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MITIGATING CUBESAT CONFUSION: FURTHER RESULTS OF IN-FLIGHT TECHNICAL  
DEMONSTRATIONS OF CANDIDATE TRACKING AND IDENTIFICATION TECHNOLOGIES

**Abstract**

CubeSats and nanosats offer affordable access to space. Their standardized size and shape have allowed a CubeSat industrial ecosystem to flourish, which has lowered costs for acquisition and launch, and vastly shortened development times. This has enabled access to space for many nontraditional actors in the space arena. What previously might have taken years to develop can now be accomplished in months, and for significantly less money. This has allowed educational institutions to fly their own CubeSats. It has also allowed numerous developing countries their first satellite. It has allowed more traditional aerospace companies and government agencies very rapid cycle times for research and development efforts. However, when scores of CubeSats are launched en masse, many cannot be immediately identified, some not even after months, if ever. This inability to identify the launched CubeSats from their cohort is what gives rise to “CubeSat confusion”. There are many factors to mitigate this issue, but chief among them would be the ability of a CubeSat owner/operator to independently identify their CubeSat, perhaps using one of various specialized techniques or technologies to aid in this regard. At the 72nd IAC in 2021, we presented preliminary results from technologies aboard Spaceflight Inc. Sherpa dispenser vehicles, accommodated as hosted payloads. Since that paper, there has been further work, both in terms of technologies launched as well as analysis of results. We report new results of several technical demonstrations, including on-board Global Positioning System (GPS) ‘fixes’ transmitted to ground stations for orbit determination, and radio-frequency identification (RFID) tests. We also describe current work for optical ID payloads and plans for near-term launches as additional hosted payloads about the Sherpa.