

**Midcontinent Communications
Statement in Support of Experimental License Application**

Midcontinent Communications (“Midco”) provides 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 continuing market trial, as defined in Sections 5.5 and 5.602, using spectrum in the 3550-3650 MHz band transmitting from designated locations in Minnesota and North Dakota. Midco requests a license term equal to the shorter of (a) one year from grant of this application, or (b) Midco’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

Midco is a fixed wireless broadband provider that holds a nationwide non-exclusive 3650-3700 MHz service license (Call Sign WQLC845) for which renewal is pending (ULS File No. 0008887095). Midco uses this license and unlicensed spectrum to provide last-mile fixed broadband service to customers in rural Northern North Dakota and Northern Minnesota. Midco currently provides fixed broadband service to approximately 4,100 customers.

Midco was previously licensed under experimental Call Sign WJ2XGO to conduct a limited market trial in this spectrum in preparation for the implementation of the Citizens Broadband Radio Service (“CBRS”). That license included a license condition specifying that the license would not be renewed. This same condition was imposed on many, though not all, experimental licenses covering the 3550 to 3700 MHz band that were issued in the 2017-2018 timeframe as a means of preventing “temporary” market trials from extending for too long a period of time and becoming *de facto* service offerings. At that time, it was apparently assumed that the CBRS band would transition within the duration of the experimental licenses so conditioned from experimental use to regular operation under the FCC’s CBRS rules. As the CBRS rules have continued to evolve, however, and in view of the related delays in the general availability of CBRS equipment and the certification of the required Spectrum Access System, it is entirely appropriate that the availability of experimental testing authority be extended for a longer period to allow testing until licensed and GAA use begins.¹ Accordingly, Midco requests that it be granted experimental authority either for one year from the date of grant or until 90 days following the commencement of GAA use of the CBRS spectrum, whichever duration is shorter. The 90-day period will afford Midco sufficient time to register its experimental access points with the SAS.

¹ Indeed, a number of experimental licensees have been granted two-year initial licenses, renewed authorizations or new licenses to conduct such trials with expiration dates extending well into 2020. *See, e.g.*, Windfield Enterprises LLC dba Kellin Communications, Call Sign WJ2XFB, File No. 0723-EX-CN-2017 (granted March 2, 2018); MetaLINK Technologies, Inc., Call Sign WJ2XHI, File No. 0046-EX-CN-2018 (granted Feb. 22, 2018); Vivint Wireless, Inc., Call Sign WJ2XKV, File No. 0046-EX-CR-2019 (1-year renewal grant issued Feb. 7, 2019); Newmax LLC dba Intermax Networks, Call Sign WJ2XOE, File No. 0408-EX-CR-2019 (1-year renewal grant issued Aug. 7, 2019).

Upon grant of the requested license, Midco intends to continue experimentation using different manufacturers' LTE-based equipment with software-defined radios that can be tuned to operate in the 3550-3650 MHz band and ultimately configured to operate with the SAS and ESC. Based on its prior research and understanding of the technical rules, Midco 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 others in the target markets that lack access to competitive broadband services.

In this trial, Midco plans to continue its testing of LTE-based equipment. This will enable Midco to gain an enhanced 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 CBRS and to compare performance and capabilities of the manufacturers' equipment and technology. Understanding the balance between cost and performance will significantly inform Midco's business decisions, for the benefit of its own financial modeling and consumers who will be offered a better service. Midco also plans to experiment with various speed and pricing plans to assess consumer acceptance of the service. If the trial is technologically successful and beneficial to consumers, Midco will be able to make decisions on the equipment platform it believes will work best and realize significant cost savings and improved performance.

The trial will provide Midco with information to help make its future equipment, expansion and network investment plans. Assuming the trial is successful, Midco 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, due to the extended ramp-up in the availability of Part 90 certified equipment that incorporates the functionality needed to comply with Part 96 requirements, and the fact that GAA is not commercially available, Midco has a need for an additional testing period in order to transition from market trial to commercial operation under the Part 96 rules.

In order to make its final determinations with respect to the best network configurations, speeds and pricing for the CBRS band, Midco seeks a new experimental license for a limited period to use spectrum in the 3550-3650 MHz band, transmitting from the sites identified in this application. These areas include significant rural areas where consumers lack choice in broadband access. Midco plans to deploy LTE-based equipment on an experimental basis to determine equipment and technology performance from two different manufacturers and the market potential resulting from an additional 100 megahertz of low-band spectrum. In sum, this experiment will inform Midco's business, investment, technology and deployment decisions as it plans to expand and upgrade its fixed broadband network.

Description of Program

Midco plans to use existing 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

Midco will conduct the experiment in its existing areas of operation. Midco has access to and is transmitting on unlicensed frequencies from existing towers and operation in this area 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 show that there are no Fixed-Satellite Service 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

Under the market trial aspect of the experiment, Midco plans to test different equipment, 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), Midco will own the access point and customer premise equipment and will not transfer ownership to trial participants.

Midco seeks authority to operate at eight locations and serve up to 2,300 end users. There are a number of reasons why the trial has been designed in this manner. First, each tower has different topography – some are located in heavily wooded areas and others are located in more open rural areas. Midco would like to determine the best ratio of coverage and throughput in these disparate environments. Second, Midco desires to trial with different numbers of customers at each location so it can evaluate usage trends and congestion points, which are significant factors in network deployment and management that inform equipment purchasing decisions. Third, Midco expects to receive feedback from trial participants at each of the diverse locations. Fourth, Midco intends to measure performance and the integration of the equipment with the SAS and ESC.

Objectives of Experimental Program

During the trial, Midco will comply with the power levels in Section 96.41 as they apply to Category B CBSDs and End User Devices. Midco has also carefully designed its experimental system to minimize signal that could extend across the boundary of the coastal

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.

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, Midco 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. Midco 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, Midco 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 Midco 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.

Contribution to the Radio Art

In accordance with Section 5.63(c)(1), Midco expects that the 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, Midco expects to learn a significant amount of information about equipment capabilities and limitations, interference protection and mitigation, customer acceptance at various speeds and price points, and integration of its service and equipment with the SAS and ESC. Because Midco will make test data available to the equipment manufacturers, the manufacturers also will gain important information that will improve equipment performance and development. To the extent permitted by SAS and ESC administrators and equipment providers, Midco will share the results of its market trial with the Commission.

Notice to Consumers

As required by Section 5.602(e), all end users will be advised that the 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. Midco 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, Midco may be required at any time, without prior notice, to cease operations in the 3550-3650 MHz band. In addition, Midco acknowledges and will notify users that all customer premise equipment authorized under the experimental license remains the property of Midco and must be collected or rendered inoperable at the conclusion of the trial if not transitioned to use under Part 96 of the FCC's rules. At the end of the trial, Midco will either: (1) shut off the service immediately, stop billing users for the service and post a public notice at www.Midco.com, and collect or render all customer premise equipment inoperable, (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 its website, and allow users to opt out of the modified service offering with no further obligation to pay for the service, or (3) convert existing customers to any follow-on services provided consistent with Part 96 of the FCC's Rules.