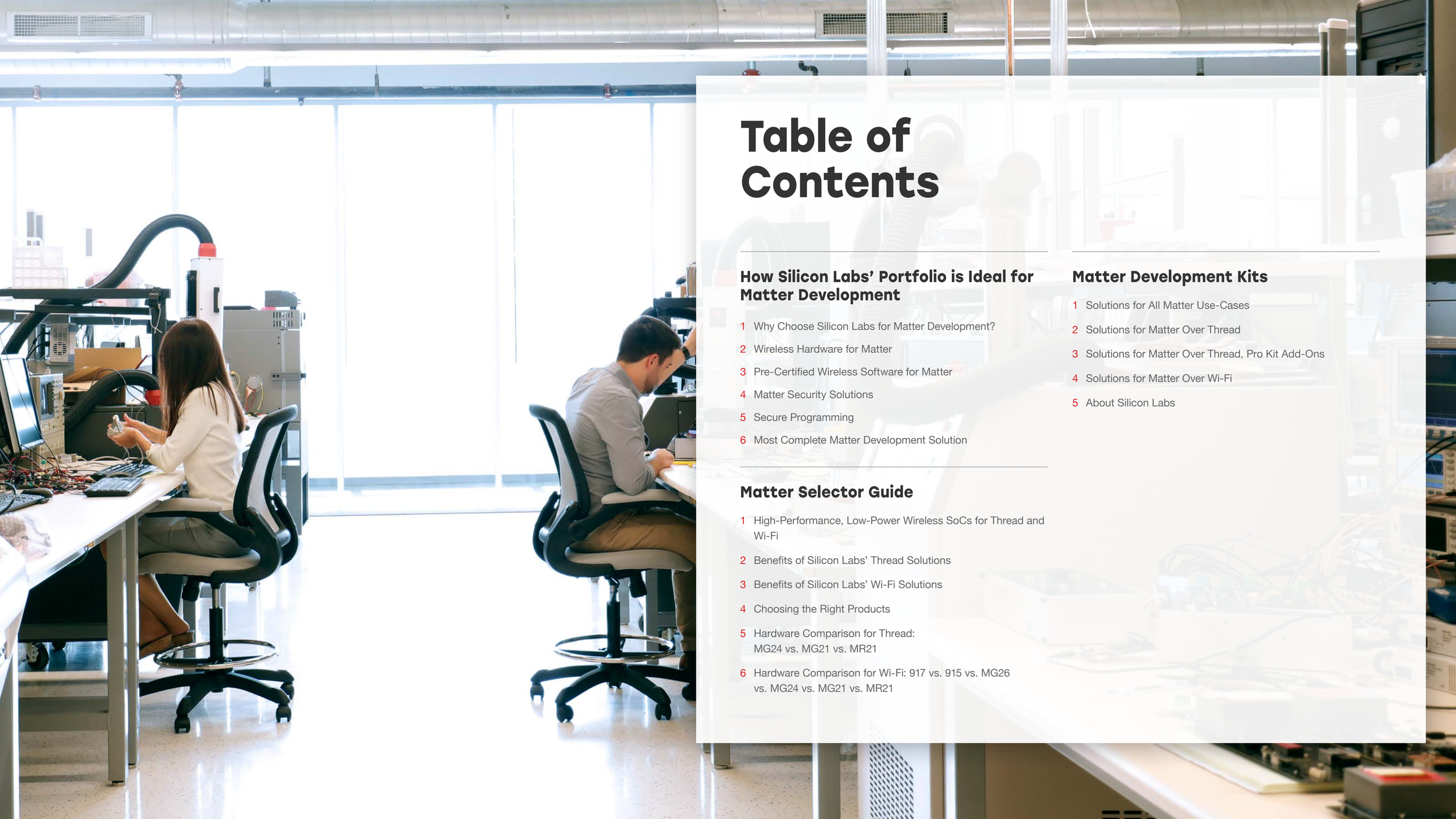
SILICON LABS | matter

Matter SoC and Module Selector Guide

Selecting the Right Matter Device for Your Applications



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How Silicon Labs' Portfolio is Ideal for Matter Development

Hardware

Single-SoC Matter solutions

- **High-performance RF** enables reliable connectivity in every room of the house and beyond
- **Ultra-low-power** — Extend battery life and recharging interval
- **Fully integrated MCU** — Simplify product design, reduce BoM costs, improve profits
- **RF-Certified Modules** — Accelerate time-to-market by up to 9 months

Software

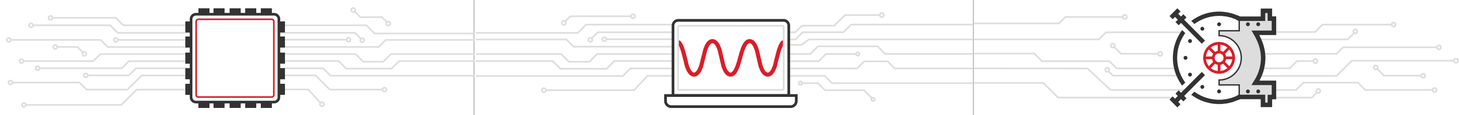
Pre-certified and tested Matter, Wi-Fi, Thread, and Bluetooth software

- **Pre-certified** and tested Matter, Wi-Fi, Thread, and Bluetooth software
- **Full compliance** and maximum performance on Silicon Labs hardware
- **Reduce time and costs** of development and certification
- **Improve** product quality
- **Matter Compliant Platform Certified** – Simplifies compliance and speeds product launches.

