

NARRATIVE STATEMENT

By this application, Motorola, Inc., seeks an experimental license to operate on: (1) non-Government spectrum in the 150-170 MHz band, (2) 765-769 MHz, and (3) 4940-4990 MHz. Grant of such authorization will allow Motorola to test and demonstrate equipment designed to enhance public safety radio communications. The following information is provided in support of this request:

Purpose of Operation and Need for a 5-Year License:

Motorola proposes to test, demonstrate and operate prototype equipment for public safety use transmitting on channels in the above-mentioned frequency bands. Motorola is continually developing equipment for public safety use and seeks to test and demonstrate this equipment during various stages of design and development to evaluate its functionality, acceptability, and interoperability prior to seeking equipment authorization. Grant of a license will serve the public interest, necessity and convenience, as it will allow Motorola over the course of the license period to improve upon equipment used to meet public safety needs.

Proposed Location:

Motorola seeks the authority to conduct experiments and demonstrations in and near McLean, Virginia. Specifically, base station transmitters operating in the 150-170 MHz and 4940-4990 MHz bands will be located within 50 km of the location listed below. Base station transmitters on 765-769 MHz will be operated only at that location. Mobiles operating in the 150-170 MHz and 4940-4990 MHz bands will be operated within 15 km of the transmitters (or within 65 km of the location listed below). Mobiles operating in the 765-769 MHz band will be operated within 15 km of the base station location, but not east of 77-12-30W (NAD83).

McLean, VA
North Latitude 38°55'51"
West Longitude 77°12'52"
Datum: NAD83

Frequencies Requested:

For purposes of the experimental activities conducted under the license requested in this application, Motorola proposes to operate only on non-Government channels allocated under Section 90.35 of the FCC Rules, 47 C.F.R. § 90.35 (2004). It has identified a number of channels in the 150-170 MHz band that are restricted to business or other non-Government use and have not been licensed to entities in the proposed area of operation. Moreover, Motorola will operate on a non-interference basis to any adjacent or co-channel licensees.

As noted above, Motorola will restrict its test in the 700 MHz band to the frequency range 765-769 MHz and will operate base stations only at the coordinates 38-55-51N; 77-12-52W (NAD83). This frequency range corresponds to UHF TV Channel 63. The closest Channel 63 (Station WWTD-LP, a low power (1kW) translator/extender) is approximately 55 kilometers east from Motorola's proposed test site. It is a class C station (designated as "M," i.e., to be moved). Class C stations must be protected to the 2mV/m contour as prescribed by FCC regulations. 2mV/m is equivalent to -66.77dBm (decibels with respect to one milliwatt). Simulating the operation of Station WWTD-LP, Motorola determined that the coverage of the station is primarily to the east/southeast. To the west, the -66.77dBm contour of Station WWTD-LP only extends approximately 10 kilometers.

Based on these findings, Motorola proposes to use a directional Yagi antenna transmitting with a front-to-back ratio of no less than 20 dB. The antenna azimuth will be placed at approximately 225 degrees (SW), directing the gain away from Station WWTD-LP and its coverage area. In addition, Motorola proposes to restrict mobile operations to locations west of 77-12-30W (NAD83). Thus, transmission from the 700 MHz operations will fall below 1pW (-90dBm) within 10 km in the direction of Station WWTD-LP, resulting in a total separation of coverage of approximately 30-35 km.

Furthermore, Motorola notes that Station WWTD-LP is transmitting with horizontal polarization. Motorola's proposed stations will transmit with vertical polarization. The difference in polarization will add approximately another 10 dB of separation. At the nearest location of coverage abutment to the -66.77dBm contour, the signal from its 700 MHz base stations will be -119dBm or less. Accounting for the difference in polarization, this results in an isolation of approximately 62 dB, well above the 43 dB CNR required for analog TV receivers. (Station WWTD-LP is listed as a digital TV station, which implies a receiver requisite CNR of less than 43 dB).

Accordingly, it is Motorola's conclusion that it will not interfere with the operational coverage footprint of Station WWTD-LP.

Technical Specifications:

Frequency	150-170 MHz	765-769 MHz	4940-4990 MHz
Station Power	225 W Peak ERP	150 W Peak ERP	5 W Peak ERP
Mobile Power	225 W Peak ERP	100 W Peak ERP	5 W Peak ERP
Bandwidth	25 kHz Maximum	150 kHz Maximum	50 MHz Maximum
Modulation	Angle	Angle/Amplitude	Angle/Amplitude
Emissions	11K0F3E, 8K10F1E, 10K0F1D, 16K0F3E, 16K0F1D, 20K0F1E	16K0F3E, 16K0F1D, 20K0F1E, 11K0F3E, 8K10F1E, 16K8F1E, 14K0F3E, 14K0F1D, 10K0F1D, 150KD9W	20M0D7W
Station Antenna	Omni or Directional up to 9 dBi Gain	Directional up to 15dBi Gain with front/back ratio ≥ 20 dB	Omni up to 9 dBi Gain
Mobile Antenna	Omni or Directional up to 9 dBi Gain	Omni or Directional up to 9 dBi Gain	Omni up to 9 dBi Gain

Antenna Information:

The antennas generally will not extend more than 6 meters above the ground or, if mounted on an existing building, will not extend more than 6 meters above a building. If the antennas are mounted in any other fashion, they will be installed in accordance with FAA and FCC rules and regulations.

Equipment to be Used:

The objective of these experiments and evaluations will be to test and demonstrate prototype equipment integrated with existing equipment, multiple wireless networks, and their integration for voice and data systems for public safety use. As such, high powered radios with existing and novel modulation schemes will be used to support integrated voice and data systems, and standalone voice with data overlay systems, in the 150-170 and 764-776 MHz bands; relatively low powered radios will be used for wireless broadband networks in the 4940-4990 MHz band.

To obtain accurate data regarding real-world operations, Motorola must employ a sufficient number of units during its studies to simulate actual usage. It expects that it will be able to complete its experimentation and demonstration with not more than 10 mobile or fixed base units and 100 mobile units associated with each base station per test location. In other words, 10 base stations and 100 mobiles reflect the maximum number of unapproved or unlicensed units that would be in operation at any given time at the locations proposed under the experimental license Motorola requests. Moreover, Motorola will limit the power, area of operation, and transmitting times to the minimum necessary to evaluate the equipment. As required, Motorola would seek separate and specific authority if more units were needed to conduct a particular experiment.

Restrictions on Operation:

Motorola recognizes that the operation of any equipment under experimental authority must not cause harmful interference to authorized facilities. It therefore will coordinate its activities with any licensees in the proposed bands in accordance with FCC requirements. Should interference occur, Motorola will take immediate steps to resolve the interference, including if necessary arranging for the discontinuance of operation.

In addition, Motorola will advise entities using the equipment that permission to operate has been granted under experimental authority issued to Motorola, that such operation is strictly temporary, and that the equipment may not cause harmful interference. Motorola proposes to label the equipment or associated written information as follows:

FCC STATEMENT

Permission to operate this device has been granted under experimental authority issued by the Federal Communications Commission to Motorola, Inc., is strictly temporary and may be cancelled at any time. Operation is subject to the condition that it not cause harmful interference. This device is not, and may not be, offered for sale or sold until the approval of the FCC has been obtained. Thus, the user does not hold a property right in the device and may be required to return the device.

Public Interest:

Motorola submits that issuance of a license is in the public interest, convenience, and necessity. Grant of a license will permit Motorola to develop innovative equipment that will accommodate the public safety communications needs of users.

Contact Information:

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