

**First Step Internet, LLC**  
**Exhibit to Application for Experimental License**

Pursuant to Section 5.63(c)(1) of the Commission’s Rules, First Step Internet, LLC (“First Step”) hereby provides this statement in support of its application for an experimental license to conduct a market trial, as defined in Sections 5.5 and 5.602, using spectrum in the 3550-3650 MHz band from Teakean Butte, Idaho in accordance with the technical and operating parameters specified in the accompanying application. First Step requests a license term of the shorter of (a) two (2) years from grant of the application, or (b) First Step’s grant of authority from a Spectrum Access System (“SAS”) and Environmental Sensing Capability (“ESC”) to operate the authorized equipment and facilities on a General Authorized Access (“GAA”) basis.

***Overview***

First Step is a broadband provider that holds a nationwide non-exclusive 3650-3700 MHz service license (Call Sign WQKH843). First Step delivers fixed broadband service to approximately 5,900 residential and business customer accounts in Idaho and eastern Washington, with a focus on rural and previously underserved locations. First Step uses a wide array of unlicensed spectrum and “lightly licensed” spectrum in the 3650-3700 MHz band. First Step has determined that, in many areas, the 3650-3700 MHz band offers a good combination of throughput, propagation, cost and equipment solutions to deliver high-quality broadband service to its subscribers and others in the target markets that lack access to competitive broadband services. First Step has deployed on 3650-3700 MHz spectrum and, at several locations, has upgraded to LTE equipment.

First Step is a recipient of \$415,855 in Rural Broadband Experiment (“RBE”) funding for 116 census blocks in Idaho and Washington.<sup>1</sup> The funded area includes census blocks that are within the footprint of Teakean Butte. First Step had planned to serve these census blocks using its registered 3650-3700 MHz access points at Teakean Butte.<sup>2</sup> However, for several months, First Step has been unable to operate its registered 3650-3700 MHz access points from Teakean Butte because an earth station licensee has claimed that First Step’s operations cause harmful interference. This has affected First Step’s ability to serve the RBE funded census blocks.

First Step therefore proposes to utilize spectrum in the 3550-3650 MHz to provide the service that it currently cannot provide on its existing 3650-3700 MHz license. Based on its experience with 3650-3700 MHz operations and LTE in particular, First Step believes that LTE technology deployed in the 3550-3700 MHz band can meet its objectives through a combination of throughput, propagation, cost and equipment to deliver high-quality broadband service to unserved consumers in the target area. First Step anticipates that it can serve up to 100 customers under the market trial experiment.

In this trial, First Step plans to test LTE equipment to serve unserved customers and also

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<sup>1</sup> See *Public Notice*, “Rural Broadband Experiment Support Authorized for Five Winning Bids for First Step Internet, LLC and Northeast rural Services, Inc.,” DA 15-1003 (rel. Sept. 11, 2015).

<sup>2</sup> The Teakean Butte access points were registered in file numbers 0006760053, 0006760135 and 0006760319.

gain a better understanding of the benefits, challenges and costs associated with near-term deployment of LTE equipment in the 3650-3700 MHz band as well as for the Citizens Broadband Radio Service (“CBRS”). Understanding the balance between cost and performance will significantly inform First Step’s business decisions, for the benefit of its own financial modeling and consumers who will be offered a better service. If the trial is technologically successful and beneficial to consumers, First Step will realize significant cost savings and improved performance. More importantly, First Step will be better able to meet its RBE service commitments and offer fixed broadband service to consumers that are currently unable to receive such service.

The trial will provide First Step with information to help make its future expansion and network investment plans. Assuming the trial is successful, First Step expects to utilize a combination of Priority Access Licenses (“PAL”) and GAA “license by rule” spectrum across the entire 150 megahertz of 3550-3700 MHz spectrum. However, to date, there is no Part 90 certified equipment that incorporates the functionality needed to comply with new Part 96 requirements, partially due to the fact that there is no certified SAS and ESC, and the technical specifications for the SAS and ESC are still under development.

In order to determine the financial and technical viability of the CBRS band and assess consumer acceptance at various speeds and price points, First Step seeks an experimental license to use spectrum in the 3550-3650 MHz band from Teakean Butte in Idaho to serve up to 100 customers. The area surrounding this site is extremely rural, and coverage and deployment are severely restricted by rugged terrain and dense foliage that makes line-of-sight propagation to nearby residences and businesses impossible. This experiment will enable First Step to provide service to identified unserved areas that are funded through the RBE program and inform First Step’s business, investment, technology and deployment decisions as it plans for expansion and densification of its broadband network.

