that does not constrain innovation and the delivery of new services to consumers.

The Voluntary Agreement is expected to continue to drive purchase and design decisions, increasing the efficiency of equipment on the market and in consumers' homes. In a prior annual report, D+R found that the reported legacy models purchased and sold in 2015 that did not meet the Voluntary Agreement's initial energy efficiency levels used an average of 18% more energy than the maximum power consumption permitted under the Voluntary Agreement's allowances.<sup>8</sup> Most of those less energy-efficient models reported in 2015 were not purchased/sold again in 2016 or 2017, and those that were, were purchased and sold with declining frequency. In 2015, only 85.8% of models met the levels of the Voluntary Agreement. In 2016, that figure increased to 92.3% and only 1.7% of all purchases and sales were of models that did not

6 - Consumer Technology Association (CTA), Content Consumption Milestone: Number of Streaming Video Viewers Now Equal to Paid TV Subscribers, Says CTA (Mar. 7, 2017), <https://cta.tech/News/Press-Releases/2017/March/Content-Consumption-Milestone-Number-of-Streaming.aspx>.

7 - Source: Akamai State of the Internet reports (Q1'15, Q1'16, Q1'17), available at <https://www.akamai.com/us/en/about/our-thinking/state-of-the-internet-report/global-state-of-the-internet-connectivity-reports.jsp>.

8 - D+R International, 2015 Annual Report, Voluntary Agreement for Ongoing Improvement to the Energy Efficiency of Small Network Equipment (Aug 8, 2016), available at <http://www.energy-efficiency.us/library/pdf/SNE-AnnualReport-2015.pdf>.

meet these levels. In 2017, 94% of the models sold met the Voluntary Agreement levels and less than 1% of sales and purchases were models that did not meet Voluntary Agreement levels.

Efficiency is expected to improve further under the more rigorous Tier 2 allowances that will replace the existing energy efficiency levels of the Agreement in 2020. These levels are on average 11% more efficient than the current Voluntary Agreement levels.

All of this data supports the finding that the Voluntary Agreement is continuing to be successful in improving the energy efficiency of small network equipment.

## Lab Verification Testing

The Independent Administrator randomly selected one model from each commercial signatory for verification testing. Verification testing was conducted in third-party laboratories approved by the Steering Committee or under a supervised vendor or service provider testing program with an accredited independent observer approved by the Steering Committee. Test results revealed that, in aggregate, the average actual idle power measurement is 0.54 watts less than the values originally reported by the signatories in their 2017 annual reports. The results also confirmed that idle mode energy usage was at or below the levels reported by the signatory, with the exception of two models. One of the models tested higher than the signatory had originally reported, but the model still met the efficiency levels of the Agreement. That model's energy measurement has since been updated by the signatory to reflect this finding. The second model that tested higher than the reported power value did not meet the VA level and that model's reported value has been updated in Appendix A to reflect this finding, and the model was counted against that company's compliance with its commitment.<sup>9</sup>

## Consumer Access to Energy Information

All signatories committed to provide subscribers and prospective customers with reasonable access to energy efficiency information for small network equipment purchased or sold at retail since January 1, 2015. This information makes it easy for consumers to learn about energy-efficient small network equipment and typical energy consumption. Links to the information are shown in Appendix B and posted at [www.energy-efficiency.us](http://www.energy-efficiency.us).

## CONCLUSION

The Voluntary Agreement continues to be successful in improving the energy efficiency of small network equipment used by American consumers with broadband Internet access service. 99.2% of reported units satisfied the energy efficiency levels of the Agreement despite increased consumer demands for the capabilities of the equipment. All 12 of the service provider and retail vendor signatories met the 90% threshold and seven of those met the Agreement's allowances for 100% of their new sales and purchases. As technology evolves and consumers continue to seek increased functionality, and as the parties strive to meet the more rigorous Tier 2 energy efficiency levels by 2020, the Voluntary Agreement will serve as a guiding force to help signatories balance improving both product innovation and energy efficiency.

9 - A third model that tested above its previously reported value in third-party lab verification was not actually reported by the signatory for 2017. The Steering Committee has revised its procedures to direct that in the future, only models purchased or sold in the reporting year should be subjected to lab verification, in order to produce more relevant results.

## APPENDIX A: SMALL NETWORK EQUIPMENT PURCHASED OR SOLD BY VOLUNTARY AGREEMENT SIGNATORIES IN 2017

Appendix A lists the small network equipment reported by the signatories as purchased or sold in 2017. Please note that the same model could have variances in reported power for several reasons, including differences in reported versus measured power, enabling of different product features, and/ or different software deployed on the device by different signatories. Modal power figures in this Appendix are rounded up to the next one-hundredth digit (e.g., 5.126 watts would be rounded up to 5.13 watts).

Vendor reports include only the models that were sold via retail channels. Models sold to Service Providers are reported by the Service Providers.

The Voluntary Agreement establishes the following categories of small network equipment subject to the Agreement:

- **“Broadband Modem”** A simple network device that enables high speed data service with a WAN (Wide Area Network) interface to a service provider wired or optical network, and typically a single LAN (Local Area Network) interface for the customer premise network. The Broadband Modem category does not include devices with integrated router or IEEE 802.11 (Wi-Fi) wireless access point functionality.
- **“Integrated Access Device” (“IAD”)**. A network device that enables high speed data service with a WAN interface to a service provider wired or optical network and one or more of the following functions on the LAN interface: multiport routing, IEEE 802.11 (Wi-Fi) wireless access point functionality, and/or VoIP.
- **“Local Network Equipment” (“LNE”)**. The following local network devices that do not have a direct interface to a Service Provider wired or optical network:
  - **Wireless Access Point:** A device that typically includes one or more Ethernet interfaces, and that provides IEEE 802.11 (Wi-Fi) wireless network connectivity to multiple clients as its primary function.
  - **Router:** A network device that forwards packets from one network interface to another based on network layer information (typically IP destination address). Devices fitting this definition may provide both wired and wireless network connectivity.
  - **Switch:** A network device that filters and forwards frames based on the Ethernet destination MAC address of each frame as its primary function.
  - **Network Extender:** A device that bridges or extends a local area network beyond its physical limitations using one or more transmission media such as twisted pair, coax, Wi-Fi, or powerline.

