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LPW-203

Ecosystem Developer Journeys for Amazon Sidewalk

Fritz Werder | August 2023

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Agenda

- Introduction to Amazon Sidewalk
- Developer Journey website walk through
- Bluetooth + Sub-GHz review

What is Amazon Sidewalk?

amazon sidewalk

A unique secure network designed to

- Make devices work better beyond the front door
- Simplify device setup
- Keep devices up-to-date even if they are outside the range of home Wi-Fi

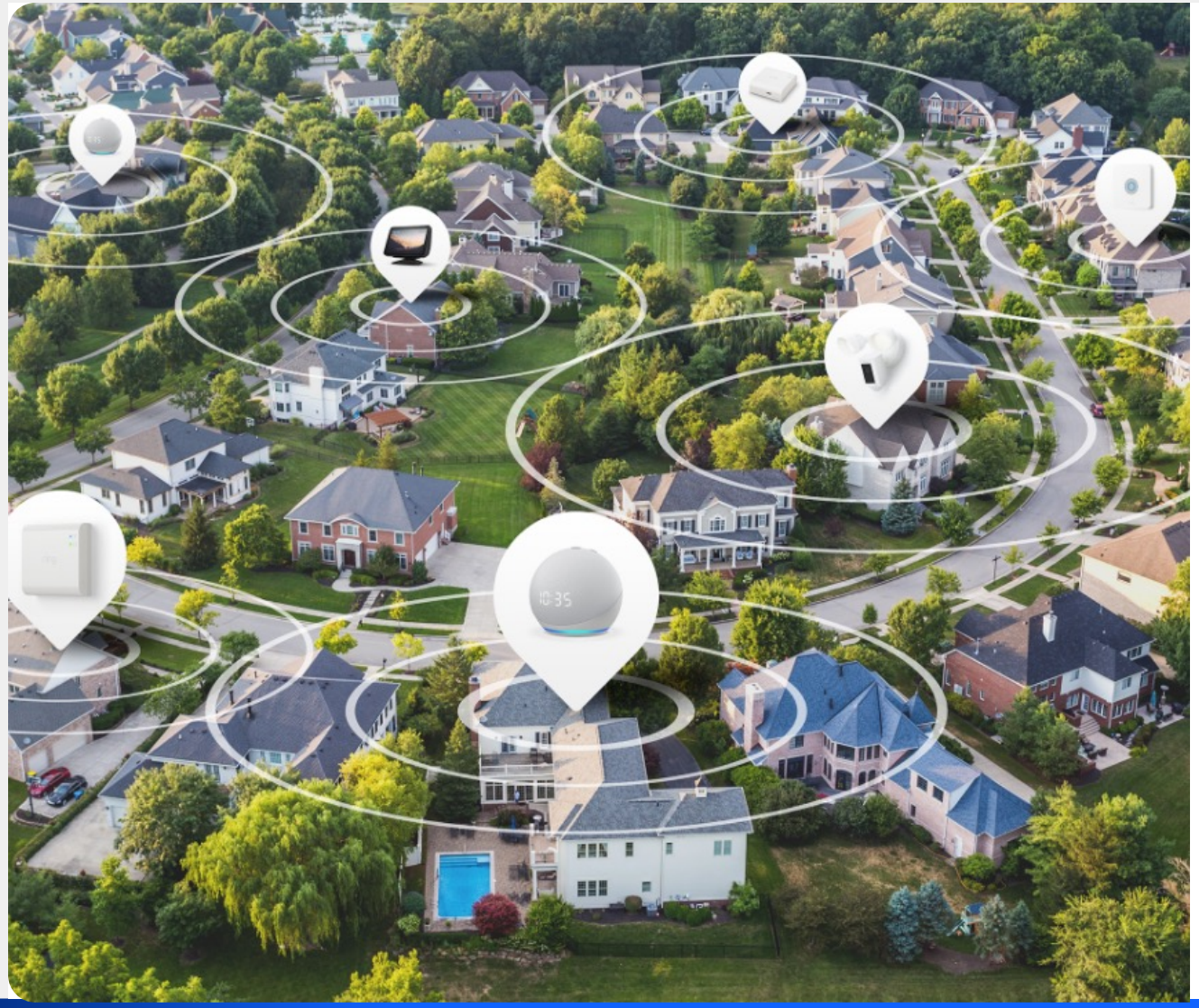
Operated by Amazon at no charge to end-customers

