

**United States of America
FEDERAL COMMUNICATIONS COMMISSION
EXPERIMENTAL
SPECIAL TEMPORARY AUTHORIZATION**

EXPERIMENTAL

(Nature of Service)

WR9XRA

(Call Sign)

XT MO

(Class of Station)

1328-EX-ST-2021

(File Number)

NAME Nanoracks LLC

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:

Downlink data from the Mars Outpost experiment.

Station Locations

- (1) MOBILE: LEO S Band
- (2) MOBILE: LEO X Band

Frequency Information

MOBILE: LEO S Band

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
2209.2 MHz	MO	2M00G1D	3.86 W (ERP)	0.00075 %

This authorization effective December 01, 2021 and
will expire 3:00 A.M. EST May 31, 2022

**FEDERAL
COMMUNICATIONS
COMMISSION**



Frequency Information

MOBILE: LEO X Band

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
8045 MHz	MO	16M0G1D	3.86 W (ERP)	0.001 %

Special Conditions:

- (1) Upon receipt of a conjunction warning from the JSpOC or other source, the licensee must review the warning and take all possible steps to assess and, if necessary, to mitigate collision risk, including, but not limited to: contacting the operator of any active spacecraft involved in such warning; sharing ephemeris data and other appropriate operational information with any such operator; modifying spacecraft attitude and/or operations.
- (2) Following launch of the satellite, the licensee must notify the FCC through electronic submission to the license file, of the status of the satellite (transmissions commenced, etc.), not later than 7 days after commencement or expected commencement of transmissions, and of termination of transmissions, not later than three months after such termination.
- (3) The licensee shall provide the Commission with all information required for the Advance Publication, Coordination and Notification of frequency assignments pursuant to the International Radio Regulations. This includes the preparation of draft materials, to be provided to the Commission prior to submission to the International Telecommunication Union. The authorized operations require notification of frequency assignments pursuant to Article 11 of the ITU Radio Regulations. Licensee shall provide the FCC, not later than 30 days after a frequency assignment is brought into use, the documents required for notification (including SpaceCap Notification MDB file) of such frequency assignments. The licensee shall also prepare materials for informing the ITU that a frequency assignments has been brought into use, or that its use has been suspended or permanently discontinued.
- (4) Point of Communication: Mars Outpost
- (5) The stop buzzer is Nathan Bishop, Outpost Project Manager, NanoRacks LLC
Phone: 979-218-5650 (cell)
email: nbishop@nanoracks.com
- (6) NTIA non-concurs with downlinks on 2209.2 MHz into White Sands and Huntsville due to interference to federal downlinks into Goldstone, CA and Wallops Island, VA.

Special Conditions:

- (7) All Nanoracks LLC operations are on a non-interference basis (NIB) and shall not cause harmful interference to, and shall not claim protection from, interference caused to it by any other lawfully operating stations. Nanoracks LLC should be aware that other stations may be licensed on these frequencies and if any interference occurs, the licensee will be subject to immediate shut down. Nanoracks LLC shall also be aware that long term or operational use of the 2200-2290 MHz frequency band by Non-Federal stations is not possible, and Nanoracks LLC shall have no expectation that future requests for operation in this band will be approved. Nanoracks LLC assumes full responsibility for any action taken or expense incurred as a result of operations pursuant to this license. This authorization replaces the previously granted 0022-EX-ST-2021.
- (8) All operations shall be limited to approximately 1 day of demonstrations as specified in the documentation provide by Nanoracks LLC for the purpose of pre-coordination with federal agencies. This authorization will expire once the second stage launch of the launch vehicle deorbits, or 30 May 2022, whichever occurs first.
- (9) All transmissions in the 2200-2290 MHz and 8025-8500 MHz bands shall comply with power flux-density limits specified in Article 21 of the ITU Radio Regulations.
- (10) Operations and spaceflight trajectories to be submitted NLT 60 days prior to launch to the Naval Surface Warfare Center, Dahlgren Division (NSWCDD). Six (6) blackout (For S band) zones (BOZs) SHALL be imposed as follows: (1) 1500 nautical mile radius centered at 22N160W; (2) 1500 nautical mile radius centered at 33.25N119.57W; (3) 1500 nautical mile radius centered at 8.723303N167.718662W; and (4) 1500 nautical mile radius centered at 57.45N152.378W; (5) 1500 nautical mile radius centered at 32.37N106.47W. (6) 1500 nautical mile radius centered at 57.34N7.35W. The final launch schedule for this Nanoracks mission will ultimately determine which, if any BOZ will be implemented. In addition, Nanoracks MUST also comply with any and all restrictions that may be levied by NSWCDD. The primary contacts for frequency coordination: Mr. James Moneyhon, (540) 653-3477- james.moneyhon@navy.mil, Mr. A. Jason Verdugo, (540) 653-9590 - Anthony.J.Verdugo@navy.mil, and/or Mr. Phillip B. Scyphers, (540) 653-6071 - Phillip.scyphers@navy.mil. Group email box - W_DLGR_NSWC_FTMA_FM@navy.mil.
- (11) As soon as possible, but no later than 3 business days prior to the planned launch, Nanoracks LLC requires providing Jimmy Nguyen (jimmy.nguyen@us.af.mil, AFSMO) with the planned starting and ending dates for the NanoRacks Mars Outpost experiment.
- (12) OPERATIONS OF SPACE STATION/S THAT COMMUNICATE/S TO ASSOCIATED GROUND STATION/S OUTSIDE OF THE USP REQUIRE NONRACKS LLC TO INITIATE AND COMPLETE THE ADVANCE PUBLICATION, COORDINATION, DUE DILIGENCE, AND NOTIFICATION PROCESS FOR THESE SPACE STATIONS AND OBTAINS AUTHORIZATION FROM APPROPRIATE ADMINISTRATION/S WHERE THE FOREIGN GROUND STATION/S IS/ARE LOCATED.