Security

Fully Matter-compliant security

- **Secure Vault** covers all mandatory, recommended, and optional security requirements
- **PSIRT** offers constant monitoring and rectification of vulnerabilities (Matter requirement)
- **MG26** has the highest PSA Level 3 certification
- **SiWG917** is the best Wi-Fi security (Certifiable for PSA Level 2)
- **The best SDK support** with 10 years of longevity



Secure Programming

Securely program Matter certificates, security settings, keys, and flash software

- **Prevent** counterfeiting and IP theft
- **Simplify** the creation of QR codes
- **Reduce** manufacturing risks and costs
- **Accelerate** production time

Developer Journey

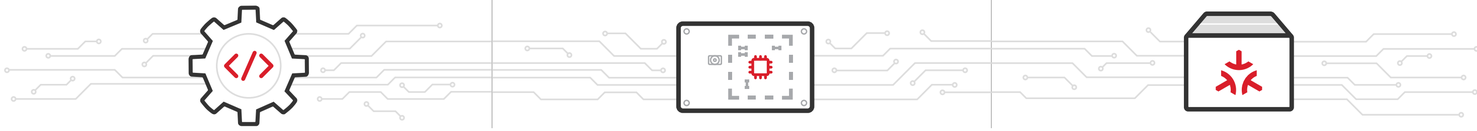
Most comprehensive end-to-end process for Matter

- **Matter ecosystem developer journeys** for learning and experimenting in advance
- **Dev Kits** for all Matter use-cases
- **Tools** for all teams and needs
- **Connectivity Lab** to test interoperability for Matter and save certification time

