

STATEMENT ACCOMPANYING REQUEST FOR EXPERIMENTAL AUTHORIZATION

1. Introduction

By this application, AeroVironment, Inc. (AeroVironment), requests that the Commission grant an experimental license to operate facilities in the 400 MHz and 5 GHz bands at sites detailed in the attached Form 442, located at:

- East Kern, Kern County, CA, North 35° 03' 20" West 118° 01' 46 ", Edwards Air Force Base, Hyundai
- East Kern, Kern County, CA, North 34° 50' 03" West 118° 04' 19", Edwards Air Force Base, Rosamond Lake Bed
- Lanai, Maui County, HI, North 20° 46' 43.8" West 156° 56' 21.4"

These tests are in support of AeroVironment's Hawk30 High Altitude Platform System (HAPS) for unmanned aircraft. The project encompasses yet to be tested solar-powered high-altitude long-endurance (HALE) unmanned aircraft. The tests will address integrating the transceivers at different altitudes in the solar environment. This application is for the first stage of testing.

The following summarizes the testing proposed, the reasons underlying this effort and the technical parameters of the intended operations.

2. Purpose and Technology

The purpose of these experiments is to test three trans-receivers in distinct spectrum bands. These are:

- the Microhard Pico 400 in the 454/459 MHz segment;
- the Harris p/n 102721-001 in the 5040-5050 MHz segment for purposes of sending ground based command and control data to and from the SUAS. Operations will be consistent with RTCA DO-362 including that the technology will select a discrete channel. The waveform is compatible the Command and Control (C2) Data Link Minimum Operational Performance Standards (MOPS);
- The Quansonix *QSX-VDR2-1100-05-04-05AB-LD-VP* will use the 5091-5101 MHz segment only for one-way air to ground telemetry during the flight tests.

AeroVironment's SUAS DDL™ is a lightweight, low power, bi-directional, digital wireless video link. Compliant with the Small Unmanned Airborne Systems Digital Data Link (SUAS DDL) waveform, it provides command and control of small SUAS. DDL is IP-based to promote flexibility and interoperability between airborne and ground systems. Users are able to communicate and transfer data via DDL-enable aircraft networks.

3. Deference to Licensed Users

AeroVironment commits to operations respecting other users of the band and those in adjacent segments.

4. Nature of Operations

Surface Based and Airborne Transmission

The DDL communications module will use the segments in the UHF band at 454 and 459 MHz to send ground based command and control (C2) data to and from the SUAS and to transmit video and telemetry to the ground control station. As noted, the 5040-5050 MHz segment will be used only to send ground based command and control data to and from the SUAS. The 5091-5101 MHz segment will be used only for one-way air to ground telemetry during the flight tests.

The project envisions testing in varied environments, including significantly higher altitudes. AeroVironment will return to the Commission to seek the necessary authorizations relating to higher altitudes.

AeroVironment anticipates that the testing will take place over a seven month period on an intermittent basis at the locations proposed. As elements of the project need resolution and coordination with various interests participating in the tests must take place, we request an initial authorization of 1 year.

AeroVironment understands that use of the frequencies are only for purposes of testing radio equipment in the spectrum band segments proposed.

5. Stop Buzzer

Bart Decker, Flight Standards Manager, is available by telephone at Mobile Phone Number (805) 391-1335 and will act as a “stop buzzer” if any matters involving interference arise during the testing.

6. Transmitting Equipment

The transmitting equipment for the 454/459 MHz segment is Microhard Systems, Inc. Pico 400. It is not experimental. The transmitting equipment for the 5040-5050 MHz segment is Harris p/n 102721. It is experimental. The transmitting equipment for the 5191-5101 MHz band is the Quansonix QSX-VDR2-1100-05-04-05AB-LD-VP. It is not experimental.

7. Antenna

For the 454/459 MHz tests, the following is the antenna information. The data sheets for each antenna are provided in a separate attachment.

Antenna	Gain (Nominal)	Polarization	Orientation in Vertical Plane	Oriental in Horizontal Plane
Ground MobileMark #Y66446D-C	9.5	Linear, Vertical	45°	55°
SWA southwest #1000-029	2	Vertical	82°	360°

For the 5 GHz tests, the following is the antenna information. The data sheets are provided in a separate attachment.

