

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

EXPERIMENTAL

(Nature of Service)

WH2XJL

(Call Sign)

XT MO

(Class of Station)

0054-EX-CM-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, Alaska, Hawaii, U.S. Territories

Frequency Information

MOBILE: CONUS, Alaska, Hawaii, U.S. Territories

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
14000-14500 MHz	MO	6M75G7W	24 kW (ERP)	
		32M4G7W		
		20M0G7D		
		24M3G7D		
		29M5G7D		
		7M60G7D		

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) The station identification requirements of Section 5.115 of the Commission's Rules are waived.
- (3) In lieu of frequency tolerance, the occupied bandwidth of the emission shall not extend beyond the band limits set forth above.

This authorization effective May 01, 2019 and
will expire 3:00 A.M. EST October 01, 2020

**FEDERAL
COMMUNICATIONS
COMMISSION**



Special Conditions:

- (4) 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 as shown in exhibit. 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.
- (5) Prior to operating in the 14.0-14.2 GHz frequency band, in the listed locations, Boeing will coordinate with National Aeronautics and Space Administration (NASA) and notify the Commission of the results of that coordination:
Within 125 km of the NASA TDRSS facilities in Guam (latitude 13° 36' 55" N, longitude 144° 51' 22" E) or,
Within 125 km of the NASA TDRSS facilities in 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) or,
Within 125 km of the NASA TDRSS facilities in Blossom Point, Maryland (latitude 38° 25' 44" N, longitude 77°05' 20" W).
- (6) Grant of this authorization is without prejudice to any determination that the Commission may make regarding any applications requesting permanent authority for operation of the VIASAT VR-12C, VIASATGlobal Aero Terminal 5320, Melco NGA, RANTEC, TECOM and GetSat in the 14.0-14.5 GHz frequency band.
- (7) Operation is NOT PERMITTED in international waters.
- (8) All customers participating in the experiment shall be informed that this operation is for experimental purposes only and can be cancelled at any time.
- (9) The stop buzzer contact for this project is John Landry at 757-207-2406.
- (10) 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.
- (11) The authorized stations must be in compliance with environmental requirement set forth in Section 1.1307 of the Commission's Rules.
- (12) This authorization is without prejudice to any determination that the Commission may make regarding pending or future experimental satellite earth station applications.
- (13) 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.
- (14) This authorization SUPERSEDES the previous issued authorization with the same call sign and number: Amended the condition.
- (15) Licensee is authorized to operate 2 unites of Phased Array antenna using the 14.0-14.5 GHz frequency band.

Special Conditions:

- (16) 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: SES-1 @ 101 WL (S2807), AMC-15 @105.05 WL (S2180), and 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. Operations must be in compliance with the applicable ESAAs requirements set forth in Section 25.227 of the Commission's Rules.
 - e. 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.
 - f. 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.
 - g. 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.
 - h. 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 cause harmful interference to the new co-frequency space station.
 - i. Communications between authorized station(s) and the Ku-band geostationary space stations must be in compliance with all existing and future space station

Special 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.

j. Licensee's stations must employ a tracking algorithm that is resistant to capturing and tracking adjacent satellite signals, and each station must be capable of inhibiting its own transmission in the event it detects unintended satellite tracking.

k. Licensee's stations must be monitored and controlled by a ground-based network control and monitoring center. Such stations must be able to receive "enable transmission" and "disable transmission" commands from the network control center and must cease transmission immediately after receiving a "parameter change" command until receiving an "enable transmission" command from the network control center. The network control center must monitor operation of each earth station to determine if it

is malfunctioning, and each earth station must self-monitor and automatically cease transmission on detecting an operational fault that could cause harmful interference to a fixed satellite service network.

l. Licensee must maintain a point of contact available 24 hours per day, seven days per week, with the authority and ability to terminate operations authorized herein, for discussing interference concerns with other licensees, and must submit a letter to be included in its license file with the name and telephone number of the point of contact prior to commencing operation.

m. Operation is NOT PERMITTED in international waters