

# ENHANCE YOUR POSITION AND PERFORMANCE

ALL-NEW OEM BOARDS  
WITH NEXT-GENERATION  
ASIC TECHNOLOGY



 / Lyra™  / Aquila™  / Cygnus™

 / Phantom™  / Vega™



## Digital ASIC Technology

The Lyra™ II digital ASIC incorporates a scalable design architecture to provide users with the most flexible and scalable GNSS positioning platform in the industry. Lyra II also delivers access to all the modern GNSS signals with very low power consumption making it an ideal option for integration into various mobile and unmanned applications. Its dedicated acquisition engine searches multi-hypothesis in parallel for better Time-To-First-Fix (TTFF) in cold-start and signal-degraded environments.

### Next-Generation Digital RF ASIC

- **Increased channel counts**
  - › Position-only (Phantom) = 800+
  - › Position and heading (Vega) = 1,100+
- **Enhanced signal tracking to include all existing, new, and planned future signals**
- **Signal support and tracking for AltBOC and BS-ACEBOC**
- **Signal support and tracking for BeiDou Phase 3 signals**
  - › B1i, B1c, B2a, B2b, B3i, ACEBOC
- **Signal support and tracking QZSS/L6**
  - › L6-D (CLAS: Japan, 6 cm PPP performance)
  - › L6-E (MADOCA: Eastern Hemisphere, PPP-AR)
- **Faster signal acquisition**
- **Built-in logic for GNSS/IMU measurement synchronization**
- **3-D attitude in a single ASIC**
  - › L1/L2/L5
  - › L1/L2
  - › L1
- **Built-in L-band for Atlas®**
  - › Three L-band/Atlas channels
- **Design layout reduced by:**
  - › 78% in size by basic area
  - › 68% in component count
  - › 73% in component area
- **New heading support for two antenna and three antenna applications**

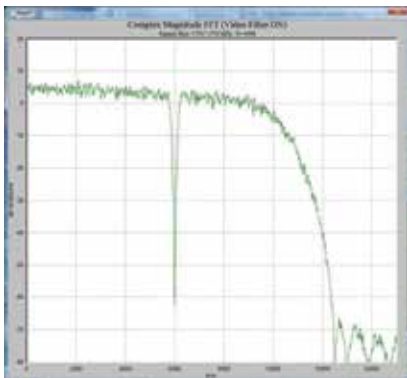


## Interference Mitigation Technology

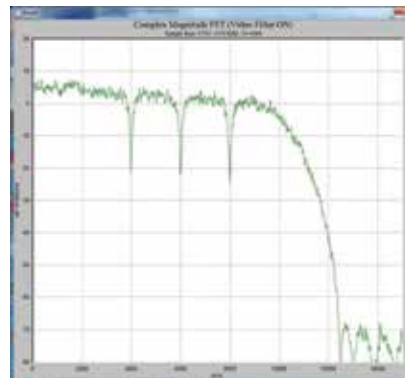
The all-new Cygnus™ interference mitigation technology incorporates the latest digital filtering technology and an integrated Fast Fourier Transforms (FFT) analyzer for real-time spectrum analysis and interference detection. The Cygnus architecture deploys precisely targeted technology in-band filtering measures with minimal impact or disruption to available GNSS constellation signals resulting in higher satellite availability in environments where band interference is present. Cygnus also uses high-resolution Analog to Digital Converters (ADC) for superior anti-jamming performance.

### Next-Generation Interference Mitigation

- **Anti-jam and interference mitigation**
- **Built-in digital filtering capabilities and spectrum analysis**
- **Manual or automatic interference mitigation methods**
- **Interference modes**
  - › High Interference Mode - for use in challenging environments with suspected or known interference
  - › Low Interference Mode - for use in typical environments (normal operating mode)
  - › Programmable
- › Designed to enhance analog filters and compensate for wideband RF front-end that does not have IF SAW filters
- › Designed to reject Out-Of-Band (OOB) interference
- **Multiple IIR filters made up of Second Order Sections (SOS)**
  - › Programmable
  - › Built with Second Order Sections for enhanced stability
- **Multiple Tap FIR filters**
  - › Programmable
  - › Operation on any two of three wideband channels



◀ **65 dB notch deployed by Cygnus to reduce in-band interference.**



◀ **Three 20 dB notches deployed by Cygnus to maintain optimum performance.**



## Wideband RF ASIC Technology




Hemisphere's new Aquila™ wideband RF ASIC can receive multiple frequency bands and use integrated software to best handle incoming signals. Using flexibility to support different bandwidths, Hemisphere is positioned on the cutting-edge of signal acquisition to easily integrate new and future signals from each constellation.

### Next-Generation Wideband Analog RF ASIC




- **All signals tracked**
  - › GPS, GLONASS, Galileo, BeiDou Phase 2 and Phase 3, QZSS, IRNSS, SBAS, and Hemisphere's Atlas® L-band
- **New GNSS receiver chipset architecture significantly minimizes components, reduces complexity, increases reliability, and dramatically lowers power consumption**



### / PHANTOM™ (POSITION) BOARD SPECIFICATIONS

 Phantom™ // 20	<b>800+ Channels</b>	20-pin connector	72 x 41 mm
 Phantom™ // 34	<b>800+ Channels</b>	34-pin connector	71 x 41 mm
 Phantom™ // 40	<b>800+ Channels</b>	40-pin connector	100 x 60 mm

### / VEGA™ (POSITION & HEADING) BOARD SPECIFICATIONS

 Vega™ // 28	<b>1,100+ Channels</b>	28-pin connector	71 x 45 mm
 Vega™ // 40	<b>1,100+ Channels</b>	40-pin connector	100 x 60 mm
 Vega™ // 60	<b>1,100+ Channels</b>	60-pin connector	100 x 60 mm



# PRECISION INTEGRATION

**Hemisphere GNSS, Inc.** is an innovative high-tech company that designs and manufactures heading and positioning products, services, and technology for use in **agriculture, construction & mining, marine, OEM, L-band correction service** markets, and any application that requires high-precision heading and positioning. Hemisphere holds numerous patents and other intellectual property and sells globally with several leading products, service, and technology brands including **Atlas®**, **Crescent®**, **Earthworks OEM**, **Eclipse™**, **GradeMetrix™**, **Outback Guidance®**, **Phantom™**, **Vector™**, and **Vega™** for high-precision applications. Hemisphere is headquartered in Scottsdale, AZ, USA, with offices located around the globe and is part of **Beijing UniStrong Science & Technology Co., Ltd.**

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# TECHNOLOGY THAT IS TRANSFORMING BEST-IN-CLASS



## OEM solutions driven by Lyra™ II digital ASIC and Aquila™ wideband RF ASIC next-gen technology.

In every business, there are watershed moments when a technology is introduced that elevates the performance of an entire industry. The new Phantom™ and Vega™ OEM boards driven by all-new Lyra II digital ASIC and Aquila wideband RF ASIC next-generation technology will rewrite the standards for precision and best-in-class performance.

Give your products a performance advantage and specify the all-new Phantom and Vega OEM boards. Together we can achieve brand dominance for your products.



### New Core Technology – Key Features:

- **Anti-jam and interference mitigation.**  
Built-in spectrum analysis.
- **Full support for the timing-receiver market.**  
One nanosecond PPS-in and PPS-out resolution.
- **Low-power modes.** Options to save power depending on the use-case.
- **Faster signal acquisition.**
- **Less taxing on computer navigation.**