Signatory	Brand	Model Number	Base Type	Claimed Allowances	Reported Idle Power (W)	Meets VA Levels
Actiontec	Actiontec	ECB2500	Basic LNE	Fast Eth LAN, MoCA	3.65	Yes
Actiontec	Actiontec	ECB6000	Basic LNE	GigE LAN, MoCA	2.04	Yes
Actiontec	Actiontec	ECB6200	Basic LNE	GigE LAN, MoCA	2.28	Yes
Actiontec	Actiontec	WCB3000	Advanced LNE	GigE LAN (2), WiFi (n) LP, WiFi (ac) LP, MoCA	7.14	Yes
Actiontec	Actiontec	WCB6200	Advanced LNE	GigE LAN (2), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP (2), MoCA	8.90	Yes
Actiontec	Actiontec	WEB6000	Advanced LNE	GigE LAN (2), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP (2)	6.69	Yes
Actiontec	Actiontec	GT784	IAD ADSL2+	Fast Eth LAN (4), WiFi (n) LP, USB 2	6.06	No
Actiontec	Actiontec	MI424-WR Rev I	IAD MoCA	GigE Backup WAN, GigE LAN (4), WiFi (n) LP, MoCA, USB 2 (2)	10.20	Yes
Actiontec	Actiontec	BHR5	IAD MoCA	GigE Backup WAN, SFP Backup WAN Present, GigE LAN (4), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP (3), 802.11n 256 QAM, MoCA, USB 3 (2)	10.25	Yes
Actiontec	Actiontec	C2300A	IAD VDSL2	GigE Backup WAN, SFP Backup WAN Present, VDSL2 (30a) Simul WAN, GigE LAN (4), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP (3), 802.11n 256 QAM, USB 3 (2)	11.32	Yes
Actiontec	Actiontec	C1900A	IAD VDSL2 (30a)	GigE Backup WAN, VDSL2 (30a) Simul WAN, GigE LAN (4), WiFi (n) HP, USB 2	12.85	Yes
Actiontec	Actiontec	F2250	IAD VDSL2 (30a)	VDSL2 (30a) Simul WAN, GigE LAN (4), WiFi (n) HP, USB 2	12.37	Yes
Actiontec	Actiontec	T2200H	IAD VDSL2 (30a)	GigE Backup WAN, VDSL2 (30a) Simul WAN, GigE LAN (4), WiFi (n) HP, USB 2	13.51	Yes
Actiontec	Actiontec	T2200M	IAD VDSL2 (30a)	VDSL2 (30a) Simul WAN, GigE LAN (4), WiFi (n) HP	8.82	Yes
Actiontec	Actiontec	T3200	IAD VDSL2 (30a)	GigE Backup WAN, VDSL2 (30a) Simul WAN, GigE LAN (4), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP (3), 802.11n 256 QAM, USB 3	11.02	Yes
Actiontec	Actiontec	T3200M	IAD VDSL2 (30a)	GigE Backup WAN, SFP Backup WAN Present, VDSL2 (30a) Simul WAN, GigE LAN (4), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP (3), 802.11n 256 QAM, MoCA, USB 3	12.58	Yes
ARRIS	ARRIS	SBX-1000P	Basic LNE	GigE LAN, G.hn	3.70	Yes
ARRIS	ARRIS	SBX-AC1200P	Advanced LNE	GigE LAN, WiFi (n) LP, WiFi (ac) LP, G.hn, PCIe	7.40	Yes
ARRIS	ARRIS	SBR-AC1200P	Advanced LNE	Fast Eth LAN (4), GigE LAN, WiFi (n) LP, WiFi (ac) LP, G.hn, USB 2, PCIe	9.50	Yes
ARRIS	ARRIS	SBR-AC1900P	Advanced LNE	GigE LAN (5), WiFi (n) LP, WiFi (ac) LP, WiFi above 2x2 LP (2), 802.11n 256 QAM, G.hn, USB 2, USB 3, PCIe (2)	11.90	Yes
ARRIS	ARRIS	SBR-AC3200P	Advanced LNE	GigE LAN (5), WiFi (n) LP, WiFi (ac) LP (2), WiFi above 2x2 LP (3), 802.11n 256 QAM, G.hn, USB 2, USB 3, PCIe (4)	15.00	No
ARRIS	ARRIS	SBG6900-AC	IAD D3	D3 above 4x4 (3), GigE LAN (4), WiFi (n) LP, WiFi (ac) LP, WiFi above 2x2 LP (2), USB 2 (2)	14.10	Yes
ARRIS	ARRIS	SB6190	Basic D3	D3 above 4x4 (7), GigE LAN	8.60	Yes
ARRIS	ARRIS	TG862R	IAD D3	D3 above 4x4, GigE LAN (4), WiFi (n) LP, FXS (2), USB 2	8.40	Yes
ARRIS	ARRIS	TM822R	IAD D3	D3 above 4x4, GigE LAN, FXS (2)	5.70	Yes

Signatory	Brand	Model Number	Base Type	Claimed Allowances	Reported Idle Power (W)	Meets VA Levels
ARRIS	ARRIS	SBR-AC1750	Advanced LNE	GigE LAN (5), WiFi (n) LP, WiFi (ac) LP, WiFi above 2x2 LP (2), USB 2	5.25	Yes
ARRIS	ARRIS	SB8200	Basic D3	D3 above 4x4 (7), GigE LAN (2)	10.75	Yes
ARRIS	ARRIS	SBG7580-AC	IAD D3	D3 above 4x4 (7), GigE LAN (4), WiFi (n) LP, WiFi (ac) LP, WiFi above 2x2 LP (2), USB 2	14.00	Yes
ARRIS	ARRIS	SVG2482AC	IAD D3	D3 above 4x4 (5), GigE LAN (4), WiFi (n) LP, WiFi above 2x2 LP, WiFi (ac) HP, WiFi above 2x2 HP, MoCA, FXS (2), USB 2 (2)	19.00	Yes
ARRIS	ARRIS	SBG6950AC2	IAD D3	D3 above 4x4 (3), GigE LAN (4), WiFi (n) LP, WiFi (ac) LP, WiFi above 2x2 LP (2), USB 2	11.10	Yes
ARRIS	ARRIS	SBG7400AC2	IAD D3	D3 above 4x4 (5), GigE LAN (4), WiFi (n) LP, WiFi (ac) LP, WiFi above 2x2 LP (3), USB 2	13.20	Yes
ARRIS	ARRIS	SBG6580	IAD D3	D3 above 4x4, GigE LAN (4), WiFi (n) LP	11.44	No
ARRIS	ARRIS	SBG6580-2	IAD D3	D3 above 4x4, GigE LAN (4), WiFi (n) LP	7.80	Yes
ARRIS	ARRIS	SB6141	Basic D3	D3 above 4x4, GigE LAN	5.45	Yes
ARRIS	ARRIS	SBG6700-AC	IAD D3	D3 above 4x4, GigE LAN (2), WiFi (n) LP, WiFi (ac) LP, WiFi above 2x2 LP	10.00	Yes
ARRIS	ARRIS	SB6183	Basic D3	D3 above 4x4 (3), GigE LAN	9.40	Yes
ARRIS	ARRIS	SBG6400	IAD D3	D3 above 4x4, GigE LAN (2), WiFi (n) LP, USB 2	8.00	Yes
ARRIS	ARRIS	TG862G/CT-0	IAD D3	D3 above 4x4, GigE LAN (4), WiFi (n) LP, FXS (2), USB 2	8.40	Yes
ARRIS	ARRIS	TG862G/NA-8	IAD D3	D3 above 4x4, GigE LAN (4), WiFi (n) LP, FXS (2), USB 2, BATTERY	8.50	Yes
AT&T	Pace	5268	IAD VDSL2	GigE Backup WAN, VDSL2 Simul WAN, GigE LAN (4), WiFi (n) LP, WiFi (ac) LP, WiFi above 2x2 LP (2), HPNA, FXS (2), USB 2	15.30	Yes
AT&T	ARRIS	BGW210-700	IAD VDSL2	GigE Backup WAN, VDSL2 Simul WAN, GigE LAN (4), WiFi (ac) LP, WiFi above 2x2 LP, WiFi (n) HP, WiFi above 2x2 HP (2), 802.11n 256 QAM, FXS (2), USB 2, PCIe, AP>5K DMIPS	14.50	Yes
AT&T	Airties	4920	Advanced LNE	GigE LAN (2), WiFi (n) LP, WiFi (ac) HP, WiFi above 2x2 HP, PCIe (2)	7.70	Yes
Cablevision	Sagemcom	F@st 5260CV	Advanced LNE	GigE LAN (5), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP (2), USB 2, Pcle (2)	6.50	Yes
CenturyLink	Actiontec	C1900A	IAD VDSL2	GigE Backup WAN, VDSL2 Simul WAN, GigE LAN (4), WiFi (n) LP, WiFi (n) HP, USB 2	11.64	Yes
CenturyLink	Technicolor	C1100T	IAD VDSL2	GigE Backup WAN, GigE LAN (4), WiFi (n) LP, USB 2	6.44	Yes
CenturyLink	Technicolor	C2100T	IAD VDSL2 (30a)	GigE Backup WAN, VDSL2 Simul WAN, GigE LAN (4), WiFi (ac) LP, WiFi above 2x2 LP (2), WiFi (n) HP, HPNA, FXS (2), USB 2	16.27	Yes
CenturyLink	Zyxel	C1100Z	IAD VDSL2	GigE Backup WAN, GigE LAN (4), WiFi (n) HP, USB 2	7.47	Yes
CenturyLink	Zyxel	C2100Z	IAD VDSL2	GigE Backup WAN, GigE LAN (4), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP (2), HPNA, USB 2	12.27	Yes
CenturyLink	Zyxel	PK5001Z	IAD ADSL2+	Fast Eth LAN (4), WiFi (n) LP	5.20	Yes
CenturyLink	Zyxel	GS105i	Basic LNE	GigE LAN (5)	2.18	Yes
CenturyLink	Zyxel	C3000Z	IAD VDSL2 (30a)	GigE Backup WAN, GigE LAN (4), WiFi (ac) LP, WiFi above 2x2 LP (2), WiFi (n) HP, WiFi above 2x2 HP, USB 2	10.40	Yes
Charter	ARRIS	TM1602AP2	IAD D3	D3 above 4x4 (5), GigE LAN, FXS (2)	10.00	Yes
Charter	ARRIS	TM1602G	IAD D3	D3 above 4x4 (5), GigE LAN, FXS (2)	11.00	Yes

