

December 11, 2013 (amended)

Julius Knapp  
Chief, Office of Engineering and Technology  
Federal Communications Commission  
445 12th Street, SW  
Washington, D.C. 20510

RE: Experimental License Service Application,  
File No. 0405-EX-RR-2013

Dear Chief Knapp,

Nokia Solutions and Networks US LLC (formerly Nokia Siemens Networks US LLC) ("NSN") in the attached application is seeking the renewal of an experimental license for operation in the 758-768/788-798 MHz spectrum that is licensed to the First Responder Network Authority ("FirstNet") in order to continue ongoing experimentation in the Village of Arlington Heights, Illinois that NSN has been conducting since July 2011 at the NSN Campus and in downtown from October 2011 to the present.

As you may be aware, NSN has been testing for evaluation purposes the use of "small cell" solutions at locations in Arlington Heights, IL, and, as permitted, in Palatine, IL, as listed in its existing experimental license issued under call sign WG2XII, attached for your reference. The Village of Arlington Heights was chosen for this experiment since NSN has a major facility in the village, which includes global research and development (R&D) for small cell and other mobile broadband solutions. The experiment includes the downtown area of the village in order to study network operation in an environment with a scale applicable to small cell network architectures and is representative of an area with fluctuating mobile traffic and demand patterns.

During the previous two-plus years, NSN has deployed three generations of small cell equipment and various licensed and unlicensed wireless backhaul technologies. Measurements have been made on these numerous topology combinations and used as the basis of "lessons learned" sharing sessions with NSN's key and potential customers. A presentation summarizing some of the key findings was made to FCC staff at an on-site visit in 2012. NSN's research and design efforts are a re-iterative process, however, that requires an extension or renewal of its experimental authorization until December 31, 2014, so that it may continue these efforts. In particular, NSN wishes to continue with this technology trial with commercial grade products that we anticipate bringing to market soon. These products will be of a smaller form factor with greater traffic capacity and a higher transmit power capability compared to the previous pre-production trial equipment. The equipment locations and radius of operation (i.e., 10 km of each location) will remain unchanged from those authorized under its existing experimental license, but the small cell base station transmitter power may be increased as authorized under its license from 1W to 5W for the purposes of showing improved in-building penetration and general increase in coverage.

The ongoing findings of the study are relevant for the continued expansion of mobile broadband networks, including methods of increasing the density of network coverage and the maximization of data throughput speeds. As 4<sup>th</sup> generation LTE networks are being deployed commercially, the implications are readily apparent for commercial networks. However, they are equally applicable to the emerging use of the spectrum by or associated with FirstNet. FirstNet's ultimate network architecture is likely to include a mix of macro and micro cell site infrastructure. The experimentation at issue in this application can be leveraged in understanding the performance of an LTE network in situations of importance to the FirstNet deployment, including extending localized coverage in difficult to reach areas such as urban canyons and inside buildings, adding capacity in "hot zone" areas, and managing shifting traffic patterns. In short, we believe that affording NSN the opportunity to continue this program of experimentation is squarely in the public interest.



Derek Khlopin  
Head of Government Relations  
North America  
Nokia Solutions and Networks

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575 Herndon Parkway  
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Herndon, VA 20170

Email:  
derek.khlopin@nsn.com

NSN intends to include this letter as part of the above-referenced application to affirm our complete understanding of the primary status of FirstNet as the licensee and our commitment to conducting operations under this license accordingly. Specifically, NSN confirms that it:

- Will not utilize the experimental license in conjunction with the provision of mission-critical communications.
- Has designated an overall project manager and a "stop-buzzer" contact for these experiments, identified in the attachment to this letter.
- Understands that the experimental license would only permit shared use of the subject radio frequencies and that it may have to coordinate with other entities licensed for experimental purposes.
- Recognizes that a separate concurrence from FirstNet will be required for renewal of this license.
- Affirms that all of its experimental operations will be secondary, such that they must not cause interference to narrowband or broadband operations authorized on a primary basis, including in the spectrum licensed to FirstNet. Narrowband or broadband operations authorized on a primary basis, including in the spectrum licensed to FirstNet, have no obligation to mitigate any interference that such primary operations may present to the Nokia Solutions and Networks experimental operations.
- Has analyzed information from the FCC's license databases and determined that the proposed operation would not interfere with, or create a significant potential for interference with, any public safety operations in the 700 MHz band. While a State of Illinois system utilizes a portion of the spectrum block for operation of vehicular repeaters under a waiver, based on discussions with the State, the operations proposed under this application are not expected to cause interference to the State's system. The application includes a letter of concurrence from the Illinois State Police STARCOM21 System Administrator for the proposed operation on its portion of the spectrum.
- Acknowledges that although FirstNet has not yet deployed in the geographic area covered by the application, if, during the term of this license, FirstNet or its assignees or lessees, plans to deploy in this area, Nokia Solutions and Networks may have to reduce the coverage or power levels of its experimental transmissions or cease them entirely to prevent interference to those operations.

