



Real-Time LoRa® Container Tracking Transforms Port Operations

MOKO Smart's LW001-BG Pro, powered by Semtech's LoRa® technology SX1262, brings real-time visibility and anti-tampering security to one of India's busiest container ports replacing error-prone manual tracking with a scalable, low-power wireless solution.

QUICKFACTS

Company

MOKO SMART
www.mokosmart.com

Customer Profile

MOKO SMART is a leading IoT device manufacturer specializing in LoRaWAN-based sensors, trackers, and gateways. With over a decade of wireless expertise, MOKO SMART develops end-to-end IoT hardware solutions for logistics, smart cities, industrial monitoring, personnel safety and asset tracking serving enterprise customers across global markets.

Objectives

- Replace manual container tracking at a high-volume Indian port
- Achieve real-time location visibility across thousands of containers simultaneously
- Eliminate misidentification errors caused by visually identical containers
- Detect tampering and security breaches at the container level
- Deploy a scalable, battery-powered solution requiring minimal infrastructure

Results

- Real-time location of every container mapped within the port at all times
- Live data fed directly into the port's container management system
- Anti-tampering alerts triggered instantly upon unauthorized access attempts
- Up to 5-year battery life per device, reducing maintenance overhead significantly
- Reliable indoor and outdoor tracking through combined GPS, Bluetooth, and LoRaWAN positioning

Products and Services

- Semtech's [LoRa Connect™](#) SX1262



INTRODUCTION

Ports are among the most operationally demanding environments in the world. Thousands of containers move daily through loading bays, storage yards, and processing areas each one looking nearly identical to the next. For port operators, knowing exactly where each container is at any given moment is not just a matter of efficiency; it is a matter of security, compliance, and revenue.

MOKO Smart, a Shenzhen-based IoT device manufacturer with deep expertise in LoRaWAN solutions, developed a container tracking system built around the LW001-BG Pro, a multi-technology tracker combining GPS, Bluetooth, and LoRaWAN connectivity in a single ruggedised device. Deployed at a busy Indian port handling thousands of containers daily, the solution delivers real-time visibility, live data integration, and security alerting all without the cost or complexity of wired infrastructure.

CHALLENGE

As container volumes at the Indian port grew steadily, the limitations of manual tracking became impossible to ignore. Port managers had initially relied on staff to physically log container movements and locations, a process that worked at modest scale but began breaking down as the yard expanded.

The fundamental problem was identification. Shipping containers are designed to look alike. In a yard handling thousands of units simultaneously, workers under time pressure and fatigue were increasingly prone to logging errors, misplacements, and missed handoffs. The consequences were tangible: delayed shipments, disputed cargo records, and gaps in security that left high-value containers vulnerable to tampering.

The port needed a solution that could track every container in real time indoors across loading bays and outdoors across open storage yards without requiring wired connections to each asset or ongoing cellular subscription costs per device.

SOLUTION

MOKO Smart deployed the LW001-BG Pro LoRaWAN GPS tracker across the port's container fleet. The LW001-BG Pro integrates three positioning technologies in a single device: GPS for precise outdoor geolocation, Bluetooth for indoor positioning assistance, and LoRaWAN for long-range, low-power data transmission back to the network.



“ LoRa® technology has enabled MOKO SMART to deliver reliable, low-power, and long-range IoT hardware solutions across various industries such as asset tracking, personnel safety, and environmental monitoring. By leveraging LoRaWAN®, our customers are able to deploy scalable IoT networks with lower maintenance costs and improved operational efficiency, even in challenging environments. ”

Jerry Li,
Co-founder at MOKO SMART

Powered by Semtech’s LoRa® chip, the tracker transmits location and status data continuously across a LoRaWAN network deployed within the port. A small number of gateways provides coverage across the entire facility both the open outdoor yard and enclosed indoor areas eliminating the need for dense Wi-Fi infrastructure or per-device cellular SIM cards.

Location data is delivered in real time to the port’s existing container management system, giving operators a live map of every container’s position and movement. The LW001-BG Pro also incorporates a tamper detection sensor that triggers an immediate alert if a container door is opened without authorization adding a critical layer of security that manual processes could never provide.

