

SPiRiT Super-Sensitive Software GNSS Receiver for 3G/4G devices

The market for 3G USB modems, which will be worth over \$3.5 billion in 2010, is highly competitive and price erosion is already there. According to an In-Stat report the average selling price of a USB modem dropped more than 25% in 2009 to below \$65 per unit. Price erosion will not disappear with the introduction of multi-mode modems that also support WiMax, WiFi or LTE. Competition will remain tough as this development path is easy to follow. Vendors have to add other valuable functionality to avoid the price pressure.

Practically all portable devices today are on a track to location awareness. There are Location Based Services that provide users with local search results, sale opportunities and promotions. Everybody wants to be better informed about useful places and interesting events happening around the corner. As they say since ancient Rome times "locus regit actum", that means location defines our activities.

A 3G USB modem embedded with a GPS receiver can turn a laptop, a MID or a netbook into a feature rich product. Having plugged such a device into a laptop, end-users will get access to the Internet and will be able to use Location Based Services and Augmented Reality applications available on the web thanks to GPS functionality.

SPiRiT Super-Sensitive Software GNSS-Receiver is a software based navigation engine that interoperates with a tiny hardware module with an antenna, an RF front-end and a USB controller implemented on it. It is specifically designed to provide reliable and accurate navigation in nearly all conditions thanks to increased sensitivity. SPiRiT Super-Sensitive Software GNSS-Receiver outperforms all commercial GPS receivers in sensitivity by 10-15dB. Complex signal processing and electromagnetic interference (EMI) suppression algorithms account for these high results.

Technical characteristics:

- Cold-start sensitivity: -157 dBm
- Hot-start sensitivity: -164 dBm
- Tracking sensitivity: -170 dBm
- Navigation sensitivity: -166 dBm
- EMI suppression

Super-sensitivity together with GPS functionality implemented in the same box as a 3G modem is a unique and valuable competitive advantage.

Other benefits for an OEM include:

- GPS is a much appreciated consumer functionality
- GPS brings an extra valuable feature for a 3G USB modem. It will stop price erosion.
- GPS is an excellent differentiating factor on the market of 3G USB modems

AT&T has already started to define a new trend. [The company has recently came on the market](#) with an offer of a 3G modem and a GPS module implemented as separate USB devices but bundled together. The bundle opens the door to location-based applications and offers high speed Internet connection to AT&T subscribers.



With SPiRiT Super-Sensitive Software GNSS-Receiver an OEM has the ability to combine the two functionalities on a singly USB device significantly reducing BOM while increasing usability for end-users.

Companies that will be the first on the market with a combined offer (3G modem + GPS) will gain significant market visibility. They will be able to price its product accordingly increasing company revenues. First-on-the-market is a winning factor now.

SPiRiT offers a USB dongle as a demonstration of its Super-Sensitive Software GNSS-Receiver:

- 32 channels to support all-in-view satellites
- SBAS (WAAS, EGNOS) support
- Long term ephemeris support (similar to A-GPS mode)
- Positioning accuracy (open sky): 3 m (CEP) autonomous
- Cold-start TTFB: < 30 seconds in the open sky, up to several minutes for certain indoors conditions (-157dBm)
- Hot-start TTFB: < 6 sec in the open sky
- Navigation sensitivity: -166dBm
- Tracking sensitivity: -170 dBm
- EMI protection support
- USB version 2.0 interface
- USB-dongle mini size: 18x42 mm

