

Amazon Sidewalk and Texas Instruments

Rogério Almeida

Americas Marketing, TI Connectivity

Amazon Sidewalk | TI is your main partner

What is Sidewalk?



- Sidewalk is a ready-to-use stack with security leveraging the 900MHz band
- Extends connectivity beyond Bluetooth and your home Wi-Fi
- Leverages Amazon's existing infrastructure for a crowdsourced network

Benefits



- Eliminates the need to build your own gateway
- Added redundancy with neighboring gateways
- Provides extended range at a lower cost than cellular
- Immunity to interference (outside of 2.4GHz)

Why TI?



- Extremely low standby current (0.85uA)
- Highly efficient integrated PA (25% lower TX current at +20dBm vs. market)
- Use BLE for easy provisioning & firmware updates with CC1352
- Fast route from development to production

Getting Started



- Build a rapid prototype with \$30 [LaunchPad SensorTag](#)



- Expand to full development with [LaunchPads](#)



Amazon Sidewalk – A community effort

- “A neighborhood network designed to help customer devices work better both at home and beyond the front door”
 - For Developers and OEMs
 - Customers experiencing issues with:
 - Set up
 - Outdated software
 - Security
 - Range (blind spots)
- Amazon gateway hardware exists today, and millions of new gateways are deployed every year
- Community aspect in which devices can roam on neighbor-created networks enabled by Sidewalk gateways

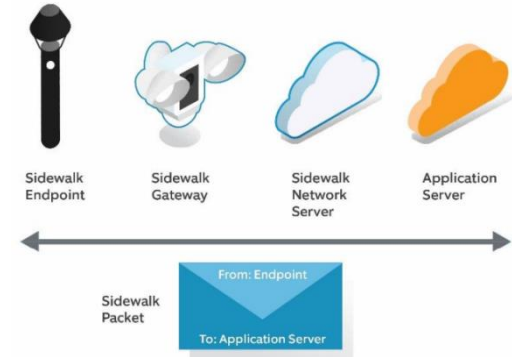


Photo credit: Amazon

To the Sidewalk and beyond



- Two types of devices:

← Sidewalk Bridges (also called Gateways)

Sidewalk Enabled Devices (also called end points) →

- Based on proprietary 900 MHz FSK and *Bluetooth*® Low Energy protocol with low power and range as priorities
- FSK Ideal for supporting indoor-outdoor applications and roaming in neighborhoods
- Bluetooth Low Energy supported for in-home applications
- Significantly lower complexity and power than LTE



Photo credit: Amazon

Amazon Sidewalk – Privacy and Security

- Objective is to protect the end node and gateway owners
- 3 layers of encryption for **security**:
 - Application layer (End point and application server)
 - Network layer (protects the packet over the air)
 - Flex layer (Gateway and Sidewalk network server)
- Trusted device identities for **authentication**
- Rolling transmission-IDs for **privacy**
- More details: [Amazon Sidewalk white paper](#)

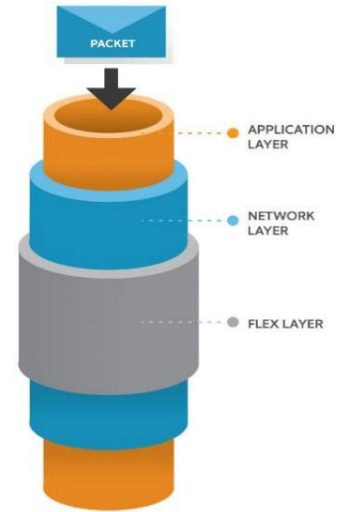


Photo credit: Amazon

TI brings lowest power end devices for Sidewalk ecosystem

- **Sidewalk Benefits**

- Redundancy of having multiple gateways (neighbor)
- Lower cost of development & deployment (no need of new gateway)
- Immunity to interference (2.4 GHz is crowded)
- Ready to use software stack
- Leveraging Amazon's existing infrastructure
- Frustration-free commissioning with Bluetooth Low Energy

- **Home Security & Safety**

- Multiple levels of security & encryption
- Low power standby current of 0.85uA (RTC ON, 80KB RAM and CPU retention) for extended battery life

- **Home Comfort**

- Easy to use (commissioning, controlling, opt in/out)
- Low power (multi-year operation on AA)
- Low latency (est. below 500ms)

- **Home Outdoors**

- FSK long range
- Industry's lowest power TX current at +20dBm with highly efficient integrated PA

Sidewalk | Development kits

Build your rapid prototype LaunchPad SensorTag Kit



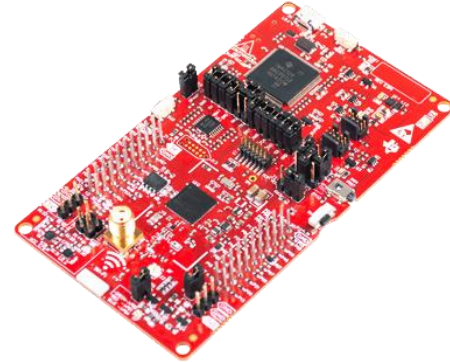
Key features:

- Battery-operated with removable enclosure
- On-board sensors (temperature, humidity, hall effect, light, motion)
- Featuring CC1352R Multi-Band MCU
- User LEDs & Pushbuttons on-board
- Access to all MCU pins
- BoosterPack-compatible
- For debugger pair with a TI LaunchPad
- <https://www.ti.com/tool/LPSTK-CC1352R>

Available for \$30!

