Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Protecting Against National Security Threats to the Communications Supply Chain through the Equipment Authorization Program	)	ET Docket No. 21-232
	)	
Petition for Expedited Waiver to Permit Targeted Class I and Class II Permissive Hardware Changes to Covered Routers	)	

PETITION FOR EXPEDITED WAIVER

Russell Hanser
Traci Biswese
NCTA – The Internet & Television Association
25 Massachusetts Ave., NW
Suite 100
Washington, DC 20001
(202) 222-2300

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Table of Contents

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To: Chief, Office of Engineering and Technology

PETITION FOR EXPEDITED WAIVER

Pursuant to Section 1.3 of the Federal Communications Commission's ("FCC" or "Commission") rules,[1] NCTA – The Internet & Television Association ("NCTA") respectfully requests grant of this Petition for Expedited Waiver ("Petition") to permit NCTA members' suppliers to make two types of necessary Class I and Class II hardware changes to consumer-grade routers produced outside of the United States. Specifically, NCTA seeks a waiver of Sections 2.932(b) and 2.1043(b) of the Commission's rules to permit NCTA members' suppliers to substitute substrate materials and memory modules in the previously certified routers that are now on the Covered List, so long as such substitutions are otherwise consistent with the regulations in Section 2.1043. NCTA requests an expedited grant of this waiver to enable its members and their suppliers to navigate unavoidable supply chain shortages and prevent disruptions in the availability of broadband for NCTA members' customers, while still fulfilling the rules' national security and public safety purpose. The Commission's Office of Engineering

[1] 47 C.F.R. § 1.3 ("Any provision of the rules may be waived by the Commission on its own motion or on petition if good cause therefor is shown.").

and Technology ("OET") recently found good cause to grant identical relief to AT&T's suppliers.[2] NCTA's suppliers are similarly situated. Accordingly, NCTA requests the same relief for their suppliers as was granted in the *AT&T Router Hardware Waiver*.

I. INTRODUCTION AND SUMMARY

NCTA members build and operate the nation's largest broadband platforms, with networks constructed to deliver fast, reliable connectivity to 88% of U.S. homes.[3] Cable service providers offer 91% of American homes and businesses they can serve access to gigabit-speed Internet service, and serve 79 million broadband subscribers, providing high-quality services that connect people, communities, and the world.[4] In 2025 alone, the cable industry invested $26 billion in infrastructure and networks to advance American innovation, unleash creativity, and create technology-driven opportunities.[5] NCTA members work with a wide variety of suppliers to provide customer-grade routers to provision home Internet services. Consumers use routers provided by NCTA members to distribute their Internet connection throughout their home and connect their devices.[6]

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[2] *See AT&T Services, Inc. Petition for Expedited Waiver of Sections 2.932(b) and 2.1043(b) of the Commission's Rules to Permit Targeted Class I and Class II Permissive Hardware Changes to Covered Routers*, Order, DA 26-491, ¶ 6 (OET May 15, 2026) ("*AT&T Router Hardware Waiver*").

[3] *Industry Data*, NCTA, https://www.ncta.com/industry/insights/data (last visited May 19, 2026).

[4] *Id*.

[5] *Id*.

[6] *See* Discovery Hub, *Modem vs. Router: What's the Difference?*, Xfinity, https://www.xfinity.com/hub/internet/modem-vs-router (last visited May 19, 2026); Spectrum Resource Center, *What's the Difference Between a Modem and a Router, and Do I Need Both?*, Spectrum, https://www.spectrum.com/resources/internet-wifi/modem-vs-router-and-do-i-need-both (last visited May 19, 2026).

