Section 5.63 Supplementary Statement

ReconRobotics requests this license to experiment with the communications system of a robot designed to assist law-enforcement officers and other first responders. The radio sought to be licensed provides communication from the "eyes and ears" of the robot to its human operators at a nearby location.

The applicant, ReconRobotics, evolved from the University of Minnesota Center for Distributed Robotics with a mandate to deliver life-preserving robotic detection and surveillance solutions for military, law enforcement, and first responder operations.

The ReconRobotics Scout is a miniaturized, human deployable, mobile robot developed with National Science Foundation grants, originally for military operation in hostile environments. The Scout provides zero lead-time deployment of video, audio, and (in the future) bio-detection in critical operational conditions. These detection and surveillance functions would otherwise require direct human interaction and consequent risk to human life. Additionally, because the Scout can move around in confined environments under remote control, it can be used in locations where humans may not be able to directly access a threat without significant risk.

A military version of the Scout has been experimentally deployed in theatre in Iraq for the past three years, providing real-life operational data now being used to prepare the robot for wide scale deployment overseas. During the military testing, domestic police forces, S.W.A.T., and emergency response teams have become aware of the tool and believe there is an important application for the Scout in counter-terrorism and security activities at home.

The military version of the Scout operates at 433.92 MHz, which is unsuited to commercial operations in the United States. ReconRobotics is accordingly investigating use of the unlicensed bands at 902-928 MHz and 2400-2483.5 MHz for transmission of audio and video in U.S. commercial deployments. (We also request authority to operate experimentally 433.92 MHz for baseline comparisons with the company's military experience, but are not considering this frequency for domestic use.)

The domestic version of the Scout under test does not qualify for Part 15 certification because it must use an analog transmitter at power levels exceeding those authorized under Section 15.249. At the present stage of product development, only an analog transmitter is physically small enough to comport with the overall miniaturized nature of the product, whose small size is necessary for rapid deployment into hostile situations and easy portability. But an analog transmitter does not qualify for the power levels otherwise available under Section 15.247.

A grant of this license will allow designated local authorities to test the Scout in an operational capacity, under ReconRobotics' supervision, to provide feedback in design and optimization of functionality for use in law enforcement and emergency response. Among other outcomes, this will help the manufacturer to determine the power and

bandwidth needs of emergency responders in a variety of operational environments, including urban structures of differing physical makeup, that cannot be accurately simulated in a laboratory.

Operation under this license will be subject to the following restrictions:

- Operation only by state and local law enforcement agencies and other first responders eligible under Section 90.20 of the Commission's Rules;
- Operation only in emergency (first response) situations;
- Operation to cease as soon as first responder activities are concluded;
- Absolute maximum on-time duration of two hours (limited by on-board battery life); most uses will be shorter.
- Complies with maximum power and minimum bandwidth requirements of Section 15.247; deviates only from the limits on spectral power density in Section 15.247(e).

A grant of this license will allow ReconRobotics to continue its work in developing an important tool for law enforcement and other first responders.

Justification for Number of Units

As noted above, activity under the requested license will compare baseline performance at the military frequency, 433.92 MHz, to performance at the potential commercial frequencies of 902-928 MHz and 2400-2483.5 MHz. This work entails comparing operation both between and within bands at various power levels ranging from 50 mW to 1 Watt. The result is a large matrix of frequency versus power combinations. We seek the option of testing each combination at each of several sites – hence the number of units requested.

We emphasize, however, that only one or two units will ever operate simultaneously at any site.

Having units over a range of potential testing conditions will help us to develop a final product that gives law enforcement agencies nationwide a tactical advantage that can save the lives of officers and civilian bystanders alike.