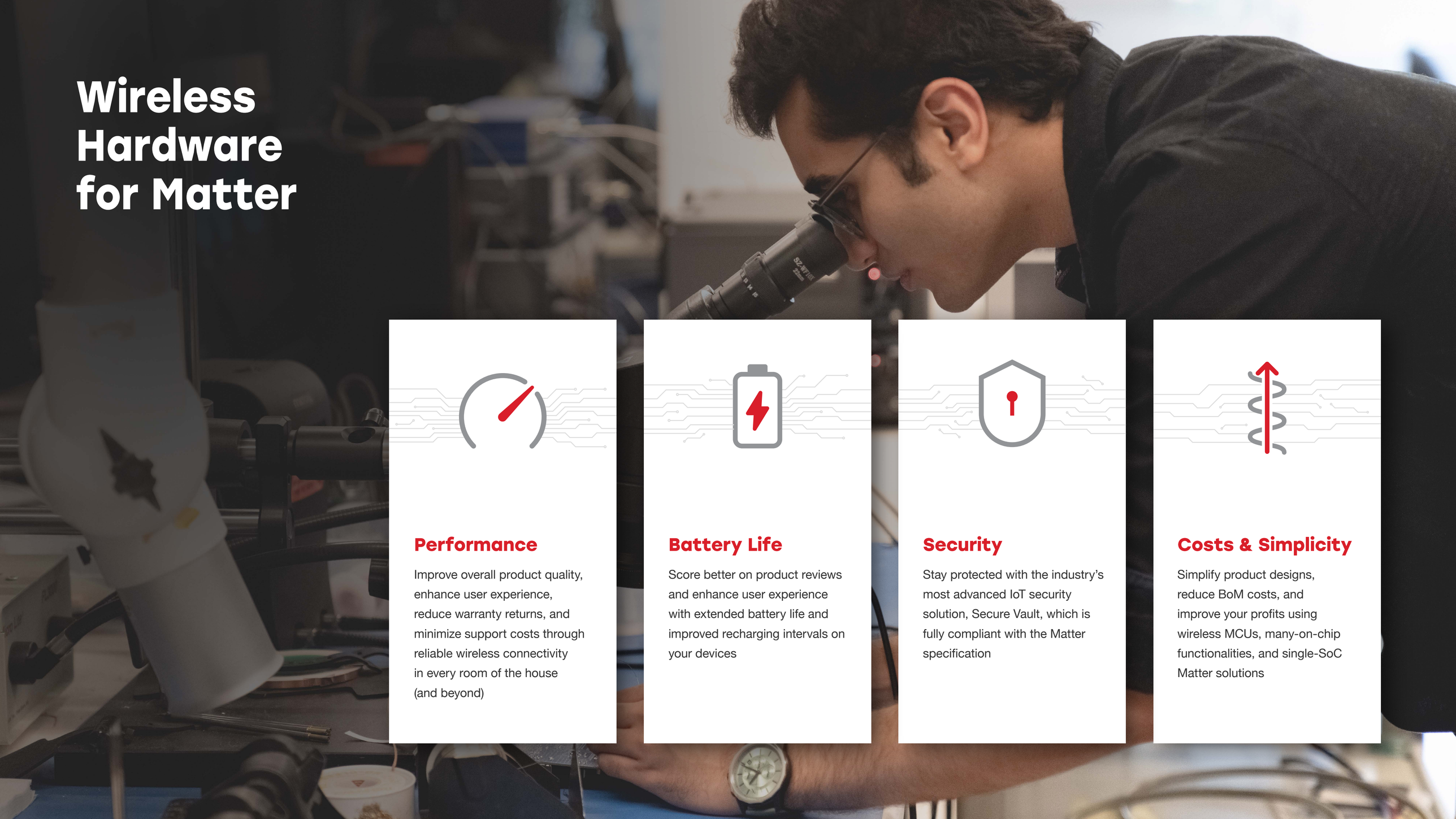
Most Complete

Most Complete Go-to-Market Solution for Matter

- **Enhance user experience** with high-performance wireless and ultra-low-power
- **Matter-compliant security** to protect devices, users, and brand reputation
- **Develop faster and reduce costs** with community support 24/7, developer journeys, and documentation
- **Accelerate certification** via the Connectivity Lab



Wireless Hardware for Matter



Performance

Improve overall product quality, enhance user experience, reduce warranty returns, and minimize support costs through reliable wireless connectivity in every room of the house (and beyond)

Battery Life

Score better on product reviews and enhance user experience with extended battery life and improved recharging intervals on your devices

Security

Stay protected with the industry's most advanced IoT security solution, Secure Vault, which is fully compliant with the Matter specification

Costs & Simplicity

Simplify product designs, reduce BoM costs, and improve your profits using wireless MCUs, many-on-chip functionalities, and single-SoC Matter solutions

Pre-Certified Wireless Software for Matter

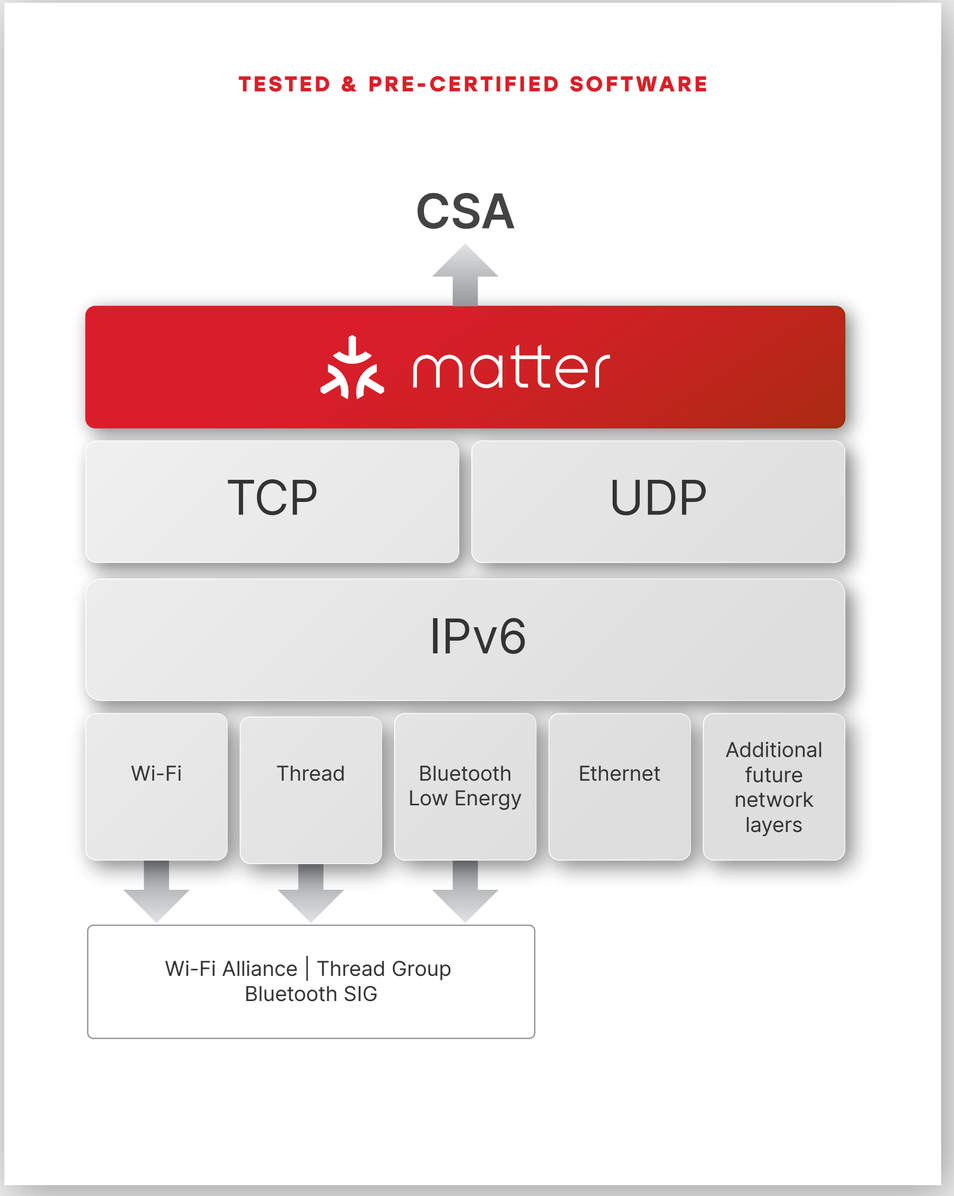
Our SDKs provide pre-certified and tested wireless protocol stacks for Wi-Fi, Thread, Bluetooth LE, and Matter application layer firmware. These SDKs are also built on a CSA-certified Matter Compliant Platform, enabling developers to inherit validated commissioning, networking, and security for faster, simpler certification.

