



**Presentation  
Will Begin  
Shortly**

tech **talks** UPCOMING SESSIONS

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FEB 2<sup>ND</sup> | Wi-Fi 6 Benefits for IoT Applications

MAR 2<sup>ND</sup> | Designing Low-Power Applications with Wi-Fi 6

MAR 30<sup>TH</sup> | Fast Track Your Wi-Fi 6 Device Certification

APR 27<sup>TH</sup> | Design with our New Multiprotocol Wi-Fi Module

MAY 25<sup>TH</sup> | Building Smart Home Devices with Always-On Wi-Fi 6

JUN 22<sup>ND</sup> | Developing Wi-Fi 6 Sensors Using SiWx917 and Matter

We will begin in: **0:00**

2023



WEBINAR SERIES

# Welcome

## Fast Track Your Wi-Fi6 Device Certification

Wi-Fi Alliance - Sarika Prasad  
Silicon Labs - Tarun Dewan



WI-FI SERIES



# Creating Wi-Fi CERTIFIED™ products: Wi-Fi Alliance® testing & certification

March 2023

The worldwide network of companies that brings you Wi-Fi®



# Wi-Fi CERTIFIED™ is foundational to Wi-Fi success

The Wi-Fi CERTIFIED logo is an internationally recognized seal of approval designating products with proven interoperability, conformance to standards and the highest industry-standard security protections in place

- Flagship product certification program
- Establishes industry-agreed standards, requirements for performance and quality user experiences



**22** years

**75K** certifications



## Wi-Fi CERTIFIED

products are the most reliable way to give customers confidence that their devices will interoperate and provide a quality experience

After understanding the benefits of Wi-Fi CERTIFIED:

**80%** Poll respondents indicated they are likely to look for Wi-Fi CERTIFIED 6® over non-certified products

**60%** Poll respondents indicated they are willing to pay more for the Wi-Fi CERTIFIED seal of approval

Source: Wakefield Research, 2019

# Wi-Fi certification options



	Product candidates	When to use	Where to test
<b>FlexTrack</b>	Highly differentiated products designed from the ground up	Extensive flexibility in Wi-Fi customization and optimization	Completed at an Authorized Test Laboratory (ATL)
<b>QuickTrack</b>	End products are based on a Qualified Solution that has already completed full Wi-Fi functionality testing	Targeted modifications to Wi-Fi components and functionality	Completed at an ATL or member testing site
<b>Derivative</b>	For product portfolios where multiple products use identical Wi-Fi designs	Members apply for certification of derivative products without the testing requirement	None required



# QuickTrack testing & certification

# QuickTrack testing & certification

FlexTrack

QuickTrack

Derivative

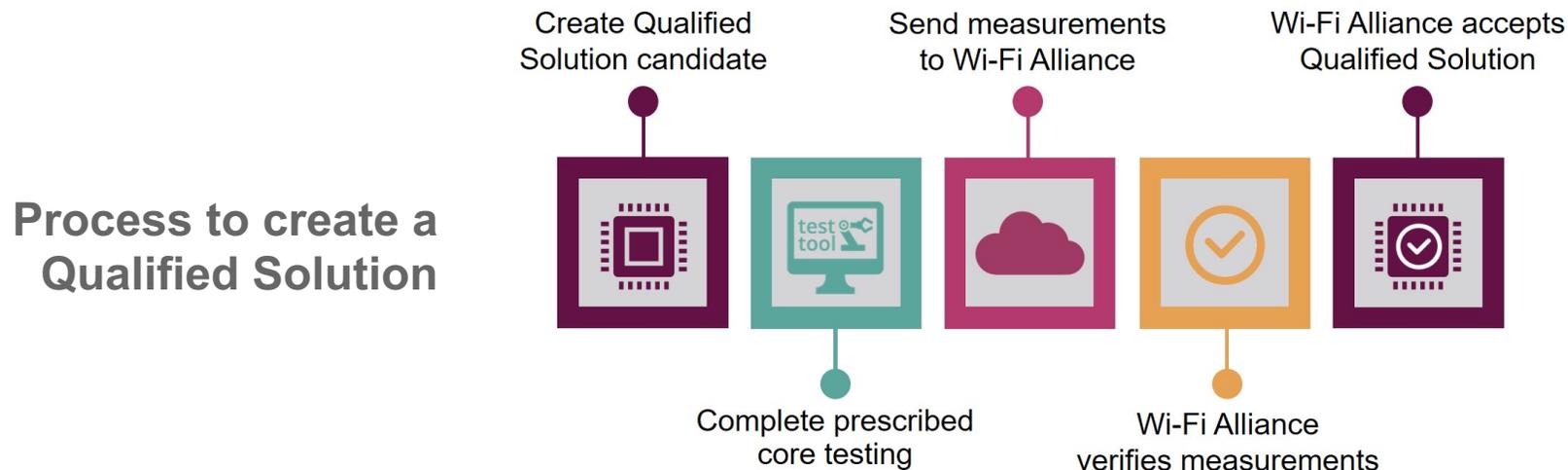
Provides a time-saving, cost-efficient option for products with limited or targeted modifications to Wi-Fi components and functionality

