Navigation Satellite Signal Generator

Technology #6736

As more devices utilize and depend on global navigation satellite systems (GNSS), such as GPS and GLONASS, more reliable testing is required during product development. By 2019, the market size for signal generators will be $262M. GNSS signal simulation mimics radio signals generated by GNSS satellites, which is a useful technique by allowing defined scenarios to be replayed in a controlled manner in a laboratory while varying operating parameters of the receiver to optimize its design. The problem is that current methods can only accurately simulate direct signals from GNSS satellites to the receivers. The disclosed technology, Navigation Satellite Signal Generator (NSSG), is able to simulate scattered signals in addition to direct signals to offer high fidelity and more realistic simulations.

How it works

NSSG consists of a high-speed storage medium, a computer, two synchronized software defined radios, and a signal distribution unit. The high-speed storage medium (solid state hard drive) stores scenario files, which can be played back, and the computer handles the data analysis and controls. The software defined radios convert the signal files into analog signals, one radio converts direct signal files and the other converts scattering signal files. Since both direct and scattered signals are generated, the distortion that would exist in real world situations is replicated.

Applications

- GNSS signal simulation for device testing
- Commercial broadcast radio and video signals simulation

Advantages

- Higher fidelity GNSS simulation compared to current techniques

Additional Inventors

- Andrew O’Brien
- Bruce Block

Inventors

Christopher S. Ruf

1600 Huron Parkway, 2nd Floor
Ann Arbor, MI 48109-2590
inventions.umich.edu
techtransfer.umich.edu
venturecenter.umich.edu

Hannah Pianko
734.647.9926
hrpianko@umich.edu