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DSA
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Via Electronic Filing

Marlene H. Dortch
Secretary
Federal Communications Commission
445 Twelfth Street SW
Washington, DC 20554

Re: ***Prompt Implementation of Part 96 Citizens Broadband Radio Service (CBRS) Rules in the 3.5GHz Band***
GN Docket No. 12-354; GN Docket No. 15-319

Dear Chairman Pai, Commissioner Clyburn, and Commissioner O'Rielly:

In July 2015, the Dynamic Spectrum Alliance[1] (DSA) wrote to the Commission to commend the establishment of a new three-tiered framework to enable efficient sharing of the 3550-3700 MHz band (the 3.5 GHz band) among federal and non-federal incumbents, holders of priority access licenses (PALs), and general authorized access (GAA) broadband licensees.[2] The three-tiered framework promotes broadband innovation and investment by facilitating spectrum availability on a very localized basis and reducing barriers to entry, particularly for applications in the GAA, while ensuring predictable access to spectrum for service providers holding PALs and protecting incumbents in the band.[3] The lynchpin for the entire CBRS regime is the certification and deployment of a dynamic Spectrum Access System (SAS), which allows all three tiers of users and their diverse technologies to coexist in the band.[4]

During the two years since a unanimous Commission adopted the CBRS rules in April 2015, a multi-stakeholder process involving more than a dozen wireless operators, OEMs, chipmakers and other technology firms have spent thousands of hours forging a consensus on detailed operating standards and interfaces that will allow this innovation in small cell dynamic spectrum sharing to proceed to deployment.[5] The groundwork has been laid for the Part 96 framework and commercialization is just around the corner.

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[1] Our membership spans multinationals, small-and medium-sized enterprises, and academic, research, and other organizations from around the world, all working to create innovative solutions that will increase the amount of available spectrum to the benefit of consumers and businesses alike. A full list of DSA members is available on the DSA's website at www.dynamicspectrumalliance.org/members/.

[2] *See* Letter from H. Nwana, Executive Director, DSA, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 12-354 (filed July 15, 2015).

[3] *See In the Matter of Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band*, Report and Order and Second Further Notice of Proposed Rulemaking, 30 FCC Rcd. 3959 (2015) (Report and Order); *see also* 47 C.F.R. Part 96.

[4] *See* Report and Order.

[5] *See* Wireless Innovation Forum (WinnForum) website *available at* http://www.wirelessinnovation.org. In particular, note the work of WinnForum's Spectrum Sharing Committee, which "serves as a common industry and government standards body to support the development and advancement of spectrum sharing technologies based on the three-tier architecture proposed for the 3.55 GHz rulemaking activities," *available at* http://www.wirelessinnovation.org/projects-committees.

Today we write for three reasons. First, we write to inform the Commission about investments and innovations that were the direct result of the Commission's CBRS rules and three tier structure. These include a recent successful test deployment of a private LTE network, a rural broadband project that demonstrates the types of investments and innovation that private enterprise has made since the adoption of the rules, and technological advancements for improving the indoor cellular experience. These and other developments have been made primarily by the 42 companies participating in the CBRS Alliance.[6] Second, we request that the Commission expedite implementation of the Part 96 framework by developing auction procedures for PALs and by fully certifying the SAS and Environmental Sensing Capability (ESC) networks as soon as possible in order to open the 3.5 GHz band for companies poised to deploy their networks. Finally, in light of the recent news that there may be interest at the Commission in considering changes to the Part 96 framework, we also caution that injecting regulatory uncertainty at this late stage will have the effect of reducing or stranding current investment, deterring future investment, and ultimately setting back active use of the 3.5 GHz band to square one.[7]

On February 2, Nokia, Alphabet's Access Group, and Qualcomm--founding members of the CBRS Alliance[8]--partnered with NASCAR and ran a successful trial at the Las Vegas Motor Speedway that entailed building a 360-degree virtual reality zone inside a stock car to provide a streaming, real-time virtual user experience at speeds over 180 mph, which was streamed on Youtube Live Events.[9] The experience was broadcast over a private LTE network using spectrum in the 3.5 GHz band. The network consisted of Nokia-manufactured base stations positioned around the speedway, Qualcomm's Snapdragon LTE modem providing in-car connectivity, and Alphabet's SAS-based frequency planning that allowed the spectrum access required for the trial.[10]

The NASCAR trial is precisely the type of innovation that the Commission envisioned in adopting the CBRS rules, and demonstrates that low barriers to entry, abundant spectrum, and innovative technologies and deployment methods can offer private enterprise new ways to reach audiences and offer consumers new experiences. Further, the NASCAR trial demonstrates that diverse companies are making real

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[6] The 42-member CBRS Alliance includes all four national mobile operators, the nation's two largest cable providers, cellular infrastructure vendors, enterprise networking vendors and other companies. The mission of the CBRS Alliance is to "Evangelize LTE-based CBRS technology, use cases and business opportunities, [d]rive technology developments necessary to fulfill the mission, including multi-operator LTE capabilities, [and] [e]stablish an effective product certification program for LTE equipment in the US 3.5 GHz band ensuring multi-vendor interoperability," *see* CBRS Alliance website, *available at* https://www.cbrsalliance.org

[7] *See* "FCC Pursuing 3.5 GHz Band Rules Changes, O'Rielly Says," Communications Daily (March 17, 2017).