Antenna	Gain	Polarization	Orientation in Vertical Plane	Orientation in Horizontal Plane
Airborne 5091-5101 MHz CNPC & Telemetry Haigh-Farr BNI-13110	See attached	Linear Vertical		
Ground 5040-5050 MHz (CNPC) Airborne SWA southwest #1055-034	15	Vertical	32°	55°

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

10. *Diagram*

A diagram of the operations is provided.

Conclusion

AeroVironment appreciates very much the consideration of the Commission, NTIA, FAA, DoD and other agencies in reviewing this application.

Please call upon us if we can respond to any questions.

Operations Diagram

Flight Control Architecture

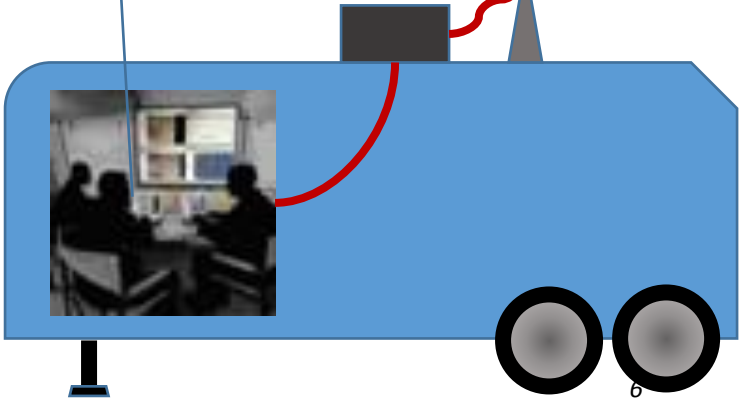
Unmanned
Aircraft

Altitude	
Edwards	915 meters
Lanai	304 meters

Antenna

Ground Radio

Pilot Station



Locations

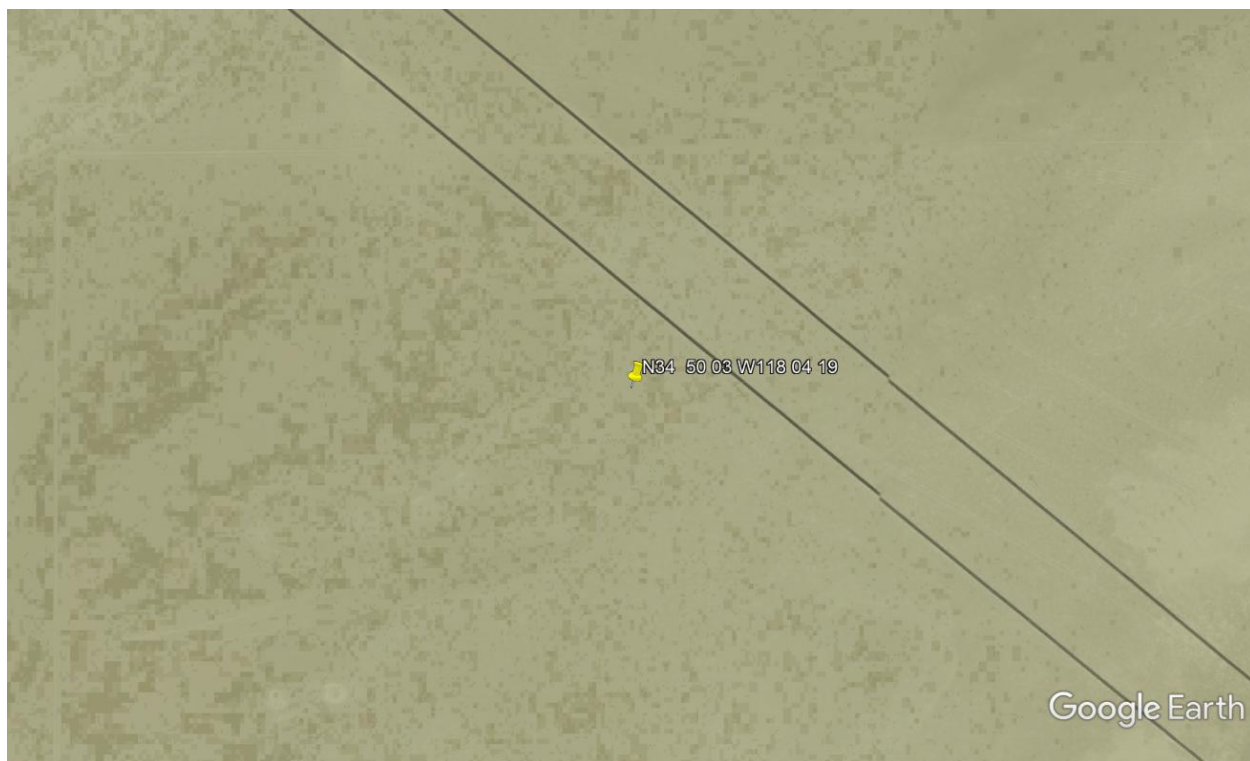


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Edwards Air Force Base

Hyundai

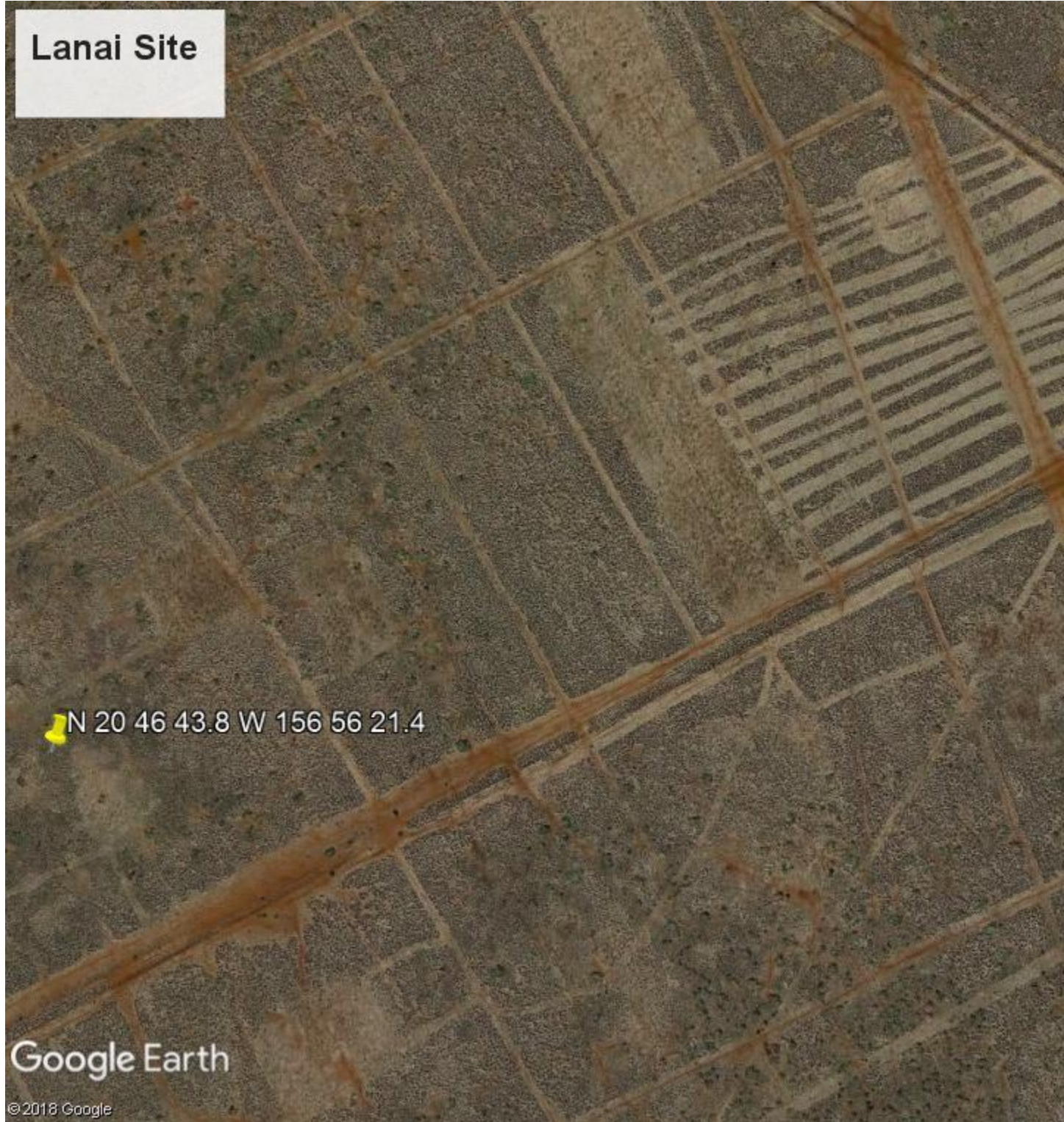


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