

**FCC FORM 442 - FEDERAL COMMUNICATIONS COMMISSION
APPLICATION FOR NEW OR MODIFIED RADIO STATION UNDER PART 5 OF FCC RULES -
EXPERIMENTAL RADIO SERVICE (OTHER THAN BROADCAST)**

**Approved
by OMB
3060 -
0065
Expires
09/30/98**

Applicant's Name (company): Nokia Solutions and Networks US LLC

File No.: 0131-EX-CM-2017

Mailing Address

Attention: Glenn Steitz
Street Address: 600 Mountain Ave
P.O. Box:
City: Murray Hill
State: NJ
Country:
Zip Code: 07974
E-Mail Address: glenn.steitz@nokia-bell-labs.com

Application Purpose

Application is for: MODIFICATION OF LICENSE

For Modification indicate below

File No.: 0067-EX-CR-2016 **Callsign:** WH2XLL

Government Contract

Is this authorization to be used for fulfilling the requirement of a government contract with an agency of the United States Government? If "YES", include as an exhibit a narrative statement describing the government project, agency and contract number. No

Foreign Government Use

Is this authorization to be used for the exclusive purpose of developing radio equipment for export to be employed by stations under the jurisdiction of a foreign government? If "YES", include the contract number and the name of the foreign government concerned as an exhibit. No

Research Project

Is this authorization to be used for providing communications essential to a research project? (The radio communication is not the objective of the research project)? If "YES", include as an exhibit the following information:

- a. A description of the nature of the research project being conducted.
- b. A showing that the communications facilities requested are necessary for the research project involved.
- c. A showing that existing communications facilities are inadequate.

No

Exhibit Information

If all the answers to Items 4, 5, 6 are "NO", include as an exhibit a narrative statement describing in detail the following items:

- a. The complete program of research and experimentation proposed including description of equipment and theory of operation.
- b. The specific objectives sought to be accomplished.
- c. How the program of experimentation has a reasonable promise of contribution to the development, extension, expansion or utilization of the radio art, or is along line not already investigated.

Estimated Duration

Give an estimate of the length of time that will be required to complete the program of experimentation proposed in this application: 24 Months

Environmental Impact

Would a commission grant of this application come within Section 1.1307 of the FCC Rules, such that it may have a significant environmental impact? If "YES", include as an exhibit an Environmental Assessment as required by Section 1.1311. No

Manufacturer

List below transmitting equipment to be installed (if experimental, so state) if additional rows are required, please submit equipment list as an exhibit :

Manufacturer	Model Number	No. Of Units	Experimental
NSN- Fixed	TBD	6	Yes
NSN- Mobile	TBD	6	Yes

Station ID

Is the equipment listed in Item 10 capable of station identification pursuant to Section 5.115? Yes

Applicant Type

Applicant is: Corporation

Foreign Government

Is applicant a foreign government or a representative of a foreign government? No

License Denied or Revoked

Has applicant or any party to this application had any FCC station license or permit revoked or any application for permit, license or renewal denied by this Commission?

If "YES", include as an exhibit a statement giving call sign of license or permit revoked and relate circumstances. No

Owner and Operator

Will applicant be owner and operator of the station? Yes

Contact Information

Give the following information of person who can best handle inquiries pertaining to this application: **First Name:**

Glenn

Last Name: Steitz

Title: Senior Manager

Phone Number: 973-214-0028

E-Mail Address: glenn.steitz@nokia-bell-labs.com

Drug Abuse Question

APPLICANT ANTI-DRUG ABUSE CERTIFICATION: By checking "YES", the individual applicant certifies that he or she is eligible for this license. This requires that he or she is not subject to a denial of federal benefits, including FCC benefits, as a result of a drug offense conviction pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. 862. A non-individual applicant, e.g., corporation, partnership or other unincorporated association, certifies that no party to the application is subject to a denial of federal benefits, pursuant to that section. For definition of a "party" for these purposes, see 47CFR 1.2002(b). Yes

Certification**THE APPLICANT CERTIFIES THAT:**

- a. Copies of the FCC Rule Parts 2 and 5 are on hand; and
- b. Adequate financial appropriations have been made to carry on the program of experimentation which will be conducted by qualified personnel; and
- c. All operations will be on an experimental basis in accordance with Part 5 and other applicable rules, and will be conducted in such a manner and at such a time as to preclude harmful interference to any authorized station; and
- d. Grant of the authorization requested herein will not be construed as a finding on the part of the Commission:
 1. that the frequencies and other technical parameters specified in the authorization are the best suited for the proposed program of experimentation, and
 2. that the applicant will be authorized to operate on any basis other than experimental, and
 3. that the Commission is obligated by the results of the experimental program to make provision in its rules including its table of frequency allocations for applicant's type of operation on a regularly licensed basis.

