High-gain Advanced GPS Receiver (HAGR)

navsys

EXCELLENCE IN GPS PRODUCTS & SERVICES

NAVSYS' High-gain Advanced GPS Receiver (HAGR) uses a digital beam steering antenna array to provide gain in the direction of up to twelve GPS satellites simultaneously on both the L1 and the L2 frequencies. This approach has the following advantages for precision GPS applications.

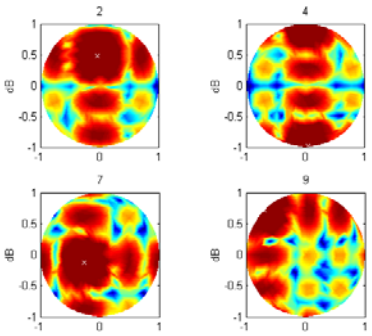
- Digital beam steering increases the observed GPS signal-to-noise ratio
- Increase in gain to each satellite increases the GPS measurement accuracy
- Beam steering directivity reduces the effect of code and carrier multipath error
- Phase coherent signal sampling allows precise carrier phase time transfer

The digital beam steering automatically adjusts the digital antenna array pattern, optimizing the signal reception for both the L1 and the L2 frequencies, by providing gain in the direction of the satellite as shown below.

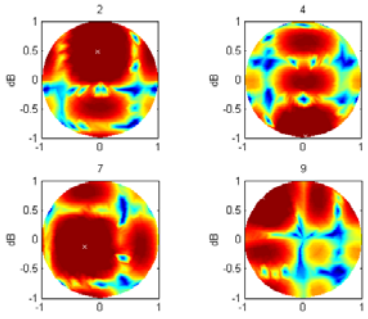
HAGR has proven to be a valuable research tool and may solve your needs also.

Antenna Configurations

This modular, digital architecture allows the HAGR to be configured with different number of antenna elements and different antenna array patterns, depending on the user's requirements. A small antenna array is available with 7-elements (L1 and L2) and larger antenna arrays are also available with 16 or even 109 antenna elements providing 10 to 20 dB of gain. Additionally, with the HAGR, a user provided antenna can be configured for use.



L1 Antenna Array Pattern



L2 Antenna Array Pattern

NAVSYS Corporation 14960 Woodcarver Road, Colorado Springs, Colorado 80921
phone 719-481-4877 *fax* 719-481-4908 *Web site* www.navsys.com

HAGR Performance Specifications

DFE Input Signals

Center frequency	L1: 1575.42 MHz L2: 1227.6 MHz
Signal bandwidth	24 MHz
No. of antenna elements	8 per DFE board Up to 16 boards per HAGR system

Receiver CAC Specification

Source	C/A code (SPS) and P(Y) code (PPS)
Channels	12 SV channels (L1 and L2)
Data Output	I and Q (E/P/L all codes) at 1 kHz

Operating Specifications

Signal acquisition	0—32 dB-Hz (depending on mode of operation)
Signal tracking (carrier phase locked)	0—34 dB-Hz (depending on mode of operation)
Beam steering Gain on GPS Signal	# of Elements — Gain 7 — 8.5 dB 16 — 12 dB 109 — 20.4 dB
Time to first fix	40 secs (cold – no time or position)
Re-acquisition	10 secs to valid position

Built-in Modules

GPS and WAAS search, acquisition and tracking
GPS stand-alone navigation and DGPS (reference and remote)
Precise Timing Reference (1-pps and IRIG-B)
Beam steering and Self-calibration
GPs Jammer Location
GPS/Inertial Navigation
Ultra-Tightly-Coupled (UTC) GPS/Inertial Tracking