

Description

The **μTrac** family is a **RF ID** that provides **Tagging, Tracking, and Locationing (TTL) in combination with global disadvantaged command and control (dC²)**, where disadvantaged refers to having a poor view of the sky. The RF Tag family includes one-way and two-way communication models.

Power levels and range capabilities are compatible with maintaining a reliable **satellite link, with margins up to 20 dB**.

Nominal longevity on two AA batteries is 2 weeks at a 5 min report interval and over a year at a 12 hour report interval. The tag's longevity is in part due to the high efficiency power amplifier which is capable of generating output power that is **configurable from 100 mW up to 10-watt** at efficiencies in excess of 80%. The tags feature a very low idle power consumption of 100 μW.

Longevity can be extended through the use of geo-fencing and motion sensing. The **geo-fencing** feature changes tag parameters as a function of the last position obtained so that energy is conserved or spent on obtaining and reporting position in proportion to where it is. For instance, the report rate might be set to be low outside of a conflict zone, and high within it. The **motion sensing** feature utilizes an accelerometer to measure changes in 3-axis pitch with 1° accuracy at a configurable interval (e.g. 10 s) and vibration. If the tag hasn't moved, there is no need to spend the energy on re-establishing its position and reporting it.

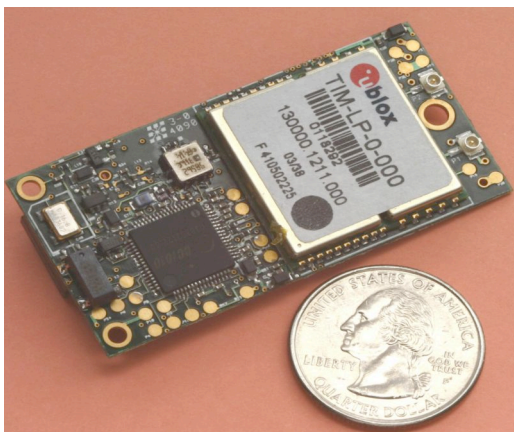


Figure 1: UHF RFID Tag

The tags operate at frequencies from **UHF to S-band**. Frequency, time, and code division multiplexing are utilized to deconflict multiple tags operating in a common theater. In the 2-way models, tags can be commanded to obtain and report position on demand.

The tags are **programmable** to suit the specific needs of the application. Programmable features include center frequency, data rate, identification number, and transmit power level, (optional) encrypt, GPS fix interval, report interval, Geo-fencing, and motion sensing parameters.

An intended application of the RF Tag family is blue force tracking (Figure 2) with obvious extensions to any high-value asset /inventory control system.



Figure 2: Blue Force Tracking Application

Features

- Software Defined Radio (SDR) implementation
- Disadvantaged Command and Control
- > 20 dB link margin
- Real-time position acquisition & reporting
- GPS accuracy
- Programmable frequencies
- Programmable data rate
- Constant Modulus Modulations
- Satellite link / global coverage
- Energy efficient operation

Development Status

The tag family has been deployed since 2004 and is continually being improved.