Amazon Sidewalk consists of:

- Protocol stack
- Application layer
- Standard physical layer (BLE, FSK, CSS)

US Only (Today), Global (Later)

Amazon Sidewalk Delivers Significant Value



- Range extension
- Automatic connection
- Remove need for proprietary gateway
- Reliable connectivity
- Free-to-connect and transport data to the cloud
- Transcend ownership while device remains connected

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Amazon Sidewalk Radio Layers

BLUETOOTH LOW ENERGY

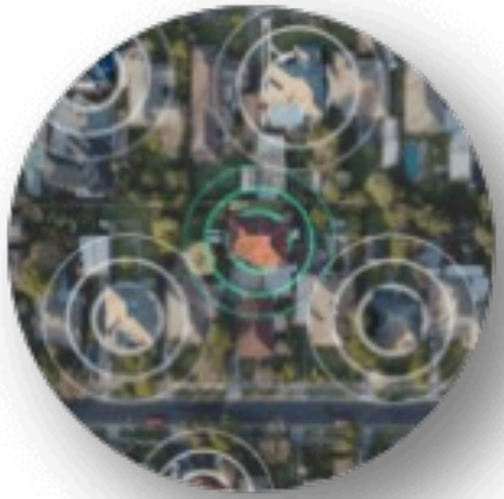
In Home and Device-to-Phone

Bluetooth Low Energy radio PHY can be used for Amazon Sidewalk applications in the home with short-range connectivity for devices such as location-based devices and connect a device to a smartphone with Amazon.

SUB-GHZ GFSK

Beyond Front Door

GFSK radio PHY can cover up to one acre lot and can address applications that need to cover detached buildings and yards such as pool, spa, and water mitigation. GFSK can even support smart city and neighborhood applications with Amazon Sidewalk coverage.



SUB-GHZ CSS

Beyond the Fence

The CSS (Chirp Spread Spectrum) radio PHY can reach several miles to support applications where devices are far from the nearest Bridge - these can include smart neighborhoods, universities, and agriculture with Amazon Sidewalk coverage.

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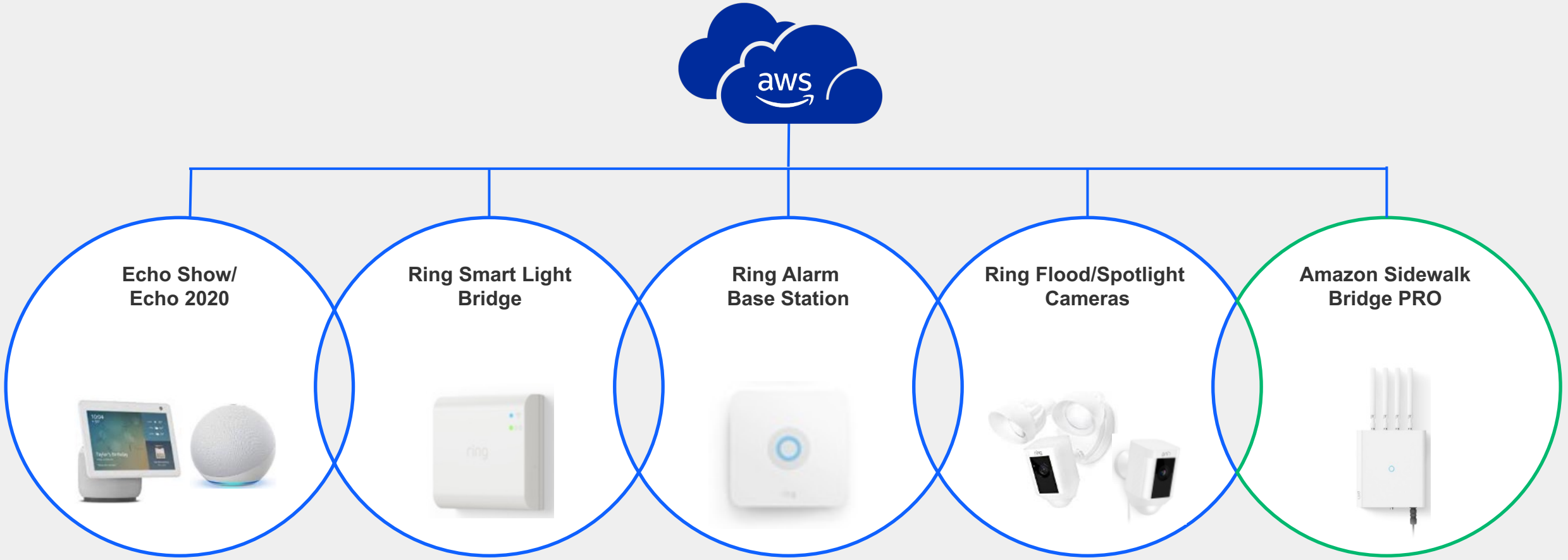
Leverage the Amazon Sidewalk Infrastructure



