

AeroVironment, Inc.

STATEMENT ACCOMPANYING REQUEST FOR EXPERIMENTAL AUTHORIZATION

1. Introduction

AeroVironment, Inc. (AV) designs, develops, manufactures, supports and operates unmanned aircraft systems (“UAS”). By this application, AV requests that the Commission grant an experimental license to operate facilities in the 400 MHz band and 5040.8825 MHz at:

- Spaceport America, Truth of Consequences, Sierra County, NM, North 32° 59’ 31” West 106° 58’ 17”

AeroVironment proposes operations with a radius of 100 km (58 miles) of center reaching an altitude of 25.9 km AGL (85,000 feet).

These tests support AeroVironment’s Hawk30 High Altitude Platform System (HAPS) for unmanned aircraft. The project is a solar-powered high-altitude long-endurance (HALE) unmanned aircraft. The tests address integrating the transceivers at different altitudes in the solar environment.

The second successful test flight of the HAWK30 solar-powered HAPS took place on October 23, 2019 at the NASA Armstrong Flight Research Center, Edwards Air Force Base (EAFB) CA. The test flight reached altitudes higher than those of the previous flight, and was conducted continuously for approximately one hour and 30 minutes. The HAWK30 successfully achieved more than two dozen test points, including 180-degree turns and further validation of avionics, power and propulsion performance. The test team simulated precise landing control on the runway, similar to its commercial operations concept.

The Commission authorized the EAFB tests under experimental licenses WJ2XUP (454.7-454.975 MHz/459.7-975 and 5040.8825 MHz) and WK2XFQ (5140-5150 MHz).

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

2. Purpose and Technology

This application proposes to test the Microhard Pico 400 in the 454/459 MHz segment for command and control purposes.

The Harris p/n 102721-001 will access 5040.8825 MHz to send ground based command and control data to and from the UAS. 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).

A separate application will be submitted to test a transceiver in the 5140-5150 MHz band for aeronautical telemetry purposes.

3. Deference to Licensed Users

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

A concurrence letter from Aura Network Systems OpCo, LLC, the leaseholder of WPON853, KUU576 and KWU510, the UHF channels relevant to the Spaceport America site, is provided on a separate attachment.

4. Coordination with the Federal Aviation Administration

A coordination request was submitted to the Federal Aviation Administration (FAA) as to 5040.8825 MHz. The coordination of FAA Spectrum Engineering is provided as a separate attachment.

5. Nature of Operations

Surface Based and Airborne Transmission

The 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. 5040.8825 MHz will be used to send ground based command and control data to and from the UAS.

AeroVironment anticipates that the testing will take place over several months on an intermittent basis. Proposed operations encompass a radius of 100 km (58 miles) of center reaching an altitude of 25.9 km AGL (85,000 feet). Test will be intermittent and conducted over a period of one year.

AV's request is solely to flight test a prototype aircraft on an intermittent basis for a short period of time. It does not encompass ongoing commercial operations. AeroVironment understands that use of the frequencies are only for purposes of testing radio equipment in the spectrum band segments proposed.

6. 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.

7. 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 5040.8825 is Harris p/n 102721. It is experimental.

8. 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 5040.8825 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
Ground SWA 1055-034	15	Vertical	32	55
Haigh-Farr	BN1-13110	attachment	attachment	attachment

9. 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.

10. 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.

11. *Diagram*

A diagram of the operations is provided.

Conclusion

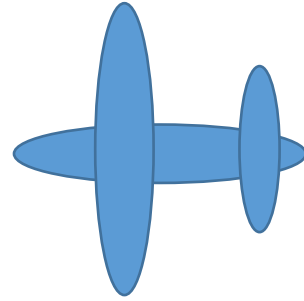
AeroVironment appreciates very much the consideration of the Commission, NTIA, FAA, DoD and other agencies reviewing this application.