Signatory	Brand	Model Number	Base Type	Claimed Allowances	Reported Idle Power (W)	Meets VA Levels
Charter	ARRIS	TM804G	IAD D3	D3 above 4x4, GigE LAN, FXS (2)	6.00	Yes
Charter	ARRIS	TM822G	IAD D3	D3 above 4x4, GigE LAN, FXS (2)	6.00	Yes
Charter	Technicolor	DPC3216	IAD D3	D3 above 4x4 (3), GigE LAN, FXS (2)	9.00	Yes
Charter	Technicolor	TC4400	Basic D3.1	GigE LAN (2)	9.50	Yes
Charter	Ubee	TVM924	Advanced LNE	Fast Eth LAN (2), FXS (2)	3.50	Yes
Charter	Technicolor	TC8715D	IAD D3	D3 above 4x4 (3), GigE LAN (4), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP (2), USB 2	16.00	Yes
Charter	Technicolor	TC8717T	IAD D3	D3 above 4x4 (3), GigE LAN (4), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP (2), FXS (2), USB 2 (2)	15.50	Yes
Charter	ARRIS	TG1672G	IAD D3	D3 above 4x4 (3), GigE LAN (4), WiFi (n) LP, WiFi above 2x2 LP, WiFi (n) HP, WiFi above 2x2 HP, FXS (2), USB 2	16.27	No
Charter	ARRIS	TG1682G	IAD D3	D3 above 4x4 (5), GigE LAN (4), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP (2), FXS (2), USB 2 (2)	16.00	Yes
Charter	ARRIS	DG1670A	IAD D3	D3 above 4x4 (3), GigE LAN (4), WiFi (n) LP, WiFi above 2x2 LP, WiFi (n) HP, WiFi above 2x2 HP, USB 2	14.60	Yes
Charter	Ubee	DDW36C	IAD D3	D3 above 4x4 (3), GigE LAN (4), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP (2), USB 2	15.00	Yes
Charter	Ubee	DVW32CB	IAD D3	D3 above 4x4 (3), GigE LAN (4), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP (2), FXS (2), USB 2	13.00	Yes
Charter	Askey	RAC2V1K	Advanced LNE	GigE LAN (5), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP (4), 802.11n 256 QAM, USB 3, PCIe (2), AP>5K DMIPS	8.50	Yes
Charter	Sagemcom	F@st5260	Advanced LNE	GigE LAN (5), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP (2), USB 2, PCIe (2)	6.50	Yes
Comcast	ARRIS	TG3482G	IAD D3.1	GigE LAN (2), WiFi (n) LP, WiFi (ac) LP, WiFi above 2x2 LP (6), 802.11n 256 QAM, MoCA, FXS (2), Bluetooth, ZigBee, Z-Wave, PCIe (2), AP>5K DMIPS	27.40	Yes
Comcast	ARRIS	TG1682 P3	IAD D3	D3 above 4x4 (5), GigE LAN (4), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP (2), MoCA, FXS (2), USB 2 (2)	16.00	Yes
Comcast	Cisco	DPC3941Tv2	IAD D3	D3 above 4x4 (5), GigE LAN (4), WiFi (n) LP, WiFi (ac) LP, WiFi above 2x2 LP (2), MoCA, FXS (2), USB 2 (2), PCIe (2)	20.50	Yes
Comcast	Technicolor	TC4400	Basic D3.1	GigE LAN (2)	11.00	Yes
Comcast	Technicolor	CGM4140COM	IAD D3.1	GigE LAN (2), WiFi (n) LP, WiFi (ac) LP, WiFi above 2x2 LP (6), 802.11n 256 QAM, MoCA, FXS (2), Bluetooth, ZigBee, Z-Wave, PCIe (2), AP>5K DMIPS	25.00	Yes
Comcast	Plume	A1A	Basic LNE	GigE LAN, WiFi (n) LP, WiFi (ac) LP	3.00	Yes
Cox	ARRIS	SB6183	Basic D3	D3 above 4x4 (3), GigE LAN	9.40	Yes
Cox	ARRIS	CM8200A	Basic D3	D3 above 4x4 (7), GigE LAN (2)	12.00	Yes
Cox	ARRIS	DG2460	IAD D3	D3 above 4x4 (5), GigE LAN (4), WiFi (n) LP, WiFi (ac) LP, WiFi above 2x2 LP (2), USB 2	14.80	Yes
Cox	ARRIS	TM3402A	IAD D3	D3 above 4x4 (7), GigE LAN (4), FXS (2)	11.60	Yes
Cox	ARRIS	TG2472	IAD D3	D3 above 4x4 (5), GigE LAN (4), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP (2), FXS (2), USB 2	16.40	Yes
Cox	ARRIS	TG1682	IAD D3	D3 above 4x4 (5), GigE LAN (4), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP (2), FXS (2), USB 2 (2)	13.60	Yes
Cox	ActionTec	WCB6200Q	Advanced LNE	GigE LAN (2), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP (2), MoCA	9.80	Yes



Signatory	Brand	Model Number	Base Type	Claimed Allowances	Reported Idle Power (W)	Meets VA Levels
Cox	Cisco	DPQ3212	IAD D3	D3 above 4x4, GigE LAN, FXS (2), USB 2	9.10	No
D-Link	D-Link	COVR-1300E Rev. A1	Advanced LNE	GigE LAN (2), WiFi (n) LP, WiFi (ac) LP, 802.11n 256 QAM	3.60	Yes
D-Link	D-Link	COVR-2600R Rev. A1	Basic LNE	GigE LAN (5), WiFi (n) LP, WiFi (ac) LP, WiFi above 2x2 LP (2), 802.11n 256 QAM, USB 3, AP>5K DMIPS	7.80	Yes
D-Link	D-Link	DAP-1120 Rev. A1	Basic LNE	WiFi (n) LP	0.96	Yes
D-Link	D-Link	DAP-1330 Rev. A1	Basic LNE	Fast Eth LAN, WiFi (n) LP	1.58	Yes
D-Link	D-Link	DAP-1620 Rev. A2	Basic LNE	GigE LAN, WiFi (ac) LP, WiFi (n) HP	3.12	Yes
D-Link	D-Link	DAP-1650 Rev. A1	Basic LNE	GigE LAN (4), WiFi (n) LP, WiFi (ac) LP, USB 2	5.45	Yes
D-Link	D-Link	DAP-1720 Rev. A1	Basic LNE	GigE LAN, WiFi (n) LP, WiFi (ac) LP, WiFi above 2x2 LP	6.65	No
D-Link	D-Link	DAP-1860 Rev. A1	Basic LNE	GigE LAN, WiFi (n) LP, WiFi (ac) LP, WiFi above 2x2 LP (2), 802.11n 256 QAM, PCIe (2)	5.34	Yes
D-Link	D-Link	DAP-2553 Rev. B1	Basic LNE	GigE LAN, WiFi (n) LP	2.39	Yes
D-Link	D-Link	DAP-2660 Rev. A1	Basic LNE	GigE LAN, WiFi (n) HP, WiFi (ac) HP	4.01	Yes
D-Link	D-Link	DAP-2690 Rev. B1	Basic LNE	GigE LAN, WiFi (n) HP (2)	4.72	No
D-Link	D-Link	DAP-3320 Rev. A1	Basic LNE	Fast Eth LAN, WiFi (n) HP	2.88	Yes
D-Link	D-Link	DCM-301 Rev. E1	Basic D3	D3 above 4x4, GigE LAN	5.12	Yes
D-Link	D-Link	DES-1005E Rev. C1	Basic LNE	Fast Eth LAN (5)	1.84	Yes
D-Link	D-Link	DES-1005E Rev. C2	Basic LNE	Fast Eth LAN (5)	1.69	Yes
D-Link	D-Link	DES-1005P Rev. A1	Basic LNE	Fast Eth LAN (5)	1.37	Yes
D-Link	D-Link	DES-1008E Rev. C1	Basic LNE	Fast Eth LAN (8)	1.46	Yes
D-Link	D-Link	DES-1008PA Rev. C1	Basic LNE	Fast Eth LAN (8)	2.44	Yes
D-Link	D-Link	DES-1008PA Rev. C2	Basic LNE	Fast Eth LAN (8)	2.36	Yes
D-Link	D-Link	DES-105 Rev. C2	Basic LNE	Fast Eth LAN (5)	1.53	Yes
D-Link	D-Link	DES-108 Rev. C2	Basic LNE	Fast Eth LAN (8)	2.28	Yes
D-Link	D-Link	DGS-1005G Rev. C2	Basic LNE	GigE LAN (5)	0.77	Yes
D-Link	D-Link	DGS-1008G Rev. C1	Basic LNE	GigE LAN (8)	1.16	Yes
D-Link	D-Link	DGS-1008G Rev. D1	Basic LNE	GigE LAN (8)	1.14	Yes
D-Link	D-Link	DGS-1008P Rev. D1	Basic LNE	GigE LAN (8)	2.73	Yes

