

# **STATEMENT ACCOMPANYING REQUEST FOR SPECIAL TEMPORARY AUTHORITY EXPERIMENTAL AUTHORIZATION BY AEROVIRONMENT, INC.**

## **1. Introduction**

By this application, AeroVironment, Inc. (AeroVironment) requests that the Commission grant Special Temporary Authority to operate at frequency segment 2380-2385 MHz at its facilities in Simi Valley, Ventura County, California. The experiments are proposed to be conducted on an intermittent basis short periods of time from April 1, 2016 through September 15, 2016.

The experiments relate to conducting Acceptance Test Procedures (ATP) in the spectrum segment 2380-2380 MHz for small unmanned aircraft system (SUAS) technology uplink command and control and downlink video and telemetry transmissions. These tests relate to provisioning the technology relating to the Qube and Shrike models to the Government of Sweden for security and public safety purposes. Several missions will be tested to determine if requirements can be met, including aerial reconnaissance, surveillance, route clearance, mapping, and payload delivery. All export and related controls will be adhered to.

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

The Commission has granted similar authority in the past under call sign WI9XWK.

In this statement, we explain the purpose and nature of the proposed operations and why this application is within the Commission's experimental authorization rules. We provide the information required by the Commission's rules.

## **2. Purpose**

The purpose of the experiments is to provide analysis and information relating to the provision of small unmanned aircraft system (SUAS) technologies. In particular, the SUAS technology will be tested for performance metrics in the 2380-2385 MHz spectrum segment, which is not one of the frequency bands where there has been long term operational experience.

The experimental authorization will be used to demonstrate that the video-telemetry technology can make a meaningful contribution to security and emergency response requirements at significant cost efficiencies. The experimental work will provide insight as to necessary adjustments and make possible the provisioning of the technology in an expeditious manner.

### **3. Technology Use**

AeroVironment's SUAS technology provides real-time direct situational awareness. The system's communications platform features air vehicles, a ground control unit and support equipment. The AV can be controlled manually or can autonomously navigate a preplanned route. The experiments embrace a model using a spectrum segment available to and authorized for the user.

AeroVironment 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.

The frequency located at 2380-2385 MHz MHz will be for purposes of SUAS control and video and telemetry transmission from the SUAS to the ground.

The proposed locations are within a Certificate of Authorization (COA) of the Federal Aviation Administration at AeroVironment's facilities in Simi Valley, California. 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 SUAS will be airborne at any one time.

### **4. Purpose and Nature of Operation**

#### *Airborne Transmission*

The segments 2380-2385 MHz MHz 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 10 w, are proposed. Transmission control will be from the ground control station to the SUAS via a laptop, tablet or consul.

### **5. Stop Buzzer**

Andy Thurling, Chief Test Pilot and Director, Product Safety and Mission Assurance, AeroVironment, will be available by telephone at 805.581.2198, extension 1892 or mobile phone 805.368.6351, and will act as a "stop buzzer" if any matters involving interference arise during the testing.

## 6. Transmitting Equipment

Manufacturer	Model	Quantity	Experimental
AeroVironment	50280	2	No

## 7. Antenna

The following details 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 deg	85 deg

\*1<sup>st</sup> Major Side Lobe

### E-Plane

- Gain: -2 dBi
- Degrees: 120 deg

### H-Plane

- Gain: -2 dBi
- Degrees: 179 deg

## 8. Restrictions on Operations and Interference Protection

AeroVironment understands that experimental operations must not cause harmful interference to authorized facilities. Should any interference occur, AeroVironment will take immediate steps to resolve the interference, including if necessary, discontinuing operations.

## 9. Waiver of Station Identification Requirements

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

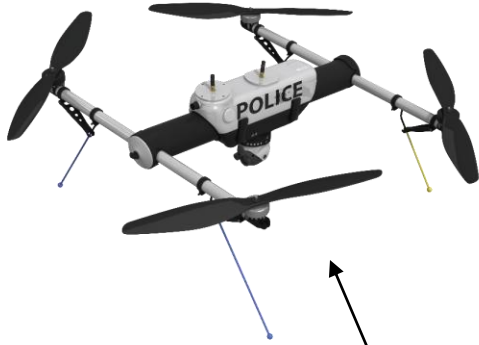
## **10. Diagram**

A diagram of the proposed operations and contour follows.