THE APPLICANT FURTHER CERTIFIES THAT:

- e. All the statements in the application and attached exhibits are true, complete and correct to the best of the applicant's knowledge; and
- f. The applicant is willing to finance and conduct the experimental program with full knowledge and understanding of the above limitations; and
- g. The applicant waives any claim to the use of any particular frequency or of the electromagnetic spectrum as against the regulatory power of the USA.

Name of Applicant: Nokia Solutions and Networks US LLC

Signature (Authorized person filing form): Glenn Steitz

Signature Date (Authorized person filing form): 05/31/2017

Title of Person Signing Application: Senior Manager

Classification: Office of applicant corporation or association

WILLFUL FALSE STATEMENTS MADE ON THIS FORM ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT (U.S. CODE, TITLE 18, SECTION 1001), AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION PERMIT (U.S. CODE, TITLE 47, SECTION 312(A)(1)), AND/OR FORFEITURE (U.S. CODE, TITLE 47, SECTION 503).

NOTIFICATION TO INDIVIDUALS UNDER PRIVACY ACT OF 1974 AND THE PAPERWORK REDUCTION ACT OF 1980

Information requested through this form is authorized by the Communications Act of 1934, as amended, and specified by Section 308 therein. The information will be used by Federal Communications Commission staff to determine eligibility for issuing authorizations in the use of the frequency spectrum and to effect the provisions of regulatory responsibilities rendered by the Commission by the Act. Information requested by this form will be available to the public unless otherwise requested pursuant to 47 CFR 0.459 of the FCC Rules and Regulations. Your response is required to obtain this authorization.

Public reporting burden for this collection of information is estimated to average four (4) hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden to the Federal Communications Commission, Records Management Branch, Paperwork Reduction Project (3060-0065), Washington

DC 20554. DO NOT send completed applications to this address. Individuals are not required to respond to this collection unless it displays a currently valid OMD control number.

THE FOREGOING NOTICE IS REQUIRED BY THE PRIVACY ACT OF 1974, P.L. 93-579, DECEMBER 31, 1974, 5 U.S.C. 552a(e)(3), AND THE PAPERWORK REDUCTION ACT OF 1980, P.L. 96-511, DECEMBER 11, 1980, 44 U.S.C. 3507.

Station Location

City	State	Latitude	Longitude	Mobile	Street (or other indication of location)	County	Radius of Operation
0 Arlington Heights	Illinois	North 42 8 8	West 87 59 56		1441 W Shure Drive (NSN building facility)		1.00 km

Datum: NAD 83

Is a directional antenna (other than radar) used? Yes

Exhibit submitted: No

(a) Width of beam in degrees at the half-power point:

(b) Orientation in horizontal plane (degrees from True North):

(c) Orientation in vertical plane (degrees from horizontal):

Will the antenna extend more than 6 meters above the ground, or if mounted on an existing building, will it extend more than 6 meters above the building, or will the proposed antenna be mounted on an existing structure other than a building? No

(a) Overall height above ground to tip of antenna in meters:

(b) Elevation of ground at antenna site above mean sea level in meters:

(c) Distance to nearest aircraft landing area in kilometers:

(d) List any natural formations of existing man-made structures (hills, trees, water tanks, towers, etc.) which, in the opinion of the applicant, would tend to shield the antenna from aircraft:

Action	Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
New	68.00000000-76.00000000 GHz	FX	N/A 3.000000 W	P		1G00W7W	
Action	Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
New	68.00000000-76.00000000 GHz	FX	N/A 3.000000 W	P		2G00W7W	
Action	Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
New	68.00000000-76.00000000 GHz	MO	N/A 3.000000 W	P		1G00W7W	
Action	Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
New	68.00000000-76.00000000 GHz	MO	N/A 3.000000 W	P		2G00W7W	

City	State	Latitude	Longitude	Mobile	Street (or other indication of location)	County	Radius of Operation
0 Mountain View	California	North 37 23 20	West 122 3 7		380 N. Bernardo Ave (NSN building facility)		1.00 km

Datum: NAD 83

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Action Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
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Action Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
New 68.00000000-76.00000000 GHz	FX	N/A 3.000000 W	P		2G00W7W	

Action Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
New 68.00000000-76.00000000 GHz	MO	N/A 3.000000 W	P		1G00W7W	

Action Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
New 68.00000000-76.00000000 GHz	MO	N/A 3.000000 W	P		2G00W7W	

City	State	Latitude	Longitude	Mobile	Street (or other indication of location)	County	Radius of Operation
0 Irving	Texas	North 32 53 37	West 96 57 57		6000 Connection Drive (NSN building facility)		1.00 km

Datum: NAD 83

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New 68.00000000-76.00000000 GHz	FX	N/A 3.000000 W	P		1G00W7W	

