Snapshot Positioning

Next Generation GNSS Receiver for Low Power Applications

Snapshot positioning takes on a completely new approach to GNSS positioning using the GPS, GLONASS, Galileo, and BeiDou/COMPASS systems. Gone is the slow start up times needed to acquire and track GNSS satellites. By leveraging our patent pending snapshot positioning technologies that allow GNSS receivers to compute its position using as little as 2 ms (2/1000th of a second) of data, we create entirely new market segments for GNSS receivers that, by conventional means, would have been impractical or infeasible due to constraints in power and form factor.

Snapshot positioning is ideally suited for obtaining single-shot position solutions similar to WiFi and Cell-ID positioning. Our snapshot positioning solution is complementary to existing WiFi positioning services; while WiFi positioning function well in dense urban environments where wireless access points are closely spaced, WiFi geolocation cannot be effectively used in large open spaces that are away from existing wireless access points. Conversely, snapshot positioning using GNSS signals such as GPS and GLONASS work best in large open spaces.

Unlike conventional GNSS receivers which consume large amounts of power, our snapshot positioning receiver can extend the battery life of GNSS enabled devices by several orders of magnitude. This feat of engineering is made possible by our flexible and efficient snapshot positioning engine which can operate in many different modes.

In its most energy efficient mode, the raw GNSS signal data is captured by an antenna, digitized, and stored for processing at a convenient time in the future. Doing this allows a GNSS enabled device to turn on the GNSS hardware for a very short amount of time – as little as 2 ms – and offload all the computationally intense and energy demanding tasks to a remote device such as a cloud-based server. In this configuration, a snapshot GNSS receiver can operate for up to several weeks on a single coin cell battery or years on a typical mobile phone battery. Applications suited for this configuration include personal fitness monitoring, smartphone positioning, geotagging, intelligent parcel tracking and more.

Alternatively, for real-time applications, the digitized GNSS data can be sent immediately to a cloud-based server using a variety of connectivity options such as GSM, Bluetooth, and WiFi. Once again, the computationally intense and energy demanding tasks that would otherwise be performed by a conventional GNSS receiver can be offloaded to a cloud-based server which do not share the same energy constraints as a low-power mobile device.

The patent pending techniques that power our snapshot positioning solutions can also be applied to conventional GNSS receivers. Although this requires the GNSS receiver to perform all the signal processing functionality on hardware, a conventional GNSS receiver can benefit greatly by reducing the time required to compute a position and quickly return to an idle state when operating in snapshot type applications.

Features and Benefits

Ultra-fast GNSS data captures requiring as little as 2 ms of signal data.

Ultra low power consumption maximizes precious battery power on mobile devices.

Patent pending snapshot positioning technologies can be readily licensed and implemented in conventional GNSS receivers.

Flexible receiver architecture enable real-time and post-processed operating modes.

Our revolutionary receiver design **removes the burden of slow start-up** times.

Complement WiFi geolocation and Cell-ID positioning services.

baseband TECHNOLOGIES

Preliminary

Snapshot Positioning vs. Conventional GNSS Receivers

	Snapshot Receiver	Conventional Receiver
Required hardware components	Antenna, RF front-end, memory storage, microcontroller	Antenna, RF front-end, RF baseband processor, microcontroller
Time to first position	GPS: < 1 second	GPS: 30 - 60 seconds A-GPS: 2 - 6 seconds
Battery life (10 mAh @ 3.3v)	18 days - 1 year	< 2 hours
Operating modes	Real-time, Post-process	Real-time

For customers that would like to incorporate our snapshot positioning solution into silicon, proprietary target platforms, or operating systems, we can provide collaborative engineering support to assist in integration. Please contact us for details.

Performance at a glance

Features

- Capture a position in as little as 2 ms
- Cloud-based server support
- Desktop PC support
- Windows and Linux compatible
- Reference design available
- Evaluation kit available

Applications

- Personal fitness trackers
- Mobile phones
- Digital cameras
- Sports watches
- Asset tracking devices
- Personal locator beacons
- Personal navigation devices
- M2M devices

Technical Specifications[i,ii]

- Position accuracy: < 9 m CEP[iii]
- Data capture duration: 2 - 20 ms
- Data capture size: 2 - 40 kbyte
- Time to compute position: < 0.1 second
- Captures on 4 GB storage: Up to 2 million

(i) Specifications are subject to change without notice
(ii) Subject to export restrictions
(iii) Subject to operating conditions

For more information on our snapshot positioning GNSS receiver, please visit www.basebandtech.com

baseband TECHNOLOGIES

Preliminary

Baseband Technologies Inc.
3553 31 Street NW
Calgary, Alberta
CANADA, T2L 2K7
Tel: +1-403-668-0699
www.basebandtech.com