

City of Oak Ridge, Tennessee
Application for Part 5 Experimental License
ELS File No. 0743-EX-PL-2013

NARRATIVE DESCRIPTION OF FILING

Pursuant to Section 5.3(d) and (i) and Section 5.53 of the Commission's rules, 47 C.F.R. §§ 5.3(d), (i), 5.53 (2012), the City of Oak Ridge, Tennessee (the City), hereby respectfully requests an experimental license for a period of 180 days¹ from the date of grant to operate in the 758-768/788-798 MHz band for the purpose of testing broadband Long-Term Evolution (LTE) in the Oak Ridge area. As addressed in Section A below, The City also intends to pursue early deployment lease negotiations with the First Responder Network Authority (FirstNet) during the 180 day testing period.

The proposed parameters of this application are consistent with those previously authorized to the City by the Commission under the experimental Special Temporary Authority (STA) granted May 22, 2013, under call sign WG9XPR, which expires November 22, 2013. A key element of the testing and demonstrations is cooperation between the City and its Federal agency partners. During the previous six months, the City has pursued cooperative discussions and initiation of necessary agreements with its Federal partners, and it has conducted some preliminary testing and demonstrations. However, additional time is needed beyond the 180 day term of the previous STA to complete required agreements and more fully test interoperability and multiple LTE applications across our various levels of government. In addition, the City still intends to pursue spectrum lease negotiations with FirstNet and those negotiations will likely take some time to complete.

A. Purpose of Operation and Need for Experimental License:

The experimental authority requested herein will allow the City of Oak Ridge to perform additional tests of the coverage and functionality of broadband operations in the Oak Ridge area. The Oak Ridge, Tennessee, area accommodates a significant nuclear weapons stockpile. The City, along with state and Federal officials cooperate to ensure safety and security of the area, and protect the public. The City is also in the process of coordinating with the State of Tennessee regarding this request. The City requests the experimental license to support continuation of the following testing and evaluation goals initiated under the previous STA:

- Support evaluation and testing, both use-case and scenario, of enhanced broadband technology among local public safety, state/regional interoperability and federal government protective services that will improve situational awareness and result in superior protection of life and property, in an area with significant nuclear facilities.

¹ When preparing the accompanying application on FCC Form 442 through the FCC's Experimental Licensing System (ELS), the City was unable to request a license period of 180 days, which it understands is preferred by FirstNet. Accordingly, it specified a longer period in the application for the purpose of completing the Form 442. As noted above, however, the City seeks a license only for period of 180 days from the date of grant.

- Demonstrate how public safety LTE technology can help maintain the safety, security and effectiveness of the U.S. nuclear weapons stockpile at DOE's Y12 facility in Oak Ridge, which provides nuclear propulsion systems for the U.S. Navy, while also providing wireless broadband capabilities for first responders in the City of Oak Ridge.
- Evaluate a wide variety of public safety mobility communications, as well as fixed location devices such as smart and secure sensors, cameras, alarms and other "unmanned" LTE devices supporting energy monitoring, smart grid, and surveillance systems.
- Cultivate a local, state and Federal partnership, while developing and demonstrating potential operational models for the Nationwide Public Safety Broadband Network (NPSBN) to support interoperability among all levels of government, a critical requirement in the Oak Ridge area.

The City of Oak Ridge believes proposed additional testing toward these goals can provide the parties involved and FirstNet with valuable preliminary information on ways in which governmental entities can cooperate together in using a broadband network.

The requested experimental operation is not intended for the provision of regular public safety mission-critical communications or the delivery of live transmissions in duties to protect life, property or safety. The experimental license will provide the City of Oak Ridge and other interested parties with an opportunity to test and receive additional knowledge of the potential benefits and capabilities of an LTE public safety network.

The City believes the above goals and benefits warrant grant of the requested experimental license. The City requests that the experimental license provide authorization for testing for a period of 180 days from grant of the requested license.

The City also intends to pursue early deployment lease negotiations with FirstNet during the 180 day testing period. The City believes the additional preliminary information and testing will be especially helpful and that the testing, followed by a subsequent lease, if approved, would provide additional "lessons learned" about government cooperation and broadband applications that will be invaluable to FirstNet.