- Products based upon a Qualified Solution leverage the extensive Wi-Fi testing previously completed for Wi-Fi components
- Member companies can control and perform certification testing at company test sites (MCTL), without the need to rely on a third party for testing
- Simplified process reduces costs and duration to achieve certification; removes redundant testing and leverages core Wi-Fi functionality testing already completed
- Can be easily integrated into product quality testing to ensure certified products continue to meet Wi-Fi CERTIFIED requirements over product lifetime

# QuickTrack ready Solution Providers deliver greater value to their customers

Solution Providers become QuickTrack ready by providing Qualified Solutions to benefit their customers by:

- Enabling faster time-to-market
- Reducing test and certification costs
- Promoting their customer's lifetime product quality
- Maintaining Wi-Fi CERTIFIED assurances

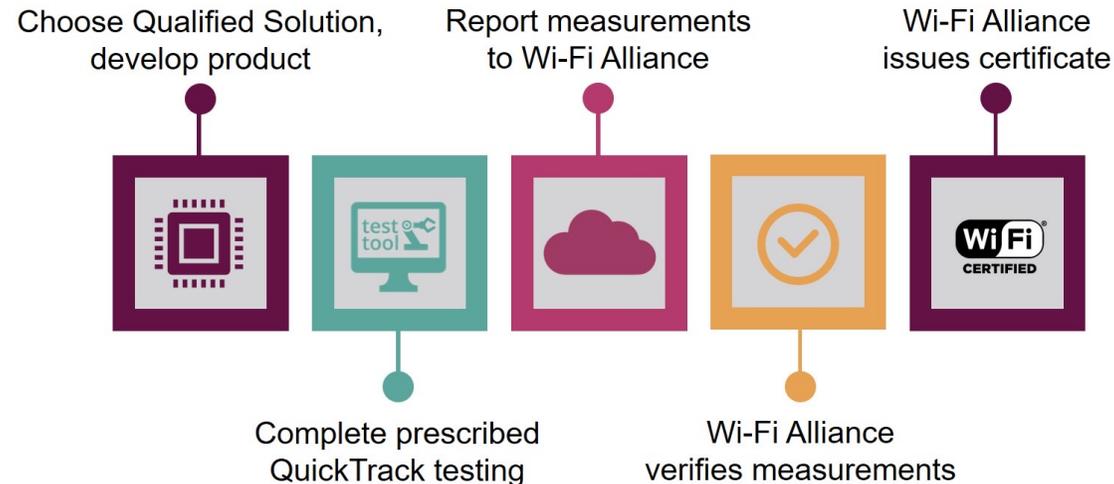


# Product developers can streamline their certification process

Reduce testing time and complexity by designing products based on Qualified Solutions

- Qualified Solutions include chipsets, modules, and other solutions pre-tested by Solution Providers
- Maintains Wi-Fi CERTIFIED assurances
- Applicable to new products and variations of previously certified devices
- Available to Sponsor, Contributor, Affiliate and Small Business Introductory Participant members\*

## QuickTrack Process for End Product Developers



*\* Members must be in good standing to certify products*

# QuickTrack customization and pricing

Core Wi-Fi components have already completed testing.

