AMG Technology Investment Group. LLC d/b/a Nextlink
Explanatory Statement in Support of Experimental License Application

AMG Technology Investment Group. LLC d/b/a Nextlink ("Nextlink") submits this explanatory statement pursuant to Section 5.63(c)(1) of the Commission's Rules in support of its application for a new experimental license under Section 5.3(j) of the Commission's Rules to test new Citizens Broadband Radio Service ("CBRS") equipment in the 3550-3650 MHz band. The requested experimental license for equipment testing purposes will replace the recently-expired authorization under Call Sign WJ2XHM, which was used for both equipment testing and limited market trials with paying customers. The new experimental license requested here will be used only to test CBRS equipment options. Testing will occur at the one location specified and in accordance with the technical and operating parameters described in the accompanying FCC Form 442.

Overview

Nextlink provides fixed wireless broadband service to thousands of consumers in Texas and Oklahoma. It intends to use experimental authority to test LTE-based equipment with software-defined radios in the 3550-3650 MHz band and ultimately configured to operate with the Spectrum Assignment System ("SAS") and Environmental Sensing Capability ("ESC") that are under development. Based on its research over the past year, Nextlink believes that LTE-based 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 potential new customers that lack access to competitive broadband services.

Nextlink plans to test equipment manufactured by Telrad from a single location in Aledo, Texas, near Nextlink's headquarters, to individual end-user receiving stations. This will enable Nextlink to gain a better understanding of the system performance and other factors associated with near-term deployment of equipment in the CBRS band, including gathering additional data concerning radio propagation characteristics at 3.5 GHz and evaluation of end-to-end CBRS architecture. Understanding the balance between cost and performance will significantly inform Nextlink's technology acquisition, expansion and network investment decisions, for the benefit of both its own financial modeling and consumers, who will be offered a better service.

Assuming the testing 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. 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

Nextlink will conduct its experimental operations from a single location within its existing service area. Nextlink has access to and is transmitting on other frequencies from the Aledo tower with personnel on site to monitor deployment 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.[1] Likewise, there appear to be no ground-based radar in or near the planned testing area that would require ESC or coordination with incumbents, and the area where the testing will be conducted lies outside of the coastal exclusion zone.[2]

During testing, 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.

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.

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[1] *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.

[2] *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.

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.

Contribution to the Radio Art

In accordance with Section 5.63(c)(1), Nextlink expects that the proposed equipment testing will contribute significantly to the radio art. 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. Nextlink expects to learn about equipment capabilities and limitations 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.