RBC Signals, LLC
Experimental License Application

Explanation of Experiment

Overview:

RBC is seeking this experimental license to provide TT&C and data downlinks for a U.S. Department of Defense satellite program SDA Tranche 0. The SDA Tranche 0 program is a novel exploration of the use of intersatellite links to provide larger volumes of data quickly to the warfighter. The Commission's regulations 47 C.F.R. §5.125 allow an experimental licensee to communicate with a government station. Therefore, this application is appropriate.

Technical Synopsis:

- Spectrum, Center Frequency: 2025-2110 MHz
- Power Level and ERP: 56 W, ERP: 235 kW
- Transmit antenna gain: 38.38 dBi
- Emission Designator: 1M00G1D and 250KG1D
- Ground Station Type: 4.5m dish, 6m dish, 3.7m dish

Description of Operations:

RBC Signals is seeking this experimental authorization to support the Department of Defense's SDA Tranche 0 satellites. The constellation operates from low earth orbit (LEO) and uses optical cross links to move large amounts of data from a range of sources to the warfighter at great speed. This improves decisions and provides more accurate information quickly. This application seeks to use spectrum that is used on the DoD satellites to provide support for the satellite operations.

RBC Signals will provide scheduling interface, antenna control and pointing, and radio configuration control for SDA Tranche 0. RBC Signals provides a network interface to the satellite operator which allows them to connect to the incoming and outgoing data streams for each site respectively. RBC Signals is seeking an experimental license from the Commission for these communications because it is supporting a DoD experiment. The DoD experiment falls in the category of space research which has a primary spectrum allocation in the band for Earth-to-space operations.[1]

RBC will send data up to the satellites from its ground station in Deadhorse, Alaska instructing the satellite on scheduling, antenna control and pointing, and radio configuration control. All of these activities fall under the general category of telemetry, tracking, and control ("TT&C") activities. This type of communication is essential to ensuring that the data generated at the satellite is able to be properly downlinked when the satellite is over authorized ground stations.

[1] *See* US Table of Allocations, 47 C.F.R. § 2.106.

This application seeks authorization for the operation of the ground station that will be used to send TT&C information up to the satellites, providing new tasking, requesting additional information to be downloaded. Because RBC Signals proposes to operate under experimental authority, operations will be on an unprotected, non-harmful interference basis in accordance with the Commission's Rules.

Spectrum Requested:

RBC Signals has requested the 2025-2110 MHz band for these operations. Actual transmissions will be limited to one megahertz or 250 kilohertz transmissions within the band. The frequencies to be used can change, and so the application seeks authorization for use of frequencies across the band. Only a small amount of bandwidth will be in use at any given time.

Location of Operations:

RBC Signals is submitting this application for the operation of its transmitters located in Deadhorse, Alaska.

Time of use:

The satellites are expected to pass over the transmit station in Deadhorse, Alaska 10-12 times each day. Each pass over the ground station is expected to last 10-12 minutes. The ground station will only be in use when the satellite passes over it. The time of use is expected to be very limited.

No likelihood of interference to other operations:

Given the remote, sparsely populated area where the RBC Signals' transmitters are located in Deadhorse, Alaska, it is unlikely that there will be any interference to any other spectrum operations.

Stop Buzzer Point of Contact:

John Ames
719-502-6206
John.ames@rbcsignals.com

Conclusion:

RBC Signals is seeking an experimental license to operate a satellite earth station on spectrum that is used by US Department of Defense satellites to support the DoD mission of providing better information to the warfighter. RBC Signals proposes to transmit from a ground station in Deadhorse, Alaska when the satellites pass over their location 10-12 times per day. The transmitter will be in use less than three hours per day. There is no likelihood of harmful interference to other operations.