Nokia Solutions and Networks appreciates your attention to this matter. If and when FirstNet grants its concurrence to our pending application, we trust that the licensing branch will be able to move as expeditiously as feasible to renew the experimental license as described herein. Please let me know if you have any questions or need additional information.

Yours sincerely,



Derek Khlopin  
Head of Government Relations  
North America  
Nokia Solutions and Networks

## ATTACHMENT

The project manager and “stop-buzzer” contact for the experimental license requested under the original Experimental License Service Application filed by Nokia Solutions and Networks under File No. 0317-EX-PL-2012, was:

**Sun Yun**  
**1501 West Shure Drive**  
**Arlington Heights, IL 60004**  
**Telephone: (847) 341-3010**  
[Sung.Yun@nsn.com](mailto:Sung.Yun@nsn.com)

The designated project manager and “stop-buzzer” contact for the operations to be conducted under the renewed authorization requested under its application pending under 0405-EX-RR-2013 will be:

**Javier Lopez**  
**Project Manager**  
**Nokia Solutions and Networks US LLC**  
**1501 West Shure Drive**  
**Arlington Heights, IL 60004**  
**Telephone: (847) 668-4384**  
[Javier.Lopez@nsn.com](mailto:Javier.Lopez@nsn.com)

If required, Mr. Lopez’s contact information may also be included on the face of any renewed authorization issued by the Commission.

**United States of America  
FEDERAL COMMUNICATIONS COMMISSION  
EXPERIMENTAL  
RADIO STATION CONSTRUCTION PERMIT  
AND LICENSE**

EXPERIMENTAL  
(Nature of Service)

WG2XII  
(Call Sign)

XD FX MO  
(Class of Station)

0317-EX-PL-2012  
(File Number)

NAME Nokia Siemens Networks US LLC

Subject to the provisions of the Communications Act of 1934, subsequent acts, and treaties, and all regulations heretofore or hereafter made by this Commission, and further subject to the conditions and requirements set forth in this license, the licensee hereof is hereby authorized to use and operate the radio transmitting facilities hereinafter described for radio communications in accordance with the program of experimentation described by the licensee in its application for license.

Operation: In accordance with Sec. 5.3(i) of the Commission's Rules

Station Locations

- (1) Arlington Heights, IL - NL 42-08-08; WL 87-59-56; MOBILE: , within 10 km
- (2) Arlington Heights, IL - NL 42-08-14; WL 87-58-57; MOBILE: , within 10 km
- (3) Palatine, IL - NL 42-09-12; WL 88-02-11; MOBILE: , within 10 km
- (4) Arlington Heights, IL - NL 42-05-04; WL 87-58-53; MOBILE: , within 10 km

Frequency Information

Arlington Heights, IL - NL 42-08-08; WL 87-59-56; MOBILE: , within 10 km

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
758-768 MHz	FX	5M00G7D 5M00W7W 5M00G2D 5M00D7D	125 W (ERP)	
758-768 MHz	FX	5M00G7D 5M00W7W 5M00G2D 5M00D7D	125 W (ERP)	

This authorization effective March 29, 2013 and  
will expire 3:00 A.M. EST December 31, 2013

**FEDERAL  
COMMUNICATIONS  
COMMISSION**



Frequency Information

Arlington Heights, IL - NL 42-08-08; WL 87-59-56; MOBILE: , within 10 km

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
788-798 MHz	MO	5M00G7D 5M00W7W 5M00G2D 5M00D7D	5 W (ERP)	
788-798 MHz	MO	5M00G7D 5M00W7W 5M00G2D 5M00D7D	5 W (ERP)	

