

AeroVironment, Inc.

Request to Modify WI2XVI

November 8, 2022

AeroVironment, Inc. (AV) designs, develops, manufactures, supports and operates unmanned aircraft systems (“UAS”) and provides related services to organizations within the U.S. Department of Defense 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. Experimental authority WI2XVI enables AV to pursue experimental operations to test UAS command and control, telemetry and payload systems at sites in Madison and Limestone Counties, Alabama.

This application seeks to add an additional frequency segment, 1840-1850 MHz, to each of the authorized locations.

AeroVironment will maintain the Emission Designators 4M68G7W and 1M56G7W and the transmit power at 1.5 w. Airborne operations will not exceed 152 meters AGL. Flights shall be within a radius of 5 km.

## **I. Purpose**

The additional experimental authorization will examine if the video-telemetry technology operating within 1840-1850 MHz can effectively contribute to security and emergency response requirements in non-line of sight environments. The experimental work provides insight to necessary adjustments and make possible provisioning the technology expeditiously.

## **II. Commitment to Users of the Radio Spectrum**

As with current authorized operations, the system’s communications platform encompasses air vehicle, a ground control unit and support equipment. The SUAS can be controlled manually or can autonomously navigate a preplanned route.

Operations will be intermittent and coordinated, as required by the Commission and NTIA with Department of Defense, or other agency Frequency and Operations Managers.

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

### III. Operational Parameters

1840-1850 MHz frequencies will send command and control data from the SUAS 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 1.5 w, are proposed. Transmission control will be from the ground control station to the SUAS via a laptop, tablet or console.

### IV. Stop Buzzer

Bart Decker, AeroVironment’s Flight Standards Director, will be available by mobile phone 805.391.1335, or email, Decker@avinc.com, and will act as a “stop buzzer” if any matters involving interference arise during the testing.

### V. Transmitting Equipment

Manufacturer	Model	Quantity	Experimental
AeroVironment	50280	2	No

### VI. 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°

\*1st Major Side Lobe

E-Plane

- Gain: -2 dBi
- Degrees: 120°

## H-Plane

- Gain: -2 dbi
- Degrees: 179°

# Operations Diagram



Small Unmanned Aircraft-

Video and Telemetry  
2362 MHz, 2366 MHz, 2389 MHz and 2390 MHz  
1840-1850 MHz

Aircraft Command and Control Main  
2362 MHz, 2366 MHz, 2389 MHz and 2390 MHz  
1840-1850 MHz

