

The Aerospace Corporation
Experimental License Application
File Number: 0678-EX-CN-2026

Explanation of Experiment

The Aerospace Corporation (“Aerospace”) is a non-profit federally funded research and development corporation (FFRDC) which has, as part of its mission, the obligation to support experimentation in space. Aerospace is filing this application as part of its support for the US Air Force under contract number FA8802-14-C-0001.

The purpose of this application is to test the performance of a data link radio that will be incorporated in a future satellite system. The testing will allow Aerospace to validate the performance of the radio across the entire data chain.

Aerospace is seeking to extend operations that started under STA WA9XWK. The initial testing was expected to last only three months. However, there is additional testing required, so Aerospace is seeking to extend the authorization. Ongoing operations will allow the program to try to meet some upcoming deadlines.

Technical Synopsis

- Spectrum Needed: 1626.5 – 1660.5 MHz
- Emission Designator: 200KG7D
- Time of Use: Estimated to be four hours per day, as Inmarsat permits
- Power Level and ERP: Output power 1 W, 7.24436 W ERP
- Federal Contract Number: FA8802-14-C-0001

Description of Operations

Aerospace is working to develop a new low earth orbit satellite system for the US government. In the process of developing the system it is testing out various components that will be part of the overall system before building the satellite system.

This application seeks authorization to validate the performance of the IQ SpaceCom XLink – L radio. The goals of the testing include:

- Validate performance of the radio
- Analyze how to move data from the radios across servers
- Determine latency affects performance
- Optimize data formatting
- Test the radio performance adding an encryption layer

To know that the radio works properly, the radio must transmit and receive data across the real-world, disparate components, through firewalls, across cloud servers, and to its end users reliably.

The Aerospace lab does not have the variety of environments that the data will traverse when the system is operational. So, to ensure that the system will work as expected, Aerospace is testing under real-world conditions. The initial months of testing have been helpful, but there is additional work to complete to ensure that the configurations are proper. .

Radio Operations

Aerospace has purchased an IQ Spacecom radio that it installed on the rooftop of its facilities in El Segundo, California. The radio is connected to a data source at Aerospace.

Aerospace schedules use of Inmarsat 4F3 at 98 degrees W using the RBC Signals' Inmarsat scheduling interface. The Inmarsat system is a mobile satellite system licensed to communicate with a wide range of ground stations. In this case, the radio and antenna combination is not pre-approved for operation with the Inmarsat system, so it is not covered by Inmarsat's blanket license. Thus, an experimental license is required.

Aerospace has been requesting testing windows of four hours each, which RBC Signals reviews with Inmarsat and then books if the satellite system is available. The RBC Signals system has worked to accommodate the service request. When services are scheduled with Inmarsat, RBC Signals assigns a 200 kHz channel for Aerospace to use for testing at the scheduled day and time. Other days, RBC Signals may have to assign a different frequency for these operations. This is why Aerospace has requested the band from 1626.5 to 1660 MHz. The actual operations will only require the 200 kHz channel assigned.

When the assigned testing window opens, Aerospace transmits to the Inmarsat satellite and receives data back from the Inmarsat satellite. It is during these operational windows that Aerospace will be able to trace the path of data packets as they traverse various cloud servers, fire walls, and enterprises. The Aerospace team will be looking a latency, analyze data formatting, and determine the effects of encryption on all the operations of the system.

In the times between radio tests, Aerospace will work on alternative data formatting and other system adjustments to achieve the best performance, so that when the LEO satellite system is operational, it will work as designed.

Spectrum Needed

Aerospace is requesting authorization to operate across the whole band that is licensed to Inmarsat on S2932. It will use a limited amount of that spectrum for testing on any specific day, and the spectrum it will use will be assigned by Inmarsat's authorized scheduler, RBC Signals.

Area of Operations

Aerospace will be operating at its facilities in El Segundo, California. The radio will be installed on the roof of a building, pointed straight up to the sky.

No Likelihood of Harmful Interference

Aerospace is using the IQ SpaceCom radio in accordance with the spectrum allocation and license in place that is used by Inmarsat currently. In fact, the scheduling of the bandwidth use is part of ensuring that there is no likelihood of harmful interference.

Stop Buzzer Point of Contact

- Thomas Pridy, 310-336-5183, thomas.c.pridy@aero.org

Conclusion

Aerospace is seeking an experimental license for ongoing testing of the functionality of a radio that it is considering using in future LEO satellites. This is intended to be a real-world test, on the ground, of a radio to assess its functionality and performance across an entire ground-to-satellite-to-ground network. The testing is a continuation of the experimentation that started under WA9XWK.

If there are any questions regarding this application, please contact Anne Cortez, Counsel to Aerospace, at anne@washingtonfederalstrategies.com or 520-360-0925.