

Explanation of Experiments and Need for FCC Experimental License

AeroVironment, Inc. (AV) designs, develops, manufactures, supports and operates unmanned aircraft systems (“UAS”) and related services to organizations within the U.S. Department of Defense (“DoD”) and to international allied governments. As part of the engineering and production process AV tests the UAS communications systems to make sure customer specifications are met and to learn how it can better serve its key customers. The ongoing experimental operations are for testing UAS command and control, telemetry and payload systems. AV asks that this authority be renewed.

The experiments conduct Acceptance Test Procedures (ATP) in the customer requested spectrum segment 2380-2385 MHz for UAS technology uplink command and control and downlink video and telemetry transmissions. These tests relate to AV’s Puma and Raven models to be acquired by allied nation governments for security and public safety purposes. The systems are tested and retested as part of the production process. Missions tested include aerial reconnaissance, surveillance, route clearance, mapping, and payload delivery.

The tests take place at AV’s facility in Simi Valley, Ventura County, California. In addition to AV engineering and technical personnel, representatives of customer allied governments are present. Beyond familiarizing the customer with the new aircraft prior to it assuming responsibility and commencing flight operations, AV gathers feedback regarding the aircraft’s radio communications to assist research and development efforts to improve solutions based on evolving customer need.

Much of AV’s allied customer relationships relate to Foreign Military Sales (FMS) through AV’s Department of Defense contract # W911QY-18-D-0192.

Purpose and Nature of Operations

Segment 2380-2385 MHz will send command and control data from the UAS and transmit NTSC video and telemetry to the ground control station with modulation SO-QPSK. Emission Designators 4M68G7W and 1M56G7W, with a transmit power of 10 w, are proposed. Transmission control will be from the ground control station to the UAS via a laptop, tablet or consul.

The site location is within a Certificate of Authorization (COA) of the Federal Aviation Administration. Access to the locations is controlled and limited. Operations will be within 12 km of the center point, not to exceed 152 meters AGL. Not more than one UAS will be airborne at any one time. Testing will be performed at intermittent intervals for several hours daily.

Transmitting Equipment

Manufacturer	Model	Quantity	Experimental
AeroVironment	50280	2	No

Antenna

The following details the antenna information:

Antenna Frequency Segment	Gain (Main Beam)	Polarization	Orientation in Vertical Plane	Orientation in Horizontal Plane
GCU Antenna ASSY AeroVironment Stack Patch	9 dbi*	Vertical	30°	85°
Tailboom ASSY AeroVironment Dipole	2.9dbi	Vertical	78°	360°

*1st Major Side Lobe

E-Plane

- Gain: -2 dBi
- Degrees: 120°

H-Plane

- Gain: -2 dbi
- Degrees: 179°

Restrictions on Operations and Interference Protection

AV understands that experimental operations must not cause harmful interference to authorized facilities. AV commits to operations respecting other users of the band and those in adjacent segments. The limited power levels proposed and the short-term intermittent use are part of this commitment. Should any interference occur, AeroVironment will take immediate steps to resolve the interference, including if necessary, discontinuing operations.

During the period of the current authorization, there have been no incidents of harmful radio interference during the testing. No harmful interference is expected from the testing proposed here.

Waiver of Station Identification Requirements

AV requests a waiver of the station identification requirements stated in Section 5.115 of the Commission's rules.

Stop Buzzer

Bart Decker, AV's Director of Flight Standards, is available by telephone or electronic mail at 805 391-1335 and Decker@AVINC.com, respectively and will act as a "stop buzzer" if any matters involving interference arise during the testing.

Coordination

This application includes coordination with the Aerospace & Flight Test Radio Coordinating Council (AFTRCC), which is attached. AV agrees to abide by the conditions stated by AFTRCC in its coordination.

Diagram

A diagram of the proposed operations follows.

Conclusion

AeroVironment appreciates the Commission's, NTIA's, the Department of the Defense's, AFTRCC's and other agencies' consideration and the cooperation of concurring agencies in reviewing this Experimental Authorization application. Please call upon us if we can respond to any questions.

Operations Diagrams RAVEN



Courtesy of AeroVironment Inc

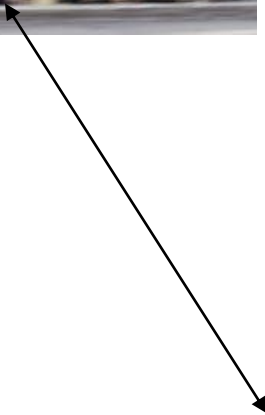
Command
and Control
Data
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Unmanned Aircraft-
RAVEN



RAVEN

PUMA



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