

Wireless Everywhere LLC d/b/a Wave Wireless
Application for Experimental Special Temporary Authorization (“STA”):
Citizens Broadband Radio Device (“CBSD”) Testing and Demonstrations

Pursuant to Sections 5.54(a)(1) and 5.61 of the rules of the Federal Communication Commission (the “Commission”),¹ Wireless Everywhere LLC d/b/a Wave Wireless (“Wave Wireless”) respectfully requests experimental special temporary authorization (“STA”) for a period of six (6) months, commencing on February 14, 2018 or as soon as practicable thereafter, to test and trial equipment and services in Citizens Broadband Radio Service (“CBRS”) spectrum from 3650-3700 MHz.

Wave Wireless seeks this experimental license to assess and validate the technical and commercial viability of certain Citizen Broadband Radio Service Devices (“CBSDs”) in the 3650-3700 MHz band in two distinct indoor environments (technology office space and hotel) to conduct the experiments. Wave Wireless believes this is the narrowest possible sample of its current and intended market and will allow it to trial equipment in locations that represent key enterprise clientele. Grant of this experimental license will serve the public interest by allowing Wave Wireless and its technology partners to demonstrate opportunities made available by CBRS spectrum sharing framework in real-world conditions using CBRS-compatible equipment.

I. Background

Wave Wireless (formerly DAS Worldwide) is a nationwide wireless infrastructure provider that designs, builds and manages indoor wireless networks for large-scale commercial properties, government agencies and entertainment venues. Wave Wireless delivers carrier-grade Wi-Fi solutions and state-of-the-art LTE networks, as well as public safety systems, to serve various user needs and improve broadband connectivity in indoor environments.

Here, Wave Wireless proposes to work with industry partners, including a Spectrum Access System (“SAS”) and multiple CBSD manufacturers, to trial and demonstrate the benefits of indoor CBRS deployments. Wave Wireless seeks to conduct trials under this STA in a 50 megahertz portion of the CBRS band from 3650-3700 MHz in order to effectively test use cases.

Wave Wireless recently filed a two-year market trial application² for near identical operations that was dismissed by the Commission due to NTIAs objection to use of the 3550-3650 MHz band in an exclusion zone without an operational Environmental Sensing Capability (“ESC”).³ Wave Wireless re-files for a shorter-term license in only the upper portion of the CBRS band to help streamline this request.

¹ 47 C.F.R. §§ 5.54(a)(1) & 5.61.

² See Wireless Everywhere LLC d/b/a Wave Wireless, File No. 0717-EX-CN-2017, Call Sign WJ2XEU (dismissed on Dec. 8, 2017).

³ Wave Wireless notes that its proposed operations in the 3550-3650 MHz band meet the specifications of Category A antennas set out in Section 96.41(c). Accordingly, once the Part 96 rules are adopted, ESC is not a requirement to protect shipborne or ground-based radar facilities in this spectrum range. Moreover,

Based on consultation with Commission staff, Wave Wireless re-files its request for a shorter trial period to operate in the 3650-3700 MHz band only in order mitigate interference concerns expressed by NTIA and allow for near-term experimentation.

Wave Wireless views the CBRS framework as a critical component of next-generation mobile services in the United States. Through this 6-month STA, Wave Wireless hopes to demonstrate the opportunities associated with CBRS spectrum sharing and how CBSDs can bring LTE propagation characteristics and speeds to users across the United States, particularly in indoor environments. Wave Wireless believes that the CBRS band will offer an ideal combination of propagation, cost and equipment solutions to deliver high-quality broadband service to users at LTE speeds.

II. Proposed Market Trial

Under this STA, Wave Wireless proposes to test up to 100 Category A CBSDs, as well as mobile terminals and other end user devices, at two (2) indoor locations in Washington, DC (up to 50 CBSDs per location). Wave Wireless plans to deploy uncertified equipment from multiple manufacturers so that it can compare costs, ease of deployment, propagation and performance in a “real world” environment.

The market trial will allow Wave Wireless to analyze the benefits, challenges and costs associated with CBSD deployment in distinct indoor environments (i.e., hospitality and office space). The indoor tests will be conducted in highly controlled field environment on an “as needed” basis throughout the term of the license and at power limits and out-of-band emission limits that comply with the Part 96 rules for Category A CBSDs and End User Devices.⁴ During testing, Wave Wireless will transmit at the lowest possible power levels (a maximum EIRP of 30 dBm/10 MHz) to meet performance objectives.

