

Bluetooth Car Seat Sensor Increases Safety



The Challenge

To build a consumer-friendly, low-power alarm system to prevent children from being accidentally left in parked cars.



The Solution

The BGM220 and BGM123 Bluetooth Low Energy Modules offered Filo the simplicity and low power to meet its development requirements, and its widespread use among consumers created an easy and familiar user experience.



The Result

Filo created the Tata Pad and Tata Band a baby car seat alarm that uses Bluetooth to alert parents when they're walking away from their car with a child inside.

Overview

Silicon Labs' Bluetooth modules are designed for longevity and energy efficiency, featuring best-in-class RF sensitivity and flexibility. Specifically designed to speed up the development of a wide variety of IoT applications across a range of industries so innovators like Filo can get to market quickly, the modules:

- Are optimized for data transfer and exchange over short distances
- Feature easy-to-use developer tools and documentation to overcome unexpected challenges
- Provide access to state-of-the-art security technologies, including Secure Debug, Secure Boot with Root of Trust & Secure Loader
- Are ideal for applications with low power requirements and size constraints

In 2019, Italy became the first country in the European Union to make it mandatory for parents to utilize technology to prevent children from being left behind in the backseat of a car. Filo, an IoT start-up in Rome, Italy, had been helping users keep tabs on their belongings since launching its



original product, the Filo Tag, in 2014. With the passage of the anti-abandonment law, the company saw an opportunity to bring its Bluetooth tracking solution to bear on this very serious challenge. On the strength of the Tag's success, the company set out on development of the Tata Pad.



The Tata Pad uses a capacitive sensor embedded into a cushioned pad that fits any car seat. When a child sits down, the Tata Pad is activated. The sensor detects their presence and sends that information to the parents' phone via an iOS or Android app. When (if) the parent is away from the car for more than three minutes, the first of three alarms is triggered. This tiered system that uses both text messages and calls is one of the primary advantages Filo's solution has over its competitors. This first alarm sends a notification to the phone, which lasts for 30 seconds. This alarm works even if the phone is on silent. If it isn't deactivated by the user, the second alarm is triggered – an actual phone call is placed to the phone from the Tata cloud service and includes voice instructions on how to deactivate it. Finally, if these two alerts are not enough, text messages and calls are placed to your pre-selected emergency contacts, who can then request a text message with your last known location. These emergency calls are made independently of the parent's phone signal, which means all three levels of alerts work even if the parent's phone is out of battery or not receiving a signal.

Bluetooth Low Energy Modules

When it came to choosing a technology, Filo had some key requirements in mind. For the networking protocol, Bluetooth was selected because of its cost-efficiency compared to other networking technologies and its wide adoption in consumer applications. When selecting wireless technology, Silicon Labs' Bluetooth solution emerged as the favorite due to its competitive price and sophisticated security features.

The result of this effort is the only baby car seat alarm with three levels of alerts, making it extremely popular with consumers and guiding Tata's way to further innovations including another alert device, the Tata Band, which can be used with any seatbelt in the world and attaches to the car seat's shoulder strap. The Tata Band also leverages Silicon Labs Bluetooth modules and extends Filo's impact beyond car seats, which have different standards depending on the country, to safety belts that are more universal.