The Commission recently added all consumer-grade "[r]outers produced in a foreign country, except routers which have been granted a Conditional Approval by [the Department of War ('DOW') or Department of Homeland Security ('DHS')]" ("Covered Routers") to the Covered List.[7] By virtue of these devices' inclusion on the Covered List, certain changes to Covered Routers that would otherwise be Class I or Class II permissive changes are prohibited by the FCC's rules.[8]

On May 15, 2026, OET issued an order permitting AT&T's suppliers to make two types of necessary Class I and Class II hardware changes to Covered Routers. Pursuant to OET's waiver, these suppliers may (i) substitute certain substrate components in existing router designs to allow those routers to remain in production and (ii) take the steps necessary to swap the memory used in existing designs.[9] Despite earlier waivers allowing certain software and firmware changes, the Commission has taken the position that Class I and Class II permissive hardware changes remain prohibited for other providers.[10]

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[7] *FCC's Public Safety and Homeland Security Bureau Announces Addition of Routers Produced in Foreign Countries to FCC Covered List*, Public Notice, DA 26-278 (PSHSB Mar. 23, 2026) ("*Routers Public Notice*"). For purposes of the Covered List, the definition of "router" is limited to consumer-grade networking devices that are primarily intended for residential use and can be installed by the customer, as defined by the National Institute of Standards and Technology Internal Report 8425A. *See id*. Appendix C at 4; *AT&T Router Hardware Waiver* ¶ 3 n.4.

[8] Note the OET waivers that already exist that permit Class I and Class II software and firmware updates. *AT&T Router Hardware Waiver* ¶ 2 (explaining that recent amendments to the Commission's rules "exclude 'equipment prohibited from authorization pursuant to § 2.903,' i.e. equipment on the Covered List, from the equipment certification procedures allowing for Class I permissive changes to authorized equipment").

[9] *Id*. ¶ 7; *see* Petition for Expedited Waiver of AT&T Services, Inc. ("AT&T"), ET Docket No. 21-232, at 1 (May 11, 2026) ("*AT&T Petition*"); supplemented by *ex parte* letter from Chris Boyer, VP-Global Public Policy, AT&T, to Marlene H. Dortch, Secretary, FCC, ET Docket No. 21-232 (May 14, 2026).

[10] *Office of Engineering and Technology and Technology Announces Waiver of Prohibitions on Certain Class I Permissive Changes to Covered Routers,* Public Notice, DA 26-286 (OET Mar.

NCTA and its member companies share the U.S. government's commitment to enhancing device security and ensuring the trustworthiness of American communications infrastructure. Indeed, NCTA members are leaders in cybersecurity with security operations that are among the most sophisticated and well-resourced in the private sector. Like AT&T, NCTA members are encouraging their suppliers to quickly pursue required onshoring, and, in the meantime, seek Conditional Approvals for Covered Routers as necessary.[11] However, unavoidable supply chain shortages in critical substrate material and memory modules (including both volatile and non-volatile memory) significantly constrain the industry. AT&T's suppliers are not unique; the same impediments they are experiencing impose inevitable limitations on NCTA's suppliers. Accordingly, NCTA seeks the same relief on behalf of its suppliers.[12] Given the immediacy of these issues and the concrete harms that would result from disruptions to the availability of broadband to large swaths of U.S. consumers and businesses, the grant of this Petition is warranted.

23, 2026) ; *Office of Engineering and Technology and Technology Announces Extension and Expansion of Waiver of Prohibitions on Certain Software and Firmware Permissive Changes to Certain Covered UAS, UAS Critical Components and Routers*, Public Notice, DA 26-454 (OET May 8, 2026); *AT&T Router Hardware Waiver* ¶ 7 ("The prohibitions in 47 C.F.R. §§ 2.932(b) and 2.1043(b) remain in effect for all other hardware modifications to covered equipment.").

[11] *See AT&T Petition* at 3.

[12] Consistent with the factors recognized in the *AT&T Router Hardware Waiver*, the hardware changes to Covered Routers (i) would not improve performance or capability or alter the functionality of the previously-authorized device; (ii) will not be used to market the device as a distinct model; and (iii) will not involve swapping a U.S.-produced component for a foreign produced component. *See AT&T Router Hardware Waiver* ¶ 6.

II. THE COMMISSION HAS GOOD CAUSE TO GRANT THIS WAIVER EXPEDITIOUSLY

The Commission may grant a waiver pursuant to Section 1.3 of the Commission's rules when there is good cause.[13] Good cause exists "where particular facts would make strict compliance inconsistent with the public interest."[14] Generally, a waiver of the Commission's rules is in the public interest if it would not undermine the purposes of the rule, and there is a stronger public interest benefit in granting the waiver than in applying the rule.[15] Here, there is good cause to grant this Petition. Furthermore, doing so quickly would serve the public interest by avoiding unnecessary competitive imbalance.

