Technical Article

Swirl Uses SimpleLink CC2640 Wireless MCU to Power Down Its New Beacons

Allie Hopkins

Bluetooth® Smart beacons have taken the retail industry by storm over the last few years. As retailers investigate making the shift from small-scale pilots at a handful of locations to full deployments at hundreds or thousands of locations, beacon battery life duration has taken on a new level of importance. With industry norms for battery life ranging anywhere from 3 months to 3 years, replacing these batteries at scale has both logistical and monetary implications for the largest retailers deploying beacons.

By leveraging TI's SimpleLink™ ultra-low power CC2640 wireless microcontroller (MCU), Swirl Networks' newest beacon has achieved an industry-leading 6-year battery life.

What Is a Beacon?

A beacon is a small piece of hardware that can help detect a smartphone user's precise location by sending a Bluetooth Smart signal that can be detected when the smartphone user comes in close proximity to the beacon. In retail settings, many retailers are using beacons to send aisle or product specific information to shoppers based on where they are in a store, gain better understanding of in-store shopper journeys and improve customer service and loyalty programs.

What Makes Swirl's Newest Beacon Stand Out from Its Competitors?

Swirl's 6-year battery life is roughly two to three times longer than most other beacons on the market, something that will help significantly reduce maintenance costs, an important consideration when deploying beacons at enterprise-scale. Swirl's beacon also utilizes SecureCast™ encryption to prevent beacon spoofing, cloning and hacking. Finally, our advanced fleet management capabilities include:

- Cloud-based real-time beacon monitoring
- Over-the-air firmware updates
- Beacon Manager App for hassle-free beacon deployment

How Did You Achieve a 6-Year Battery Life?

The TI SimpleLink Bluetooth Smart CC2640 wireless MCU was the driving force behind our battery improvements. First, the CC2640 device consumes 5.9 mA in RX and 6.1 mA in TX at 0 dBm in comparison to those from other providers that range from 8 mA to 18 mA. Swirl testing revealed a 40 %+ power savings with the TI CC2640 chipset in comparison to the TI 25xx chipset. The dual CPUs of the TI CC2640 wireless MCU enable application performance efficiencies over other single CPU devices. Finally, we utilized the extremely low standby current of CC2640 wireless MCU: 1 µA with Real-Time Clock running and RAM/CPU retention, to power the ability to set sleep time hours and freely alternate between active to sleep modes, which further reduces power consumption.

Why Did You Choose TI's SimpleLink Bluetooth Smart CC2640 Wireless MCU for This Beacon?

The power saving features listed above were obviously a big factor in making this decision. Additionally, we worked with TI on our first generation chip and were impressed by its reliability and the responsiveness of our contacts at TI. When TI released the more powerful CC2640 wireless MCU, we were excited to take advantage of its more advanced features and leverage those features to leapfrog the other beacons on the market.

Where Do You See the Beacon Industry Going in the Next Few Years?

We've only begun to scratch the surface on what beacons and their level of location-precision can enable for smartphone users. In the retail setting alone, we'll begin to see new use cases for beacons including things like:

- Streamlining the buy online, pick up in-store trend
- Tying together in-store and online customer data to direct personalized shopper communications
- Enhancing salesperson knowledge of who is in their store at any given moment so they can offer improved customer service

Interested in getting started developing with the CC2640 wireless MCU?

- Buy a SimpleLink SensorTag kit today
- Order the new SimpleLink CC2650 LaunchPad development kit

About Swirl

Swirl offers leading retailers, brand advertisers and publishers the industry's most advanced platform for beacon-powered mobile marketing. By leveraging the power of Bluetooth® Smart beacons and the Swirl platform, retailers are able to influence in-store shoppers at the precise time and place they are making purchase decisions. Swirl Ad Exchange is the world's first programmatic private ad exchange for beacon-powered mobile advertising, allowing brands to deliver highly targeted content to shoppers wherever their products are sold. Swirl's patented technology (U.S. patent No. 8,781,502 B1) is used by leading retailers such as Lord & Taylor, Hudson's Bay, Urban Outfitters, Alex and Ani, Timberland and many more. Swirl is backed by top-tier investors including Twitter, Simon, Hearst, SoftBank Capital, and Longworth Venture Partners. Learn more at swirl.com.

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