New Product: Bad Elf GNSS Surveyor with Sub-meter Accuracy

We're excited to announce the newest addition to our product line-up: the Bad Elf GNSS Surveyor (BE-GPS-3300).

The Bad Elf GNSS Surveyor is the first sub-meter GPS/GLONASS receiver for the iPad and iPhone that you can fit in your pocket!

Designed for the GIS and light-survey markets, the Bad Elf GNSS Surveyor is perfect for back-country wilderness surveys, property line verification, agricultural planning, DOT asset surveys, etc.

Like the Bad Elf GPS Pro and the Bad Elf GPS Pro+, the Bad Elf GNSS Surveyor features a 24-hour battery life, LCD screen with backlight, rugged enclosure, and Bluetooth connectivity with up to 5 devices at a time. It also features a barometer and supports USB connectivity.

Whereas the Bad Elf GPS Pro and Bad Elf GPS Pro+ are designed for moving vehicles with limited sky visibility and outdoor activities, the Bad Elf GNSS Surveyor is optimized for slower or stationary outdoor environments where sub-meter GPS accuracy is a priority.
High-precision Accuracy

The Bad Elf GNSS Surveyor uses a high-performance u-blox 7 GNSS engine with support for GPS, GLONASS, and GQSS satellite networks. It supports a number of technologies to provide high-precision positioning data depending on your location and environment:

- **Precise Point Positioning (PPP):** for stationary applications with clear-sky visibility, PPP uses GPS signal carrier-phase tracking to reduce ionospheric and multi-path signal distortion. This provides sub-meter accuracy without the need for a local reference station or other correction source.

- **Space Based Augmentation Services (SBAS):** broadcast by the satellite networks, SBAS provides correction data for satellite orbits, clocks, and atmospheric delays based on ground reference stations. Coverage includes North America (WAAS), Japan (MSAS), Europe (EGNOS), and India (GAGAN). By itself, SBAS improves horizontal position accuracy to 2-2.5 meters.

- **Differential GPS (D-GPS):** for world-wide precision applications where a base station or other correction source is available, the GNSS engine supports industry-standard RTCM 2.3 messages for operation as a D-GPS rover.

- **Raw data for RTK/post processing:** for users needing even better accuracy (10-50cm), the raw GPS and SBAS satellite measurements are available for real-time kinematics (RTK) applications and post-processing. This data is available via our SDK or the log files recorded in standalone mode.

Together, these technologies allow the Bad Elf GNSS Surveyor to deliver enhanced precision compared to conventional single-point positioning receivers.

Here's a plot of locations that shows the PPP algorithms achieving sub-meter accuracy in under 4 minutes after getting a cold-start GPS lock. Assuming clear sky visibility, subsequent points reach sub-meter accuracy much faster.
Unlike consumer GPS chipsets that are designed to reduce GPS jitter while stationary, the u-blox 7 GNSS engine is designed to continuously report the best location data possible as the PPP algorithms are working to improve the accuracy over time. You can see this in the time-lapse video below, which shows the accuracy improving over a 5 minute time span:
Data-Collector Apps

Like our all of our GPS accessories, the Bad Elf GNSS Surveyor is certified under Apple's MFi program and works with any location-based app in the App Store. Once the Bad Elf GNSS Surveyor accessory is paired with your iPad or iPhone over Bluetooth, apps will receive high-precision location data automatically.

Some popular GIS apps that work with the Bad Elf GNSS Surveyor and our other GPS accessories today:

- [iGeoTrak](https://www.cogent3d.com/) and [iCropTrak](https://www.cogent3d.com/) from Cogent3D
- [Wolf-GIS Pro](https://www.wolftek.com/) by Wolf-Tek, Inc.
- [Trimble Outdoors Navigator](https://www.trimble.com/) by Trimble Navigation Ltd.
- [GIS Kit Pro](https://www.garafa.com/) by Garafa, LLC
- [Collector for ArcGIS](https://www.esri.com/) by ESRI
- [MotionX GPS HD](https://www.motionx.com/) by Fullpower Technologies, Inc.
- and many more
The Bad Elf GNSS Surveyor can also provide streaming NMEA GPS data over Bluetooth or USB to non-iOS devices running Android, Windows, Mac OS X, and Linux. Limited support is available for these platforms.

We are working with several iOS app developers using our SDK to access the raw satellite measurement data for RTK and improved accuracy via post-processing. We also expect to have several methods for accessing free and commercial correction services in the near future.

We will announce more about these activities over the coming weeks and months. If you are an application developer and would like to use our SDK, please contact us at sdk@bad-elf.com.

**Special Launch Pricing until Oct 15, 2014**

The Bad Elf GNSS Surveyor is available for purchase starting today, and will ship on or before October 15th. Standard MSRP is $599.99, but we are offering a special launch price for our early adopter customers of $499.99 for all orders places before October 15th!

You can learn more about the device here.

Questions? Feedback? Please send an email to support@bad-elf.com.