



**Qualcomm Incorporated**

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January 2, 2024

**Via Email**

National Telecommunications and Information Administration  
1401 Constitution Ave., NW  
Washington, DC 20230  
[NSSimplementationplan@ntia.gov](mailto:NSSimplementationplan@ntia.gov)

**Re: Implementation of the National Spectrum Strategy - Request for Public Input**

Dear Madam/Sir:

Qualcomm Incorporated is pleased to respond to NTIA’s Request for Input on implementation of the National Spectrum Strategy (“NSS”) with a focus on the next several years.<sup>1</sup> Successful implementation of the NSS is key to ensuring that one of “our nation’s most important natural resources”<sup>2</sup> — spectrum — is effectively and efficiently used to strengthen U.S. world leadership in advanced wireless technology and bolster continued economic growth and national security. We applaud the Administration’s identification for intensive study frequencies in the 7.125-15.3 GHz upper mid-band range that was a focus of Qualcomm’s Comments on the development of the NSS.<sup>3</sup>

**The NSS provides a pathway for U.S. leadership in 6G.** Qualcomm applauds the Administration’s identification of the 7125-8400 MHz frequency range for study in the NSS. This frequency range deserves to be closely analyzed for potential wireless use even if it currently hosts certain federal operations characterized as mission critical. This same range of frequencies was identified for study for mobile terrestrial use globally at the recently concluded World Radio Conference 2023 in Dubai, UAE. Intensive study of this frequency range will determine whether next generation terrestrial wireless operations (“6G”) can share with incumbent operations, which include Fixed, Fixed Satellite, Mobile, Mobile Satellite, Space Research, Earth Exploration Satellite, and Meteorological Satellite services. As detailed in Qualcomm’s Comments, there are technological tools that can be implemented to open wide channels for 6G operations in this range while protecting incumbent operations.

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<sup>1</sup> See Department of Commerce, National Telecommunications and Information Administration Implementation of the National Spectrum Strategy, [Notice of Opportunity for Public Input](#) (Nov. 29, 2023). Qualcomm was pleased to provide detailed comments to NTIA on the development of the NSS and to see substantial alignment between its comments and the NSS.

<sup>2</sup> [National Spectrum Strategy](#) at 1, The White House (Nov. 13, 2023) (the “NSS”) (*quoting* President Biden).

<sup>3</sup> See [Qualcomm Comments on NTIA Development of a National Spectrum Strategy](#) (Apr. 17, 2023) (“Qualcomm Comments”).

**Continued U.S. leadership in 5G and 6G is essential.** As an American company founded and headquartered in San Diego, Qualcomm supports the Administration’s strategic efforts to ensure the U.S. remains a global leader in the world of technological innovations. To do so, opening of spectrum to support the continually expanding demands on today’s mobile, fixed wireless, and satellite convergent communications networks is imperative. The NSS recognizes that ensuring America’s wireless networks have access to additional spectrum is key to advancing national security, economic growth, critical infrastructure, public safety and emergency response, healthcare, agriculture, climate monitoring, and ongoing scientific discovery.<sup>4</sup>

**Qualcomm is a leading wireless technology developer and chipset provider** for billions of consumer devices (smartphones, tablets, laptops, and many other wireless devices), as well as small cells, Wi-Fi access points, automobiles, and space equipment. Our technology advances are continuing to drive the wireless revolution. Qualcomm is behind the rapid proliferation of 5G in the United States and worldwide, and we are actively working to open new spectrum bands for the next generation of wireless technology.<sup>5</sup> Every day, Qualcomm engineers work tirelessly to squeeze more capacity out of existing spectrum allocations by enabling more intensive spectrum reuse and improved performance in terms of overall capacity and lower latency by more intensively sharing limited spectrum resources among more users and uses. But these efforts alone are insufficient to meet constantly growing wireless data demands.

**To support growing demands and generational mobile technology advances, additional spectrum for licensed 5G and 6G operations and unlicensed uses is needed.** The NSS rightly acknowledges that maintaining a spectrum pipeline is crucial for the roll-out of new wireless technologies.<sup>6</sup> America’s mobile technology leadership has been built on a regulatory approach that has favored spectrum clearing, exclusive-use spectrum licenses with flexible use rights, private sector investment, and competition. Fully cleared, exclusively licensed spectrum remains a top priority for the wireless industry to support the continued rapid roll-out of 5G and 6G across the U.S., including in cities, transportation hubs, sports and entertainment venues, and in suburban and rural areas. Unlicensed spectrum also plays an important role enabling innovative technologies like Wi-Fi in homes, businesses, entertainment venues, schools, and libraries. Unfortunately, the ability to fully clear spectrum bands is challenged by the growing demands of all users — on both the federal and commercial sides.