Signatory	Brand	Model Number	Base Type	Claimed Allowances	Reported Idle Power (W)	Meets VA Levels
D-Link	D-Link	DGS-108 Rev. C5	Basic LNE	GigE LAN (8)	1.90	Yes
D-Link	D-Link	DIR-510L Rev. A1	Advanced LNE	Fast Eth LAN, WiFi (n) LP, WiFi (ac) LP	2.93	Yes
D-Link	D-Link	DIR-605L Rev. B2	Advanced LNE	Fast Eth LAN (5), WiFi (n) LP	0.70	Yes
D-Link	D-Link	DIR-655 Rev. C1	Advanced LNE	GigE LAN (5), WiFi (n) LP, WiFi above 2x2 LP, USB 2	4.18	Yes
D-Link	D-Link	DIR-820L Rev. A1	Advanced LNE	Fast Eth LAN (5), WiFi (n) LP, WiFi (ac) LP	3.47	Yes
D-Link	D-Link	DIR-820L Rev. B1	Advanced LNE	Fast Eth LAN (5), WiFi (n) LP, WiFi (ac) LP	4.05	Yes
D-Link	D-Link	DIR-830L Rev. A1	Advanced LNE	Fast Eth LAN (5), WiFi (n) LP, WiFi (ac) LP	4.05	Yes
D-Link	D-Link	DIR-842 Rev. B1	Advanced LNE	GigE LAN (5), WiFi (n) LP, WiFi (ac) LP	2.64	Yes
D-Link	D-Link	DIR-850L Rev. B1	Advanced LNE	Fast Eth LAN (5), WiFi (n) HP, WiFi (ac) HP	6.22	Yes
D-Link	D-Link	DIR-859 Rev. A1	Advanced LNE	GigE LAN (5), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP	3.74	Yes
D-Link	D-Link	DIR-859 Rev. A3	Advanced LNE	GigE LAN (5), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP	3.74	Yes
D-Link	D-Link	DIR-860L Rev. B1	Advanced LNE	GigE LAN (5), WiFi (n) LP, WiFi (ac) LP, USB 3	4.90	Yes
D-Link	D-Link	DIR-866L Rev. A1	Advanced LNE	GigE LAN (5), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP, 802.11n 256 QAM, USB 2	5.33	Yes
D-Link	D-Link	DIR-868L Rev. A1	Advanced LNE	GigE LAN (5), WiFi (n) LP, WiFi (ac) LP, WiFi above 2x2 LP (2), USB 3, PCIe (2)	8.77	Yes
D-Link	D-Link	DIR-878 Rev. A1	Advanced LNE	GigE LAN (5), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP (4), 802.11n 256 QAM	10.80	Yes
D-Link	D-Link	DIR-880L Rev. A1	Advanced LNE	GigE LAN (5), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP (2), 802.11n 256 QAM, USB 2, USB 3	9.10	Yes
D-Link	D-Link	DIR-882-US Rev. A1	Advanced LNE	GigE LAN (5), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP (4), 802.11n 256 QAM, USB 2, USB 3	7.01	Yes
D-Link	D-Link	DIR-890L/R Rev. A1	Advanced LNE	GigE LAN (5), WiFi (n) HP, WiFi (ac) HP (2), WiFi above 2x2 HP (3), 802.11n 256 QAM, USB 2, USB 3, PCIe (3)	11.72	Yes
D-Link	D-Link	DIR-890L/R Rev. A2	Advanced LNE	GigE LAN (5), WiFi (n) HP, WiFi (ac) HP (2), WiFi above 2x2 HP (3), 802.11n 256 QAM, USB 2, USB 3, PCIe (3)	11.72	Yes
D-Link	D-Link	DSL-2750B Rev. T1	IAD ADSL2+	Fast Eth LAN (4), WiFi (n) LP	4.79	Yes
D-Link	D-Link	DSL-2750B Rev. T2	IAD ADSL2+	Fast Eth LAN (4), WiFi (n) LP	4.78	Yes
D-Link	D-Link	DSR-150 Rev. A2	Advanced LNE	Fast Eth LAN (9), USB 2	5.48	Yes
D-Link	D-Link	DSR-150 Rev. A3	Advanced LNE	Fast Eth LAN (9), USB 2	5.48	Yes
D-Link	D-Link	DSR-150N Rev. A2	Advanced LNE	Fast Eth LAN (8), GigE LAN, WiFi (n) LP, USB 2, PCIe	6.78	Yes