Provided with a Qualified Solution, which has already completed testing

Component	Customizable
Chipset	--
Driver	Exceptions possible; apply for exception in the certification system
Firmware	Exceptions possible; apply for exception in the certification system
RF architecture	--
OS	✓
Physical interface	✓
RF components	✓
Antenna	✓
<b>Cost, eligibility</b>	
Wi-Fi CERTIFIED license fee (per product model)	\$7,500
Testing	Only Conformance testing, duration (4 to 5 hours), Performed either at ATL or members' own facilities (MCTL)
Eligible members	All except Implementer membership

## QuickTrack Wi-Fi CERTIFIED program availability

Program testing currently available:	
Wi-Fi CERTIFIED 6 <sup>®</sup> and Wi-Fi 6E	Wi-Fi CERTIFIED WPA3 <sup>™</sup> & WPA2 <sup>™</sup>
Wi-Fi CERTIFIED <sup>™</sup> ac	Wi-Fi CERTIFIED Enhanced Open <sup>™</sup>
Wi-Fi CERTIFIED <sup>™</sup> n	Protected Management Frames
Wi-Fi CERTIFIED Agile Multiband <sup>™</sup>	Wi-Fi CERTIFIED Data Elements <sup>™</sup>
Wi-Fi CERTIFIED Wi-Fi Protected Setup <sup>™</sup>	Wi-Fi CERTIFIED Wi-Fi Direct <sup>™</sup>

# Steps to become a MCTL

Members shall submit an application to Wi-Fi Alliance for review using the online lab application form found here: [QuickTrack Lab Application | Wi-Fi Alliance](#)

Member purchases approved qualified AP and/or STA for use in QuickTrack certification path testing. The list of approved devices for QuickTrack certification testing can be found here: [QuickTrack Supported Devices | Wi-Fi Alliance](#). Cost of the devices is mentioned in catalog (section 9): [Wi-Fi Alliance Test Bed Catalog](#)

Wi-Fi Alliance marks as an active MCTL in certification system.

**NOTE:** No qualification testing, or test data submissions are required for establishing an MCTL. Instead, the application process is used as a formal indication by the member of their interest in proceeding with product certifications via the QuickTrack path. Additionally, the process also establishes one or more contacts at the member lab responsible for the lab's operations



# Derivative certification

# Derivative certification for products based on a Wi-Fi CERTIFIED Source Product

FlexTrack

QuickTrack

Derivative

- End product derivatives of source product have no Wi-Fi functionality changes
- No testing required; leverages test results of an existing Wi-Fi CERTIFIED product via the [Derivative Certifications Policy](#)
- Available to Sponsor, Contributor, Affiliate, Small Business Participant, Implementer, and Small Business Implementer members \*

Apply for derivative certification

Wi-Fi Alliance issues certificate



Wi-Fi Alliance reviews, approves application

*\* Members must be in good standing to certify products*

## Derivative customization and pricing

Best choice for identical Wi-Fi products in different product form factors, sizes

Component	Customizable
Chipset	--
Driver	--
Firmware	--
RF architecture	--
OS	--
Physical interface	--
RF components	--
Antenna	--
Cost, eligibility	
Wi-Fi CERTIFIED license fee (per product model)	\$600 for first 16 product models* (\$100 post that) \$4,000 for Implementers
Testing	n/a
Eligible members	All membership types

\* Sponsor, Contributor, Affiliate, and Small Business Introductory Participant members

# Wi-Fi certification customization options

Component	FlexTrack	QuickTrack	Derivative
Chipset	✓	--	--
Driver	✓	Exceptions possible; apply for exception in the certification system	--
Firmware	✓	Exceptions possible; apply for exception in the certification system	--
RF architecture	✓	--	--
OS	✓	✓	--
Physical interface	✓	✓	--
RF components	✓	✓	--
Antenna	✓	✓	--
Cost, eligibility			
Wi-Fi CERTIFIED license fee (per product model/USD)	\$5,000	\$7,500	\$600 for first 16 product models* (\$100 post that) \$4,000 for Implementers
Testing	Interop & Compliance + Conformance testing, duration (2~4 weeks), Performed at ATL	Only Conformance testing, duration (4 to 8 hours), Performed either at ATL or members' own facilities (MCTL)	n/a
Eligible members	All except Implementer membership types	All except Implementer membership types	All membership types