Silicon Labs wireless protocol stacks are tested and quality assured for full compliance, stability, and maximum performance to:

Increase overall product quality

Reduce development time and costs

Ensure that devices can pass final certifications on the first go



Matter Security Solutions

Fully Compliant

With Secure Vault, PSIRT, and CPMS, receive the functions needed to cover all mandatory, recommended, and optional security requirements on the Matter specification in one package

Most Advanced

Featuring advanced IoT security solutions; our MG26 supports the highest PSA Level 3 certification and SiWG917 features the best Wi-Fi security on the market, supporting the PSA Level 2

Always Up-to-Date

Continuously monitor vulnerabilities and receive timely security updates; with us, you get the best support service in the industry, with up to 10 years of longevity for software and security

Programmable

Safely program Matter certificates, keys, security settings, applications, and bootloaders on wireless SoCs to reduce risks, save costs, and accelerate production

Secure Programming

Ready to Ship

With CPMS, securely program all Matter certificates, security settings, keys, applications, and bootloaders; Onboarding Payload is provided for the QR code, so Matter products are ready to ship

Accelerate Production

Instead of separate programming and flashing (in-house/CM), Silicon Labs programs SoCs during production and can deliver Matter-related programming as part of the process; reduces risk, cost, and time-to-market

Reduce Risks

Wireless SoCs are delivered to the CM secured and programmed with an encrypted SW image, preventing counterfeiting and IP theft

Maximize Security

Achieve maximum protection with Silicon Labs Secure Vault, which is broadly recognized as the most advanced IoT security solution and is fully compliant with the Matter specification

Most Complete Matter Development Solution

Learn in Advance

Access the most comprehensive Matter developer journeys for popular ecosystems like Google, Amazon, Apple, and SmartThings; these journeys help development teams learn the entire process in advance to avoid common mistakes and plan resources wisely

Kits for all Use-cases

Leverage development kits for all Matter use cases: Matter over Wi-Fi, Matter over Thread, border router, Matter bridge, and more

