FACT SHEET

GPX2

Needs

- Evaluate the viability of low cost Commercial-Off-the-Shelf (COTS) GPS receivers for SmallSat on-orbit, close-proximity operations such as formation flying or in-space assembly
- Demonstrate novel application of proven technologies for cost and complexity reduction

Goals

Perform Differential GPS (dGPS) measurement on-orbit

Objectives

- Assess the performance of dGPS in measuring the known baseline.
- Collect ionospheric density observations supporting collaboration with *The Aerospace Corporation*

Technical Information

Apogee: 500 km

Perigee: 500 km

Inclination: 45°

Mass: 3.4 kg

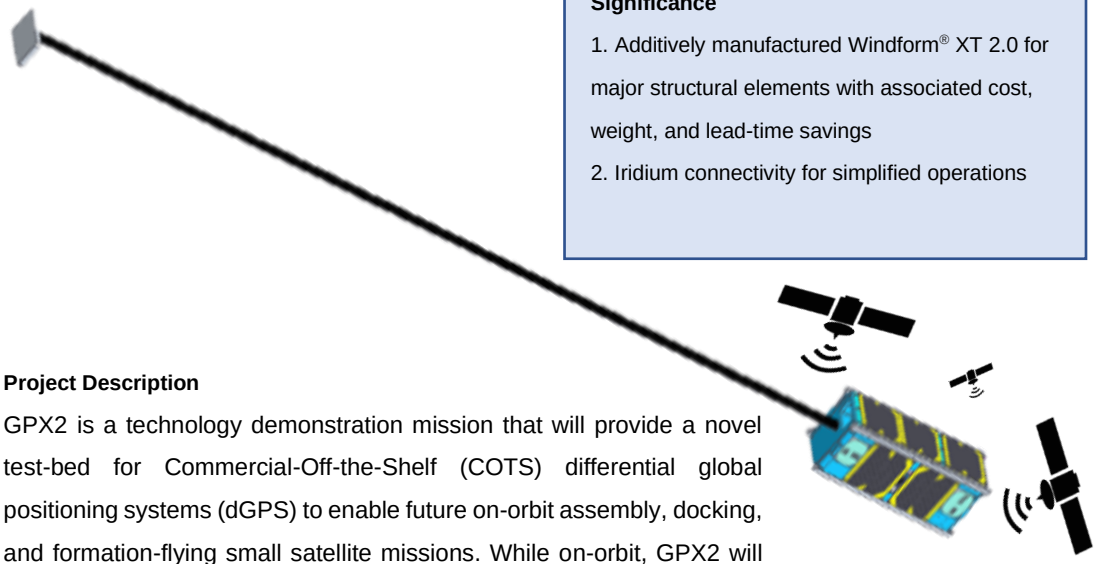
Dimensions: 10 cm x 10 cm x 30 cm (3U)

Tech Transition

- Demonstration of additive manufacturing process for SmallSat primary structure - Windform® XT 2.0 material system
- Demonstration of Iridium Short Burst Data (SBD) for command/telemetry (based on NASA Ames Research Center TechEdSat Program)

Significance

1. Additively manufactured Windform® XT 2.0 for major structural elements with associated cost, weight, and lead-time savings
2. Iridium connectivity for simplified operations



GPX2 CubeSat with Gravity Gradient Boom deployed

Project Description

GPX2 is a technology demonstration mission that will provide a novel test-bed for Commercial-Off-the-Shelf (COTS) differential global positioning systems (dGPS) to enable future on-orbit assembly, docking, and formation-flying small satellite missions. While on-orbit, GPX2 will assess the capability of multi-frequency COTS dGPS receivers. GPX2 is passively stabilized using a 2-meter gravity gradient boom, providing a local orbit horizon view to the GPX2 antennae and Iridium communication. By demonstrating dGPS on-orbit, GPX2 paves the way for on-orbit assembly and autonomous robotic operations using high-accuracy dGPS to measure relative proximity and orientation.

www.windform.com/windform-xt-2-0.html
www.nasa.gov

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