

## Precision Orbit Determination of the SAC-C Satellite Using the GPS Dual Frequency Measurement

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A precision orbit determination (POD) system of low Earth orbiter using the GPS dual frequency measurements has been developed. It is an option of KOMPSAT-2 POD process system. In this research, the orbit determination using the real dual frequency carrier phase measurements of the SAC-C satellite was conducted to verify KOMPSAT-2 POD system reliability. The SAC-C satellite is an international cooperative mission between NASA, the Argentine Commission on Space Activities (CONAE), Centre National d'Etudes Spatiales (CNES or the French Space Agency), Instituto Nacional De Pesquisas Espaciais (Brazilian Space Agency), Danish Space Research Institute, and Agenzia Spaziale Italiana (Italian Space Agency). The SAC-C was launched at November 21, 2000. The altitude of SAC-C is 702 km and it carries a TurboRogue III GPS and four high gain antennas developed by the JPL. The receiver is able to generate the dual frequency code and carrier phase data. Double-differenced carrier phase measurements were formed using 25 IGS stations. The data were sampled at 30 seconds interval. Fully dynamic approach was adopted for POD. The POD results were compared with those of JPL using GOA II software. The comparison verifies that deci-meter level 3D position accuracy of low Earth orbiting satellite could be achieved. The POD system has been developed successfully.