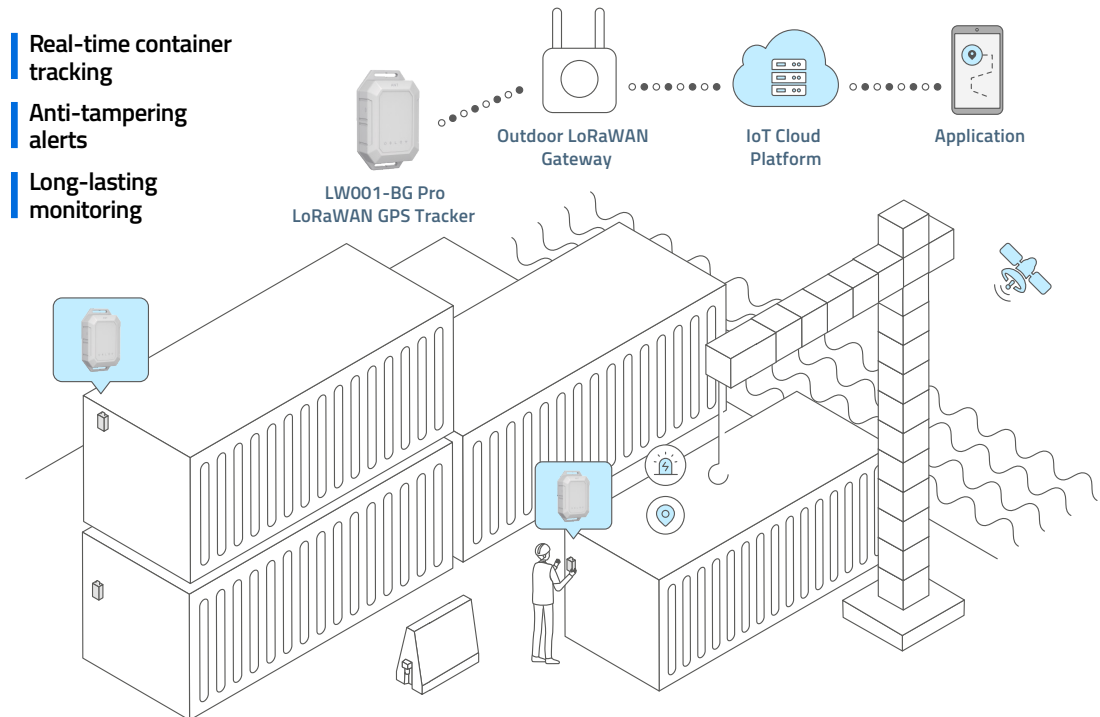
The device is available in battery-replaceable and rechargeable variants, with a battery life of up to five years under standard reporting intervals making it practical to deploy and maintain at scale across a large and continuously active port environment.

BENEFITS

- **Complete Operational Visibility**
Port managers now have a live, accurate map of every container at all times. Location data flows directly into the container management system, eliminating manual logging and the errors that came with it.
- **Security at the Container Level**
Anti-tampering alerts notify operators the moment an unauthorised access attempt is detected, giving security teams the ability to respond immediately rather than discover a breach after the fact.
- **Long Battery Life, Low Maintenance**
With up to five years of battery life per device, the LW001-BG Pro significantly reduces the operational cost of maintaining a large fleet of trackers across a busy port environment.
- **Indoor and Outdoor Coverage in One Device**
The combination of GPS, Bluetooth, and LoRaWAN positioning means the same device works seamlessly whether a container is in an open storage yard or inside a covered loading facility — no separate hardware required for different zones.

- **Scalable Without Infrastructure Overhaul**

LoRaWAN's long-range, low-power architecture means the port can scale its tracking deployment adding more containers or expanding coverage without proportional increases in gateway infrastructure or network subscription costs.



About Semtech

Semtech Corporation (Nasdaq: SMTC) is a leading provider of high-performance semiconductors powering AI data center networking, IoT connectivity and intelligent connected devices worldwide. Our global teams are committed to empowering solution architects and application developers to develop breakthrough products for the infrastructure, industrial and consumer markets.

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