

Description of Research Project

SpaceX is looking to fly and operate a Research and Development (R&D) Vertical Takeoff, Vertical Landing (VTVL) vehicle on its test site in McGregor, Texas. The vehicle will take off, ascend vertically to a low altitude, and then descend back to its original landing spot. While the vehicle is in the air, it is important to have communications with the vehicle for two main reasons:

1. Downlink: SpaceX can view the data in real-time and ensure that all parameters remain nominal.
2. Uplink: If there is an anomaly, SpaceX needs the ability to command the vehicle into a safe state (as a backup to its onboard safety systems).

Thus, to ensure both a safe and useful test, it is important for SpaceX to maintain a bidirectional RF link between the control center and the vehicle.

SpaceX already has received an experimental permit from the FCC for two downlink frequencies and for an uplink frequency (File number 0394-EX-PL-2011, Call sign WF2XXL). The purpose of this application is to request a second frequency for the uplink, where the signal is sent from a fixed antenna at the SpaceX test site.

As noted on its application last year, SpaceX wishes to use the same transmitters on the VTVL vehicle that it uses on its other vehicles. The major difference is that the ERP is reduced on this vehicle by a factor of 80 (reduction of 19 db). This transmitter has been demonstrated to be very safe and reliable under both flight and test conditions and the regulatory agencies involved (both FAA and FCC) are familiar with the hardware and frequencies.

The tests themselves are divided into low-altitude and higher-altitude tests. The low-altitude tests stay below 215 meters in altitude and last approximately 45 seconds. These tests will be run approximately three times per week during the initial portion of the program. The higher-altitude tests can go as high as 3.5 km and will occur approximately once per week. These tests last approximately 3 minutes.

Please note that SpaceX is also applying for an experimental permit from the FAA in order to gain permission to run these VTVL tests.