Signatory	Brand	Model Number	Base Type	Claimed Allowances	Reported Idle Power (W)	Meets VA Levels
D-Link	D-Link	DSR-250 Rev. A3	Advanced LNE	GigE LAN (9), USB 2	5.60	Yes
D-Link	D-Link	DSR-500 Rev. B1	Advanced LNE	GigE LAN (6), USB 2	4.32	Yes
D-Link	D-Link	DWL-3600AP Rev. A1	Advanced LNE	GigE LAN, WiFi (n) LP, PCIe	5.41	No
D-Link	D-Link	DWL-6600AP Rev. A1	Advanced LNE	GigE LAN, WiFi (n) LP (2), PCIe	5.79	Yes
D-Link	D-Link	DWL-6610AP Rev. A1	Advanced LNE	GigE LAN, WiFi (n) HP, WiFi (ac) HP, PCIe	9.46	No
D-Link	D-Link	DWL-8610AP Rev. A1	Advanced LNE	GigE LAN (2), WiFi (n) LP, WiFi (ac) LP, WiFi above 2x2 LP (2), PCIe (2)	6.94	Yes
D-Link	D-Link	DWL-8710AP Rev. A1	Advanced LNE	GigE LAN (2), WiFi (n) HP, WiFi (ac) HP, 802.11n 256 QAM, PCIe (2)	10.28	No
D-Link	D-Link	GO-SW-5E Rev. E2	Basic LNE	Fast Eth LAN (5)	1.46	Yes
D-Link	D-Link	GO-SW-5G Rev. C1	Basic LNE	GigE LAN (5)	0.91	Yes
D-Link	D-Link	GO-SW-5GE Rev. C3	Basic LNE	GigE LAN (5)	0.77	Yes
D-Link	D-Link	GO-SW-5GE Rev. D1	Basic LNE	GigE LAN (5)	0.91	Yes
D-Link	D-Link	GO-SW-8E Rev. E2	Basic LNE	Fast Eth LAN (8)	1.46	Yes
D-Link	D-Link	GO-SW-8G Rev. C1	Basic LNE	GigE LAN (8)	1.18	Yes
D-Link	D-Link	GO-SW-8G Rev. D1	Basic LNE	GigE LAN (8)	1.40	Yes
Frontier	ARRIS	NVG468 MQ	IAD GigE	GigE LAN (4), WiFi (n) LP, WiFi (ac) LP, WiFi above 2x2 LP (3), MoCA, FXS (2), USB 3	12.13	Yes
Frontier	ARRIS	NVG448 BQ	IAD VDSL2	GigE Backup WAN, VDSL2 Simul WAN, GigE LAN (4), WiFi (n) LP, WiFi (ac) LP, WiFi above 2x2 LP (3), FXS (2), USB 3	13.49	Yes
Frontier	ARRIS	NVG448 BQ	IAD VDSL2	GigE Backup WAN, VDSL2 Simul WAN, GigE LAN (4), WiFi (n) LP, WiFi (ac) LP, WiFi above 2x2 LP (3), FXS (2), USB 3	13.30	Yes
Frontier	ARRIS	NVG448 B	IAD VDSL2	GigE Backup WAN, VDSL2 Simul WAN, GigE LAN (4), WiFi (n) LP, WiFi (ac) LP, WiFi above 2x2 LP, FXS (2), USB 3, PCIe	12.00	Yes
Frontier	ARRIS	NVG443 B	IAD VDSL2	GigE Backup WAN, VDSL2 Simul WAN, GigE LAN (4), WiFi (n) LP, WiFi (ac) LP, WiFi above 2x2 LP, USB 3, PCIe	11.99	Yes
Frontier	Netgear	D2200D	IAD ADSL2+	Fast Eth LAN (4), WiFi (n) LP, PCIe	4.00	Yes
Netgear	Netgear	C3000-1T8NAS	IAD D3	D3 above 4x4, GigE LAN (2), WiFi (n) LP, WiFi above 2x2 LP, USB 2	9.25	Yes
Netgear	Netgear	C6220-100NAS	IAD D3	D3 above 4x4, GigE LAN (2), WiFi (n) LP (2), USB 2	11.80	Yes
Netgear	Netgear	C6250-100NAS	IAD D3	D3 above 4x4 (3), GigE LAN (2), WiFi (n) LP, WiFi (ac) LP, WiFi above 2x2 LP (2), USB 2	14.60	Yes
Netgear	Netgear	C6250-1AZNAS	IAD D3	D3 above 4x4 (3), GigE LAN (2), WiFi (n) LP, WiFi (ac) LP, WiFi above 2x2 LP (2), USB 2	14.60	Yes

Signatory	Brand	Model Number	Base Type	Claimed Allowances	Reported Idle Power (W)	Meets VA Levels
Netgear	Netgear	C6300-1T8NAS	IAD D3	D3 above 4x4 (3), GigE LAN (4), WiFi (n) LP, WiFi (ac) LP, WiFi above 2x2 LP (2), 802.11n 256 QAM, USB 2	13.27	Yes
Netgear	Netgear	C6900-100NAS	IAD D3	D3 above 4x4 (5), GigE LAN (4), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP (2), 802.11n 256 QAM, USB 2, PCIe (2)	18.13	Yes
Netgear	Netgear	C7000-1AZNAS	IAD D3	D3 above 4x4 (5), GigE LAN (4), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP (2), 802.11n 256 QAM, USB 2, PCIe (2)	18.13	Yes
Netgear	Netgear	C7100V-100NAS	IAD D3	D3 above 4x4 (5), GigE LAN (2), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP (2), 802.11n 256 QAM, FXS (2), USB 2 (2), PCIe (2)	16.88	Yes
Netgear	Netgear	C7100V-1AZ-NAS	IAD D3	D3 above 4x4 (5), GigE LAN (2), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP (2), 802.11n 256 QAM, FXS (2), USB 2 (2), PCIe (2)	16.88	Yes
Netgear	Netgear	C7500-100NAS	IAD D3	D3 above 4x4 (5), GigE LAN (4), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP (2), 802.11n 256 QAM, USB 2 (2), PCIe (2)	22.10	No
Netgear	Netgear	C7800-100NAS	IAD D3.1	GigE LAN (4), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP (2), 802.11n 256 QAM, USB 3 (2), PCIe (2)	17.84	Yes
Netgear	Netgear	CM1000-100NAS	Basic D3.1	GigE LAN	9.04	Yes
Netgear	Netgear	CM1000-1AZ-NAS	Basic D3.1	GigE LAN	9.04	Yes
Netgear	Netgear	CM400-1AZ-NAS	Basic D3	D3 above 4x4, GigE LAN	5.30	Yes
Netgear	Netgear	CM500-100NAS	Basic D3	D3 above 4x4 (3), GigE LAN	8.22	Yes
Netgear	Netgear	CM500-1AZ-NAS	Basic D3	D3 above 4x4 (3), GigE LAN	8.22	Yes
Netgear	Netgear	CM500V-100NAS	Basic D3	D3 above 4x4 (3), GigE LAN, FXS (2)	7.80	Yes
Netgear	Netgear	CM600-100NAS	Basic D3	D3 above 4x4 (5), GigE LAN	10.15	Yes
Netgear	Netgear	CM600-1AZ-NAS	Basic D3	D3 above 4x4 (5), GigE LAN	10.15	Yes
Netgear	Netgear	CM700-100NAS	Basic D3	D3 above 4x4 (7), GigE LAN	8.73	Yes
Netgear	Netgear	D6200-100NAS	IAD ADSL2+	GigE Backup WAN, GigE LAN (4), WiFi (n) LP, WiFi (ac) LP, USB 2	8.93	No
Netgear	Netgear	D6400-100NAS	IAD VDSL2	GigE Backup WAN, GigE LAN (5), WiFi (n) LP, WiFi (ac) HP, WiFi above 2x2 HP, USB 2 (2)	9.22	Yes
Netgear	Netgear	D7000-100NAS	IAD VDSL2	GigE Backup WAN, GigE LAN (4), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP, 802.11n 256 QAM, USB 3 (2)	8.82	Yes
Netgear	Netgear	DM200-100NAS	Basic VDSL2	VDSL2 Simul WAN, Fast Eth LAN	5.62	Yes
Netgear	Netgear	EX2700-100PAS	Basic LNE	Fast Eth LAN, WiFi (n) HP	1.64	Yes
Netgear	Netgear	EX3110-100NAS	Advanced LNE	WiFi (n) LP, WiFi (ac) LP	2.38	Yes
Netgear	Netgear	EX3700-100NAS	Advanced LNE	GigE LAN, WiFi (n) LP, WiFi (ac) LP, PCIe (2)	2.85	Yes

