

## Dorsat-01 Satellite Technical Description

The overall goal of the DORSAT-01 mission, is to test the new NearSpace Launch NSL-X5 GPS Module.

The DORSAT-1 experiment will be launched as a hosted payload aboard the ABL-2 launch vehicle, from Pacific Spaceport Complex - Alaska, Kodiak Island, Alaska, No Earlier Than June 1, 2023. It will remain attached to the ABL-2 second stage, which will circularize into an orbit at 200 km apogee and perigee, on an inclination from the equator of 87.3 degrees. Transmission will begin 15 minutes after satellite activation, and cease upon demise, about 6 days after launch.

The spacecraft is a single unit with the dimensions of 10 cm X 10 cm X 10 cm CubeSat module mounted to the pusher plate in the 3U launcher (giving an overall dimension of 10 cm X 10 cm X 10 cm.) The total mass is about 750gm.

**Figure 1 DORSAT-01 Overview**



In the above illustration, the round antenna is for the NSL-X5 GPS, and the square antenna is for the S4 Iridium transceiver.

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## Satellite Subsystems

### **Communications Subsystem:**

The NSL EyeSTAR S4 module communicates with mission operations via the Iridium constellation, using an Iridium 9603 transceiver, and a Tallysman TW1600 patch antenna.

Transmission from the S4 module can be suspended by a command from mission operations, through the Iridium constellation.

### **Command and Data Handling (CDH) Subsystem:**

The processor in the EyeSTAR S4 module will function as the flight processor. It will control TT&C and interface to the NSL-X5 GPS Module.

### **Electrical Power Subsystem (EPS):**

The EPS is a direct energy transfer system from the LiPo 7.4 V/ 7.0 A-hr battery system. There are no solar arrays, the battery is the only energy source.

### **Structure Subsystem:**

The structure is fabricated of aluminum 6061-T6.

### **Propulsion Subsystem:**

No propulsion subsystem is included.

### **Payload Subsystem:**

The NSL-X5 GPS Module.