

Tap-free Payment Transactions Powered by UWB

The Challenge: Easier, More Secure Payment Transactions

In the past decade many of us became addicted to tap-to-pay transactions using smartphones, wearables, or cards. The convenience of paying instantly by just casually tapping a smart device to the payment terminal was the main driver for contactless payment transactions, next to hygienic considerations during the pandemic.

Since then, additional cashless payment use-cases have been established in retail, transport, leisure, or travel settings with more expected in the future to make our lives easier. However, there are situations where a simple tap with a mobile device is not as easy and convenient as it sounds. Do these situations sound familiar?

- Uncomfortably twisting your arm over the counter to align the screen of your smart watch with the payment terminal.
- Blocking the subway gate because you can't get your phone out fast enough to tap and pay.
- Pulling up to the toll station and having to lean out of the car window or open your door to pay.

Ultra-wideband (UWB) can help to overcome many of these issues without compromising security.

The Solution: Tap-free Payment Transactions Powered by UWB

With the increase in ecosystem adoption, UWB can enable the next level of payment convenience and enable touchless transactions across different applications.

Because UWB is highly accurate in determining your position, it can provide proof of presence to authorize transactions, e.g. one factor within a two-factor authentication.

Additionally, UWB is providing highly secured ranging information by utilizing the Time-of-Flight (ToF) principle within the system to help to counter relay or man-in-the-middle attacks while securely authenticating a user for a transaction. UWB-based localization is supported by Scrambled Time Sequences (STS) which may rely on encrypted session keys provided by a Secure Element (SE). The secure and remarkable localization provided by UWB and supported by an SE is the root of trust in your system for potential FiRa® Consortium use cases. The SE can store critical keys, provide cryptographic support, and authenticate tap-free transactions.

UWB-supported payment transactions will, of course, need to follow existing or future security certification schemes required and needs to be adopted by the respective use case ecosystems.



UWB in Smart Retail

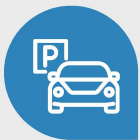
Thanks to UWB-enabled technology, shopping becomes easier and quicker. There's no need to pull out your wallet or phone at the checkout anymore. By having your UWB-enabled smartphone, you can breeze through the payment process without having to tap to pay. UWB, with its centimeter-level accuracy and secure ranging capabilities, verifies your exact location and provides proof of presence to authorize a transaction. Just walk into a store, grab what you need, and go. UWB can also support tap-free mobile payments in unmanned stores with secured access.



UWB for Public Transport Payments

Wouldn't your daily commute be easier if you could just walk through a train or subway turnstile without needing a transport card or having to take out your phone?

As you approach the station, your UWB-enabled smart device would be alerted there's a transport system nearby. You'd then be notified you'd need to buy a virtual ticket or the system would recognize you already had one. The station's secure infrastructure would detect the ticket and that you're nearing the gate, allowing you to seamlessly pay the fare and cross through the gate - all with your phone still in your pocket or bag.



Using UWB for Parking or at a Toll Booth

Have you ever had a hard time reaching a toll booth or parking station payment terminal from your car? UWB technology offers a streamlined solution. By utilizing secure ranging and precise centimeter-level accuracy, a UWB anchor at the gate can identify your car or your UWB-enabled smartphone from a distance with pinpoint accuracy.

The system then carries out a FiRa-defined touchless transaction once the payment method has been authorized, allowing your car to smoothly pass through the gate. This eliminates the need to lean out of the window or leave your car, making the process more convenient and accessible. UWB-supported ranging in your car could also be used to find a free parking spot or assist with autonomous parking.

Making Payment Transactions Easier and More Convenient with UWB

Why not take advantage of new technologies to make life even more convenient? The above use cases are only the tip of the iceberg when it comes to how UWB can simplify tap-free mobile payments. And thanks to UWB's precise accuracy and comprehensive security features, consumers could enjoy an easier payment process without compromising their security.

