Jennifer Laverentz, 2335 Irving Hill Road, Lawrence, KS 66045,

United States of America
FEDERAL COMMUNICATIONS COMMISSION
EXPERIMENTAL
SPECIAL TEMPORARY AUTHORIZATION

EXPERIMENTAL	WM9XBI
(Nature of Service)	(Call Sign)
XT MO	1621-EX-ST-2017
(Class of Station)	(File Number)

NAME The Center for Remote Sensing of Ice Sheets, University of Kansas

This Special Temporary Authorization is granted upon the express condition that it may be terminated by the Commission at any time without advance notice or hearing if in its discretion the need for such action arises. Nothing contained herein shall be construed as a finding by the Commission that the authority herein granted is or will be in the public interest beyond the express terms hereof.

This Special Temporary Authorization shall not vest in the grantee any right to operate the station nor any right in the use of the frequencies designated in the authorization beyond the term hereof, nor in any other manner than authorized herein. Neither the authorization nor the right granted hereunder shall be assigned or otherwise transferred in violation of the Communications Act of 1934. This authorization is subject to the right of use of control the Government of the United States conferred by Section 706 of the Communications Act of 1934.

Special Temporary Authority is hereby granted to operate the apparatus described below:

Purpose Of Operation:
The purpose of operation is snow, soil, and vegetation measurements from a helicopter UAS. Please note that during the requested period of operation identified below that the instrument will

Station Locations
(1) MOBILE: Ozakie, KS, within 1 km, centered around NL 39-08-57; WL 95-25-31

Frequency Information

MOBILE: Ozakie, KS, within 1 km, centered around NL 39-08-57; WL 95-25-31

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
2-18 GHz	MO		0.000316 W (ERP)	
		16G0M0N		
		16G0G0N		

Special Conditions:
(1) Operation is subject to prior coordination with affected Educational Broadband Service/Broadband Radio Service (EBS/BRS) licensees.
(2) Operation is subject to prior coordination with the local Society of Broadcast Engineers, Inc. (SBE) frequency coordinator. Consult the list at http://freq.sbe.org/pdf_files/coordinators.pdf to find the appropriate coordinator.

This authorization effective December 01, 2017 and
will expire 3:00 A.M. EST January 31, 2018

FEDERAL COMMUNICATIONS COMMISSION

Special Conditions:

(3) Licensee is required to coordinate operations with existing microwave users in the area to avoid interference.

(4) Licensee should be aware that other stations may be licensed on these frequencies and if any interference occurs, the licensee of this authorization will be subject to immediate shut down.

(5) Operation in the 1695-1780 MHz, 1915-1920 MHz, 1995-2020 MHz or 2110-2200 MHz band requires consent of local Advanced Wireless Service (AWS) licensee(s) to avoid interference.

(6) In lieu of frequency tolerance, the occupied bandwidth of the emission shall not extend beyond the band limits set forth above.

(7) Operation is subject to consent of All WCS licensees (2305-2320 MHz/2345-2360 MHz) within 50 miles of the test area.

(8) Maintain separation from the grandfathered earth stations as defined in Part 90, Sub-part Z, or coordinate and agreement with the grandfathered earth station licensees prior to accessing to 3650-3700 MHz.

(9) Ensure that the operation will not cause harmful interference to any existing registered stations in the 3650-3700 MHz band, and notify the registered users in the proposed area.

(10) NTIA is concerned with the wide bandwidth, unconstrained, use of the band from 2 to 18 GHz. While testing at the indicated power level and location is acceptable, widespread deployment of this devise would not be acceptable.

(11) CRSIS must notch the following frequencies and bands to protect Air Force operations:
8750.55 MHz +/- 4M
8778.90 MHz +/- 4M
8807.25 MHz +/- 4M
14400-14830 MHz
15150-15350 MHz

(12) In accordance with US246, the following frequency ranges must be excluded to protect Radio Astronomy and passive space sensor operations;
2690-2900 MHz
4990-5000 MHz
10600-10700 MHz
15350-16200 MHz

(13) CRSIS must not utilize the following bands in order to protect Flight safety radars in the area:
2740-2760 MHz
2810-2830 MHz
5595-5615 MHz

Special Conditions:

(14) Prior to operations, experimental licensee, must notify licensees of FSS earth stations operating the 3700 - 4200 MHz and 10.7 – 12.2 GHz within 30 kilometers' radius of the locations from which experimental operations will occur. Experimental licensee, must also provide such notification to the National Spectrum Managers Association frequency coordinators by email. (see http://wireless.fcc.gov/services/index.htm?job=licensing_1&id=microwave). The notice must include the name and contact information of the stop buzzer personnel that will be available to cease operations in the event of reported interference. The notification should include the testing parameters (specific location(s), antenna gain(s), antenna pattern, antenna height(s), antenna orientation, eirp density) and day and times of each test. Consult the IBFS database to identify licensed earth station in the band 3700-4200 MHz and 10.7-12.2 GHz bands.

(15) Operations in the 3700-4200 MHz and 10.7-12.2 GHz bands, the experimental stations power fluxdensity (pfd) at each location of every FSS earth stations within line of sight must not exceed -154 dB (W/ (m2 · 4 kHz)).

(16) DirecTV/AT&T, EchoStar and DISH Network L.L.C. ("DISH") consents to The University of Kansas ("KU") use of the 12.2-12.7 GHz band for radio transmission for the [05/05/2017] to [10/01/2017] duration at Perry Lake Area – Oskaloosa, Kansas (Lat.: 39.1489 long: -95.4257) on following conditions:
a. The aircraft will operate at AGL below 100 ft (30 meters) and maintain an operating radius of up to 1640 ft (500m). Maximum transmit power will be 0 dBm.
b. The radar will use 500 microsecond pulse and chirp only for 240 microseconds.
c. The aircraft will avoid flying in the exclusion zones as given in University of Kansas DISH.kmz file.
e. KU further agrees to:
(i). No testing in the exclusion zone as describe in DISH.kmz file. This means that the aircraft/radar equipment cannot fly over the excluded area in active testing mode.
(ii). Suspend testing if DISH, EchoStar, and/or DirecTV/AT&T indicates that testing impacted subscribers' experience, and work with DISH, EchoStar, and/or DirecTV/AT&T to revise parameters to resume testing.
(iii). Suspend testing if new subscribers are added during the testing period, and work with DISH, EchoStar, and/or DirecTV/AT&T to revise parameters to resume testing.

(17) This experimental license was obtained based on the written consent of Sirius XM Radio Inc., the FCC licensee for the 2320-2345 MHz band.

(18) This experimental license was obtained based on the written consent of Global Star Inc., the FCC licensee for the 2483.5 - 2500 MHz band.

(19) No automatic renewal for this authorization.

(20) Stop buzzer contacts is Jennifer Laverentz at phone (785) 864-7722.

(21) Grant of this authorization is without prejudice to any determination that the Commission may make regarding pending or future experimental satellite earth station applications.

(22) Further requests for extension of the authority granted herein must be filed on Form 442, "Application for New or Modified Radio Station Authorization under Part 5 of FCC Rules - Experimental Radio Service." Future STA requests to extend this authorization will not be considered.