Amazon bridge devices for the free-to-connect network and connection to Cloud

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Amazon Sidewalk Applications Ideas

In Home / Beyond the Front Door

BLUETOOTH LE

Tracking
Telematics
Theft Prevention
Personal Care

BLUETOOTH LE/FSK

Outdoor Lighting
Access Control
Water Mitigation and Control
Energy Conservation
Appliance Predictive Maintenance

Beyond the Fence

BLUETOOTH LE/FSK/CSS

Parks Management
Environmental Management
Agriculture and Farming
Building and Campus Management
Airports

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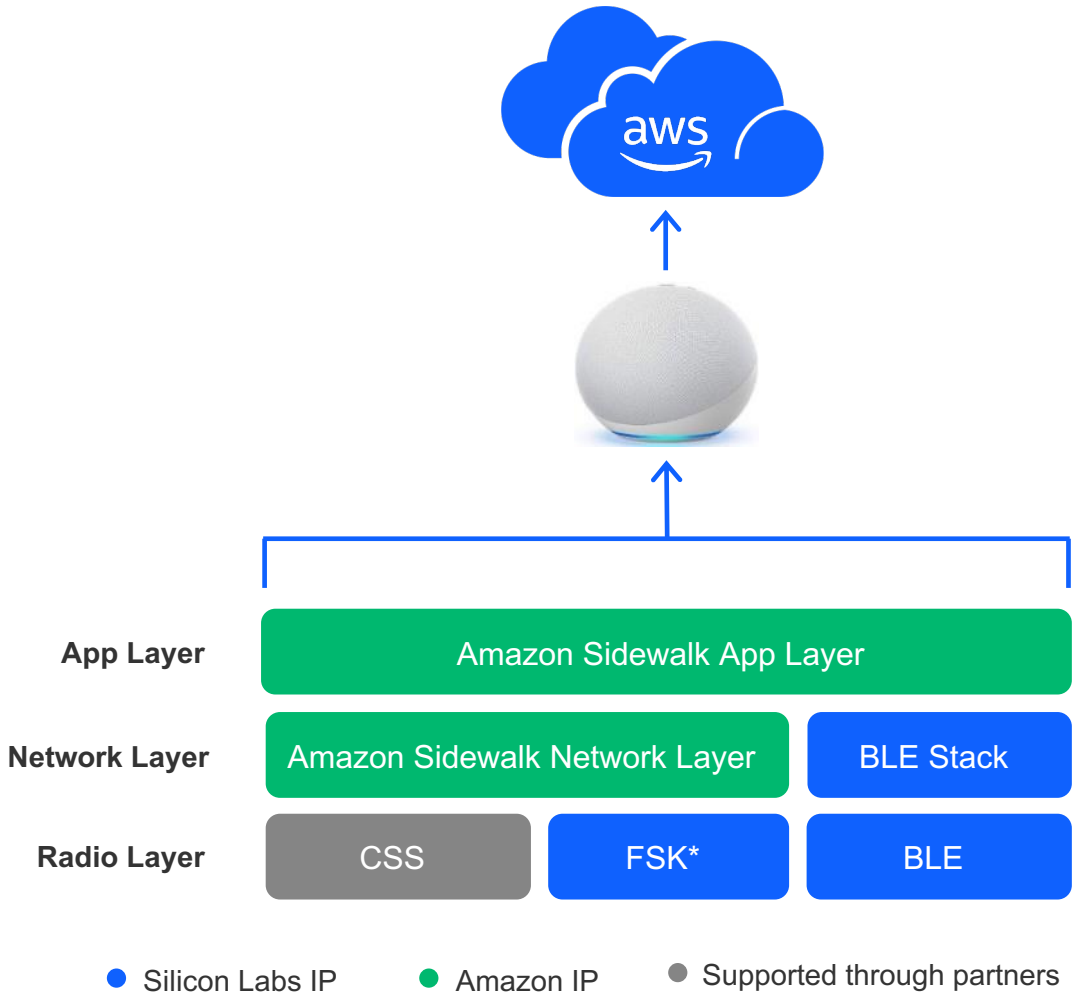
Video Placeholder

