



MOTOROLA SOLUTIONS

November 24, 2017

Julius Knapp
Chief, Office of Engineering and Technology
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

**RE: Request for Renewal of Experimental License
Call Sign WG2XRE; ELS File No. 0174-EX-CR-2017**

Dear Mr. Knapp,

Motorola Solutions, Inc. respectfully seeks renewal of the above-referenced experimental license issued by the Federal Communications Commission (“FCC”) under call sign WG2XRE. That license authorized Motorola Solutions to conduct limited operations on a non-interference basis in the 758-768/788-798 MHz band (“Band Class 14”) at its facilities in Schaumburg and Palatine, Illinois, and at its laboratory in Plantation, Florida.

Motorola Solutions is a leading manufacturer and integrator of mobile radio equipment for the public safety and homeland security community and is continually engaged in the design and development of new and innovative communications solutions. Renewal of the experimental license requested herein is vital to the company to support its activities. Motorola Solutions takes seriously good engineering practices to conduct extensive and comprehensive tests on prototype devices and solutions to ensure their functionality, reliability, and acceptability to support critical communications needed by public safety personnel and first responders. Motorola Solutions is concerned not only about safety of the public, but also the safety of our public safety community. It is therefore critical to Motorola Solutions to test devices fully and thoroughly to ensure they are sufficiently robust to meet the requirements and specifications of public safety personnel and first responders.

Motorola Solutions also affirms the primary status of the First Responder Network Authority (“FirstNet”) as the licensee in the 758-768/788-798 MHz band. Motorola Solutions understands that FirstNet has a similar interest in ensuring the functionality, reliability, and acceptability of devices and products that support the public safety community. Motorola Solutions also appreciates that FirstNet seeks to protect against interference to existing and future users of Band Class 14 spectrum. Motorola Solutions shares that concern with FirstNet and, in fact, considers it an obligation not to cause interference when it conducts its experimental activities. Indeed, any other stance would be inconsistent with the company’s underlying mission and objectives.



To that end, Motorola Solutions has discussed its license renewal request in detail and on several occasions with FirstNet staff to address its concerns about interference to existing or future operations on Band Class 14 and, in particular, to Band Class 14 users from the experimental activities of Motorola Solutions. In addition, Motorola Solutions has coordinated with incumbent narrowband licensee Illinois State Police about this matter. Attached is a letter from the Illinois State Police concurring with the experimental operations of Motorola Solutions.

NON-INTERFERENCE PROGRAM:

In response to the mutual goals of Motorola Solutions and FirstNet to prevent interference to existing and future operations on Band Class 14 spectrum, Motorola Solutions has developed, and is committed to, the following “Non-Interference Program” comprised of operational, technical and procedural requirements to govern its activities under the experimental license requested herein. Many of the commitments presented below were previously established in coordination with FCC staff and Motorola Solutions and have already been specified on the license Motorola Solutions seeks to renew; others expand on those requirements to advance the interests of all parties to mitigate interference. Motorola Solutions would accept these commitments as “Special Conditions” incorporated into its renewed experimental license.

- (1) Motorola Solutions agrees that its experimental operations will be secondary and shall not cause interference to FirstNet operations or those approved to operate in Band Class 14, including narrowband or broadband operations (i.e., FirstNet Spectrum Management Lease Agreement (“SMLA”) licensees/current incumbents). Motorola Solutions agrees that any failure to prevent interference shall result in immediate suspension of the experimental authority until such time, as determined by FirstNet, that the experimental operations may continue.**
- (2) Motorola Solutions acknowledges that although FirstNet may not yet have deployed in the geographic areas covered by the license, if FirstNet or its assignees or lessees plan to deploy in the areas during the term of the license, Motorola Solutions shall be required to modify its experimental activities or cease operations entirely to prevent interference to such deployment. Motorola Solutions may also be required to obtain any necessary concurrence letters from FirstNet or its assignees or lessees.**
- (3) Motorola Solutions shall establish a point of contact (POC) for its experimental operations and shall send the such contact information to the Governor-appointed FirstNet Single Point of Contact within the proposed license locations. Motorola Solutions agrees to cease operations at the request of FirstNet immediately upon receipt of such a request to the POC until such time, as determined by FirstNet, that operations may continue. The POC and "stop-buzzer" contact for operations in Illinois is Douglas**



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Phelps, Starcom21 Network Manager, Motorola Solutions, Inc.; Email: dougphelps@motorolasolutions.com; Cell: 847-514-8566. The POC and "stop-buzzer" for operations at Plantation, FL is Mark Solak, Project Manager, Motorola Solutions, Inc.; Office: 847-576-3081; Cell: 847-341-0223; CELX58@motorolasolutions.com.