\* Sponsor, Contributor, Affiliate, and Small Business Introductory Participant members



# Using the Wi-Fi CERTIFIED brand

## Using the Wi-Fi CERTIFIED logo

- A company must be a member of Wi-Fi Alliance in good standing and achieve certification to use the Wi-Fi CERTIFIED logo and Wi-Fi CERTIFIED certification marks
- Wi-Fi Alliance members are bound to follow the requirements of the [Brand Style Guide](#) pursuant to the [Certification Mark License Agreement](#)
- The Wi-Fi CERTIFIED logos may not be changed in configuration or proportion, and must include the ® or ™ to identify as a registered mark
- The logo should be displayed with a clear background and without a border. Dark colored or patterned backgrounds that interfere with the visibility of the logo are not permitted.



More information available at  
[Our Brands | Wi-Fi Alliance](#)

# Proper use of the Wi-Fi CERTIFIED logo

## Correct

- Prefer white or clear background



- On product, illuminated or not illuminated



## Incorrect

- No patterned or dark backgrounds, no added borders



- No use of retired logos (see [Brand Style Guide](#))

# Resources

Certification option	Public website	Member website
General	<ul style="list-style-type: none"> <li>• <a href="#">Product Certification Highlights</a></li> <li>• <a href="#">QuickTrack Highlights</a></li> <li>• <a href="#">Authorized Test Laboratory (ATL) list</a></li> <li>• Additional questions: <a href="mailto:support@wi-fi.org">support@wi-fi.org</a></li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">ATL User Guide</a></li> <li>• <a href="#">Certification System Getting Started Guide</a></li> <li>• <a href="#">Member Support Portal</a></li> <li>• <a href="#">Test Bed Information</a></li> <li>• <a href="#">Wi-Fi Test Suite</a></li> </ul>
FlexTrack		<ul style="list-style-type: none"> <li>• <a href="#">Training - FlexTrack New Product Application Training</a></li> </ul>
Derivative		<ul style="list-style-type: none"> <li>• <a href="#">Training - Product Derivative Application</a></li> </ul>
QuickTrack resources (all resources on member website)	Solution Providers	End product developers
QuickTrack	<ul style="list-style-type: none"> <li>• <a href="#">QuickTrack Qualified Solution Policy</a></li> <li>• <a href="#">QuickTrack Qualified Solution and End Product Development Guidelines</a></li> <li>• <a href="#">QuickTrack Solution Test Laboratory Requirements Guidelines and Procedures</a></li> <li>• <a href="#">QuickTrack Test Tool User Manual</a></li> <li>• <a href="#">QuickTrack Qualified Solution Application Training</a></li> <li>• <a href="#">QuickTrack New Product Application Training</a></li> <li>• <a href="#">QuickTrack Test Tool Platform Acceptance Plan</a></li> <li>• <a href="#">QuickTrack Solution Provider Highlights</a></li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">QuickTrack Qualified Solution and End Product Development Guidelines</a></li> <li>• <a href="#">QuickTrack Test Tool User Manual</a></li> <li>• <a href="#">Training - QuickTrack New Product Application</a></li> </ul>

# Join us to drive the future of Wi-Fi now!

Membership in Wi-Fi Alliance brings together product certification, industry networking, marketing resources, regulatory influence, and an opportunity to shape the future of the industry

Queries on Wi-Fi Alliance membership:  
[membershipinfo@wi-fi.org](mailto:membershipinfo@wi-fi.org)

Queries on Wi-Fi Certification:  
[support@wi-fi.org](mailto:support@wi-fi.org) or  
[certificationinfo@wi-fi.org](mailto:certificationinfo@wi-fi.org)