Wave Wireless has reviewed the status of incumbent operations in the 3650-3700 MHz band⁵ and has concluded that its indoor low-power trial operations will comply with existing limits.

the closest ground-based military radar facility is more than 3 km from the test location. *See* Letter from Paige R. Atkins, NTIA, to Julius P. Knapp, FCC, GN Docket No. 12-354 (dated March 24, 2015), at 6.

⁴ *See generally 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, GN Docket No. 12-354, ¶ 73 (2015) (“*CBRS Order*”); 47 C.F.R. § 96.41.

⁵ Incumbent users include federal entities authorized to operate on a primary basis in accordance with the table of frequency allocations, fixed satellite service operator, or Grandfathered Wireless Broadband Licensee authorized to operate on a primary basis on frequencies designated. *See* 47 C.F.R. § 96.3.

- For operations in the 3650-3700 MHz band, consent from commercial Fixed-Satellite Service earth stations is not required because the test operations will not exceed the power levels for mobile and portable stations set out in Section 90.1321(c).
- Wave Wireless understands that its operations are secondary to any authorized Part 90 commercial operations in the 3650-3700 MHz band and will operate its trials on a non-interference basis to primary terrestrial operations in the band.

Given the low EIRP levels of the CBSDs and the enclosed trial environments, Wave Wireless anticipates no harmful interference to existing incumbent users operating in the 3650-3700 GHz band. Wave Wireless has full access to the transmit locations and has personnel nearby to monitor construction and operation to ensure that there will be no harmful interference to incumbent users and to remedy harmful interference in the unlikely event it occurs. In any event, Wave Wireless agrees to accept interference from incumbent users and will immediately terminate its operations in the event it receives reports documenting harmful interference to other authorized spectrum users in the band. During the STA, requests to cease transmissions during the license term should be directed to: imranh@wavewireless.co.

Wave Wireless acknowledges that there is presently no certified SAS and ESC, and the technical specifications for the SAS and ESC are still under development. Accordingly, as noted, prior to the certification of a SAS and ESC, Wave Wireless will comply with the power levels in Sections 90.1321 of the Commission's Rules (for 3650-3700 MHz operations). At the conclusion of the experimental STA term, Wave Wireless will either transition to Part 96 GAA if the equipment is certified and authorized under GAA rules, or will cease operations in 3650-3700 MHz band. Assuming the trial is successful and the equipment has been certified, Wave Wireless expects to utilize a combination of PAL and GAA spectrum across the entire 150 megahertz from 3550-3700 MHz.

Understanding the balance between capabilities and performance of multiple equipment manufacturers in an indoor environment will significantly inform Wave Wireless' business decisions and network investment plans, as well as create a viable business case around CBRS that will generally improve broadband services in indoor environments. If the trial is technologically successful and beneficial to the trial participants, Wave Wireless and its partners will be able to more effectively and affordably serve users and improve the quality of wireless services available to U.S. customers. In addition to creating business models around CBRS, Wave Wireless plans to test propagation models ability to predict co-channel interference, blocking, and OOB to comply with protections of existing incumbent users.

III. Contribution to the Radio Art

In accordance with Section 5.63(c)(1), Wave Wireless anticipates that its market trial will contribute greatly to the radio art and serve the public interest. CBRS is a new service in which commercial and Federal uses will share a spectrum band and has been characterized as a paradigm shift in spectrum management. The proposed market trial will help demonstrate the capabilities of this innovative new spectrum sharing framework and promote real-world

implementation of CBRS spectrum, as well as allow Wave Wireless to learn a significant amount of information about equipment capabilities and limitations, customer acceptance at various speeds, revenue models, and integration of its service and equipment with the SAS and ESC. To the extent required, Wave Wireless will share the results of its market trial with the Commission.

IV. Conclusion

Based on the foregoing, Wave Wireless respectfully requests a 6-month experimental STA, commencing on February 14, 2018, or as soon as practicable thereafter, to demonstrate and trial equipment in CBRS spectrum from 3650-3700 MHz.