Signatory	Brand	Model Number	Base Type	Claimed Allowances	Reported Idle Power (W)	Meets VA Levels
Netgear	Netgear	EX3800-100NAS	Advanced LNE	GigE LAN, WiFi (n) LP, WiFi (ac) LP, 802.11n 256 QAM, PCIe (2)	2.80	Yes
Netgear	Netgear	EX6100-100NAS	Advanced LNE	GigE LAN, WiFi (n) LP, WiFi (ac) LP, WiFi above 2x2 HP, 802.11n 256 QAM	4.03	Yes
Netgear	Netgear	EX6100-100PAS	Advanced LNE	GigE LAN, WiFi (n) LP, WiFi (ac) LP, WiFi above 2x2 HP, 802.11n 256 QAM	4.03	Yes
Netgear	Netgear	EX6110-100NAS	Advanced LNE	WiFi (n) LP, WiFi (ac) LP	2.38	Yes
Netgear	Netgear	EX6120-100NAS	Advanced LNE	GigE LAN, WiFi (n) LP, WiFi (ac) LP, PCIe (2)	2.85	Yes
Netgear	Netgear	EX6150-100NAS	Advanced LNE	GigE LAN, WiFi (n) LP, WiFi (ac) LP, WiFi above 2x2 HP, 802.11n 256 QAM	4.20	Yes
Netgear	Netgear	EX6200-100NAS	Advanced LNE	GigE LAN (5), WiFi (n) LP, WiFi (ac) LP, WiFi above 2x2 HP, 802.11n 256 QAM, USB 3	5.64	Yes
Netgear	Netgear	EX6200-100PAS	Advanced LNE	GigE LAN (5), WiFi (n) LP, WiFi (ac) LP, WiFi above 2x2 HP, 802.11n 256 QAM, USB 3	5.64	Yes
Netgear	Netgear	EX6400-100NAS	Advanced LNE	GigE LAN, WiFi (n) LP, WiFi (ac) LP, WiFi above 2x2 LP (3), PCIe	3.62	Yes
Netgear	Netgear	EX6920-100NAS	Advanced LNE	GigE LAN, WiFi (n) LP, WiFi (ac) LP, PCIe (2)	2.85	Yes
Netgear	Netgear	EX7000-100NAS	Advanced LNE	GigE Backup WAN, GigE LAN (5), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP (2), 802.11n 256 QAM, USB 3, PCIe (2)	9.30	Yes
Netgear	Netgear	EX7000-1AZ-NAS	Advanced LNE	GigE Backup WAN, GigE LAN (5), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP (2), 802.11n 256 QAM, USB 3, PCIe (2)	9.30	Yes
Netgear	Netgear	EX7300-100NAS	Advanced LNE	GigE LAN, WiFi (n) LP, WiFi (ac) LP, WiFi above 2x2 LP (3), PCIe	3.70	Yes
Netgear	Netgear	EX7500-100NAS	Advanced LNE	WiFi (n) LP, WiFi (ac) LP, WiFi (ac) HP, 802.11n 256 QAM, Bluetooth	5.70	Yes
Netgear	Netgear	EX8000-100NAS	Advanced LNE	GigE LAN (4), WiFi (n) HP, WiFi (ac) HP (2), WiFi above 2x2 HP (2), 802.11n 256 QAM, PCIe	7.23	Yes
Netgear	Netgear	FS105NA	Basic LNE	Fast Eth LAN (5)	0.43	Yes
Netgear	Netgear	FS205-100PAS	Basic LNE	Fast Eth LAN (5)	1.15	Yes
Netgear	Netgear	GS105NA	Basic LNE	GigE LAN (5)	0.92	Yes
Netgear	Netgear	GS205-100PAS	Basic LNE	GigE LAN (5)	1.16	Yes
Netgear	Netgear	GS208-100PAS	Basic LNE	GigE LAN (8)	1.33	Yes
Netgear	Netgear	GS305-100PAS	Basic LNE	GigE LAN (5)	1.23	Yes
Netgear	Netgear	GS308-100PAS	Basic LNE	GigE LAN (8)	1.34	Yes
Netgear	Netgear	GS605NA	Basic LNE	GigE LAN (5)	1.14	Yes
Netgear	Netgear	GS608NA	Basic LNE	GigE LAN (8)	1.33	Yes
Netgear	Netgear	GS908-100NAS	Basic LNE	GigE LAN (8)	2.30	Yes
Netgear	Netgear	N450-100NAS	IAD D3	D3 above 4x4, GigE LAN (4), WiFi (n) LP, WiFi above 2x2 LP, USB 2, PCIe (2)	7.84	Yes
Netgear	Netgear	PR2000-100NAS	Basic LNE	Fast Eth LAN (2), WiFi (n) HP, USB 2	1.71	Yes
Netgear	Netgear	R6020-100NAS	Advanced LNE	Fast Eth LAN (4), WiFi (n) LP, WiFi (ac) LP	2.81	Yes
Netgear	Netgear	R6050-100PAS	Advanced LNE	GigE LAN (5), WiFi (n) LP (2), WiFi (ac) HP, USB 2	3.67	Yes

Signatory	Brand	Model Number	Base Type	Claimed Allowances	Reported Idle Power (W)	Meets VA Levels
Netgear	Netgear	R6080-100NAS	Advanced LNE	Fast Eth LAN (4), WiFi (n) LP, WiFi (ac) LP	2.81	Yes
Netgear	Netgear	R6120-100NAS	Advanced LNE	Fast Eth LAN (4), WiFi (n) LP, WiFi (ac) LP, USB 2	3.27	Yes
Netgear	Netgear	R6220-100NAS	Advanced LNE	GigE LAN (4), WiFi (n) LP, WiFi (ac) LP, USB 2	5.20	Yes
Netgear	Netgear	R6220-100PAS	Advanced LNE	GigE LAN (4), WiFi (n) LP, WiFi (ac) LP, USB 2	5.20	Yes
Netgear	Netgear	R6220-200NAS	Advanced LNE	GigE LAN (4), WiFi (n) LP, WiFi (ac) LP, USB 2	5.20	Yes
Netgear	Netgear	R6230-100NAS	Advanced LNE	GigE LAN (4), WiFi (n) LP, WiFi (ac) LP, USB 2	4.86	Yes
Netgear	Netgear	R6250-200NAS	Advanced LNE	GigE LAN (5), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP, USB 2, PCIe (2)	9.40	Yes
Netgear	Netgear	R6300-100PAS	Advanced LNE	GigE LAN (5), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP (2), 802.11n 256 QAM, USB 2, USB 3, PCIe (2)	9.83	Yes
Netgear	Netgear	R6400-100NAS	Advanced LNE	GigE LAN (5), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP (2), USB 2, USB 3, PCIe (2)	9.41	Yes
Netgear	Netgear	R6700-100NAS	Advanced LNE	GigE LAN (5), WiFi (n) LP, WiFi (ac) LP	6.34	Yes
Netgear	Netgear	R6900-100NAS	Advanced LNE	GigE LAN (5), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP (2), 802.11n 256 QAM, USB 2, USB 3, PCIe (2)	10.22	Yes
Netgear	Netgear	R6900-200NAS	Advanced LNE	GigE LAN (4), WiFi (n) LP, WiFi (ac) LP, USB 3	6.34	Yes
Netgear	Netgear	R6900P-100NAS	Advanced LNE	GigE LAN (5), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP (2), 802.11n 256 QAM, USB 3	8.89	Yes
Netgear	Netgear	R7000-100PAS	Advanced LNE	GigE LAN (5), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP (2), 802.11n 256 QAM, USB 2, USB 3, PCIe (2)	10.07	Yes
Netgear	Netgear	R7000P-100NAS	Advanced LNE	GigE LAN (5), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP (2), 802.11n 256 QAM, USB 2, USB 3	9.30	Yes
Netgear	Netgear	R7500-200NAS	Advanced LNE	GigE LAN (5), WiFi (ac) LP, WiFi above 2x2 LP (2), WiFi (n) HP, WiFi above 2x2 HP, 802.11n 256 QAM, USB 3 (2), SATA, PCIe (2)	7.18	Yes
Netgear	Netgear	R7800-100NAS	Advanced LNE	GigE LAN (5), WiFi (ac) LP, WiFi above 2x2 LP (3), WiFi (n) HP, WiFi above 2x2 HP, 802.11n 256 QAM, USB 3 (2), SATA, PCIe (2)	9.25	Yes
Netgear	Netgear	R7900-100NAS	Advanced LNE	GigE LAN (5), WiFi (n) HP, WiFi (ac) HP (2), WiFi above 2x2 HP (3), 802.11n 256 QAM, USB 3, PCIe (3)	12.81	Yes
Netgear	Netgear	R7900P-100NAS	Advanced LNE	GigE LAN (5), WiFi (n) HP, WiFi (ac) HP (2), WiFi above 2x2 HP (3), 802.11n 256 QAM, USB 2, USB 3, AP>5K DMIPS	12.81	Yes
Netgear	Netgear	R8000-100NAS	Advanced LNE	GigE LAN (5), WiFi (n) HP, WiFi (ac) HP (2), WiFi above 2x2 HP (3), 802.11n 256 QAM, USB 2, USB 3, PCIe (3)	12.70	Yes
Netgear	Netgear	R8000-100PAS	Advanced LNE	GigE LAN (5), WiFi (n) HP, WiFi (ac) HP (2), WiFi above 2x2 HP (3), 802.11n 256 QAM, USB 2, USB 3, PCIe (3)	12.70	Yes
Netgear	Netgear	R8000P-100NAS	Advanced LNE	GigE LAN (5), WiFi (n) HP, WiFi (ac) HP (2), WiFi above 2x2 HP (3), 802.11n 256 QAM, USB 2, USB 3, AP>5K DMIPS	12.81	Yes
Netgear	Netgear	R8300-100NAS	Advanced LNE	GigE LAN (7), WiFi (n) HP, WiFi (ac) HP (2), WiFi above 2x2 HP (6), 802.11n 256 QAM, USB 3	8.13	Yes