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

Operations Diagram

Flight Control Architecture

Unmanned Aircraft

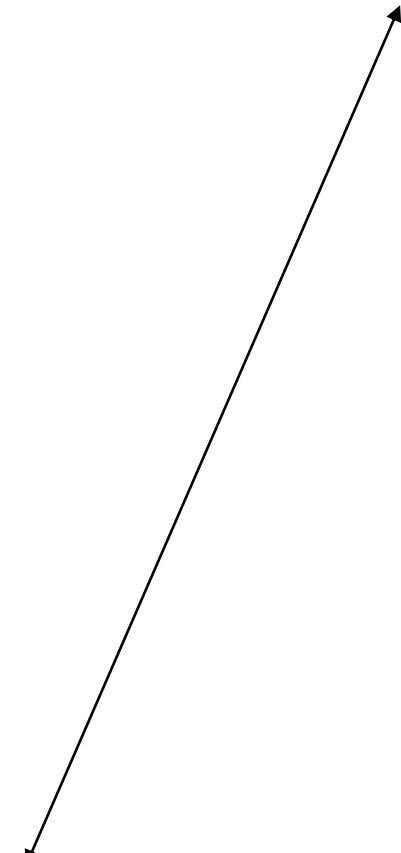
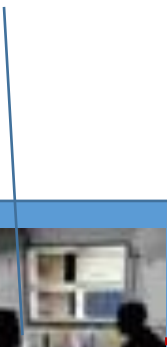
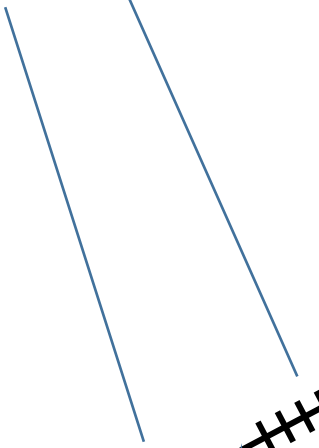
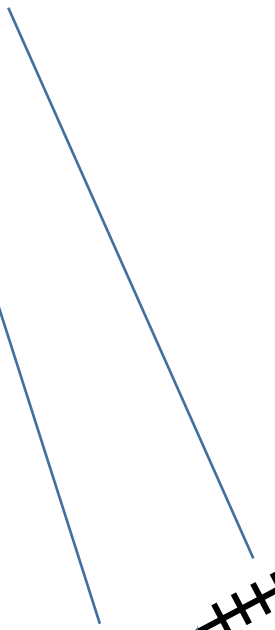
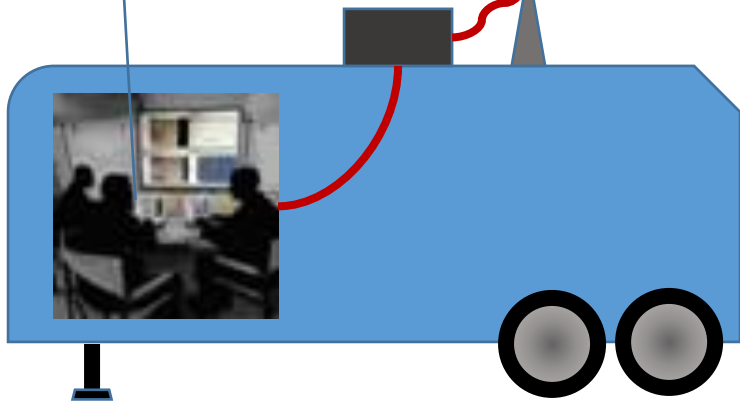


Altitude
Spaceport America, NM
25.9 km AGL

Antenna

Ground Radio

Pilot Station



Location

Spaceport America, Truth of Consequences, Sierra County, NM, North 32° 59' 31" West
106° 58' 17"



Co Rd a 13

N 32 59 31 W 106 58 17

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Imagery Date: 12/14/2013 32°59'31.02" N 106°58'17.04" W elev 4605 ft eye alt 34532 ft