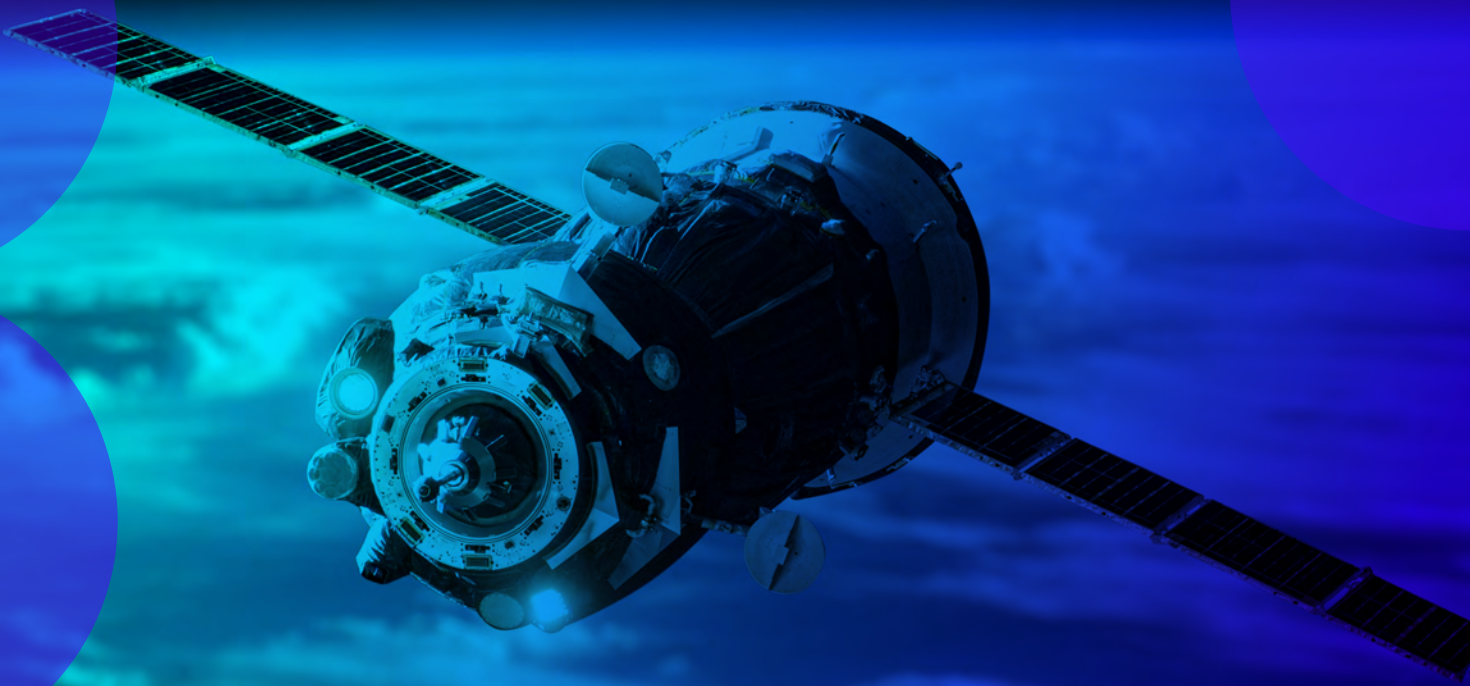


Low-power GPS asset tracking: a development guide



Introduction

GNSS and GPS asset tracking has become a staple in improving efficiency for a range of industries. Logistics and cold-chain use the technology to track the location of packages and distinguish whether they have been kept in optimal temperatures. On the other hand, construction companies use GPS tracking to monitor their high-value equipment, keep track of who is using it and have an added layer of security.

Low-power GPS asset tracking represents a specialised aspect of the technology, ensuring remote assets can be reliably tracked without the risk of running out of power. They offer a balance of connectivity and efficiency, providing reliable visibility for a range of businesses. A vital aspect of low-power GPS asset trackers is the antenna solution, and understanding their features is vital in finding the right one.

