

SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM (B2)  
Advanced Technologies (1)

Author: Mr. Harry A. Cikanek

National Oceanic and Atmospheric Administration (NOAA), United States, harry.cikanek@noaa.gov

Ms. Ann Over

NASA Glenn Research Center, United States, ann.p.over@nasa.gov

Mr. Michael Barrett

NASA Glenn Research Center, United States, michael.j.barrett@nasa.gov

Mr. Richard Reinhart

NASA Glenn Research Center, United States, richard.c.reinhart@nasa.gov

DESIGN, DEVELOPMENT, AND PRE-FLIGHT TESTING OF THE COMMUNICATIONS,  
NAVIGATION AND NETWORKING RECONFIGURABLE TESTBED (CONNECT) TO  
INVESTIGATE SOFTWARE DEFINED RADIO ARCHITECTURE ON THE INTERNATIONAL  
SPACE STATION (ISS)

**Abstract**

The Communication Navigation and Networking Reconfigurable Testbed (CoNNeCT) is a NASA sponsored mission, which will investigate the usage of software defined radios as a multi-function communication system for space missions. A software-defined radio system is a communication system in which typical components of the system (e.g. modulators) are incorporated into software. The software-defined capability allows flexibility and experimentation in different modulation, coding and other parameters to understand their effects on performance. This flexibility builds inherent redundancy and flexibility to the system for improved operational efficiency, real-time changes to space missions and enhanced reliability/redundancy. The CoNNeCT Project is collaboration between industrial radio providers and NASA. The industrial radio providers are providing the SDRs and NASA is designing, building and testing the entire flight system. The flight system will be integrated on the Express Logistics Carrier (ELC) on the International Space Station after launch on the H-II in 2012. This paper provides an overview of the technology, research objectives, payload description, design challenges and early testing results.