[8] CBRS Alliance membership *available at* https://www.cbrsalliance.org

[9] *See* "Nokia, Alphabet's Access Group and Qualcomm showcase first live demo of a private LTE network over CBRS shared spectrum providing a 360° race car experience," Nokia Press Release (February 7, 2017), *available at* https://www.nokia.com/en_int/news/releases/2017/02/07/nokia-alphabets-access-group-and-qualcomm-showcase-first-live-demo-of-a-private-lte-network-over-cbrs-shared-spectrum-providing-a-360deg-race-car-experience

[10] *See Id*.

investments today, because they believe in the promise offered by the CBRS framework and are counting on it remaining intact. In short, to answer the question that then Commissioner Pai posed in his Statement to the Report and Order of whether the CBRS framework would work, the answer is unquestionably yes.[11]

Rural broadband providers are already investing in deployments in the 3650-3700 GHz band, in anticipation of access to the expanded CBRS band. For example, Rise Broadband (Rise), the nation's largest fixed wireless internet service provider, is implementing its $16.9 million subsidy under the FCC Rural Broadband Experiment program with base stations that will be capable of operating across the full Part 96 CBRS band of 3550 to 3700 MHz.[12] Once CBRS device-to-SAS protocols are finalized and a SAS is certified, Rise will be able to load new software on these base stations to provide far greater throughput and more affordable rural broadband service. Rise has already constructed its first six towers in the Provo, Utah area under an experimental license that is delivering 100 Mbps service to its first 100 customers at distances up to 5 km from the tower. And since deployments of 3.5 GHz fixed wireless networks are between one-fifth and one-tenth the cost of fiber, Rise believes it can offer 100 Mbps service at lower prices than any wireline alternative in these areas.

Others are also investing to develop new solutions for improving the indoor cellular experience. Ruckus Wireless and Qualcomm have developed and demonstrated technologies that combine "coordinated shared spectrum, [including] 3.5 GHz in the U.S., with neutral host-capable small cells to enable cost-effective, ubiquitous in-building cellular coverage." This type of solution will enable "[e]nterprises and service providers [to provide improved] in-building cellular solutions that are easy to deploy" and provide cost effective solutions for bringing improved in-building coverage and performance.[13] This technology allows entities such as businesses, hotels, factories, hospitals, municipalities, and niche service providers to deploy and operate their own LTE networks without having to acquire rights to exclusive, licensed spectrum. These networks can be used to meet the communications needs of the deploying entity and may also be made available to the established cellular operators via a neutral-host relationship.[14]

Given the innovations and investments in the current framework, it's imperative the Commission promptly implement the CBRS rules, including the drafting and release of PAL auction public notices, and fully certify the SAS and ESC networks as soon as possible. We are particularly concerned with the slow progress on ESC specifications,

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[11] Report and Order (Statement of Commissioner Ajit Pai Approving in Part and Concurring in Part) ("After considering several outside-the-box ideas, we are moving forward with an experiment to see if we can make this spectrum more productive. Will it work?")

[12] Joan Engebretson, "Rise Broadband Exec: Broadband Wireless Economics are Better than Ever," *Telecompetitor* (April 14, 2016), *available at* https://goo.gl/YMUu40. Rise co-founder Jeff Kohler is quoted, stating that "instead of licensing . . . huge geographic swaths, the spectrum will be auctioned by census tract -- it appears [PALs] may be affordable for small carriers." *Id.*

[13] "Ruckus Wireless Shares Vision for the Future on In-Building Cellular," Ruckus Wireless (Feb. 18, 2016), *available at* https://goo.gl/2KgMqF.

[14] Testimony of David A. Wright before the U.S. House Subcommittee on Communications and Technology (April 5, 2017), *available at* https://goo.gl/CUyX1G.

which have yet to be finalized by the Commission and Department of Defense. Failure to finalize ESC specifications will jeopardize CBRS services for the 60% of the U.S. population who live near the coast and will bar all high-power applications throughout the U.S., including applications for rural broadband.

As the Commission itself has pointed out, immediate implementation of the three-tiered sharing framework will facilitate rapid deployment in the 3.5 GHz band.[15] Companies will continue to invest and make use of the 3.5 GHz band, *if* they can count on regulatory stability. The WinnForum CBRS standards process and the CBRS Alliance have contributed enormous momentum toward investment and deployment in the 3.5 GHz band by harnessing the efforts of a variety of large and small companies. However, DSA is deeply concerned that the introduction of any new uncertainty regarding the future of the three-tiered framework and applicable Part 96 rules, including any substantial change in the framework for assigning PALs or in their geographic size, will derail this historic effort and deter investment in the band. This could also have the effect of creating an unfortunate self-fulfilling prophecy for spectrum sharing opponents; they will no doubt cite a lack of investment in the band as proof the CBRS structure generally, and the three-tier approach in particular, does not work, then claim a justification for a return to the old exclusive licensing model. The Commission must avoid any signals that would deter investment supporting the FCC's exciting new regulatory approach that the entire world is watching. We therefore urge the Commission to end the uncertainty by implementing the three-tiered sharing framework as soon as possible, or at the very least, clarify its intentions regarding the Part 96 rules.

DSA and its membership shared the Commission's excitement to lead the world in the creation of a shared, small cell "innovation band" in which an ecosystem of diverse private enterprises would experiment, innovate, invest and deploy wireless networks to meet the public's burgeoning demand.[16] We're at the doorstep of that vision. Companies are ready to invest and are poised to deploy their networks in the foreseeable future if the Commission fulfills the promise of an innovation band and adopts the CBRS rules without further delay.

Sincerely,

Kalpak Gude
President, Dynamic Spectrum Alliance

[15] Report and Order, ¶¶ 54, 55.
[16] *See* Report and Order, ¶ 2.