

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

EXPERIMENTAL  
(Nature of Service)

WE2XDV  
(Call Sign)

XT MO  
(Class of Station)

0248-EX-CR-2019  
(File Number)

NAME THE BOEING COMPANY

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(b) of the Commission's Rules

Station Locations

(1) MOBILE: CONUS, AK, HI.

Frequency Information

MOBILE: CONUS, AK, HI.

| Frequency   | Station Class | Emission Designator                                                                  | Authorized Power | Frequency Tolerance (+/-) |
|-------------|---------------|--------------------------------------------------------------------------------------|------------------|---------------------------|
| 14-14.5 GHz | MO            | 3M00G7W<br>6M75G7D<br>11M9G7D<br>20M0G7D<br>24M3G7D<br>29M5G7D<br>32M4G7D<br>3M40G7D | 251188 W (ERP)   |                           |

Special Conditions:

- (1) 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.
- (2) In lieu of frequency tolerance, the occupied bandwidth of the emission shall not extend beyond the band limits set forth above.

This authorization effective August 01, 2019 and  
will expire 3:00 A.M. EST August 01, 2021

**FEDERAL  
COMMUNICATIONS  
COMMISSION**



**Special Conditions:**

- (3) The station identification requirements of Section 5.115 of the Commission's Rules are waived.
- (4) 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).
- (5) Subject to coordination with the Western Area Frequency Coordinator located at the Navy Pacific Missile Test Center, Pt. Mugu, Cal., prior to use within a 322 kilometer radius of Pt. Mugu or in California south of Latitude 37 30' North.
- (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 The Boeing Company 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) No transmissions are permitted between 14.47 GHz - 14.5 GHz within 125 km of Mauna Kea, HI (at latitude 19° 48' N, longitude 155° 28' W).
- (10) The designated point-of-contact to terminate transmissions if interference occurs is Network Operation Center Hotline (703) 467-7001 and alternate Stop Buzzer is Douglas A. Cook (571) 437-5953.
- (11) POINTS OF COMMUNICATION: U.S. Permitted Space Stations.
- (12) Prior to operating in the 14.47-14.5 GHz frequency band, in the listed locations, The Boeing Company 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 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.
- (13) No transmissions are permitted in the 14.00 - 14.2 GHz band within 125 km of Blossom Point, MD (latitude: 38° 25' 44" N, longitude 77° 05' 20" W) .

**Special Conditions:**

- (14) Operation is subject to prior coordinate with White Sands Missile Range (WSMR) and Restone Arsenal.
- (15) Operation is subject to immediate cessation, if it causes harmful interference to Health and Human Service (HHS) Medical operations, NASA operations and Guam assignments.
- (16) Prior to activation, Boeing must coordinate with GSFC Spect Manger 301-286-5089.

**Special Conditions:**

- (17) The stations are authorized to conduct tests using the 14.0-14.5 GHz frequency band. The operations are subject to the following conditions:
- a. POINT OF COMMUNICATION: authorized Geostationary-satellite orbit (GSO) Ku-band satellites in the US Permitted Space Station List.
  - b. The authorized stations must be in compliance with the off-axis EIRP power spectral density ("PSD") standards (the "off-axis mask") set forth in 25.218(f) for conventional Ku-band earth stations.
  - c. Operations must be in compliance with the requirements set forth in Section 25.212( c)(2) of the Commission's Rules: the input power spectral density into the antenna must not exceed -14 dBW/4 kHz.
  - d. 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.
  - e. Prior to commencement of operations with each satellite pursuant to this experimental license, Boeing shall obtain a certification regarding the notification of all satellite operators with co-frequency operations within 6 degrees longitude of each satellite, generally describing the experimental operations authorized herein, including the term thereof, and providing a point of contact for the purpose of resolving any complaints of interference. Boeing shall obtain a similar certification if, during the term of this experimental license, any of the satellites move orbit locations, or if a satellite operator commences co-frequency operations within 6 degrees longitude of each of the satellites. If the point of contact receives a complaint of harmful interference, the party receiving the complaint (if not Boeing) will notify Boeing, and Boeing shall immediately cease such operations or adjust such operations to avoid harmful interference. Boeing will submit a copy of these certification(s) to the Commission for incorporation into the record of this file.
  - f. The stations are authorized, on a non-protected and non-harmful interference basis, to transmit to the geostationary-orbit space stations using the 14.0-14.5 GHz frequency band that are authorized by the Commissions. The stations authorized herein must immediately terminate operations upon notification that such operation is causing harmful interference to any other radio system lawfully operating in the 14.0-14.5 GHz frequency band. The stations authorized herein cannot claim protection from harmful interference from any radio system lawfully operating in the 14.0-14.5 frequency band.
  - g. Operation pursuant to this authorization must be in compliance with the terms of coordination agreements between the authorized GSO Ku-band satellite operators operating in the 14.0-14.5 GHz frequency band and operators of other Ku-band geostationary space stations within six angular degrees of those space stations. In the event that another GSO FSS space station commences operation in the Ku-band at a location within six degrees of any of these space stations, earth stations operating pursuant to this temporary authority shall cease transmitting to that space station unless and until such operation has been coordinated with the new space station's operator or Licensee demonstrates that such operation will not

