AMG Technology Investment Group, LLC
Statement in Support of Experimental License

AMG Technology Investment Group, LLC dba Nextlink ("Nextlink") submits this statement pursuant to Section 5.63(c)(1) of the Commission's Rules 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 transmitting from designated a location in Scotts Bluff County in Nebraska. Nextlink requests a license term equal to the shorter of (a) one (1) year from grant of this application, or (b) Nextlink'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

Nextlink provides fixed wireless broadband service to thousands of consumers in Texas and Oklahoma. It intends to experiment using LTE-based equipment with software-defined radios in the 3550-3650 MHz band and ultimately configured to operate with the SAS and ESC that are under development. Based on its preliminary research, Nextlink believes that LTE-baeed technology deployed in the 3550-3700 MHz band offers the best combination of throughput, propagation, cost and equipment to deliver high-quality broadband service to its subscribers and others in the target markets that lack access to competitive broadband services.

In this trial, Nextlink plans to test LTE-based equipment manufactured by Telrad from a single sector at a single location in Aledo, Texas, near Nextlink's headquarters, to 20 end-user locations. This will enable Nextlink to gain a better understanding of the benefits, challenges and costs associated with near-term deployment of LTE-based equipment in the 3650-3700 MHz band as well as for the Citizens Broadband Radio Service ("CBRS") and to compare performance and capabilities of the equipment and technology. Understanding the balance between cost and performance will significantly inform Nextlink's business decisions, for the benefit of its own financial modeling and consumers who will be offered a better service. Nextlink also plans to experiment with various channel sizes, speeds and pricing plans to assess consumer acceptance of the service. If the trial is technologically successful and beneficial to consumers, Nextlink will be able to make better decisions on whether to deploy in the CBRS band and, if so, on what terms.

The trial will provide Nextlink with information to help make its future equipment, expansion and network investment plans. Assuming the trial is successful, Nextlink 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.

Nextlink believes that the *CBRS Order*,[1] along with the ongoing development of the SAS and ESC, represents a positive change in spectrum management policy, and will eventually result in extremely efficient and widespread use of this 150 megahertz of spectrum for both small cell technologies for mobile wireless broadband and higher power technologies for fixed wireless broadband in rural and underserved locations.

In order to determine the financial and technical viability of the CBRS band and assess consumer acceptance at various speeds and price points, Nextlink seeks an experimental license to use spectrum in the 3550-3650 MHz band, transmitting from the site identified in this application. Nextlink plans to deploy LTE-based equipment in 10- and 20-megahertz channels to determine equipment and technology performance and the market potential resulting from an additional 100 megahertz of low-band spectrum. In sum, this experiment will inform Nextlink's business, investment, technology and deployment decisions as it plans to expand and upgrade its fixed broadband network.

Description and Objectives of Experimental Program

Because the Commission has not yet certified equipment for use with the SAS or the ESC in the CBRS band, Nextlink 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 Order* and the Order on Reconsideration and Second Report and Order.[2]

Nextlink will conduct the experiment from a single location within its existing area of operation. Nextlink has access to and is transmitting on other frequencies from the Aledo tower with personnel on site to monitor construction 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. Commission records also show that there are no Fixed Satellite earth stations in the 3600-3650 MHz band operating near the test area.[3] Likewise, there appear to be no ground-based radar in or near the planned trial area that would require ESC or coordination with incumbents, and the area where the trial will be conducted lies outside of the coastal exclusion zone.[4]

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[1] *See Amendment of the Commission's Rules with Regard to the 3550-3650 MHz Band*, Report and Order and Second Further Notice of Proposed Rulemaking, 30 FCC Rcd 3959 (2015) ("*CBRS Order*").

[2] *See 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) .

[3] *See Amendment of the Commission's Rules with Regard to the 3550-3650 MHz Band*, Notice of Proposed Rulemaking and Order, 27 FCC Rcd 15594 (2012), at Appendix A.

[4] *See* Letter dated from Paige R. Atkins, NTIA, to Julius P. Knapp, FCC, GN Docket No. 12-354 (dated March 24, 2015), at Enclosures 1 and 2.

Under the market trial aspect of the experiment, Nextlink plans to test different bandwidths (10- and 20-megahertz channels), broadband speeds and price points to determine the utility and value of the CBRS as it relates to consumer take rates and network performance. Consistent with the market trial requirements of Section 5.602(d), Nextlink will own the access point and customer premise equipment, and will not transfer ownership to trial participants. Nextlink seeks authority to serve up to 20 end users, which it believes is the minimum quantity necessary to conduct the trial proposed in this application due to the need to measure performance and the integration of the equipment with the SAS and ESC. Nextlink believes that a one-year term will be sufficient for it to gain information about consumer demand for LTE-based equipment and s-peed, and the price points that consumers are willing to pay.

During the trial, and prior to the certification of a SAS and ESC, Nextlink will comply with the power levels in Section 96.41 as they apply to End User Devices and Category B CBSDs. Nextlink has also carefully designed its experimental system to minimize signal that could extend across the boundary of the coastal exclusion zone or to areas where harmful interference to earth stations would be expected to occur. At the conclusion of the requested experimental license term, Nextlink 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. Nextlink hopes that the equipment and SAS/ESC development can be accelerated through the information generated by the market trial.

In addition to the technical objectives, Nextlink will test to determine the value and utility of PALs, which necessitates charging for the service at varying price points and performance levels. The trial will also provide Nextlink with information that may be useful in bidding on PALs.

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

Section 96.15 - Validate ability to comply through dynamic frequency changes across a geographically clustered collection of CBSDs, planned and executed within 300 seconds of a simulated command to vacate an occupied channel.

Section 96.17 – Validate propagation model's ability to predict co-channel interference, blocking, and OOBE to comply with protections of existing Incumbent Access users. This will also be useful to assess protection of PAL users by GAA users.

Section 96.21 - Validate propagation model's ability to predict co-channel interference, blocking, and OOBE to comply with protections of grandfathered FSS earth stations and any Grandfathered Wireless Broadband Protection Zones.

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

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 CBSD and End User Device from other GAA and PAL users so it can be reported to the SAS and ESC.

Notice to Consumers

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. Nextlink further acknowledges that it will retrieve the end user devices from the users at the end of the trial. In particular, all end 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, Nextlink may be required at any time, without prior notice, to cease operations in the 3550-3650 MHz band. In addition, Nextlink acknowledges and will notify users that all customer premise equipment authorized under the experimental license remains the property of Nextlink, and must be collected or rendered inoperable at the conclusion of the trial. At the end of the trial, Nextlink will either: (1) shut off the service immediately, stop billing users for the service and post a public notice at [www.nextlinkinternet.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.nextlinkinternet.com], and allow users to opt out of the modified service offering with no further obligation to pay for the service.

Contribution to the Radio Art

In accordance with Section 5.63(c)(1), Nextlink expects that the proposed technology and 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, Nextlink 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. Because Nextlink will make test data available to the equipment manufacturer, the manufacturer also will gain important information that is intended to improve equipment performance and development.