In the event these lease negotiations cannot be concluded within the 180 day term of this requested experimental license, the City recognizes that continued use of the frequencies licensed to FirstNet beyond the 180 days requested in this application requires that a separate application for such use be submitted and a separate concurrence from FirstNet must be obtained.

B. Location of Proposed Operation:

The City of Oak Ridge proposes to conduct its demonstrations and testing using up to three fixed base station transmitter antennas with mobile/portable units operating within a radius of 2 miles from the fixed base stations. These locations are the same as those previously authorized under experimental STA WG9XPR granted May 22, 2013 which expires November 22, 2013. The address and approximate coordinates of the demonstration sites are as follows:

1. McKinny Ridge Location
Blair Road, Roane County
Oak Ridge, TN
35-56-33 North Latitude
84-22-54 West Longitude
Datum: NAD83
2. Pine Ridge Location
Bear Creek Road, Anderson County
Oak Ridge, TN
35-59-41 North Latitude
84-14-59 West Longitude
Datum: NAD83
3. Melton Hill Location
White Wing Road, Roane County
Oak Ridge, TN
35-54-34 North Latitude
84-18-19 West Longitude
Datum: NAD83

C. Technical Specifications:

1. Frequencies Desired

The City requests authorization to operate in the band 758-768/788-798 MHz that has been allocated for public safety broadband use.

2. Effective Radiated Power

All power levels will comply with the limits set forth in the FCC's rules, including those relating to human exposure to radiation.

The mobile/portable units to be deployed are configured to operate at a power level of no more than 1 Watt effective radiated power ("ERP"). The base stations will be configured to operate at a peak power level of 692 Watts ERP. The City will reduce the actual powers to the minimum power needed for successful operation, based on set-up and testing at the demonstration site.

In addition, the City will evaluate environmental considerations to ensure compliance with Section 1.1306 of the FCC's rules, 47 C.F.R. § 1.1306 (2012), and, in particular, the human exposure requirements set forth in FCC OET Bulletin No. 65.

3. Modulation and Emissions

The City proposes to operate using OFDM modulation. The primary emission designators are 5M0G7D, 5M0W7W, 5M0G2D, 5M0D7D, 10M0G7D, 10M0W7W, 10M0G2D, and 10M0D7D. Other emission modes may be utilized, but in no event will the emissions extend beyond the frequency bands requested.

4. Antenna Information

The fixed base station transmitter antennas at all three sites specified above will be located at a height of no more than 120 feet above ground level. The mobile/portable antennas will be installed at a height not greater than 2 meters above ground when used outdoors or at various locations as needed for testing when used indoors. No antennas will be mounted in a fashion that will require approval under FAA and FCC rules and regulations.

5. Equipment To Be Used

The City expects that it will be able to conduct its testing with three base stations and up to 100 mobile/portable units in aggregate across all base stations. The base station is a prototype unit from Ericsson and the mobile/portable units are prototype Motorola Solutions equipment. Moreover, the City will limit the power, area of operation, and transmitting times to the minimum necessary to conduct its testing and evaluation of LTE broadband technology.

D. Protection Against Causing Interference:

As noted above, the City of Oak Ridge is requesting authority to operate in the 758-768/788-798 MHz band allocated for deployment of the NPSBN. However, deployment of that Nationwide Public Safety Broadband Network is unlikely to begin during the period requested for this Experimental license. Therefore, the proposed testing operation is not expected to impact any regular operation on the 700 MHz band public safety spectrum.

Under the Commission's rules, LPTV and translator stations were required to vacate the 700 MHz band by December 31, 2011, so there should be no interference to those operations from the proposed operation.

E. Restrictions on Operation:

The City of Oak Ridge recognizes that the operation of any equipment under experimental authority must not cause harmful interference to authorized facilities. Should interference occur, the City will take immediate steps to resolve the interference, including if necessary arranging for the discontinuance of operation.

F. Public Interest:

The City of Oak Ridge submits that issuance of an experimental license as requested is in the public interest, convenience, and necessity. Such action will help the City to perform additional test of innovative equipment that will accommodate the communications needs of the public safety community.

G. Contact Information:

For questions about this application or in the unlikely event interference concerns should arise during the period of authorization for this STA, please contact:

Alan Massengill
Deputy Chief of Police
City of Oak Ridge
200 S. Tulane Ave
Oak Ridge, TN 37830
amassengill@cortn.org
Telephone: (865) 425-3508