TI Information – Selective Disclosure

Expand to full development LaunchPad Development Kits



Key features:

- On-board debugger/programmer with EnergyTrace
- USB-powered
- Available for all SimpleLink Product Families
- User LEDs & Pushbuttons on-board
- Access to all MCU pins
- BoosterPack-compatible
- <https://www.ti.com/tool/LAUNCHXL-CC1352P>

Available from \$39 to \$49!

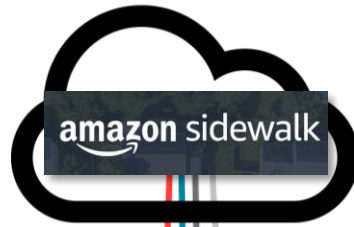
Why TI?

- Full ecosystem provider, from end points to gateways
- SimpleLink™ wireless MCUs currently in production and Sidewalk-ready for your design
 - [CC1352R](#) – Dual-band low-power wireless MCU supporting Sidewalk 900MHz FSK and BLE Protocol
 - [CC1352P](#) - Dual-band low-power wireless MCU with an integrated +20 dBm power amplifier (PA) for extended range
 - [CC1312R](#) - Single-band low-power wireless MCU for 900MHz FSK solution
 - [CC2652P](#) - Multi-protocol 2.4 GHz wireless MCU with integrated PA and [CC2642R](#) - Wireless MCU for *Bluetooth®* Low Energy
- Development tools available now:
 - [SimpleLink™ multiband CC1352R wireless MCU LaunchPad™ SensorTag kit](#) (LPSTK-CC1352R) is a Sidewalk-ready development kit that combines integrated environmental sensors with low-power Sub-1 GHz and Bluetooth Low Energy wireless connectivity. Following sensors are supported today: humidity, temperature, Hall effect, light sensors and accelerometers
 - [LAUNCHXL-CC1352R1](#), [LAUNCHXL-CC1352P](#) and [LAUNCHXL-CC1312R1](#) They come with an onboard debugger, XDS110 and EnergyTrace – a low power development tool
 - Sensor Controller – Take advantage of TI' Sensor Controller in ultra low power applications, using our [Sensor Controller Studio](#) and [white paper](#)
- Available later this year
 - SimpleLink SDK supporting Sidewalk
 - Software Library – Out of box examples to help you start your development
- Worldwide support available via local sales and/or [TI E2E™ support forum](#).

Potential bundle

TI + Amazon Sidewalk Bundle:

Nodes: 2x LPSTK-CC1352R LaunchPad SensorTag Kits



Amazon Gateway

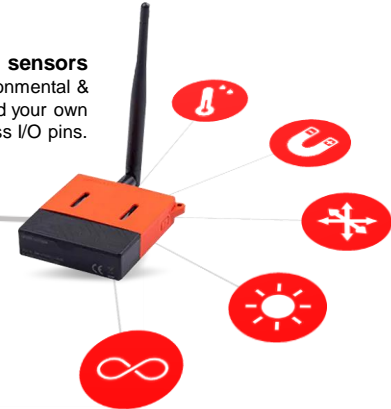
Over-the-air download & seamless provisioning
Download an Amazon Sidewalk image to LPSTK over-the-air through Bluetooth & provision to an Amazon Sidewalk-enabled gateway.



Flexible connectivity options
with concurrent 2.4GHz & sub-1GHz options. Support various protocols, including Bluetooth, ZigBee, Thread & proprietary protocols.

LPSTK available today

On-board sensors
Integrated environmental & motion sensors or add your own with easy-access I/O pins.



Ultra-low power

AAA or coin cell powered design with remove-able enclosure.

IMPORTANT NOTICE AND DISCLAIMER

TI PROVIDES TECHNICAL AND RELIABILITY DATA (INCLUDING DATASHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES "AS IS" AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS AND IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for skilled developers designing with TI products. You are solely responsible for (1) selecting the appropriate TI products for your application, (2) designing, validating and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, or other requirements. These resources are subject to change without notice. TI grants you permission to use these resources only for development of an application that uses the TI products described in the resource. Other reproduction and display of these resources is prohibited. No license is granted to any other TI intellectual property right or to any third party intellectual property right. TI disclaims responsibility for, and you will fully indemnify TI and its representatives against, any claims, damages, costs, losses, and liabilities arising out of your use of these resources.

TI's products are provided subject to TI's Terms of Sale (<https://www.ti.com/legal/termsofsale.html>) or other applicable terms available either on [ti.com](https://www.ti.com) or provided in conjunction with such TI products. TI's provision of these resources does not expand or otherwise alter TI's applicable warranties or warranty disclaimers for TI products.

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265
Copyright © 2021, Texas Instruments Incorporated