Tools for all

Find the right complete package of Matter and wireless SDKs for any IDE

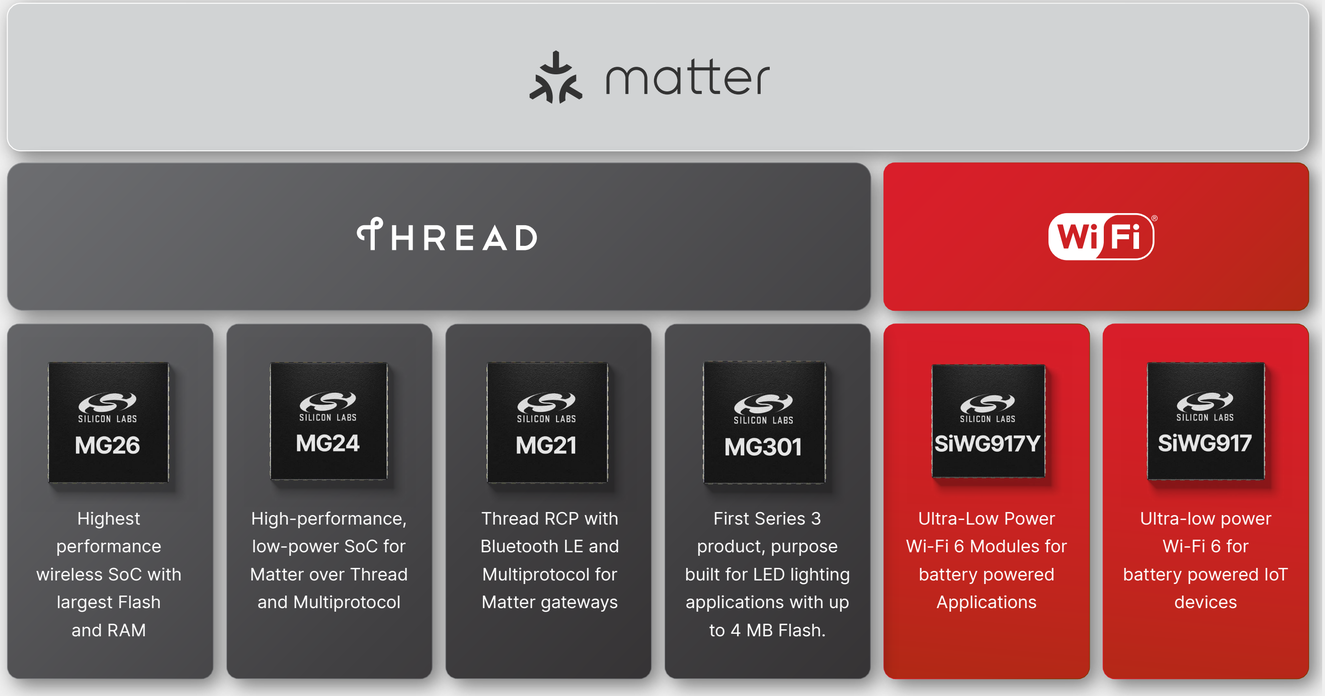
Connectivity Lab

Work with the only silicon vendor offering Connectivity Lab*

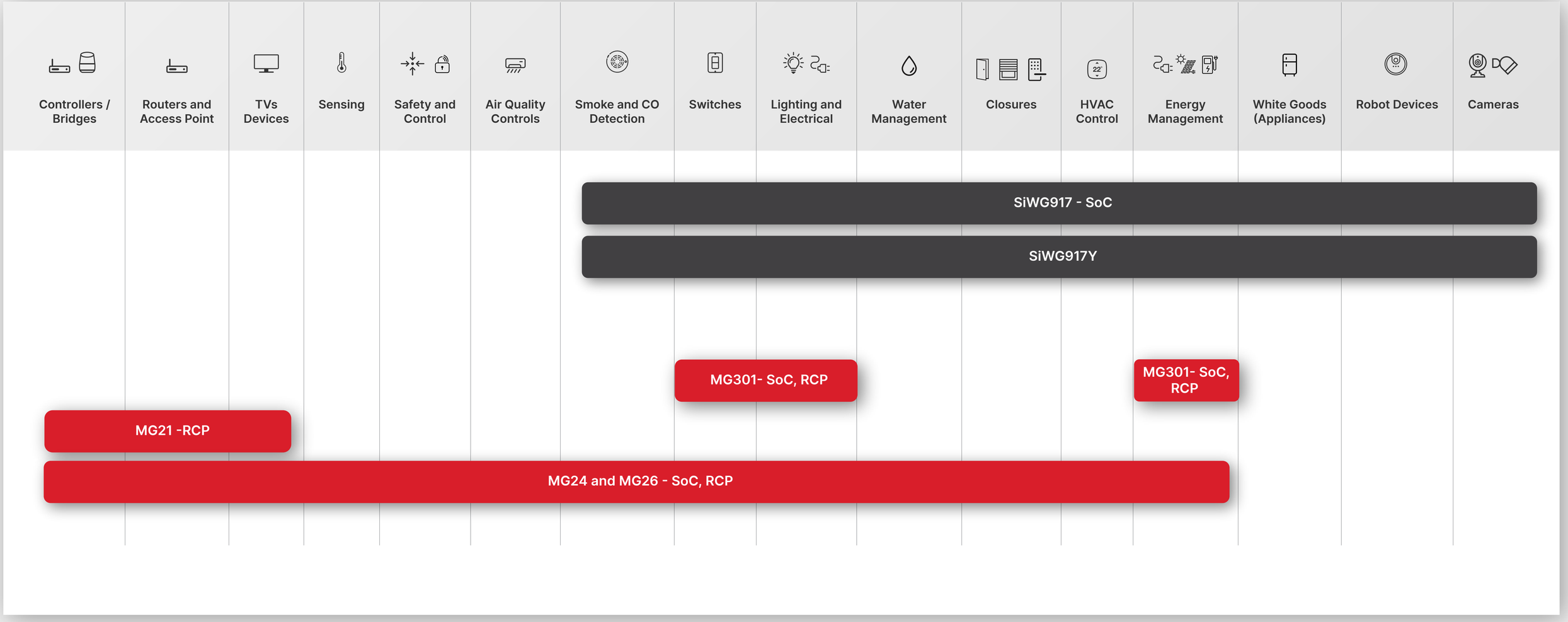
- Test Matter devices with ecosystems
- Save time and money with remote or onsite testing
- Validate functionality in a friendly zone before applying for official certifications and badges

High-Performance, Low-Power Wireless SoCs for Thread and Wi-Fi

- Lowest power on the market for Wi-Fi
- Industry-leading wireless characteristics (TX power, RX sensitivity, etc.)
- Single-SoC Matter solutions with Bluetooth LE co-existence
- Integrated wireless MCUs with many add-ons: AI/ML, Sensor Hub, high-accuracy ADC, etc.
- Most advanced security with PSA Level 3 certification for Matter, Thread, Bluetooth LE
- Best IoT Security for Wi-Fi supporting PSA Level 2



Current and Future Application Support



Silicon Labs Thread Solutions

Largest combination of Flash and RAM enables more complex applications and ML capabilities