Signatory	Brand	Model Number	Base Type	Claimed Allowances	Reported Idle Power (W)	Meets VA Levels
Netgear	Netgear	R8500-100NAS	Advanced LNE	GigE LAN (7), WiFi (n) HP, WiFi (ac) HP (2), WiFi above 2x2 HP (6), 802.11n 256 QAM, USB 2, USB 3, PCIe (3)	18.45	No
Netgear	Netgear	R8900-100NAS	Advanced LNE	GigE Backup WAN, SFP Backup WAN Not Present, GigE LAN (6), WiFi (ac) LP, WiFi above 2x2 LP (2), WiFi (ac) HP, WiFi above 2x2 HP (2), USB 3 (2), Bluetooth	15.30	No
Netgear	Netgear	R9000-100NAS	Advanced LNE	GigE Backup WAN, GigE LAN (7), WiFi (ac) LP, WiFi above 2x2 LP (2), WiFi (ac) HP, WiFi above 2x2 HP (2), USB 3 (2), Bluetooth	15.30	No
Netgear	Netgear	RBS40-100NAS	Basic LNE	GigE LAN (4), WiFi (n) HP (2), WiFi (ac) HP (2), 802.11n 256 QAM, Bluetooth, PCIe	6.66	Yes
Netgear	Netgear	RBS50-100NAS	Advanced LNE	GigE LAN (4), WiFi (ac) LP, WiFi above 2x2 LP (3), WiFi (n) HP, WiFi above 2x2 HP, 802.11n 256 QAM, USB 2, Bluetooth, PCIe	7.33	Yes
Netgear	Netgear	RB-S50Y-100NAS	Basic LNE	WiFi (ac) LP, WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP (2), 802.11n 256 QAM, Bluetooth, PCIe	6.70	Yes
Netgear	Netgear	RBW30-100NAS	Basic LNE	WiFi (n) LP, WiFi (ac) LP, WiFi (ac) HP, 802.11n 256 QAM, Bluetooth	5.70	Yes
Netgear	Netgear	WN2000RPT-200NAS	Basic LNE	Fast Eth LAN (4), WiFi (n) LP	1.75	Yes
Netgear	Netgear	WN2500RP-100NAS	Basic LNE	Fast Eth LAN (4), WiFi (n) LP (2)	5.07	Yes
Netgear	Netgear	WN3000RP-100NAS	Basic LNE	Fast Eth LAN, WiFi (n) HP	1.66	Yes
Netgear	Netgear	WN3000RP-100PAS	Basic LNE	Fast Eth LAN, WiFi (n) HP	1.67	Yes
Netgear	Netgear	WNDR3400-100NAS	Basic LNE	Fast Eth LAN (4), WiFi (n) LP (2), USB 2, PCIe (2)	5.29	Yes
Netgear	Netgear	WNDR4300-100NAS	Advanced LNE	GigE LAN (5), WiFi (n) LP (2), USB 2, PCIe	3.73	Yes
Netgear	Netgear	WNDR4500-100NAS	Advanced LNE	GigE LAN (5), WiFi (n) LP (2), USB 2 (2), PCIe	4.05	Yes
Netgear	Netgear	WNDR4500-100PAS	Advanced LNE	GigE LAN (5), WiFi (n) LP (2), USB 2 (2), PCIe	4.05	Yes
Netgear	Netgear	WNR1000-100NAS	Basic LNE	Fast Eth LAN (5), WiFi (n) LP	1.60	Yes
Netgear	Netgear	WNR2000-100NAS	Basic LNE	Fast Eth LAN (4), WiFi (n) LP	2.21	Yes
Netgear	Netgear	WNR2000H-511NAS	Basic LNE	Fast Eth LAN (4), WiFi (n) LP	2.21	Yes
Netgear	Netgear	WNR2020-200PAS	Basic LNE	Fast Eth LAN (5), WiFi (n) LP (2)	1.60	Yes
Netgear	Netgear	WNR3500L-100NAS	Advanced LNE	GigE LAN (5), WiFi (n) LP, USB 3	5.84	Yes
Netgear	Netgear	XR500-100NAS	Advanced LNE	GigE LAN (4), WiFi (ac) LP, WiFi above 2x2 LP (3), WiFi (n) HP, WiFi above 2x2 HP, 802.11n 256 QAM, USB 3 (2), SATA, PCIe (2)	9.30	Yes
Verizon	Actiontec	GT784WNV	IAD ADSL2+	Fast Eth LAN (4), WiFi (n) LP, USB 2	6.09	No
Verizon	D-Link	DSL-2750B	IAD ADSL2+	Fast Eth LAN (4), WiFi (n) LP, USB 2	5.05	Yes
Verizon	D-Link	DGS-1005G	Basic LNE	GigE LAN (5)	1.56	Yes

Signatory	Brand	Model Number	Base Type	Claimed Allowances	Reported Idle Power (W)	Meets VA Levels
Verizon	Actiontec	WCB6200Q	Advanced LNE	GigE LAN (2), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP (2), MoCA	9.21	Yes
Verizon	Verizon	FiOS-G1100	IAD MoCA	GigE Backup WAN, GigE LAN (4), WiFi (n) HP, WiFi (ac) HP, WiFi above 2x2 HP (2), MoCA, USB 2 (2), Z-Wave	10.43	Yes
Verizon	Actiontec	ECB5240	Advanced LNE	GigE LAN (4), MoCA	4.91	Yes



Table 3 describes feature allowances outlined in the Voluntary Agreement.