### ***Description of Program***

Because the Commission has not yet certified equipment for use with the SAS or the Environmental Sensing Capability (“ESC”) in the CBRS band, First Step plans to use Telrad LTE equipment certified by the FCC for use in the 3650-3700 MHz band that is re-tuned to the 3550-3650 MHz band. Power limits and out-of-band emission limits will conform to the Part 96 rules for Category B CBSDs that the Commission adopted in the CBRS proceeding.<sup>3</sup>

First Step has identified the area surrounding Teakean Butte as the optimum place to conduct the market trial experiment. As discussed above, the area lies within the area the Commission has funded through the RBE program, but First Step is currently unable to provide quality service because of interference issues on its registered 3650-3700 MHz access points. First Step has access to the transmit location and has personnel nearby to monitor construction

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<sup>3</sup> See *Amendment of the Commission’s Rules with Regard to the 3550-3650 MHz Band*, First Report and Order and Further Notice of Proposed Rulemaking, 30 FCC Rcd 3959 (2015); *Amendment of the Commission’s Rules with Regard to the 3550-3650 MHz Band*, Order on Reconsideration and Second Report and Order, 31 FCC Rcd 5011 (2016).

and operation to ensure that there will be no harmful interference to Incumbent Access users and to remedy harmful interference in the unlikely event it occurs. Further, there appears to be no ground-based radar facilities anywhere near the planned trial site that would require ESC or coordination with incumbents, and the proposed area of operation is well outside the coastal protection zone. Commission records also show that there are no Fixed Satellite earth stations in the 3600-3650 MHz band authorized within 180 miles of the trial location.<sup>4</sup>

Pursuant to this market trial, First Step plans to test different broadband speeds and price points to determine the utility and value of the CBRS as it relates to consumer take rates and network performance. Over time, First Step may test with different equipment as it becomes available. Consistent with the market trial requirements of Section 5.602(d), First Step will own the base station and end user equipment, and will not transfer ownership to trial participants. First Step seeks authority to deploy one base station at Teakean Butte consisting of three access points and up to 100 end user devices, which it believes is the minimum quantity necessary to meet its objectives.

As required by Section 5.602(e), all end users will be advised at the commencement of the trial that service is being provided on a trial basis, that any non-approved devices are for testing only and that all equipment must be returned at the end of the trial period. First Step further acknowledges that it will need to retrieve the devices from the users at the end of the trial. In particular, all users will be notified that the service they will be receiving is being provided in part or in whole under experimental authority, and that as a condition of the experimental license, First Step may be required at any time, without prior notice, to cease operations in the spectrum between 3550 and 3650 MHz. In addition, First Step acknowledges and will notify users that all customer premise equipment authorized under the experimental license remains the property of First Step, and must be collected or rendered inoperable at the conclusion of the trial. At the end of the trial, First Step will either: (1) shut off the service immediately, stop billing users for the service and post a public notice at [www.fsr.com](http://www.fsr.com), and collect or render all customer premise equipment inoperable, or (2) change the frequency and operating parameters of some or all of the customer premise equipment that is part of the trial to parameters authorized under Part 90, Subpart Z of the FCC rules (which may materially impact network capacity, performance, and quality of service), post a public notice to [www.fsr.com](http://www.fsr.com), and allow users to opt out of the modified service offering with no further obligation to pay for the service.

### ***Objectives of Experimental Program***

During the trial, and prior to the certification of a SAS and ESC, First Step will comply with the power levels in Section 96.41 as they apply to End User Devices and Category B CBSDs. At the conclusion of the requested experimental license term, First Step will either transition to Part 96 GAA if equipment is certified and authorized under GAA rules or, if not, cease operation in 3550-3650 MHz. First Step hopes that the equipment and SAS/ESC development can be accelerated through the information generated by the market trial.

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<sup>4</sup> See *Amendment of the Commission's Rules with Regard to the 3550-3650 MHz Band*, Notice of Proposed Rulemaking and Order, GB Docket No. 12-354, 27 FCC Rcd 15594 (2012), at Appendix A.

In addition to the technical objectives, the objective of determining the value and utility of PALs exists, which necessitates charging for the service at varying price points and performance levels.

The experiment will examine the impact of the following rules on potential future commercial deployments.

*Section 96.17* – Validate propagation models ability to predict co-channel interference, blocking, and OOB to comply with protections of existing FSS Earth Stations.

*Section 96.21* - Validate propagation models ability to predict co-channel interference, blocking, and OOB to comply with protections of Grandfathered Wireless Broadband Licensees.

*Section 96.25* – Validate propagation model’s ability to predict compliance with PAL Protection Areas.

*Section 96.39(a)* – Develop a method for determining CBSD locations with sufficient accuracy to comply with this section.

*Section 96.39(d), (e)* – Develop methods for collecting Signal Level and Frequency information from the CBSD so it can be reported to the SAS.

*Section 96.41* – Determine the appropriate power levels for CBSD and End User Devices to both comply with this section and achieve desired coverage and performance. The aggregate RMS power level RSS and PAPR requires measurement validations in a real world environment where CBSD and End User Device density is consistent with intended long term use of the band. Propagation models must be tuned and validated to accurately predict compliance. Power level control of the equipment must be tuned so that the CBSD and End User Device transmit at the lowest power levels possible to meet performance objectives, while complying with the prescribed limits.

*Section 96.53* – Develop methods to detect interference at the CBDS and End User Device from other GAA and PAL users so it can be reported to the SAS.

### ***Contribution to the Radio Art***

In accordance with Section 5.63(c)(1), First Step expects that its market trial will contribute greatly to the radio art. The CBRs is a new service in which commercial and Federal uses will share a spectrum band, with use governed by an SAS and ESC. It has been characterized as a test-bed for innovation and as a paradigm shift in spectrum management. In connection with its market trial, First Step expects to learn a significant amount of information about equipment capabilities and limitations, customer acceptance at various speeds and price points, and integration of its service and equipment with the SAS and ESC. To the extent required, First Step will share the results of its market trial with the Commission.