- High Performance Compute
- The tri-core device has a 78MHz M33 application core and dedicated cores for both the radio and security subsystems
- AI/ML accelerator further offloads compute intensive tasks for machine learning
- Robust RF Performance provide long-range and reliable communication
- Robust Security protects the data and the device - Secure Vault High is designed for PSA Level 3 and protects against local and remote attacks
- Rich Peripheral set with up to 64 GPIOs and 4 dedicated analog pins enables better system integration -
- Low Power enables smaller batteries and provides longer battery life
- Pin compatible with xG24 devices - Pin compatible 6x6 QFN48 for xG24 allows easy migration for devices that need more memory and ML capabilities

Memory - RAM 512 kB, Flash 3200 kB

Reliable, low-latency, and long-range Thread connectivity for SoC and RCP solutions

- +20 dBm output power
- Increased RF sensitivity

Single-SoC Matter solution

- Integrated Bluetooth LE Co-ex for easy commissioning

Matter-compliant security

- Secure Vault™ High supports the Matter hardware and software security requirements with PSA/SESIP Certification Level 3

Higher accuracy for industrial sensors

- 20-bit ADC for more granular output values

Extend product lifetime

- Large memory facilitating more features, smooth OTA updates, and longer product lifetime

Reduce BOM and PCB footprint while simplifying design

Faster AI/ML processing with lower energy consumption

- Integrated AI/ML hardware accelerator enables 2-4X faster ML inferencing and up to 6X lower power compared to non-accelerated processors (depends on the algorithm and model)

Memory – RAM 256 kB, Flash 1536kB

High-performance and reliable Thread RCP solution for Matter gateways

- +20 dBm output power
- High RF sensitivity

Multi-protocol

- Bluetooth LE co-ex for easy device commissioning
- Zigbee

Improved Wi-Fi blocking performance

- Prevent interference by filtering out Wi-Fi signals

Secure Vault™ High

- The most advanced IoT security with PSA/SESIP Level 3

Memory - RAM 96 kB, Flash 1024kB

Optimized for lighting and line powered devices

- No DCDC reduces external components
- Integrated lighting control circuits and LED pre-driver enables low level and consistent dimming while reducing BOM requirements

Flexible Flash with up to 512 kB of RAM

- Up to 4 MB co-packaged Flash w/ Secure XIP
- Supports up to 8 MB Flash for when using external Flash
- Future proofs deployed devices as specifications like Matter evolve over time

High Performance Compute

- Multi-core device to offload application
- 150 MHz M33 application core
- Dedicated cores for radio and security

Secure Vault High ensure robust security

- Designed for PSA Level 3 to protect against local and remote attacks
- Authenticated XIP protects NVM contents
- Dedicated radio crypto reduces latency

Concurrent 802.15.4 receive mode

- Enables device to participate on both Zigbee and Matter over Thread networks

Silicon Labs Wi-Fi Solutions

Lowest-power Wi-Fi 6 SoC battery-powered devices

Minimal battery replacement and recharging hassle for users

- Always-on cloud connectivity with minimal power
- Lowest power Wi-Fi 6 SoC can enable multi-year battery life for IoT devices such as smart locks

Improved user experience with superior wireless performance and easy device commissioning

- Bluetooth LE co-ex

Devices, users, and brand are protected from cyber threats

- Best-in-Class Security for Wi-Fi - PSA Level 2 Certifiable, WPA3, TLS 1.3, AI/ML engine

Fully integrated wireless MCU

- Dual core with an application-dedicated ARM core
- High memory, PSRAM
- AI/ML, ultra-low-power sensor hub

Maximum Wi-Fi gateway compatibility

- Independently tested
- Reduce user frustration, customer care costs, and improve brand loyalty

Seamless integration with Silicon Labs development solutions

- Simplicity Studio 6 streamlines the development process, reducing costs and time-to-revenue

Ultra Low Power Wi-Fi 6 Module

Faster Time-to-Revenue

- Integrated Antenna & Worldwide RF Certifications
- Many integrated BoM components, EMC shielding, etc.

Differentiate through Ultra-Low-Power

- Increase the Battery Life for your IoT Device

Enhance User Experience & Wireless Reliability

- Wi-Fi 6 on 2.4GHz in every corner of the building

Multiprotocol Simplification

- Wi-Fi 6, Bluetooth LE 5.4, Matter – Certified stacks

Protect the Device, Users, and Your Brand

- High level of Device, Protocol, and Networking Security

BoM-friendly Package for Wireless & Computing

- Separate Application and Wireless Processing
- Large memory: Embedded SRAM up to 672 KB, In-package Flash up to 8 MB and supports optional external Flash up to 16 MB, In-package PSRAM up to 8 MB and supports optional external PSRAM up to 16 MB
- Wireless, Computing, and Peripherals in the same package