- (4) Motorola Solutions agrees that the operations shall be limited to testing, experimentation, or trial and will not involve live-duty operations by first responders or others to protect life, property, or safety. The experimental operations are 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.
- (5) Before commencing any experimental operations, Motorola Solutions shall verify that there is no current potential for interference with FirstNet operations or those approved to operate in Band Class 14 per special temporary authority ("STA")/experimental license ("EL") license (*i.e.*, SMLA licensees/current incumbents). Motorola Solutions shall analyze information in the FCC's license databases to determine that the proposed operation would not interfere or create a significant potential for harmful interference with any public safety operations in Band Class 14. Motorola Solutions shall also coordinate with the Governor-appointed FirstNet Single Point of Contact to request available information about the status of any plans by FirstNet or its assignees or lessees to deploy in the area during the term of the license.
- (6) Motorola Solutions shall conduct its experimental activities in Band Class 14 under the following technical guidelines, designed to mitigate interference:
 - a. When feasible, testing must be conducted only within an anechoic chamber or Faraday cage;
 - b. When feasible, testing must be conducted only within an indoor location with the greatest possible attenuation characteristics;
 - c. Testing in an outdoor environment shall be subject to the following limitations:
 - i. Operations shall be limited to geographic areas where there are no operations by FirstNet or its assignees or lessees, unless Motorola Solutions has received concurrence for such operations;
 - ii. The operations shall be limited to the shortest possible duty cycle/time of day needed to obtain valid engineering data;
 - iii. The operation of any base stations shall be limited as follows:
 1. Motorola Solutions shall deploy not more than one temporary base station at each location;
 2. Base station antennas shall be placed at the lowest height needed to obtain valid engineering data so as



- to reduce transmissions toward any FirstNet or other operations on Band Class 14;
 - 3. Base station antennas shall use directional antennas when feasible to reduce transmissions toward any FirstNet or other operations on Band Class 14; and
 - 4. Base stations must operate with the minimum power needed to obtain valid engineering data, but in no case more than 500 Watts effective radiated power (ERP);
 - iv. The operation of any portable/mobile devices shall be limited as follows:
 - 1. Portable/mobile units to be deployed will be limited to the number needed to obtain valid engineering data;
 - 2. Portable/mobile units shall operate within the smallest possible radius of a temporary base station, but not more than 9.5 km from such base station; and
 - 3. Portable/mobile units must operate with the minimum power needed to obtain valid engineering data, but in no case more than 2.5 Watts ERP; and
 - d. During testing, Motorola Solutions shall continually monitor for any operations by FirstNet or its assignees or lessees and discontinue any testing should interference to such operations be detected.
- (7) Motorola Solutions understands that any primary operations have no obligation to mitigate any interference that might be present to the experimental operations of Motorola Solutions. Motorola Solutions agrees to accept interference from any other user of Band Class 14 and that it must coordinate operations with other authorized Band Class 14 STA/EL holders (e.g., during trade shows, multiple experimental authorizations might be requested and granted; it is the responsibility of each STA/EL holder to coordinate operations among themselves effectively). Motorola Solutions agrees that any failure to coordinate effectively will result in immediate suspension of its experimental authority until such time, as determined by FirstNet, that the operations may continue.
- (8) Motorola Solutions agrees that any press release to be issued regarding the license, the operations, or the use of Band Class 14 spectrum relating to the license shall be coordinated with and receive written sign-off from FirstNet prior to release.
- (9) Motorola Solutions recognizes that a separate concurrence from FirstNet will be required for renewal or extension of the requested license, if needed, beyond the term of the license as renewed.



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Motorola Solutions appreciates the FirstNet's and the FCC's consideration of this matter and respectfully requests that FirstNet act as expeditiously as possible to provide any needed concurrence and that the FCC renew the license as requested. Grant of the instant application is in the public interest, as such action will allow Motorola Solutions to continue testing and evaluating the propagation characteristics and reliability of prototype devices and systems designed to support public safety and homeland security communications.

Respectfully submitted,

/s/

Chuck Powers
Director, Engineering and Technology Policy
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Washington, DC 20004

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cc: Peter Tomczak, Spectrum Clearance, First Responder Network Authority
Peter.Tomczak@firstnet.gov

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ILLINOIS STATE POLICE
Division of Administration

Bruce Rauner
Governor

Leo P. Schmitz
Director

May 23, 2017

Mr. Steve Pyle
Motorola Solutions
1301 East Algonquin Road
Schaumburg, Illinois 60196-4041

Dear Mr. Pyle,

Motorola Solutions has requested an extension of the authority to perform LTE testing in the Schaumburg and Palatine areas of northeastern Illinois.

The State of Illinois hereby provides this letter of concurrence in support of Motorola's application for a two year extension of the experimental STA to operate in the 700MHz band spectrum for LTE broadband equipment in the aforementioned area. This concurrence is granted with the understanding that Motorola Solutions continue to perform the testing in accordance with the parameters identified in the State's original correspondence of November 8, 2010.

