

**NARRATIVE STATEMENT**

Pursuant to Section 5.3(e), (f), (h) and (j) and Section 5.54(a)(1) of the Federal Communications Commission (“FCC”) rules, 47 C.F.R. §§ 5.3(e), (f), (h) and (j); 5.54(a)(1) (2019), Motorola Solutions, Inc., hereby respectfully requests an Experimental License (“XD”) For a 2 year duration to operate in the 897.5-900.5 MHz and 936.5-939.5 MHz bands for the purpose of developing and demonstrating prototype broadband Long-Term Evolution (“LTE”) equipment to support the needs of utility, private business, transportation, and related business as well as to support internal development programs. The proposed operation will not involve live-duty operations by first responders or others to protect life, property, or safety. Development or, and demonstration of prototype equipment will take place in Rockford, Winnebago County, IL, near Winter, Sawyer County, Wisconsin, and near Portal, AZ in Cochise County, AZ. Motorola Solutions has obtained concurrence from the current licensees of the requested allocations at Location 1, specified below.

**A. Purpose of Operation and Need for License:**

Motorola Solutions is a leading manufacturer 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 equipment. The experimental authority requested herein will allow the company to demonstrate the functionality of prototype devices designed to support the needs of the utility, private business, transportation, and related business interests.

Specifically, Motorola Solutions proposes to conduct demonstrations of prototype equipment in Rockford, IL and Portal, AZ as well as develop and test systems in Sawyer County, WI. Motorola Solutions respectfully requests that the FCC grant an Experimental License, “XD” classification, for a period of 2 years.

Grant of an Experimental License will allow Motorola Solutions to demonstrate prototype equipment and obtain additional feedback so that it may enhance the company’s efforts to design, develop and improve its equipment to meet the communications needs of users.

**B. Locations of Proposed Operation:**

Motorola Solutions proposes to conduct its demonstrations at three locations. The address and approximate reference coordinates (in Datum: NAD83) of the proposed base station locations are identified below. Portable/mobile operations will occur within a 10 km radius of the fixed locations:

<u>Location 1:</u> 3300 Airport Drive Rockford, IL 61109 Winnebago County N 42° 12' 03.7" W 89° 06' 15.0"	<u>Location 2:</u> Junction State Hwy 70 and County Hwy W Winter, WI 54896 Sawyer County N 45° 52' 47.0" W 90° 58' 00.0"	<u>Location 3:</u> Junction of Portal Rd and Foothills Road Portal, AZ 85632 Cochise County N 31° 54' 50.61" W 109° 07' 43.09"
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**C. Technical Specifications:**

**1. Frequencies Desired**

Motorola Solutions requests authorization to operate in the bands 879.5-900.5MHz paired with downlink allocation at 936.5-939.5MHz. This allocation has recently been reallocated to Part 22 broadband services; particularly envisioned to support 1.4 and 3MHz LTE for Private Broadband use-cases associated with the utilities, transportation, and other business industries. In addition, Motorola Solutions will also develop, demonstrate and test NB IoT solutions as well variants of LTE specific to the requested bandwidth and use-cases.

**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.

Up to 25 portable/mobile units will be deployed and configured to operate at a mean power level of 2W TPO / 10W effective radiated power ("ERP") at each location. The base station will be configured to operate at a mean power level of 20 Watt TPO / 180W ERP. Motorola Solutions will reduce the actual power to the minimum power needed for successful operation, based on set-up and testing at the demonstration site. Motorola Solutions will also coordinate with other equipment suppliers demonstrating equipment as required and reduce power accordingly.

FX: 936.5-939.5 MHz band: 20W TPO / 180W ERP; 1 unit per location

MO: 897.5-900.5 MHz band: 2W TPO / 10 W ERP; 25 units per location

**3. Modulation and Emissions**

Motorola Solutions proposes to operate using OFDM modulation. The primary emission designators are 3M00G7D, 3M00W7W, 3M00G2D, 3M00D7D, 1M40G7D, 1M40W7W, 1M40G2D, 1M40D7D, 200KG7D, 200KW7W, 200KG2D, and 200KD7D. Other emission modes may be utilized, but in no event will the emissions extend beyond the frequency bands requested.

**4. Antenna Information**

The antenna for the temporary fixed base station will be located at a height no greater than 15.2 meters above ground level (AGL). The portable/mobile unit antennas in and around the demonstration site will be located as required for a successful demonstration and will be operated at a height ranging from 1.5m AGL and not to exceed 9 meters AGL. No antennas will be mounted in a fashion that will require approval under FAA and FCC rules and regulations. Antennas utilized will be omnidirectional; however, some testing may be undertaken utilizing directional panel antennas comprised of cross-polarization design utilizing +/-45 degree elements reference to the horizon, exhibiting a total 3dB horizontal beamwidth of no more than 120 degrees and a vertical beamwidth not to exceed 12 degrees The effective gain of this panel shall not exceed 13dBi and conducted power output will be reduced as to not to exceed the requested total ERP in this application and narrative statement.

## **5. Equipment To Be Used**

Motorola Solutions expects to conduct its demonstration with 1 base unit and up to twenty mobile/portable units per location. Motorola Solutions will limit the power, area of operation, and transmitting times to the minimum necessary to provide an effective demonstration and assessment of equipment under development. All equipment utilized will be prototype in nature.

### **D. Protections Against Causing Interference:**

As noted above, Motorola Solutions has contacted all licensees currently holding narrowband licenses within the potentially affected area and has obtained concurrence to utilize the requested allocation. In addition, Motorola Solutions will be sharing data collected and allowing observations and participation in experiments conducted and demonstrations undertaken.

Motorola Solutions also understands that it must accept interference from any other users of these bands and that it is its responsibility to coordinate its operations with other authorized user during the conference and that any failure to coordinate effectively may result in the immediate suspension of its authority until such time, as determined by the primary licensee within the allocation, concurs that interference is not taking place, that the operations may continue.

Motorola Solutions also conducted a search of the Commission's Universal Licensing System ("ULS") database and verified that the proposed demonstration in all requested locations should not interfere with any primary operations in that spectrum. Moreover, Motorola Solutions has obtained concurrence from licensed operations at Location 1 for experimental operations prior to submission of this application.

In summary, the proposed operations consistent with the commitments and statements presented above should not result in interference with any licensed operations. Should interference occur, Motorola Solutions will take immediate steps to resolve the interference, including if necessary arranging for the discontinuance of operation.

### **E. FCC Restrictions on Operation:**

Motorola Solutions is not seeking authority to perform a market study under the requested License. Moreover, no fees will be charged to entities using the equipment during this test. After the test is completed, it will disassemble the demonstration facilities.

Motorola Solutions also recognizes that the operation of any equipment under experimental authority must not cause harmful interference to authorized facilities. In the unlikely event interference occurs, Motorola Solutions will take immediate steps to resolve the interference, including discontinuance of operation if necessary.

Entities will be advised in accordance with Section 2.803 of the Commission's rules, 47 C.F.R. § 2.803 (2019), that any unapproved devices which have not been authorized as required by the FCC are not being offered for sale or lease, or sold or leased, until authorization is obtained.

**F. Public Interest Statement:**

Motorola Solutions submits that issuance of an Experimental License as requested is in the public interest, convenience, and necessity. Grant of an Experimental License will help Motorola Solutions to develop innovative equipment that will accommodate the communications needs of the private broadband community.

**G. Contact Information:**

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