Arlington Heights, IL - NL 42-08-14; WL 87-58-57; MOBILE: , within 10 km

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
758-768 MHz	FX	5M00G7D 5M00W7W 5M00G2D 5M00D7D	125 W (ERP)	
758-768 MHz	FX	5M00G7D 5M00W7W 5M00G2D 5M00D7D	125 W (ERP)	
788-798 MHz	MO	5M00G7D 5M00W7W 5M00G2D	5 W (ERP)	

Frequency Information

Arlington Heights, IL - NL 42-08-14; WL 87-58-57; MOBILE: , within 10 km

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
788-798 MHz	MO	5M00D7D	5 W (ERP)	
788-798 MHz	MO	5M00G7D 5M00W7W 5M00G2D 5M00D7D	5 W (ERP)	

Palatine, IL - NL 42-09-12; WL 88-02-11; MOBILE: , within 10 km

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
758-768 MHz	FX	5M00G7D 5M00W7W 5M00G2D 5M00D7D	125 W (ERP)	
758-768 MHz	FX	5M00G7D 5M00W7W 5M00G2D 5M00D7D	125 W (ERP)	
788-798 MHz	MO	5M00G7D 5M00W7W 5M00G2D 5M00D7D	5 W (ERP)	
788-798 MHz	MO	5M00G7D	5 W (ERP)	

Frequency Information

Palatine, IL - NL 42-09-12; WL 88-02-11; MOBILE: , within 10 km

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
788-798 MHz	MO	5M00W7W 5M00G2D 5M00D7D	5 W (ERP)	

Arlington Heights, IL - NL 42-05-04; WL 87-58-53; MOBILE: , within 10 km

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
758-768 MHz	FX	5M00G7D 5M00W7W 5M00G2D 5M00D7D	125 W (ERP)	
758-768 MHz	FX	5M00G7D 5M00W7W 5M00G2D 5M00D7D	125 W (ERP)	
788-798 MHz	MO	5M00G7D 5M00W7W 5M00G2D 5M00D7D	5 W (ERP)	
788-798 MHz	MO	5M00G7D 5M00W7W 5M00G2D 5M00D7D	5 W (ERP)	

**Special Conditions:**

- (1) Operation is subject to prior coordination with the Society of Broadcast Engineers, Inc. (SBE); ATTN: Executive Director; 9102 North Meridian Street, Suite 305; Indianapolis, IN 46260; telephone, (866) 632-4222; FAX, (317) 846-9120; e-mail, [executivedir@sbe.org](mailto:executivedir@sbe.org); information, [www.sbe.org](http://www.sbe.org).
- (2) LTE base stations will be located at four sites in and around Nokia Siemens offices in South Arlington Heights and Palatine, Illinois. In addition, Nokia Siemens would deploy up to 12 LTE low power "pico-sites" within one kilometer of each site and up to 20 portable devices within ten kilometers of each base station.
- (3) Nokia Siemens has analyzed information in the FCC's license databases and states that the proposed operation would not interfere or create a significant potential for harmful interference with any public safety operations in the 700 MHz band. The Illinois State Police, which use a portion of the subject frequencies for narrowband operations under a previous band plan, have concurred in Nokia Siemens' proposed experimental license.
- (4) Operation of the experiment will not be used in mission-critical operations or in the delivery of live transmissions in duties to protect life, property, or safety. Operations will be confined to a 10 kilometer radius of the four base station sites listed in the application.
- (5) Nokia Siemens has provided an overall project manager and in case of interference issues, "stop-buzzer" contact for these experiments: Sung Yun, Project Manager, 847-341-3010; [sung.yun@nsn.com](mailto:sung.yun@nsn.com).
- (6) Nokia Siemens understands that an experimental license only permits shared use of the subject radio frequencies and that it may have to coordinate with other entities licensed for experimental purposes. Nokia Siemens further understands that a separate concurrence from FirstNet will be required for renewal of this license.
- (7) All experimental operations by Nokia Siemens will be secondary, meaning that they must not cause interference to narrowband or broadband operations authorized on a primary basis, including in the spectrum licensed to FirstNet. Narrowband or broadband operations authorized on a primary basis, including in the spectrum licensed to FirstNet, have no obligation to mitigate any interference that such primary operations may present to the Nokia Siemens experimental operations.



**Special Conditions:**

- (8) FirstNet has not yet deployed in the geographic area covered by this application.  
Nokia  
Siemens understands that if, during the term of this license, FirstNet or its assigns or lessees,  
plans to deploy in this area, Nokia Siemens may have to reduce the coverage or power levels  
of its experimental transmissions or cease them entirely.