Respectfully,

A handwritten signature in black ink, appearing to read "Donald A. Buttitta, Jr." with a stylized flourish at the end.

Donald Buttitta, Jr.
STARCOM21 System Administrator



ILLINOIS STATE POLICE

Office of the Director

Pat Quinn
Governor

November 8, 2010

Jonathon E. Monken
Acting Director

Mr. Rich O'Herron
Motorola Inc.
1301 East Algonquin Road
Schaumburg, IL

Mr. O'Herron:

The State of Illinois hereby provides this letter of concurrence in support of Motorola's proposed application for experimental special temporary authority ("Experimental STA") to authorize operation in the 700 MHz band spectrum for testing of Long Term Evolution ("LTE") broadband equipment in the Schaumburg and Palatine, Illinois area. The State understands the testing would conform to the following parameters:

- 1) LTE base stations will be located on the Motorola campus at 1301 East Algonquin Road, Schaumburg, IL; on the Harris Bank building at 800 East Northwest Highway, Palatine, IL; and at a communications tower located at 1350 Plum Grove Road, Rolling Meadows, IL. Mobile or portable LTE units would operate around these base sites. We understand the actual area of coverage is one of the parameters that will be determined by the proposed testing.
- 2) Motorola will request authority from the FCC to operate over the 758-768/788-798 MHz band. This encompasses both the 763-768 /793-798 MHz bands, which are currently licensed on a nationwide basis to Public Safety Spectrum Trust as part of the 700 MHz Public Safety Broadband License, and the 758-763/788-793 MHz bands known as the Upper 700 MHz D Block; which has not yet been licensed, but is being sought by public safety in discussions with Congress.
- 3) Motorola will request authority for experimental operation for a period of six months from the Experimental STA grant. It is possible that Motorola would request extending that experimental authority. Any future extension would depend on whether regular public safety or commercial deployment has begun in the spectrum by the time the experimental STA expires.

The spectrum proposed for experimental testing overlaps a segment of spectrum currently used by the State Police for vehicular repeaters that relay signals between portable handheld radios and the system infrastructure in some areas of the state. This spectrum overlap occurs because the FCC modified the 700 MHz band-plan after deployment of the Illinois STARCOM21 system was started. As a result, the current public safety broadband spectrum where the proposed LTE testing would be conducted overlaps some for the spectrum designated for narrowband operations under the previous plan, until the FCC defines additional steps concerning funding the transition of its operations to conform to the revised band-plan.

The State understands that Motorola has analyzed the potential for interference to the 700 MHz band Illinois STARCOM21 system from the proposed testing and has concluded that interference is unlikely given the specifics of the areas and frequencies involved. Specifically, Motorola has noted that the spectrum overlap for the proposed testing occurs on a portion of the spectrum used for vehicular repeaters to transmit to the portable radios. Therefore, any potential conflict would only be in areas where the vehicular repeaters are needed. There is no overlap on the portions of the spectrum used for communications directly between mobiles/portables and the system base stations within interference range of the proposed testing. While vehicular repeaters are a necessary part of the STARCOM21 system in some areas of the state, they are seldom needed for coverage in the vicinity of Schaumburg and Palatine. In those areas, the STARCOM21 system provides sufficient coverage for direct communications between portable radios and the system infrastructure without the need for vehicular repeaters. Therefore, interference to state operations from the proposed testing is unlikely.

We understand from Motorola's analysis that in the event vehicular repeaters were operated within approximately one mile of the proposed Schaumburg, Palatine, or Rolling Meadows LTE base sites, some interference may be experienced. However, as noted above, use of the vehicular repeaters in these particular areas is unlikely. We are also aware that low power LTE subscriber units will also be a part of the testing. However, the close proximity of vehicular repeaters to their associated narrowband portable radios should minimize the chance of potential interference from any LTE mobile/portable operations, even if vehicular repeaters were operated in the area.

We have discussed these issues with Motorola and concur interference is unlikely. However, in the event interference does occur, we expect Motorola to take immediate steps to eliminate the interference, and Motorola representatives have agreed to do so. Notably, Motorola operates the STARCOM21 system for the State of Illinois subject to prescribed quality requirements. As a result, we are confident that any unexpected conflicts that do arise between the proposed experimental testing and use of the STARCOM1 system will be addressed immediately.

In view of the above, the State of Illinois concurs with Motorola's proposed experimental STA for the Schaumburg and Palatine, Illinois areas to test LTE broadband technology in the 700 MHz band under the parameters noted above.

Respectfully,



Daniel C. Meseke
STARCOM21 System Administrator
Illinois State Police
Communications Services Bureau