In light of recent modifications to the Covered List, suppliers to NCTA members cannot make necessary hardware changes that would otherwise be permissive in the previously authorized Covered Routers without express approval.[16] As AT&T highlighted, "[s]oftware and firmware changes . . . are not the only updates necessary to ensure continued functionality of previously approved devices, and in the ordinary course they are not the only changes that can be

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[13] 47 C.F.R. § 1.3; *see also Northeast Cellular Telephone Co. v. FCC*, 897 F.2d 1164 (D.C. Cir. 1990); *WAIT Radio v. FCC*, 418 F.2d 1153 (D.C. Cir. 1969).

[14] *Northeast Cellular*, 897 F.2d at 1166; *see also ICO Global Communications (Holdings) Limited v. FCC*, 428 F.3d 264, 269 (D.C. Cir. 2005) (quoting *Northeast Cellular*); *WAIT Radio*, 418 F.2d at 1157-59.

[15] *See, e.g., WAIT Radio*, 418 F.2d at 1157 (stating that even though the overall objectives of a general rule have been adjudged to be in the public interest, it is possible that application of the rule to a specific case may not serve the public interest if an applicant's proposal does not undermine the public interest policy served by the rule); *Northeast Cellular*, 897 F.2d at 1166 (stating that in granting a waiver, an agency must explain why deviation from the general rule better serves the public interest than would strict adherence to the rule).

[16] *See Protecting Against National Security Threats to the Communications Supply Chain through the Equipment Authorization Program*, Second Report and Order and Second Further Notice of Proposed Rulemaking, 40 FCC Rcd 8430, ¶ 55 (2025) ("*Second Report and Order*"); *Routers Public Notice*.

made as Class I and Class II permissive changes."[17] Under Section 2.1043, *any* changes that qualify as Class I (*i.e.*, modifications that do not degrade the characteristics reported by the manufacturer) or Class II (*i.e.*, modifications that degrade the performance but still meet the minimum requirements of the applicable rules) are permissible for devices not on the Covered List in the ordinary course.[18] In granting the *AT&T Petition*, OET recognized the "unavoidable supply-chain shortages" impacting the communications industry, and the critical need for certain hardware changes to "prevent disruptions in the availability of broadband."[19] Granting this Petition to NCTA's members' suppliers, therefore, would be in service of, and consistent with, those important public interest goals that OET already recognized as critical in the current supply chain environment.

A. Good Cause Exists to Permit NCTA Members' Suppliers to Substitute Certain Substrate Components in Existing Router Designs

NCTA members' suppliers face the repercussions of a global shortage for semiconductor substrates, a critical component for electronic devices. Artificial Intelligence ("AI") is driving unprecedented demands for substrate materials, leading to a growing shortage of the necessary materials for semiconductor manufacturing.[20] Broadcom, an American semiconductor manufacturing company, recently flagged supply chain constraints across the technology sector,

[17] *AT&T Petition* at 5.

[18] 47 C.F.R. §§ 2.1043(b)(1)-(2).

[19] *AT&T Router Hardware Waiver* ¶ 6.

[20] Sourceability Team, *DRAM price surges aren't the only casualty of AI*, Industry Updates, Sourceability (Jan. 23, 2026), https://sourceability.com/post/dram-price-surges-arent-the-only-casualty-of-ai.

including capacity limits at its manufacturing partner, due to soaring demand for AI chips.[21] Persistent industry-wide substrate shortages have caused delays and supply chain constraints, triggered by increased demand and material shortages.[22]

In light of these extraordinary circumstances, NCTA members' suppliers require flexibility to substitute certain substrate components in existing, certified router designs to ensure that our ISP members can continue to deliver world-class broadband to consumers.