Specific cause harmful interference to the new co-frequency space station.

h. Communications between authorized station(s) and the Ku-band geostationary space stations must be in compliance with all existing and future space station coordination agreements reached between the Ku-band GSO operators and other administrations; and between the Ku-band GSO operators and, if any, the Ku-band NGSO (non- geostationary space stations) operators.

i. The licensee shall not operate in the band 14.0-14.2 GHz within 125 km of the NASA TDRSS facilities on: Guam (latitude 13°36'55" N, longitude 144°51'22" E); White Sands, New Mexico (latitude 32°20'59" N, longitude 106°36'31" W and latitude 32°32'40" N, longitude 106°36'48" W); Blossom Point, Maryland (latitude 38° 25' 44" N.L. longitude 77° 05' 02" W.L.) unless and until it enters into an agreement with NASA that NTIA has approved. The licensee must conform its operations to the terms of any coordination agreement with NASA.

j. The licensee shall not operate in the band 14.47-14.50 GHz within (a) 45 km of the radio observatory on St. Croix, Virgin Islands (located at latitude 17°46' N, longitude 64°35' W); (b) 125 km of the radio observatory on Mauna Kea, Hawaii (located at latitude 19°48' N, longitude 155°28' W); and (c) 90 km of the Arecibo Observatory on Puerto Rico (located at latitude 18°20'46" N, longitude 66°45'11" W) unless and until the licensee enters into an agreement with the National Science Foundation that has been approved by NTIA. The licensee must conform its operations to the terms of any coordination agreement with the National Science Foundation.

k. The licensee shall not operate in the vicinity of radio observatories of Radio Astronomy Service (RAS) in the band 14.47-14.50 GHz unless and until the licensee enters into an agreement with the National Science Foundation that has been approved by NTIA. The licensee must conform its operations to the terms of any coordination agreement with the National Science Foundation. The appropriate NSF contact point to initiate coordination is Electromagnetic Spectrum Manager, NSF, 4201 Wilson Blvd., Suite 1045, Arlington, VA 22203, fax 703-292-9034, e-mail [esm@nsf.gov](mailto:esm@nsf.gov). See also a list of each applicable RAS site, its location, and the applicable coordination zone on Table-1: Applicable RAS Facilities and Associated Coordination Distances, 47 C.F.R. 25.226(d)(2).

- (18) This authorization is without prejudice to any determination that the Commission may make regarding pending or future experimental satellite earth station applications.
- (19) The authorized stations must be in compliance with the Federal Aviation Administration (FAA) requirements as set forth in Section 17.4 of the Commission's Rules.
- (20) The authorized stations must be in compliance with environmental requirement set forth in Section 1.1307 of the Commission's Rules.

**Special Conditions:**

- (21) 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 station and it shall cease transmission(s) immediately upon notice of such interference and notify the FCC in writing.
- (22) Operation is subject to coordination with the Western Area Frequency coordinator in the Navy Pacific Missile test center Pt. Mugu, CA prior to use within a 322 km radius of Pt. Mugu or in California South of latitude 37° 30' North.
- (23) Upon notification from the FCC, operation on this assignment is subject to immediate cessation if it causes harmful to Federal government operations.