HARDWARE COMPARISON FOR THREAD

MG26 vs. MG24 vs. MG21 vs. MG301

	MG26	MG24	MG21	MG301
Protocol Support	RCP SoC - Dynamic Multi-Protocol w/ Bluetooth LE Supports OTA with internal flash	RCP SoC - Dynamic Multi-Protocol w/ Bluetooth LE Supports OTA with internal flash	Multi-protocol, Proprietary Bluetooth, Thread and Zigbee (NCP and SoC) Matter (RCP only)	RCP SoC – DMP and CMP w/ BLE Supports OTA with internal flash
Frequency Bands	2.4 GHz	2.4 GHz	2.4 GHz	2.4 GHz
Core	Cortex-M33 (78 MHz)	Cortex-M33 (78 MHz)	Cortex-M33 (80 MHz)	Cortex-M33 (150 MHz)
Max Flash	3200 kB	1536 kB	1024 kB	4096 kB
Max RAM	512 kB	256 kB	96 kB	512 kB
Security	Secure Vault High	Secure Vault Mid Secure Vault High	Secure Vault Mid Secure Vault High	Secure Vault High
Rx Sensitivity (15.4)	-105.4 dBm	-105.4 dBm	-104.5 dBm	-106.3 dBm
Rx Sensitivity (Bluetooth LE 1Mbps)	-97.6 dBm	-97.6 dBm	-97.5 dBm	-98.6 dBm
Active Current	53.9 µA/MHz	33.4 µA/MHz	63.8 µA/MHz	47 µA/MHz
Sleep Current (EM2, 16 kB ret)	1.4 µA	1.3 µA	4.5 µA	NA
TX Current @ +0 dBm (2.4 GHz)	5.9mA	5.0 mA	9.3 mA	11.4 mA
TX Current @ +10 dBm (2.4 GHz)	19.5 mA	19.1 mA	33.8 mA	28.6 mA
TX Current @ +20 dBm (2.4 GHz)	152.7 mA	156.8 mA	185 mA	NA
RX Current (802.15.4)	6.2 mA	5.1 mA	9.4 mA	9.0 mA
RX Current (Bluetooth LE 1 Mbps)	5.4 mA	4.4 mA	8.8 mA	8.1 mA
Serial Peripherals	USART, EUSART, I2C	USART, EUSART, I2C	USART, I2C	EUSART, I2C, LEDDRV, PIXELRZ
Analog Peripherals	20-bit ADC, ACMP, VDAC	20-bit ADC, ACMP, VDAC	12-bit ADC, ACMP	12-bit ADC, ACMP
Other	Die Temp Sensor	Die Temp Sensor	Die Temp Sensor	Die Temp Sensor
Operating Voltage	1.71 V to 3.8 V	1.71 V to 3.8 V	1.71 V to 3.8 V	1.8 V to 3.6 V
GPIO	28, 32, 45, 49, 64	26, 28/32	20	17, 20, 22, 28
Package	6x6 QFN48, 8x8 QFN68, 7x7 BGA136, 12.9x15.0 PCB Module	5x5 QFN40, 6x6 QFN48 12.9x15.0 PCB Module	4x4 QFN32	4x4 QFN32 5x5 QFN40

HARDWARE COMPARISON FOR WI-FI

917 SoC vs 917 Modules

Parameter	SiWG917	SiWG917Y
Sampling / In-Production	In Production: Q1 2025	IP: Q4 2024
RF Bands (GHz)	2.4GHz	2.4GHz
Wi-Fi Generation / Bandwidth	Wi-Fi 6 / 20MHz (OFDMA, MU-MIMO, TWT)	Wi-Fi 6 / 20MHz (OFDMA, MU-MIMO, TWT)
Bluetooth Support	Bluetooth LE 5.1	Bluetooth LE 5.4
Modes of Operation	RCP, NCP, SoC	RCP, NCP, SoC
Temperature Range	-40 to 85C	-40 to 85C
PSRAM, AI/ML	Yes	Yes
Embedded SRAM and FLASH	672kB and up to 8MB; opt ext. flash	672kB and up to 8MB; opt ext. flash
NWP Type / Speed (MHz)	NWP 160MHz	NWP / 160MHz
MCU Type / Speed (MHz)	Cortex M4F / 180MHz	Cortex-M4F / 180MHz
Security	WPA2/WPA3, SSL/TLS 1.3 TRNG, PUF, Secure Boot, Secure OTA, Secure Zone (TEE), Secure XIP (AES-XTS), Advanced Crypto	WPA2/WPA3, SSL/TLS 1.3 PSA-L1 Certified PSA-L2 certifiable TRNG, PUF, Secure Boot, Secure OTA, Secure Zone, Encrypted XiP (AES-XTS), Advanced Crypto
Max GPIO (GPIO Multiplexer)	46	43
IC Pkg	7x7 QFN84, PCB Module	16 mm x 21.1 mm x 2.3 mm PCB Module
WLAN Max Tx Power / Rx Sens	19.5dBm / -97.5dBm	17.5dBm / -95dBm
Power Modes	Ultra Low Power	Ultra Low Power
Target Applications	Door Locks, HVAC, Portable Medical, Sensors, Cameras, Switches, Power Tools, Asset Monitoring, Fleet Management, Clinical Medical, Metering	Smart Homes, Smart Cameras, Appliances, Consumer Health and Wearables, Clinical Medical, Industrial, Smart Building, and Asset Tracking

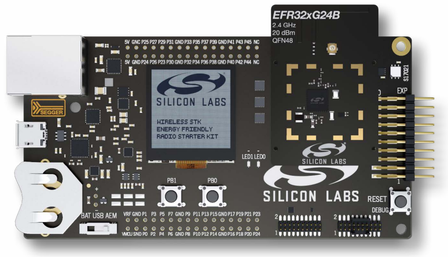
MATTER DEVELOPMENT KITS

Matter Over Thread Development Kits

Pro Kit

EFR32xG24 +20 dBm, EFR32xG26 + 10 dBm, SixG301 Wireless 2.4 GHz +10 dBm 4MB Flash Pro Kit

Pro Kit with the **MG24 SoC**, **MG26 SoC** and **MG301 SoC** is the development tool for Matter innovators! All tools for developing wireless applications. Enhance with Add-on radio boards.



