

Field Response Emergency Deployable



DGPS has a large coverage area and is used for various Coast Guard missions. The Coast Guard also handles DGPS maintenance.

1/c Fuller, 1/c Leffler, 1/c Perez Sponsors: C3CEN & NAVCEN Develop an expandable system to receive, demodulate, parse, and analyze the Coast Guard's DGPS system.

The Matlab-coded parsing algorithm looks at the bit-stream of 1's and 0's from the FPGA and converts it to usable data.

MATT AR

This project has four tiers: Receive, Demodulate, Parse, and Analyze.

Processor

Receiver



10010110111011101011...

Parser

The Field Programmable Gate Array (FPGA) allows for implementation of physical circuits through the use of computer code.

computer code.





Once the data is extracted it is uploaded to the database for storage and analysis.

DGPS DATA



0 kHz

303 kHz

292 kHz

NULL

Greensboro,NC

Cape

18-Apr-2013

Hinchinbrook,AK



As GPS satellites orbit and the elevation angle changes, their pseudo-range corrections vary based on timing errors caused by propagation through the atmosphere.





The FPGA converts the DGPS signal from an MSK modulated signal to a usable bit stream through the use of a heterodyne receiver design.





The pseudo-range view allows the user to analyze the different GPS satellites as rise and fall through the atmosphere by comparing their pseudo-ranges over time. This helps to validate the results.







Configuration

Scan

Error Settings

