**SmallSat Ka-band Operations User Terminal (SKOUT)**

***Project Introduction***

SKOUT is a Ka-band communications system for future NASA mission spacecraft that operates with both NASA and commercial relay satellite constellations in GEO and potentially LEO as well as direct-to-Earth (DTE) networks.

This project encompasses the development and demonstration of commercial-off-the-shelf (COTS) 5G, Ka band, phased array technologies compatible with commercial space networks, including actively phases array antennas, software defined modems, power optimization algorithms, and high data rate to ground using the DVB-S2 standard.

***Anticipated Benefits***

* Eliminates Mechanical Gimbal/Body Pointing
  + *Electronically steered antenna provides near instantaneous pointing and tracking without disturbing spacecraft operations*
* Reduce perceptions of mission risk by demonstrating Ka-band phased array technology to advance TRL
* Demonstrate improved performance of Ka-band phased-array antennas
* Increase ease use of Ka-band for future missions
* Develop low-cost communications payload by utilizing commercial best-practices and/or leveraging growing commercial 5G market
* Tiled architecture extensible from CubeSats to traditional large satellite user missions

***Primary Work Locations and Key Partners***

|  |  |  |  |
| --- | --- | --- | --- |
| **Org Performing Work** | **Role** | **Type** | **Location** |
| Glenn Research Center (GRC) | Lead Organization | NASA Center | Cleveland, Ohio |
| CesiumAstro, Inc. | Supporting Org | Industry | Austin, TX |
| Defense Innovation Unit | Supporting Org | US Government | Mountain View, CA |
|  |  |  |  |

***Primary US Work Locations***

* Ohio
* Texas
* California

***Organizational Responsibility***

* Responsible Mission Directorate: HEOMD
* Lead Center/Facility: GRC
* Responsible Program: SCaN

***Project Management***

* Program Director: Badri A Younes
* Program Manager: Jason W Mitchell
* Project Manager: Aaron Yingling
* Principal Investigator: Jim Downey

***Project Duration***

* Start Date: Oct 2018
* End Date: Sept 2021

***TRL***

* Start: 4
* Current:6
* End: 7-8 estimated Dec 2021

***Technology Areas*** (per <https://techport.nasa.gov/view/taxonomy>)

* TX05 Communications, Navigation, and Orbital Debris Tracking and Characterization Systems
  + TX05.2 Radio Frequency
    - TX05.2.6 Innovative Antennas
  + TX05.5 Cognitive
    - TX05.5.1 Cognitive Networking

***Target Destinations***

* Earth

***Supported Mission Type***

* Projected Mission (DTE Mission Category)

