

FORM 442, QUESTION 6, DESCRIPTION OF RESEARCH PROJECT

a. A description of the nature of the research project being conducted.

The requested frequency will facilitate communications with two experimental CubeSats: SpacelICE (Space Interface Convective Effects) and CAPSat (Cooling, Annealing, Pointing Satellite).

SpacelICE will launch as a single 3U CubeSat and, once in orbit, conduct a materials science freeze-casting experiment. This is a CubeSat experiment for the purpose of demonstrating freeze-casting in Low Earth Orbit and better characterizing the process in micro-gravity.

CAPSat is a single 3U CubeSat that encompasses three technology demonstrations, each advancing the technology readiness level of NASA roadmap technologies. The experiments are: strain-actuated deployable panels for improved pointing control and jitter reduction, an active thermal control system, and single-photon avalanche detectors (SPADs) to test methods of mitigating space radiation damage.

b. A showing that the communications facilities requested are necessary for the research project.

The ground station is necessary to have access to both satellite systems. The radios on each of the satellites are necessary to communicate with the ground station.

c. A showing that existing communications facilities are inadequate.

There is no communications channel currently available for these missions.