

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

EXPERIMENTAL

(Nature of Service)

WE2XTW

(Call Sign)

XD MO

(Class of Station)

0271-EX-RR-2012

(File Number)

NAME RaySat Antenna Systems, LLC

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(i) of the Commission's Rules

Station Locations

(1) MOBILE: CONUS, Alaska and Hawaii

Frequency Information

MOBILE: CONUS, Alaska and Hawaii

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
14000-14500 MHz	MO	4M00G7W	4.47 kW (ERP)	

Special Conditions:

- (1) The station identification requirements of Section 5.115 of the Commission's Rules are waived.
- (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) No transmissions are permitted between 14.47 GHz and 14.5 GHz within 125 km of Mauna Kea, HI (at latitude 19° 48' N, longitude 155° 28' W).
- (5) No transmissions are permitted between 14.0 GHz and 14.2 GHz within 125 km of White Sands, NM (latitude: 32° 20' 59" N, longitude 106° 36' 31" W and latitude: 32° 32' 40" N, longitude 106° 36' 48" W).

This authorization effective September 21, 2012 and will expire 3:00 A.M. EST September 21, 2014

**FEDERAL  
COMMUNICATIONS  
COMMISSION**



**Special Conditions:**

- (6) Note that if, during the term of this authorization, NASA seeks to provide protection to a future TDRSS site that has been coordinated through the National Telecommunications and Information Administration (NTIA) Interdepartment Radio Advisory Committee (IRAC) Frequency Assignment Subcommittee process, NTIA will notify the Commission that the site is nearing operational status. Upon notice from the Commission, licensee must cease operations in the 14.0-14.2 GHz band within 125 km of the new TDRSS site until Raysat Antenna Systems, LLC has coordinated with the new site. After coordination, operations will then again be permitted in the 14.0-14.2 GHz band within 125 km of the new TDRSS site, subject to any operational constraints developed in the coordination process.
- (7) National Science Foundation (NSF) requests that licensee:
  - 1) Coordinate operation at the Taunton, MA site with the National Radio Astronomy Observatory's VLBA site at Hancock, NH. (POC Mr. Dan Mertely at Socorro, NM, Phone: 505- 835-7027 and e-mail: dmertely@nrao.edu).
  - 2) Coordinate operation at the Fredericksburg, VA site with Wes Sizemore at Green Bank. (Phone: 304-456-2107, e-mail:wsizemor@nrao.edu).
- (8) In accordance with Article 4.4 of the ITU Radio Regulations, the operations authorized herein shall not cause harmful interference to, and shall not claim protection from harmful interference caused by, a station operating in accordance with the provisions of the ITU Constitution, the ITU Convention, and the ITU Radio Regulations.
- (9) POINTS OF COMMUNICATION: Ku-band: AMC-6, SBS-6, AMC-5, GALAXY-28, AMC-4, HORIZONS-1, GALAXY-27, GE-23, GALAXY-26, GALAXY-4R, Telstar-14.
- (10) Licensee shall comply with the EIRP density criteria set forth in Part 25.222(a)(1) through (a)(4) of the FCC's rules.
- (11) Prior to operating in the 14.47-14.5 GHz frequency band, in the listed locations, Raysat Antenna Systems, LLC will coordinate with the National Academy of Sciences (NSF) and notify the Commission of the results of that coordination:  
Within 45 km of the radio observatory on St. Croix, Virgin Islands (latitude 17° 46' N, longitude 64° 35' W);  
Within 125 km of the radio observatory on Mauna Kea, Hawaii (latitude 19° 48' N, longitude 155° 28' W);  
Within 90 km of the Arecibo Observatory on Puerto Rico (latitude 18° 20' 46" N, longitude 66° 45' 11" W); and  
Within 160 km of the radio observatories listed in US203 as observing in the 14.47-14.5 GHz band.
- (12) The designated point-of-contact to terminate transmissions if interference occurs is Mr. Ilan Kaplan at: Cell: (202) 255-6684.
- (13) Coordinate with NASA when in the area of Moffett Field, Pasadena and Goldstone, CA.
- (14) Raysat Antenna Systems, LLC will need to update its coordination agreement with NASA to include operations within 125 km of the new TDRSS site at Blossom Point, MD. Raysat Antenna Systems, LLC METs shall cease operations within 125 km of the new Blossom Point facilities when those facilities become operational, unless Raysat Antenna Systems, LLC reaches an agreement with NASA permitting such operations.

**Special Conditions:**

- (15) Raysat Antenna Systems, LLC shall take all reasonable and customary measures to ensure that the MET does not create a potential for harmful non-ionizing radiation to persons who may be in the vicinity of the MET when it is in operation. At a minimum, permanent warning label(s) shall be affixed to the MET warning of the radiation hazard and including a diagram showing the regions around the MET where the radiation levels could exceed 1.0 mW/cm<sup>2</sup>. The operator of the MET shall be responsible for assuring that individuals do not stray into the regions around the MET where there is a potential for exceeding the maximum permissible exposure limits required by Section 1.1310 of the Commission's rules, 47 C.F.R., § 1.1310. This shall be accomplished by means of signs, caution tape, verbal warnings, placement of the MET so as to minimize access to the hazardous region and/or any other appropriate means.
- (16) In the event that another co-frequency FSS satellite commences operation at a location within six degrees of the target satellite, Raysat Antenna Systems, LLC must reduce aggregate off-axis radiation from its METs to levels one dB below the routine-processing envelope, pending demonstration of coordination with the operator of the new satellite.
- (17) Raysat Antenna Systems, LLC METs must employ a tracking algorithm that is resistant to capturing and tracking adjacent satellite signals, and each Raysat Antenna Systems, LLC MET must be capable of inhibiting its own transmission in the event it detects unintended satellite tracking.
- (18) This authorization is issued for the express purpose of conducting experimental operations described in the related application and required by the U.S. Government contract number 66001-07-C-0076. The use of this radio station in any other manner or for any other purpose will constitute a violation of the privileges herein authorized. Except as subsequently authorized by the Commission, this radio station shall not be operated after the expiration date of the contract designated in the related application and enumerated above.