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Wireless for the next generation

Antenova is a leading innovator in wireless technology solutions. With a passion for connectivity, we specialize in designing and manufacturing high-performance antennas and radio frequency (RF) modules for a wide range of applications. Our mission is to empower the Internet of Things (IoT), providing seamless and reliable connectivity for smart devices, wearables, and more. At Antenova, we combine cutting-edge engineering expertise with a commitment to customer success, delivering compact, efficient, and reliable wireless solutions that enable the next generation of connected devices. **Join us on the journey to make the world more connected, efficient, and smarter.**

[Find out more](#)

What are low-power GPS asset trackers?

GPS asset trackers provide businesses with precise locational data of equipment and goods in real-time.

The main component of these trackers are GNSS antenna/ modules that utilise trilateration to communicate with satellites and distinguish their location. These trackers provide businesses with a holistic view of their assets that can then be interpreted by software to provide optimisation, security and compliance opportunities. Low-power GPS asset trackers represent devices that exhibit optimisations to components (mainly with their GNSS antenna/modules) to maximise power efficiency. Trackers can last upwards of 10 years after installation without need of replacement, enabling businesses to reliably manage remote products and equipment.

Why is power efficiency a vital feature for low-power GPS asset trackers?

There are a range of features required of GPS asset trackers to provide consistent locational data to different businesses.

These include compact size, durability, and power efficiency. The importance of these features can change depending on the industry; applications like cold-chain require the tracking device to be small, whereas construction fleet trackers may have more of an emphasis on durability. Power efficiency, however, is a feature that almost all GPS asset tracker applications depend upon. Low-power GPS trackers are usually installed within hidden locations of parts, equipment or packaging. Not only does this mean they need to function via a battery source, but they are unable to be charged or replaced if they are depleted. For device designers, this makes power efficiency a vital integration challenge as they need to be able to function effectively for years on a single, limited battery source.



What applications depend on low-power GPS asset trackers?

Logistics

Logistics applications such as cold-chain and package deliveries can be enhanced and optimised via GPS asset trackers.

These devices provide up-to-date locational data on the goods vehicles are carrying, their time in transit, and how long they have spent outside of temperature-controlled containers. The GPS asset trackers used in these applications are compact and remote, and are installed in confined places such as within packaging pallets. Because of this, low-power solutions are necessary in providing long-term and reliable locational data.

Light electric vehicle fleets

Light electric vehicle (LEV) fleets are single-person vehicles such as e-scooters and e-bikes that enable users to travel short distances in condensed city centre areas.

These vehicles can be used by anyone and are often left in remote locations. Because of this, businesses need GPS trackers to survey their fleet in real-time to monitor their location, ensure users are being compliant and be able retrieve their assets when required. Additionally, these trackers need to be able to function when the power is removed for security capabilities and to support retrieval.

Asset security

Regardless of the industry, asset tracking offers the additional benefit of security and insurance

Moreover, GPS tracking is a necessity in applications involving critical and high-value assets. Low-power GPS trackers allow businesses to reliably track their assets to where they are and when, which can lead to the identification of possible security risks in certain locations. If an asset is lost, businesses can then begin the process of reclamation to minimise impact to operations

The importance of antenna choice in low-power GPS asset trackers

When it comes to the design of low-power GPS asset trackers, the choice of antenna/module solution is the most important aspect.

Not only do they determine the performance and connectivity of the device, but they are also the most power consuming element. In order to maximise the battery life of your tracker design, you need an antenna/module that is especially designed with efficiency in mind. At Antenova, we offer a selection of GNSS modules that are specialised for power efficiency;

Active GNSS M20047-1 & M20057-1

Compact all-in-one GNSS active antennas that feature a low power GNSS SMD antenna.

Both modules have in-built LNA and SAW filters, enhancing connectivity and reducing interference of other components such as those in e-scooters and e-bicycles. The M20057 model has reversed SAW and LNA positions, and provides a simple integration process for low-power GPS asset tracker designs. Find out more by visiting the [M20047-1](#) and [M20057-1](#) product pages.



M20047-1
[View Product](#)



M20057-1
[View Product](#)

GNSSNOVA M20071 & M20072

Best-in-class GNSS modules for power consumption and precision in small designs.

Both models feature next-generation MediaTek flash chips, combining unmatched power efficiency and performance. Additionally, they include built-in LNA and SAW filters to enhance connectivity, reduce interference and simplify integration. To find out more, visit the [M20071](#) and [M20072](#) product pages.

For further integration guidance, visit our purpose built antenna integration hub to help you find the perfect antenna solution for your device.



M20071

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M20072

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