

**United States of America
FEDERAL COMMUNICATIONS COMMISSION
EXPERIMENTAL
RADIO STATION CONSTRUCTION PERMIT
AND LICENSE**

EXPERIMENTAL

(Nature of Service)

XD MO

(Class of Station)

WL2XBR

(Call Sign)

0424-EX-CN-2020

(File Number)

NAME Umbra Lab

Subject to the provisions of the Communications Act of 1934, subsequent acts, and treaties, and all regulations heretofore or hereafter made by this Commission, and further subject to the conditions and requirements set forth in this license, the licensee hereof is hereby authorized to use and operate the radio transmitting facilities hereinafter described for radio communications in accordance with the program of experimentation described by the licensee in its application for license.

Operation: In accordance with Sec. 5.3(a & j) of the Commission's Rules

Station Locations

- (1) MOBILE: NONGEOSTATIONARY
- (2) MOBILE: NONGEOSTATIONARY
- (3) MOBILE: NONGEOSTATIONARY

Frequency Information

MOBILE: NONGEOSTATIONARY

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
9.6 GHz	MO	600MF3N	43 MW (ERP)	
9.8 GHz	MO	1G20F3N	43 MW (ERP)	

This authorization effective February 09, 2021 and
will expire 3:00 A.M. EST August 01, 2025

**FEDERAL
COMMUNICATIONS
COMMISSION**



Frequency Information

MOBILE: NONGEOSTATIONARY

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
8150 MHz	MO	250MG7D	38.6 W (ERP)	

MOBILE: NONGEOSTATIONARY

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
2253.5-2254.5 MHz	MO	100KG7D	80 mW (ERP)	

Special Conditions:

- (1) 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.
- (2) 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.
- (3) In lieu of frequency tolerance, the occupied bandwidth of the emission shall not extend beyond the band limits set forth above.
- (4) The station identification requirements of Section 5.115 of the Commission's Rules are waived.
- (5) 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.
- (6) All operations are secondary to Federal Earth Exploration Satellite (active), Space Research (active), and Radiolocation operations, and shall be subject to immediate cessation in the event that harmful interference is caused to authorized Federal users.
- (7) POINT OF COMMUNICATION: Umbra-2001 Satellite.

Special Conditions:

- (8) OPERATIONS OF SPACE STATION/S THAT COMMUNICATE/S TO ASSOCIATED GROUND STATION/S OUTSIDE OF THE USP REQUIRE Umbra Lab 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.