**Future spectrum access will involve increasingly dynamic and intensive spectrum sharing due to the shrinking supply of greenfield spectrum.** The NSS recognizes greenfield spectrum is limited,<sup>7</sup> and virtually all spectrum bands have incumbents, including federal users, and may not be able to be completely cleared on a nationwide basis to enable mobile and fixed terrestrial operations coast-to-coast. Clearing incumbents is increasingly difficult as all users’ spectrum needs are growing, forcing all spectrum users to sharply focus on spectrum sharing solutions.

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<sup>4</sup> NSS at 1, 21-22.

<sup>5</sup> *Id.* at 1, 4.

<sup>6</sup> *See id.* at 3-8.

<sup>7</sup> *See id.* at 7.

The appropriate spectrum sharing approach will be band-specific and depend on the current incumbent users' present and future operational needs and locations.<sup>8</sup>

**Qualcomm has played a key role in developing innovative sharing solutions** for commercial bands, including the 3.5 GHz licensed band and the 6 GHz unlicensed band.<sup>9</sup> As detailed in our comments on the development of the NSS, Qualcomm also has an innovative sharing proposal for the Lower 37 GHz shared licensed band that would allow federal and commercial licensees to share the same spectrum band at the same time and place without harmful interference.<sup>10</sup> The technology-neutral, equipment-based approach would effectively provide each shared licensee with access to the entire 600-MHz-wide Lower 37 GHz band to satisfy ever increasing mobile data demands. Qualcomm is pleased to see this band in the NSS for in-depth near-term study.<sup>11</sup>

**Spectrum sharing between federal users and commercial users can be a win-win.** By opening to sharing a frequency band exclusively held today by the federal government, such as the 7125-8400 MHz band, federal government users can take advantage of the most advanced wireless technologies, chipsets, and equipment that industry develops for commercial operations in the band, thereby improving federal operations and making more intensive use of the shared spectrum bands.

**To ensure continued U.S. leadership in wireless innovation, all spectrum stakeholders need to work collaboratively to study spectrum sharing.** Spectrum stakeholders should have an honest and open discussion and assessment of whether current spectrum users can: (i) operate more efficiently using less spectrum, (ii) allow other users to access the spectrum bands in which incumbent operations are occurring without causing harmful interference, and (iii) accept some level of unwanted signal noise and still operate successfully. A collaborative approach with an open exchange of information will ensure the U.S. leads the way in efficient spectrum utilization supported by the latest technological innovations. For instance, federal and industry stakeholders should jointly establish reasonable, evidence-based, real-world assumptions for interference modeling. At the same time, industry stakeholders need realistic and reliable data relating to the incumbent federal operations to develop objective and accurate industry contributions to the study process. The federal government also needs to allocate sufficient resources to implement studies to evaluate the provision of commercial services in the identified bands.

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<sup>8</sup> *See id.* at 1-2, 13-18.

<sup>9</sup> *See, e.g.*, Qualcomm OnQ Blog, [Qualcomm Technologies propels CBRS commercialization with platforms for devices and infrastructure](#) (Apr. 7, 2020); OET Announces Conditional Approval for 6 GHz Band Automated Frequency Coordination Systems, Public Notice, ET Docket No. 21-352, DA 22-1146 (Nov. 2, 2022).

<sup>10</sup> *See* Qualcomm Comments at 8-10, 13.

<sup>11</sup> *See* NSS at 6-7. Qualcomm also is pleased to see the 5030-5091 MHz band for Unmanned Aircraft Systems identified in the NSS for near term in-depth study. Qualcomm has a proposal before the FCC for using a portion of this band for UAV-UAV direct communications to enable safe flight operations. *See* [Qualcomm Comments in WT Docket No. 22-323](#) (filed Mar. 9, 2023).

**Qualcomm looks forward to partnering with U.S. government spectrum stakeholders to enable expanded commercial and government spectrum uses.** Qualcomm's standing as a leader in wireless ecosystem innovations is driven by the expanding applications and needs of the commercial mobile industry's consumers, supported by industry-led standards organizations. This uniquely positions Qualcomm as a partner to all U.S. government agencies with spectrum needs. Qualcomm applauds NTIA's efforts to explore opportunities to increase spectrum utilization across the board. We stand ready to help NTIA forecast spectrum access requirements for future applications to take advantage of the extensive innovation that is occurring in the mobile ecosystem.

Qualcomm appreciates NTIA's important work on the National Spectrum Strategy, and we look forward to continuing to work with our federal and commercial partners on NSS implementation.

Respectfully submitted,

QUALCOMM INCORPORATED



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