Developer Journey Website walk through

Amazon Sidewalk Software Details



**supported in roadmap products*

- Protocol stack and application layer
- Must connect to cloud through AWS
- Data accessed through AWS IoT core
- Bridging to other clouds possible
- Using standard PHYs
- Vault level security required
- Will be governed by qualification program
- Currently available on GitHub for initial customers
- Silicon Labs will integrate Amazon Sidewalk in GSDK and Simplicity Studio

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Software Solution

Amazon Sidewalk Applications

Amazon Sidewalk Sample Apps

Silicon Labs Sample Apps

FreeRTOS

Amazon Sidewalk Stack

Sidewalk Application Layer Library

BLE Network Interface

900MHz Network Interface

Sidewalk MAC

Silicon Labs' Platform Abstraction Layer

crypto | timer | serial

storage_kv | SWI | clock

ble_adapter | clock | Radio PAL

Bluetooth Stack

RAIL

Platform MCU

Tools

AWS Services

Simplicity Studio

Project Configurator

Component Selector

Pin Tool

Energy Profiler

Gecko SDK

Silicon Labs Sidewalk Contribution

Amazon Sidewalk Contribution

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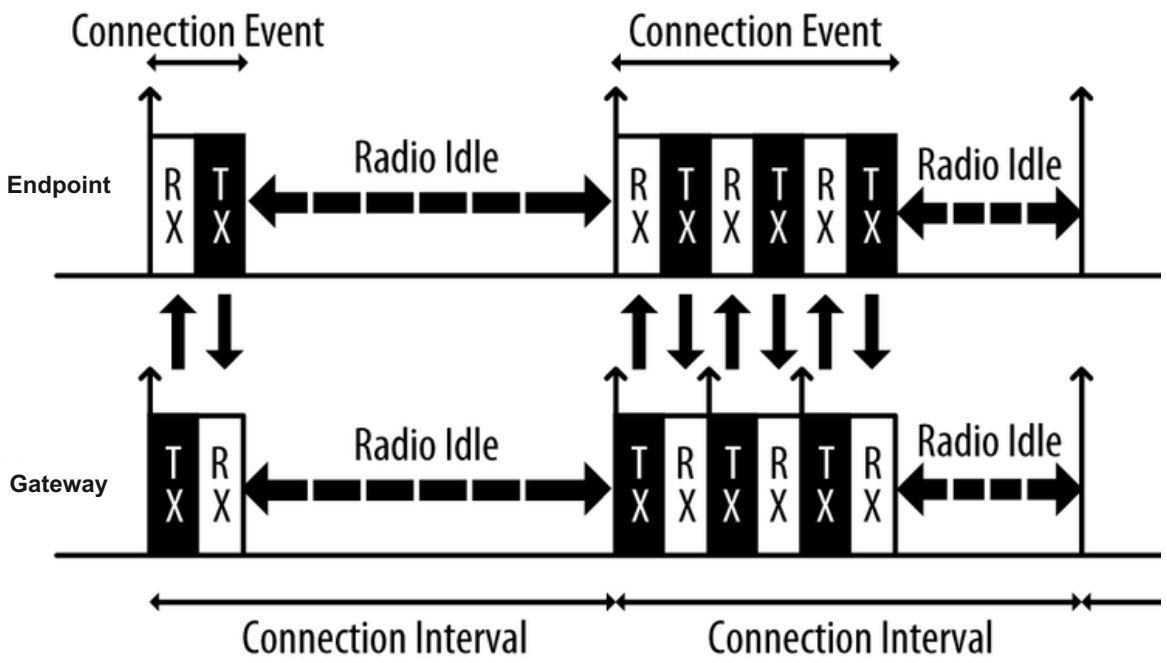
Amazon Sidewalk Bluetooth



- Amazon Sidewalk leverages the Bluetooth connected mode between the endpoint and the Amazon Sidewalk gateway.
- Used for devices that want to connect to the Sidewalk network typically within or very near the home
- Provides ease of device OTA that is not as intuitive on other protocols

