

Indoor Navigation Test Results using an Integrated GPS/TOA/Inertial Navigation System

Alison Brown and Yan Lu

NAVSYS Corporation

Phone: 719-481-4877; Fax: 719-481-4908, e-mail: abrown@navsys.com

ABSTRACT

NAVSYS has developed a networked radionavigation approach for operating in urban environments where GPS signals can be significantly attenuated or completely blocked. The networked radionavigation approach is based on a Software Defined Radio (SDR) testbed, which combines Global Positioning System (GPS), wireless communications, and Time-of-Arrival (TOA) "Pseudolite" technology to provide location indoors for applications such as first responders, warfighters operating in urban terrain, and location-based services. This system has been integrated with a low-cost Micro-Electro-Mechanical System (MEMS) Inertial Measurement Unit (IMU) to provide an integrated GPS/TOA/inertial man-portable navigation system. The system architecture and test results showing its performance for indoor navigation are presented in this paper.