Accordingly, OET should issue a limited waiver permitting the substitution of substrate in certified routers where such changes would otherwise comply with the Class I and Class II permissive change requirements in Section 2.1043.[23]

B. Good Cause Exists to Permit NCTA Members' Suppliers to Substitute Memory Used in Existing Router Designs

Additionally, the increasing global demand for memory has caused significant and urgent ramifications for broadband providers. At the center of this issue is volatile memory, Dynamic Random Access Memory ("DRAM"), along with non-volatile memory, such as NAND flash and embedded MultiMediaCard ("eMMC"). Driven largely by surging demand from AI, manufacturers are shifting production toward DRAM chips used in data centers, and this shift has tightened supply for the widely used DRAM memory components that support everyday

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[21] Wen-Yee Lee, *Broadcom flags supply constraints, says TSMC capacity a bottleneck*, Investing.com (Mar. 24, 2026), https://www.investing.com/news/stock-market-news/broadcom-flags-supply-constraints-says-tsmc-capacity-a-bottleneck-4576598?.

[22] *See, e.g.*, Sunny Grimm, *AI chip boom sparks BT substrate materials shortage — TSMC's huge demand causes supply disruptions for NAND flash controllers, SSDs*, tom's Hardware (May 27, 2025), https://www.tomshardware.com/tech-industry/semiconductors/ai-chip-boom-sparks-bt-substrate-materials-shortage-tsmcs-huge-demand-causes-supply-disruptions-for-nand-flash-controllers-ssds?; Anton Shilov, *Intel Warns of Consumer Chip Shortages for Q3*, tom's Hardware (July 23, 2021), https://www.tomshardware.com/news/intel-warns-of-consumer-chip-shortages-for-q3?.

[23] *See AT&T Petition* at 6; *AT&T Router Hardware Waiver* ¶ 7.

technologies like routers.[24] Data centers already account for roughly 50% of global volatile memory consumption, up from about 32% just five years ago.[25] As NCTA president and CEO Cory Gardner recently observed, broadband and Wi-Fi infrastructure are facing increasing pressure from global volatile memory supply constraints.[26] Already, costs for DDR4 memory – a foundational component in routers – have surged 700-800% year-over-year; currently, memory accounts for more than 20% of the total manufacturing cost of a low-to-mid-range router, up from 3% last year.[27]

NCTA members' suppliers are already facing significant lead-times to find alternatives for memory to use in routers. Unless NCTA members' suppliers can source memory alternatives as soon as possible, NCTA members expect that router manufacturers may experience supply shortages imminently, with significant supply shortages this year. The impact on consumers would be immediate and detrimental – access to broadband would be more expensive and more difficult to deploy.

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[24] News Release, NCTA, *A Growing Memory Chip Shortage is Pressuring America's Digital Infrastructure* (Apr. 13, 2026), https://www.ncta.com/news/growing-memory-chip-shortage-pressuring-americas-digital-infrastructure; *see* Ron Schmelzer, *AI's Chip Boom Is Creating Labor and Supply-Chain Problems*, Forbes (May 15, 2026), https://www.forbes.com/sites/ronschmelzer/2026/05/15/ais-chip-boom-is-creating-labor-and-supply-chain-problems/.

[25] *Why the AI Boom Will Make Phones, Cars and Electronics More Expensive,* Bloomberg, https://www.bloomberg.com/graphics/2026-ai-boom-memory-chip-shortage/?embedded-checkout=true (last visited May 29, 2026).

[26] Cory Gardner, *Can America Fix Its Chip Crisis?*, National Review (May 4, 2026), https://www.nationalreview.com/2026/05/can-america-fix-its-chip-crisis/.

[27] News Release, NCTA, *Industry Stats: The Growing Memory Chip Crunch* (May 5, 2026), https://www.ncta.com/news/industry-stats-growing-memory-chip-crunch; *see also The AI Boom Is Making Your Router More Expensive: Why Networking Hardware Prices Are Rising in 2026,* ModemGuides (Apr. 2026), https://www.modemguides.com/blogs/tech-news/ai-boom-router-prices-rising-2026?.