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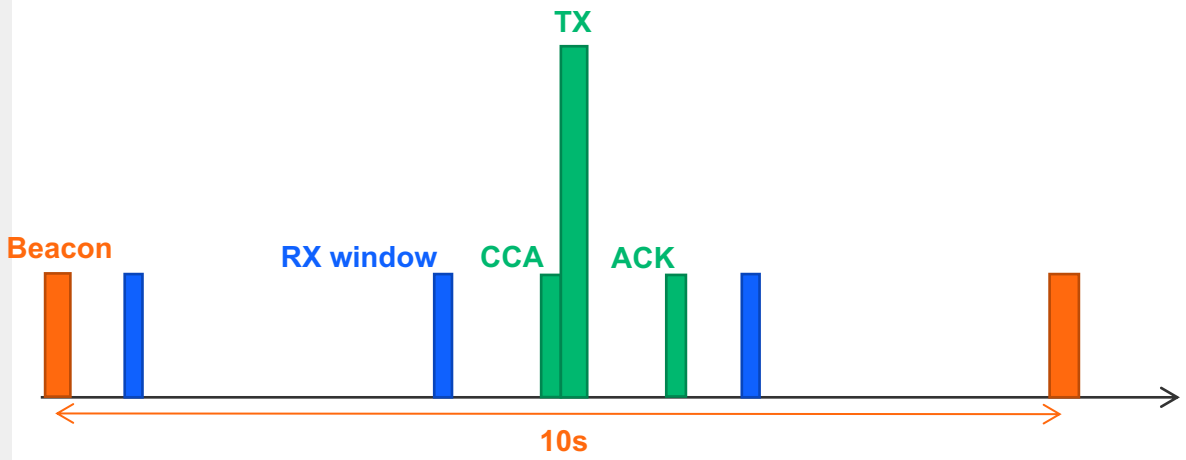
Sub-GHz Protocols Deep Dive

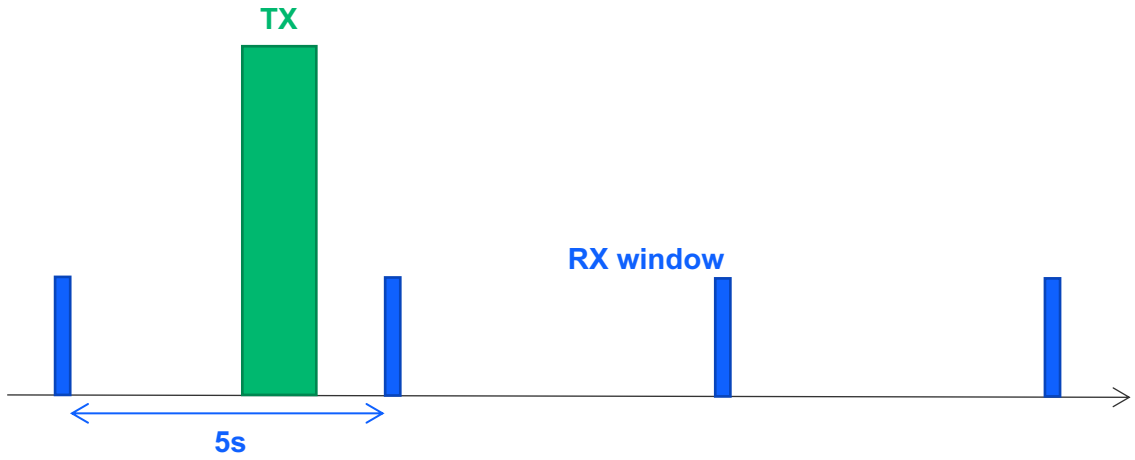
FSK (900 MHZ)

- **Synchronous protocol: always connected to GW**
- **Connected through beacons every 10 seconds**
- **Listening windows and transmission opportunities in between beacons**
- **Different power profiles are available**
  - Power profile A: Configuration chosen by gateway
  - Power profile B: Configuration chosen by the endpoint



CSS (900 MHZ)

- **Asynchronous protocol: connects when needed**
- **Periodic listening windows (every 5 seconds)**
- **Transmissions when needed**
- **Different power profiles available**
  - Power profile A: RX windows depend on TX
  - Power profile B: periodic RX



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Q&A