## **Conclusion**

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

*Operations Diagram- QUBE*



Small Unmanned  
Aircraft-  
QUBE

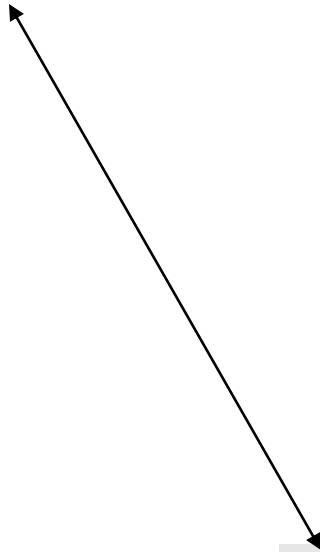
Command  
and Control  
Data  
Video and  
Telemetry  
2380-2385  
MHz



*Operations Diagram- SHRIKE*



Small Unmanned Aircraft  
SHRIKE-



Command  
and  
Control  
Data  
Video and  
Telemetry  
2380-2385  
MHz



## Coordination by the Aerospace & Flight Test Radio Coordinating Council

**From:** <[wayne.morris@L-3com.com](mailto:wayne.morris@L-3com.com)>

**Date:** February 9, 2016 at 11:09:34 AM EST

**To:** <[johnelogan@jelogan.com](mailto:johnelogan@jelogan.com)>

**Cc:** <[dataentry@aftrcc.org](mailto:dataentry@aftrcc.org)>, <[dhankins@txtav.com](mailto:dhankins@txtav.com)>, <[treasurer@aftrcc.org](mailto:treasurer@aftrcc.org)>

**Subject:** AFTRCC ICN 1156-16/5949 (AeroVironment Inc XT/UAS Test-Simi Valley, CA)

This email is your AFTRCC coordination.

This coordination includes this header information, DOD Area Frequency Coordinator comments and AFTRCC comments. These messages must not be separated.

This coordination is advisory only and not binding on the FCC. Applicants are advised that this coordination does not constitute a judgment that the frequency(ies) is best suited for the applicant's purpose nor that the frequency(ies) is exclusive to the applicant. Flight Test frequencies are shared and may require scheduling with other users.

In return for AFTRCC's processing of the applicant's coordination request, the applicant agrees to release and hold harmless AFTRCC, its officers, directors, agents, members, and representatives from any claims, losses or expenses that may arise from the use of the frequency.

This coordination is not an authorization to transmit. A copy of this coordination must accompany application to the FCC.

Signed:

Wayne Morris

AFTRCC Telemetry Coordinator

903-457-6949

-----Original Message-----

From: Heaton, Jamie CIV NAVAIR, 52370MD [<mailto:jamie.heaton@navy.mil>]

Sent: Tuesday, February 09, 2016 9:38 AM

To: Morris, Wayne L @ AS - MID; Foltz, Andrew P CIV NAVAIR, 52140MD

Subject: RE: AFTRCC ICN 1156-16/5949 (AeroVironment Inc XT/UAS Test-Simi Valley, CA)

Wayne,

WAFC concur with AFTRCC ICN 1156-16/5949 (AeroVironment Inc XT/UAS Test-Simi Valley, CA).

WAFC ctrl nbr 16-145.

Thx,  
Jamie

Jamie Heaton, CIV  
DOD Western Area Frequency Coordinator  
M/S 3008 130 Easy Road  
China Lake CA 93555  
Code 52140MD  
Comm: 760-939-6832  
DSN: 437-6832

-----Original Message-----

From: [wayne.morris@L-3com.com](mailto:wayne.morris@L-3com.com) [<mailto:wayne.morris@L-3com.com>]  
Sent: Tuesday, February 09, 2016 5:45 AM  
To: Foltz, Andrew P CIV NAVAIR, 52140MD  
Cc: Heaton, Jamie CIV NAVAIR, 52370MD  
Subject: [Non-DoD Source] AFTRCC ICN 1156-16/5949 (AeroVironment Inc XT/UAS Test-Simi Valley, CA)

AFTRCC concurs with and requests DoD Western AFC concurrence/coordination on the following XT request in support of UAS testing.

This request replaces FCC XT WI9XWK previously coordinated/granted which expired 2016-02-06.

Applicant:

AeroVironment Inc.

85 Moreland Road

Simi Valley, CA 93065

POC: John Logan (202-787-5621)



Frequency: 2380-2385.0 MHz

Station Class: MOEA

Emissions: 4M68G7W/1M56G7W

Power: 10 watts (ERP)

Location: Simi Valley, CA (34-19-23N 118-51-35W)

MIRAD: 7.5 miles (12KM)

Maximum Altitude: 152 meters (499 FT) AGL

Dates: 2016-04-01 thru 2016-09-30

AFTRCC comments: replace FCC WI9XWK which has expired.

AeroVironment will contact DoD Western AFC (760-939-6832) at least

48 hours prior to flight test for IFDS scheduling.

Stop Buzzer POC: Andy Thurling (805-368-6351)

Please reply via return email as to concurrence, non concurrence,  
additional scheduling, or comments.

Signed:  
Wayne Morris

AFTRCC Telemetry Coordinator

903-457-6949