City of Oak Ridge, Tennessee
Request for Part 5 Experimental
Special Temporary Authority
OET File No. 0853-EX-ST-2012

DESCRIPTION OF FILING

Pursuant to Section 5.3(d) and (i) and Section 5.61 of the Commission's rules, 47 C.F.R. §§ 5.3(d), (i), 5.61 (2011), the City of Oak Ridge, Tennessee hereby respectfully requests special temporary authority ("STA") for a period of six months 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, Tennessee area.

A. Purpose of Operation and Need for STA:

The experimental authority requested herein will allow the City of Oak Ridge (the City) to test 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 STA to support the following testing and evaluation goals:

- 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.

- 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 requested experimental authority is not intended to support full or regular public safety operations. The STA is needed to permit the creation of a test bed to study the LTE broadband technology, as well as to develop early experience in establishing cooperation between the City and state, in coordination with a Federal entity in the shared use and operation of broadband spectrum. The City believes the above goals and benefits warrant grant of the requested STA.

The City requests that the STA provide authorization for testing beginning January 1, 2013 and continuing through June 30, 2013. However, in the event grant of the STA is delayed beyond the January 1, 2013 date, the City requests authorization for testing to cover a full six month period from the date of the grant.

B. <u>Location of Proposed Operation</u>:

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. 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 (2011), 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 STA. 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 STA as requested is in the public interest, convenience, and necessity. Grant of an STA will help the City to test 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:

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