

REQUEST FOR EXPERIMENTAL AUTHORIZATION

Lockheed Martin Corporation (“Lockheed Martin”) hereby seeks authority under Part 5 of the Federal Communications Commission’s rules to operate a ground transmitter and directional tracking antenna at its Littleton, CO facility to conduct transmissions to an experimental CubeSat secondary payload carried and deployed from an India Polar Satellite Launch Vehicle (PSLV), which is currently projected for an April 18, 2019 launch.

Lockheed Martin herein provides additional details related to the objectives of these experimental operations, also known as the Pony Express project:

Experimental mission overview.

Lockheed Martin is developing passive receiver technology to demonstrate advanced communication technologies and waveforms. The receiver is intended as a pathfinder for integration into future spacecraft missions.

An overview of the Pony Express concept of operations (operational view 1) is shown in Figure 1. The figure shows a notional concept of operation for a single pass over the Lockheed Martin Littleton site.

Prior to each pass, receiver tasking commands are uploaded via a partner ground station in Irvine, CA to the spacecraft and then to the Lockheed Martin receiver and timed to execute at the appropriate time. Once the spacecraft is within visibility of the Lockheed Martin site, transmission of the desired test signal from the ground will begin, and the spaceborne receiver will receive the signal and store data to memory. Once the pass has ended the ground site will cease transmission and the receiver will transfer data to the spacecraft avionics for storage. Finally, the receiver will power-down to conserve energy and downlink this data to the partner ground site in Norway via an S-band link.

Lockheed Martin confirms that the operation of the partner UHF and S-band communications links is not part of this instant submission; instead, those partners are securing by separate process the appropriate operating and transmitting authorizations with the appropriate jurisdictional authority.

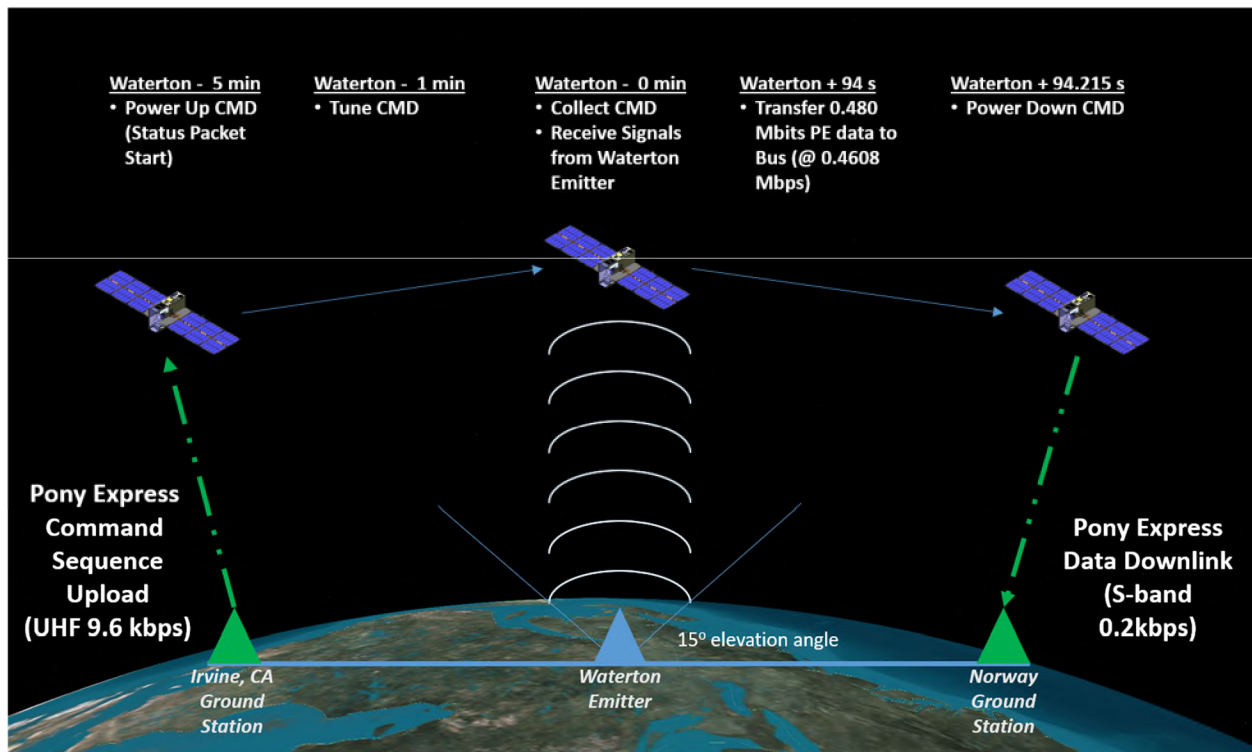


Figure 1 Pony Express System OV-1

Lockheed Martin proposes to transmit signals from its Littleton site in Colorado to the spaceborne receiver using a variety of waveforms and at several spot frequencies between 900 MHz and 2.4 GHz. The receiver is capable of operation over a wide range of frequencies, which drives the request for transmitter operation over multiple bands.

The transmitter antenna is highly directional, and operation will be limited to elevations above 15 degrees to minimize interference to terrestrial users. Operations will also be intermittent rather than continuous, with signals only being transmitted during selected overhead passes.

Satellite payload.

The Lockheed Martin passive receiver and host CubeSat will be integrated into the PSLV as a secondary payload. The passive receiver itself consists of a small antenna and a software defined radio receiver.

The host spacecraft is licensed by Lockheed Martin's partner in this technology demonstration. The licensing of the spacecraft includes providing a necessary orbital space debris assessment. The PSLV is licensed by the Indian administration for launch and operation for its own primary payload, with which Lockheed Martin is not involved.