There are also significant supply chain difficulties concerning non-volatile memory. Major eMMC manufacturers are discontinuing low-density eMMC components with densities below 64GB, including 4GB and 8GB modules that have historically been used in residential routers.[28] This change in eMMC production has created shortages in eMMC components, which has forced router manufacturers to secure alternative sources and in some cases transition from 4GB or 8GB eMMC to higher-density alternatives, such as 64GB eMMC. With respect to permissive changes for routers, alternative sources as well as higher density sources such as 64GB eMMC are generally a pin-to-pin and footprint-compatible replacement for a lower-density part, so it can be placed directly onto the existing routers without other changes to device hardware. Prior to foreign-made routers being added to the Covered List, this change would generally have been classified as a Class I permissive change, as it involves no degradation to device performance and requires no changes to the device or other hardware components. However, NCTA members' suppliers now cannot pursue these memory changes given the prohibitions of permissive changes for router hardware.

Accordingly, OET should issue a limited waiver permitting the substitution of volatile and non-volatile memory in certified routers where such changes would otherwise comply with the Class I and Class II permissive change requirements in Section 2.1043.[29]

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[28] *See Discontinuation of eMMC: A Guide for Developers and OEMs*, MEMPHIS Electronic GmbH, https://www.memphis.de/en/techhub/memory-knowhow/emmc-discontinuation-guide-for-developers (Last visited May 19, 2026) ("In addition to its compact size, eMMC is easy to integrate and cost effective. It sits between slower traditional storage and faster, more expensive technologies like UFS and NVMe. But even after being a popular storage solution for many years, many manufacturers have revised down their production plans by 50% and more, and Samsung has decided to discontinue eMMC production from next year, citing pricing pressure and focus on high-margin memory.").

[29] *See id.* at 8; *AT&T Router Hardware Waiver* ¶ 7.

C. Granting this Limited Requested Waiver is in the Public Interest

The targeted waiver requested would not undermine the purposes or policies underpinning the Commission's rules, and there is a stronger public interest benefit in granting the waiver than in applying the rule. Indeed, the waiver is in service of implementing the Commission's and the Administration's national security and broadband deployment goals. "The Commission has recognized that, absent a particular finding, the addition of a product to the Covered List does not result in either a revocation of existing authorizations or in a restriction on the ability to import and market previously authorized designs,"[30] and has established procedures to prohibit continued importation or marketing of such equipment.[31]

The targeted waiver requested by NCTA on behalf of its suppliers would allow continued production of existing devices in the near term while members work with their suppliers on Conditional Approval requests, and is intended to prevent sudden and abrupt disruptions that would harm vast swaths of American consumers who are NCTA members' customers. NCTA emphasizes that the hardware changes to Covered Routers contemplated (i) would not improve performance or capability or alter the functionality of the previously-authorized device; (ii) will not be used to market the device as a distinct model; and (iii) will not involve swapping a U.S.-produced component for a foreign produced component.[32] Consistent with OET's findings in the

[30] *AT&T Petition* at 8, citing FCC, *FAQs on Recent Updates to FCC Covered List Regarding Routers Produced in Foreign Countries* (May 8, 2026), https://www.fcc.gov/faqs-recent-updates-fcc-covered-list-regarding-routers-produced-foreign-countries ("**New** models of devices on the Covered List are prohibited from receiving FCC authorization and are therefore prohibited from being imported or sold in the U.S. Being added to the Covered List today **does not** prohibit the import, sale, or use of any existing device models the FCC previously authorized").

[31] *Second Report and Order* ¶ 45.

[32] *See AT&T Router Hardware Waiver* ¶ 6.

AT&T Router Hardware Waiver, NCTA's request does not undermine the national security and public safety purpose of the rule.[33] Accordingly, grant of the targeted waiver is warranted.

III. CONCLUSION

Consistent with the *AT&T Router Hardware Waiver* and for the reasons stated above, NCTA requests that OET grant this Petition to permit NCTA members' suppliers to substitute substrate components and memory used in existing, approved routers, as outlined above. Good cause exists to prevent disruptions to millions of Americans' broadband services.

Respectfully submitted,

/s/ Russell Hanser

Russell Hanser
Traci Biswese
NCTA – The Internet & Television Association
25 Massachusetts Ave., NW
Suite 100
Washington, DC 20001
(202) 222-2445

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[33] *Id*.