Action Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
New 68.00000000-76.00000000 GHz	FX	N/A 3.000000 W	P		2G00W7W	

Action Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
New 68.00000000-76.00000000 GHz	MO	N/A 3.000000 W	P		1G00W7W	

Action	Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
New	68.00000000-76.00000000 GHz	MO	N/A 3.000000 W	P		2G00W7W	

City	State	Latitude	Longitude Mobile	Street (or other indication of location)	County	Radius of Operation
0 Austin	Texas	North 30 24 29	West 97 43 31	11500C, North MoPac Expressway		1.00 km

Datum: NAD 83

Is a directional antenna (other than radar) used? Yes

Exhibit submitted: No

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New	68.00000000-76.00000000 GHz	FX	N/A 3.000000 W	P		2G00W7W	
New	68.00000000-76.00000000 GHz	MO	N/A 3.000000 W	P		1G00W7W	

Action	Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
New	68.00000000-76.00000000 GHz	MO	N/A 3.000000 W	P		2G00W7W	

City	State	Latitude	Longitude Mobile	Street (or other indication of location)	County	Radius of Operation
0 Brooklyn	New York	North 40 41 37	West 73 59 17	333 Adams Street		1.00 km

Datum: NAD 83

Is a directional antenna (other than radar) used? Yes

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(a) Width of beam in degrees at the half-power point:

(b) Orientation in horizontal plane (degrees from True North):

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Action Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
New 68.00000000-76.00000000 GHz	FX	N/A 3.000000 W	P		2G00W7W	
Action Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
New 68.00000000-76.00000000 GHz	MO	N/A 3.000000 W	P		1G00W7W	
Action Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
New 68.00000000-76.00000000 GHz	MO	N/A 3.000000 W	P		2G00W7W	

City	State	Latitude	Longitude	Mobile	Street (or other indication of location)	County	Radius of Operation
0 Brooklyn	New York	North 40 41 40	West 73 59 7		2 MetroTech Center		1.00 km

Datum: NAD 83

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Action Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
New 68.00000000-76.00000000 GHz	FX	N/A 3.000000 W	P		1G00W7W	
Action Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
New 68.00000000-76.00000000 GHz	FX	N/A 3.000000 W	P		2G00W7W	
Action Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
New 68.00000000-76.00000000 GHz	MO	N/A 3.000000 W	P		1G00W7W	

Frequency

Action Frequency	Station Class	Output Power/ERP	Mean Peak	Tolerance (+/-)	Emission Designator	Modulating Signal
New 68.00000000-76.00000000 GHz	MO	N/A 3.000000 W	P		2G00W7W	

City	State	Latitude	Longitude Mobile	Street (or other indication of location)	County	Radius of Operation
0 Waltham	Massachusetts	North 42 23 43	West 71 16 18	500 Sylvan Rd (Verizon facility)	MIDDLESEX	1.00 km

Datum: NAD 83

Is a directional antenna (other than radar) used? Yes

Exhibit submitted: No

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(c) Distance to nearest aircraft landing area in kilometers:

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Action Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
New 68.00000000-76.00000000 GHz	FX	N/A 3.000000 W	P		1G00W7W	
New 68.00000000-76.00000000 GHz	FX	N/A 3.000000 W	P		2G00W7W	
New 68.00000000-76.00000000 GHz	MO	N/A 3.000000 W	P		1G00W7W	

Action Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
New 68.00000000-76.00000000 GHz	MO	N/A 3.000000 W	P		2G00W7W	

City	State	Latitude	Longitude Mobile	Street (or other indication of location)	County	Radius of Operation
0 Euless	Texas	North 32 51 3	West 97 4 13	1001 Bear Creek Parkway (Verizon Facility)		1.00 km

Datum: NAD 83

Is a directional antenna (other than radar) used? Yes

Exhibit submitted: No

(a) Width of beam in degrees at the half-power point:

(b) Orientation in horizontal plane (degrees from True North):

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Action Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
New 68.00000000-76.00000000 GHz	FX	N/A 3.000000 W	P		1G00W7W	

Action Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
New 68.00000000-76.00000000 GHz	FX	N/A 3.000000 W	P		2G00W7W	

Action Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
New 68.00000000-76.00000000 GHz	MO	N/A 3.000000 W	P		1G00W7W	

Action Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
New 68.00000000-76.00000000 GHz	MO	N/A 3.000000 W	P		2G00W7W	

City	State	Latitude	Longitude	Mobile	Street (or other indication of location)	County	Radius of Operation
0 Basking Ridge	New Jersey	North 40 43 31	West 74 32 3		1 Verizon Way	SOMERSET	1.00 km

Datum: NAD 83

Is a directional antenna (other than radar) used? Yes

Exhibit submitted: No

(a) Width of beam in degrees at the half-power point:

(b) Orientation in horizontal plane (degrees from True North):

(c) Orientation in vertical plane (degrees from horizontal):

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(a) Overall height above ground to tip of antenna in meters:

(b) Elevation of ground at antenna site above mean sea level in meters:

(c) Distance to nearest aircraft landing area in kilometers:

(d) List any natural formations of existing man-made structures (hills, trees, water tanks, towers, etc.) which, in the opinion of the applicant, would tend to shield the antenna from aircraft:

Action Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
New 68.00000000-76.00000000 GHz	FX	N/A 3.000000 W	P		1G00W7W	

Action Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
New 68.00000000-76.00000000 GHz	FX	N/A 3.000000 W	P		2G00W7W	

Action Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
New 68.00000000-76.00000000 GHz	MO	N/A 3.000000 W	P		1G00W7W	

Action	Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
New	68.00000000-76.00000000 GHz	MO	N/A 3.000000 W	P		2G00W7W	

City	State	Latitude	Longitude Mobile	Street (or other indication of location)	County	Radius of Operation
0 Murray Hill	New Jersey	North 40 41 3	West 74 24 5	600 Mountain Ave (Bell Labs)	UNION	1.00 km

Datum: NAD 83

Is a directional antenna (other than radar) used? Yes

Exhibit submitted: No

(a) Width of beam in degrees at the half-power point:

(b) Orientation in horizontal plane (degrees from True North):

(c) Orientation in vertical plane (degrees from horizontal):

Will the antenna extend more than 6 meters above the ground, or if mounted on an existing building, will it extend more than 6 meters above the building, or will the proposed antenna be mounted on an existing structure other than a building? No

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Action	Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
New	68.00000000-76.00000000 GHz	FX	N/A 3.000000 W	P		1G00W7W	
New	68.00000000-76.00000000 GHz	FX	N/A 3.000000 W	P		2G00W7W	
New	68.00000000-76.00000000 GHz	MO	N/A 3.000000 W	P		1G00W7W	

Action	Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
New	68.00000000-76.00000000 GHz	MO	N/A 3.000000 W	P		2G00W7W	

City	State	Latitude	Longitude Mobile	Street (or other indication of location)	County	Radius of Operation
0 Naperville	Illinois	North 41 48 44	West 88 7 11	2000 W Lucent Lane	DU PAGE	2.00 km

Datum: NAD 83

Is a directional antenna (other than radar) used? Yes

Exhibit submitted: No

(a) Width of beam in degrees at the half-power point: 11.00

(b) Orientation in horizontal plane (degrees from True North):

(c) Orientation in vertical plane (degrees from horizontal):

Will the antenna extend more than 6 meters above the ground, or if mounted on an existing building, will it extend more than 6 meters above the building, or will the proposed antenna be mounted on an existing structure other than

a building? No

(a) Overall height above ground to tip of antenna in meters:

(b) Elevation of ground at antenna site above mean sea level in meters:

(c) Distance to nearest aircraft landing area in kilometers:

(d) List any natural formations of existing man-made structures (hills, trees, water tanks, towers, etc.) which, in the opinion of the applicant, would tend to shield the antenna from aircraft:

Action	Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
New	68.00000000-76.00000000 GHz	FX	1.000000 W 3.000000 W	P		1G00W7W	QPSK, 16 and 64 QAM
New	68.00000000-76.00000000 GHz	FX	1.000000 W 3.000000 W	P		2G00W7W	QPSK, 16 and 64 QAM
Modified	68.00000000-76.00000000 GHz	MO	1.000000 W 3.000000 W	P		1G00W7W	QPSK, 16 and 64 QAM
Modified	68.00000000-76.00000000 GHz	MO	1.000000 W 3.000000 W	P		2G00W7W	QPSK, 16 and 64 QAM

City	State	Latitude	Longitude	Mobile	Street (or other indication of location)	County	Radius of Operation
0	Holmdel	New Jersey	North 40 23 25	West 74 11 11	791 Holmdel RD	MONMOUTH	2.00 km

Datum: NAD 83

Is a directional antenna (other than radar) used? Yes

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New	68.00000000-76.00000000 GHz	FX	1.000000 W 3.000000 W	P		1G00W7W	QPSK, 16 and 64 QAM
New	68.00000000-76.00000000 GHz	FX	1.000000 W 3.000000 W	P		2G00W7W	QPSK, 16 and 64 QAM
Modified	68.00000000-76.00000000 GHz	MO	1.000000 W 3.000000 W	P		1G00W7W	QPSK, 16 and 64 QAM

Action	Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
Modified	68.00000000- 76.00000000 GHz	MO	1.000000 W 3.000000 W	P		2G00W7W	QPSK, 16 and 64 QAM