Learn More & Order!

Dev Kit

EFR32xG24, EFR32xG26

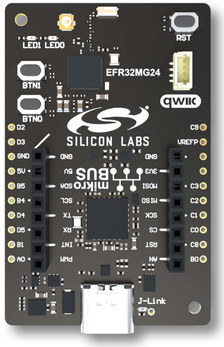
A small, cost-effective, and feature-rich development kit based on the **MG24** SoC and **MG26** SoC for prototyping and experimenting energy-friendly Matter devices. Supports Qwik and Ada Fruit boards.

Learn More & Order!

Explorer Kit

EFR32xG24, EFR32xG26, SixG301

The Explorer Kit is an ultra-low cost board for rapid Matter prototyping and concept creation on the **MG24 SoC**, **MG26 SoC** and **MG301 SoC**.



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MATTER DEVELOPMENT KITS

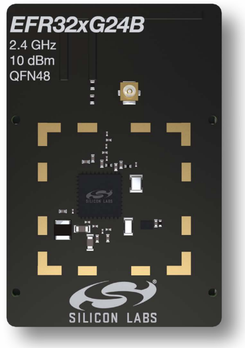
Solutions for Matter Over Thread

Pro Kit Add-Ons

Radio Board

+10 dBm EFR32xG24/xG26/SixG301 Wireless 2.4 GHz

The +10 dBm Radio Board works with the MG24, MG26 and SixG301 Pro Kit. Supports Bluetooth LE, Thread, Matter, and other protocols.



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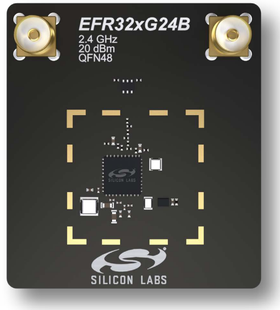
Antenna Diversity

+20 dBm EFR32xG24/xG26 Wireless 2.4 GHz

A radio board for antenna diversity development for managing multipath fading on the MG24 and MG26 Pro Kit. Includes an antenna reference design.



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Radio Board

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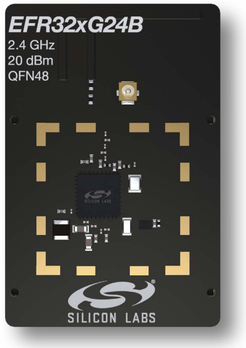
The +20 dBm Radio Board works with the MG24 and MG26 Pro Kit. Supports Bluetooth LE, Thread, Matter, and other protocols.



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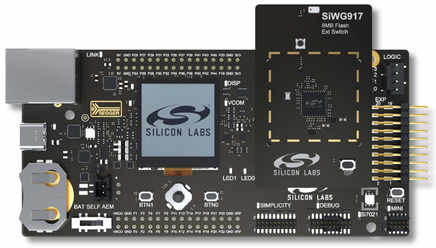
MATTER DEVELOPMENT KITS

Solutions for Matter Over Wi-Fi

SiWG917 Dev Kit for SoC Mode

Radio board with SiWx917 that plugs into the Pro Kit baseboard; radio board provides access to the SiWx917 MCU peripherals and the internal application MCU for development using Simplicity Studio IDE and Debugger



SiWG917Y Module Wi-Fi 6 and Bluetooth LE 8MB Flash RF-Pin Radio Board

The SiWG917Y Module SoC Radio Board is designed to work with the Wireless Pro Kit Mainboard (not included) to support the development of wireless IoT devices based on based on the SiWG917M ultra-low power SoC that includes Single-Band Wi-Fi 6 + Bluetooth LE 5.4, Matter, and IP networking stack for cloud connectivity.

SiWN917Y Module Wi-Fi 6 and Bluetooth LE 4MB Flash RF-Pin Co-Processor Radio Board

The SiWN917Y SoC Radio Board is designed to work with the Wireless Pro Kit Mainboard (not included) to enable you to develop IoT devices using the SiWG917 ultra-low power SoC supporting Wi-Fi 6, Bluetooth LE 5.4, Matter, and IP networking stack for cloud connectivity.

About Silicon Labs

Silicon Labs is the leading provider of silicon, software, and solutions for a smarter, more connected world. Our industry-leading wireless solutions feature a high level of functional integration. Multiple complex mixed-signal functions are integrated into a single IC or system-on-chip (SoC) device, saving valued space, minimizing overall power consumption requirements, and improving products' reliability. We are the trusted partner for the world-leading consumer and industrial brands. Our customers develop solutions for wide range of applications, from medical devices to smart lighting to building automation, and much more.