**Table 3: Voluntary Agreement Allowance Descriptions**

Description	Descriptor	Allowance
<b>Base Allowance: IAD Devices (by WAN Interface) (watts)</b>		
ADSL2plus	IAD ADSL2+	3.9
VDSL2 (8, 12a, 17a, but not 30a)	IAD VDSL2	4.7
VDSL2 (all above profiles including 30a)	IAD VDSL2 (30a)	6.2
DOCSIS 3.0 basic configuration (4x4)	IAD D3	6.2
DOCSIS 3.1 (no FDX)	IAD D3.1	16.7
MoCA 1.1/2.0	IAD MoCA	5.7
Gigabit Ethernet	IAD GigE	4.0
SFP with 1000BaseLX/SX	IAD SFP 1000BaseLX/SX	4.0
SFP with GPON	IAD SFP GPON	5.0
<b>Base Allowance: Broadband Modems (by WAN Interface) (watts)</b>		
ADSL2plus	Basic ADSL2+	2.4
VDSL2 (8, 12a, 17a, but not 30a)	Basic VDSL2	3.2
VDSL2 (all above profiles including 30a)	Basic VDSL2 (30a)	4.7
DOCSIS 3.0 basic configuration (4x4)	Basic D3	4.7
DOCSIS 3.1 (no FDX)	Basic D3.1	15.2
G.fast	G.fast	4.2
<b>Base Allowance: LNE (watts)</b>		
LNE other than Advanced LNE	Basic LNE	2.0
Advanced LNE	Advanced LNE	3.75
<b>Adders for Additional Backup WAN Interface</b>		
Gigabit Ethernet WAN	GigE Backup WAN	0.7
SFP Not Present	SFP Backup WAN Not Present	0.7
SFP Present (1000BaseLX/SX or GPON)	SFP Backup WAN Present	2.0
<b>Adders for Simultaneous Additional WAN Interface</b>		
VDSL2 (8, 12a, 17a, but not 30a)	VDSL2 Simul WAN	3.2
VDSL (profile 30a)	VDSL2 (30a) Simul WAN	4.7
DOCSIS 3.0 additional power allowance for each additional 4 downstream channels	D3 above 4x4	1.5
<b>Adders for LAN Interfaces and Additional Functionality</b>		
1 Fast Ethernet port	Fast E LAN	0.2
1 Gigabit Ethernet port	GigE LAN	0.25
Wi-Fi IEEE 802.11n radio at 2.4 GHz or at 5.0 GHz with a conducted output power less than 200 mW per chain (up to 2x2, i.e. 400 mW)	Wi-Fi (n) LP	1.0
Wi-Fi, IEEE 802.11ac radio at 5 GHz with a conducted output power less than 200 mW per chain (up to 2x2, i.e. 400 mW)	Wi-Fi (ac) LP	2.1
Additional allowance per RF chain above a 2x2 MIMO configuration (e.g., for 3x3 and 4x4) with a conducted output power less than 200 mW per chain	Wi-Fi above 2x2 LP	0.3

**Table 3: Voluntary Agreement Allowance Descriptions (cont.)**

Description	Descriptor	Allowance
Wi-Fi IEEE 802.11n radio at 2.4 GHz or at 5.0 GHz with a conducted output power greater than or equal to 200 mW per chain (up to 2x2, i.e. 400 mW)	Wi-Fi (n) HP	1.2
Wi-Fi, IEEE 802.11ac radio at 5 GHz with a conducted output power greater than or equal to 200 mW per chain (up to 2x2, i.e. 400 mW)	Wi-Fi (ac) HP	2.5
Additional allowance per RF chain above a 2x2 MIMO configuration (e.g., for 3x3 and 4x4) with a conducted output power greater than 200 mW per chain	Wi-Fi above 2x2 HP	0.4
Wi-Fi IEEE 802.11n at 2.4GHz supporting 256-QAM	802.11n 256 QAM	0.5
HPNA	HPNA	1.5
G.hn	G.hn	2.0
MoCA 1.1/2.0	MoCA	2.5
FXS	FXS	0.3
DECT	DECT	0.5
USB 2.0 - no load connected	USB 2	0.1
USB 3.0 - no load connected	USB 3	0.2
SATA - no load connected	SATA	0.3
Built-in back-up battery	BATTERY	0.4
Bluetooth	Bluetooth	0.1
ZigBee	ZigBee	0.1
Z-wave	Z-wave	0.1
PCIe Interface (Connected)	PCIe	0.2
Application Processor 5-10K DMIPS	AP>5K DMIPS	1.0

## APPENDIX B: CONSUMER-FACING SMALL NETWORK EQUIPMENT ENERGY EFFICIENCY INFORMATION

Small network equipment energy information for consumers is available at [www.energy-efficiency.us](http://www.energy-efficiency.us), and for each service provider and retail vendor at the links below.

Signatory	Consumer Information Location	Additional Information
<b>Service Providers</b>		
<b>AT&amp;T</b>	<a href="https://www.att.com/ecms/dam/att/consumer/help/tv/pdf/ATT-Small-Network-Equipment-Energy-Information-29Jun2018.pdf">https://www.att.com/ecms/dam/att/consumer/help/tv/pdf/ATT-Small-Network-Equipment-Energy-Information-29Jun2018.pdf</a>	
<b>Cablevision</b>	<a href="https://energy.cablelabs.com/cablevision-sne/">https://energy.cablelabs.com/cablevision-sne/</a>	
<b>CenturyLink</b>	<a href="http://www.centurylink.com/home/help/internet/modems-and-routers/modem-energy-efficiency.html">http://www.centurylink.com/home/help/internet/modems-and-routers/modem-energy-efficiency.html</a>	
<b>Charter</b>	<a href="https://energy.cablelabs.com/charter-sne/">https://energy.cablelabs.com/charter-sne/</a>	
<b>Comcast</b>	<a href="https://energy.cablelabs.com/comcast-sne/">https://energy.cablelabs.com/comcast-sne/</a>	
<b>Cox</b>	<a href="https://energy.cablelabs.com/cox-sne/">https://energy.cablelabs.com/cox-sne/</a>	
<b>Frontier</b>	<a href="https://frontier.com/~media/HelpCenter/Documents/tv/fios/small-network-equipment-efficiency.ashx">https://frontier.com/~media/HelpCenter/Documents/tv/fios/small-network-equipment-efficiency.ashx</a>	
<b>Verizon</b>	<a href="https://www.verizon.com/support/residential/tv/equipment/stb-dvr#sne">https://www.verizon.com/support/residential/tv/equipment/stb-dvr#sne</a>	Scroll down to “Learn about Verizon’s Small Network Equipment (SNE) Energy Information” and click the plus sign next to it.
<b>Vendors</b>		
<b>Actiontec Electronics</b>	<a href="http://support.actiontec.com/doc_files/actiontec_broadband_equipment_energy_information_sne_v1.pdf">http://support.actiontec.com/doc_files/actiontec_broadband_equipment_energy_information_sne_v1.pdf</a>	
<b>ARRIS</b>	<a href="http://ir.arris.com/phoenix.zhtml?c=87823&amp;p=irol-govresponsibility">http://ir.arris.com/phoenix.zhtml?c=87823&amp;p=irol-govresponsibility</a>	Scroll down to “Sustainability” and click the link entitled “ARRIS Small Network Equipment (SNE) Energy Efficiency”
<b>D-Link Systems</b>	<a href="ftp://ftp2.dlink.com/PRODUCTS/ENERGY_REPORT/D-LINK_PRODUCTS_ENERGY-TEST-RESULTS_021216_1.0_EN.PDF">ftp://ftp2.dlink.com/PRODUCTS/ENERGY_REPORT/D-LINK_PRODUCTS_ENERGY-TEST-RESULTS_021216_1.0_EN.PDF</a>	
<b>Netgear</b>	<a href="https://www.netgear.com/images/pdf/about/NETGEAR%20SNE%20Energy%20Information%202015.pdf">https://www.netgear.com/images/pdf/about/NETGEAR%20SNE%20Energy%20Information%202015.pdf</a>	
<b>Technicolor</b>	No Retail Products	
<b>Ubee Interactive</b>	No Retail Products	



# 2017 Annual Report Audit Results

The Voluntary Agreement requires the service provider and retail vendor signatories to submit annual procurement and sales data to an independent administrator, who collects and analyzes the data, then publishes the findings in an Annual Report. Data from the individual signatories is aggregated for publication in the Annual Report to protect this highly confidential information. To verify the accuracy of the reported data, the Voluntary Agreement requires an audit of one randomly-selected commercial signatory each year. In accordance with the confidentiality requirements of the Voluntary Agreement, the name of the audited party is not published.

D+R conducted an audit of the 2017 report data provided in 2018, which was used to develop the findings for the 2017 Annual Report. D+R randomly selected the party by creating an Excel spreadsheet and using the “random” function.

D+R requested raw data from the selected party to verify the data submitted. D+R reviewed the submitted data, which included invoice data and specification sheets.

D+R, as the Independent Administrator, has determined that the data submitted by the signatory for the audit is consistent with the annual report submitted by that party.

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