

Special Temporary Authority to Test Radar Instrumentation

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A. Purpose of Operation and Need for License

The purpose of this application is to request authorization from the FCC for Remote Sensing Center at the University of Alabama to operate an aircraft-mounted radar system during two flight tests (2-4 hours each flight) from March 18 to April 8 of 2019, near Blue Mesa and East River in Colorado, to test and calibrate the radar system prior to deploying it later a field mission. The objective is to collect radar survey data over alpine snow regions from a manned airborne platform. The radar data will be used to map the snow-air and snow-ice interfaces for estimating the thickness of the snow cover.

Flight tests are needed near Grand Junction, Colorado, the location where the radar systems will be installed by Remote Sensing Center on a Twin Otter aircraft. Operation of the radar during flight tests requires authorization from the FCC. We are including nominal operating parameters (frequency and power).

B. Locations of Proposed Operation

A license is requested to allow the operation of the aircraft-mounted radars during flight tests to test the radars and calibrate the systems prior to deployment. The locations of operation are outlined in Table 1.

Proposed Location	
Area near Grand Mesa and Gunnison River in CO	39°16'31.45"N 108°26'51.92"W
	39°16'41.46"N 105°50'0.54"W
	37°40'20.20"N 106°58'22.22"W
	37°42'4.13"N 108° 5'22.68"W

Table 1 – Summary of Proposed Operation Locations

The operation will be limited to two flights, each flight lasting two to four hours, between March 18th to April 8th, 2019. The height of the transmitter will be between 500 and 1500 feet AG.

C. Technical Specifications

1. Frequency of Operation

Operation from 2 – 18 GHz.

2. Effective Radiated Power (ERP)

The effective radiated power (ERP) will not exceed 2 W average for 2 – 18 GHz.

3. Modulation Signal Description and Emissions

The 2 – 18 GHz signal is a linear Frequency Modulated radar signal with a sweep time varying between 50us to 250us, duty cycle varying 50% to 100%. These parameters can be adjusted.

4. Antenna Information

The antenna that will be used is made by Pasternack (PE9887-11). It is a broadband waveguide horn antenna. The antenna exhibits 6 dBi to 15.9 dBi of gain across the 1-18 GHz band, with a maximum horizontal 3dB beamwidth of 62° and maximum vertical 3dB beamwidth of 97°. The antenna will be radiating nadir, toward the surface of the earth.

5. Equipment Utilized

Equipment used for this system is built at the Remote Sensing Center at the University of Alabama.

6. Station Class

This station will be Aeronautical Mobile in the areas described in section B, with a nominal altitude of 1500 feet AGL.

D. Contact Information

For questions about this application or in the unlikely event interference concerns should arise, please contact:

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