



Special Temporary Authority to Test Radar Instrumentation

**STA Confirmation Number: EL780326
Form 442, File Number: 1145-EX-ST-2017**

**Jennifer Laverentz
Center for Remote Sensing of Ice Sheets (CRISIS)
University of Kansas, Lawrence, Kansas
August 11, 2017**

Table of Contents

A. Purpose of Operation and Need for License	3
B. Previously Approved Experimental Special Temporary Authorizations (STA)	3
C. Locations of Proposed Operation	4
D. Technical Specifications.....	5
1. Frequency of Operation	5
2. Effective Radiated Power (ERP)	5
3. Modulation Signal Description and Emissions	5
4. Antenna Information	6
5. Equipment Utilized.....	6
6. Station Class	6
E. Contact Information	6

A. Purpose of Operation and Need for License

The purpose of this application is to request authorization from the FCC for CReSIS (Center for Remote Sensing of Ice Sheets) at the University of Kansas to perform test measurements of a aircraft-mounted radar system during 2-3 flights between September 15-30, 2017 and October 19-28, 2017 around Oshkosh, Wisconsin.

The primary objectives of the project are to perform radar measurements as a part of NASA's OIB (Operation ICE Bridge) program over the Arctic and Antarctic sea ice and ice sheets (NASA contract number NNX16AH54G). The radar data are will be used to determine ice thickness and to map both near surface and deep internal layers of ice sheets, as well as to map the snow-air and snow-ice interfaces for estimating the thickness of snow over land and sea ice.

B. Previously Approved Experimental Special Temporary Authorizations (STA)

CReSIS/KU has been granted the following experimental Special Temporary Authorizations to operate within the United States in the past.

Experimental Special Temporary Authorization, Call Sign: WK9XHF

File number: 1251-EX-ST-2016

- Effective date range: September 26, 2016 – October 19, 2016
- Geographic region: Alluvial Fan – NL 35-04-59 WL 117-14-23
- Frequency Information:

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance
165-215 MHz	MO	QXN	4200 W (ERP)	
2-8 GHz	MO	Q3N	1 W (ERP)	
12-18 GHz	MO	Q3N	12 W (ERP)	

Experimental Special Temporary Authorization, Call Sign: WH9XUR

File number: 0738-EX-ST-2014

- Effective date range: October 5, 2014 – October 12, 2014
- Geographic region: Alluvial Fan – NL 35-04-59 WL 117-14-23
- Frequency Information:

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance
165-215 MHz	MO	50MOQ3N	4200 W (ERP)	
2-8 GHz	MO	F3X	1.21 W (ERP)	
12-18 GHz	MO	F3X	12 W (ERP)	

C. Locations of Proposed Operation

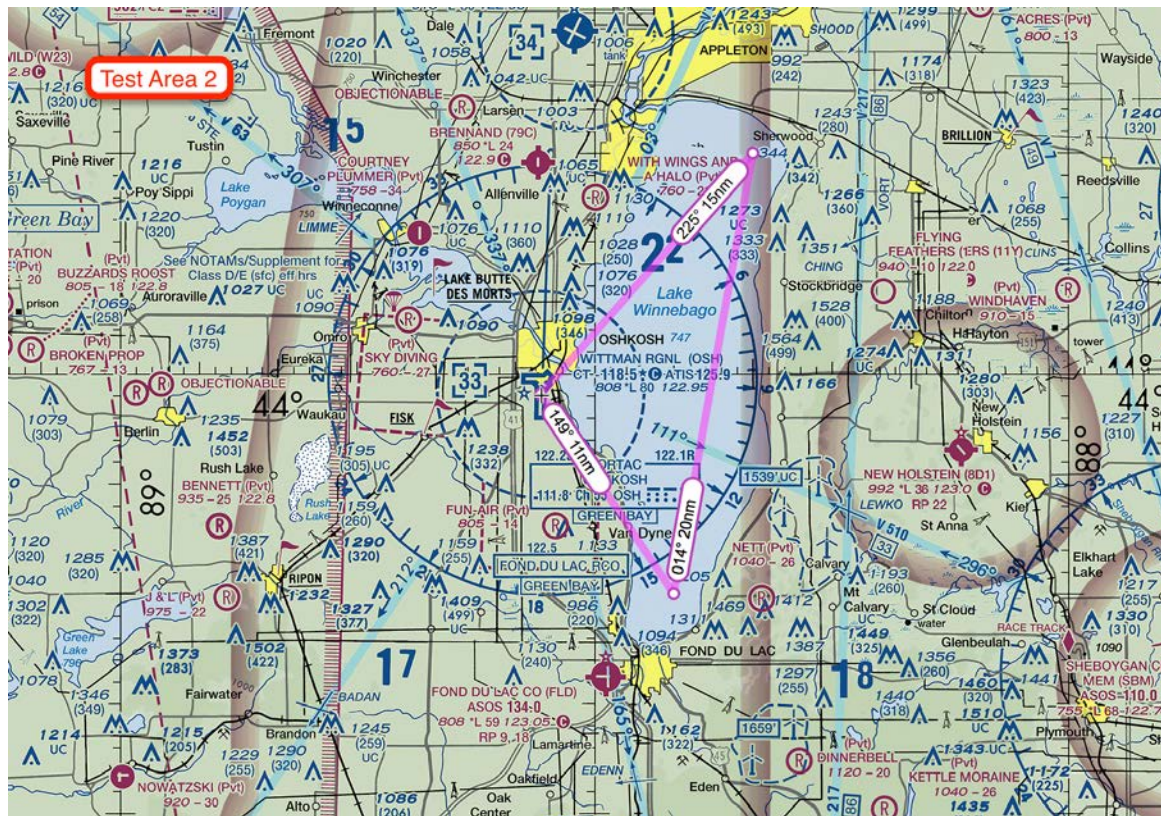
An STA is requested to allow the collection of ice data using aircraft-mounted ultra wideband radar and for the calibration and testing of the radar. The height of the transmitter will be at a nominal flight altitude of 1500 feet AGL. The locations of operation are outlined in Image 1 and Image 2.

The area of operation in the Oshkosh area will depend on the weather. Ideally the test flights will take place over Lake Michigan. In case of strong winds we will use Lake Winnebago

Image 1. Test area over Lake Michigan



Image 2 – Test Area over Lake Winnebago



D. Technical Specifications

1. Frequency of Operation

CRISIS requests authorization to operate in 150-450 MHz bands.

2. Effective Radiated Power (ERP)

The effective radiated power (ERP) will not exceed 63 W peak, 54 average

3. Modulation Signal Description and Emissions

For 150-450 MHz, the signal is a UHF/VHF radar signal with a pulse width of 1 μ s/ 10 μ s to 20 μ s Max, duty cycle of 10%, and a pulse repetition frequency of 10kHz. The primary emission designator is 300MQXN.

4. Antenna Information

The antenna used is an co-linear array. The antenna exhibits up to 10-15 dBi of gain with a beamwidth up to 20° in along-track and 50° in cross-track. The antenna broadside is pointed at nadir, toward the surface of the earth.

5. Equipment Utilized

Equipment used for this system is custom built at CReSIS.

6. Station Class

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

E. Contact Information

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

Jennifer Laverentz
Center for Remote Sensing of Ice Sheets (CReSIS)
The University of Kansas
2335 Irving Hill Rd
Lawrence, KS 66045
Telephone: (785) 864-7722
jenlav@ku.edu