[www.wi-fi.org](http://www.wi-fi.org)



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# Silicon Labs



**WI-FI SERIES**

# Agenda

- Introduction to Wi-Fi Alliance and Certification
- WFA Certification Options
- Steps required for WFA certification and brand usage
- Silicon Labs' Wi-Fi Portfolio and Certified solutions
- Customer next steps based on Silicon Labs' Wi-Fi 6 Certification
- Summary and Benefits based on Silicon Labs' certified solution

# Evolution of Wi-Fi 4 to Wi-Fi 6

						Wi-Fi 6
IEEE Protocol	802.11b	802.11a	802.11g	802.11n	802.11ac	802.11ax
WFA Naming	N/A	N/A	N/A	Wi-Fi 4	Wi-Fi 5	Wi-Fi 6, Wi-Fi 6E
Year Introduced	1999	1999	2003	2009	2013	2019, 2021 for 6E
Band(s) (GHz)	2.4	5	2.4	2.4, 5 (SB or DB)	5	2.4, 5, 6 (SB, DB, TB)
Channel Bandwidth (MHz)	20	20	20	20, 40	20, 40, 80, 160	20, 40, 80, 160
Allowable Streams	1	1	1	4	8 (only 4 implemented)	8
Max Data Rates (Mbps)	11	54	54	600 (150 Mbps per stream)	433 (80MHz, 1SS) 866 (160MHz, 1 SS) 3467 (160MHz, 4 SS)	143 (20MHz, 1 SS) 600 (80MHz, 1 SS) 9607 (160MHz, 8 SS)
MIMO	N/A	N/A	N/A	Single User (SU-MIMO)	Downlink Multiuser (DL MU-MIMO)	Multiuser (Uplink and Downlink MU-MIMO) – 8 Users
Subcarrier Spacing (KHz)	N/A	312.5	312.5	312.5	312.5	78.125
Symbol Duration (us)	N/A	3.2	3.2	3.2	3.2	12.8
Guard Interval (us)	N/A	0.8	0.8	0.4, 0.8	0.4, 0.8	0.8, 1.6, 3.2
PHY Modulation	DSSS	OFDM	DSSS, OFDM	DSSS, OFDM, HT-OFDM	DSSS, OFDM, HT-OFDM, VHT-OFDM	DSSS, OFDM, HT-OFDM, VHT-OFDM, OFDMA
Multi-user Operation	No	No	No	No	(DL MU-MIMO)	Uplink and Downlink OFDMA
Highest Order Modulation	CCK	64-QAM	64-QAM	64-QAM	256-QAM	1024-QAM
Power Saving Mechanisms	PS-POLL	PS-POLL	PS-POLL	PS-POLL	PS-POLL	Target Wake Time
Spatial Reuse Mechanisms	No	No	No	No	No	BSS Coloring
Certification	Wi-Fi CERTIFIED n, Wi-Fi CERTIFIED WPA3™				Wi-Fi CERTIFIED ac Wi-Fi CERTIFIED WPA3	Wi-Fi CERTIFIED 6®, Wi-Fi Agile Multiband™ Wi-Fi CERTIFIED WPA3

Wi-Fi 6 is the largest upgrade to Wi-Fi and expect Wi-Fi 6 deployments to grow significantly, yet backward compatible

# Wi-Fi CERTIFIED 6 and Key Prerequisite Certifications

## Wi-Fi CERTIFIED 6

- Ensure each connected device performs at an optimum level.
- Devices meet the highest standards for security and interoperability, and enable lower battery consumption, making it a solid choice for any environment, including the Internet of Things (IoT).
- Key features certified include OFDMA, Target-Wake-Time, BSS Coloring, MU-MIMO downlink/uplink

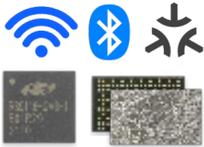
## Wi-Fi Agile Multiband

- Facilitates better management of Wi-Fi network environments
- Enables Wi-Fi devices to better respond to changing Wi-Fi network conditions.
- Improves Connectivity Experience

## Wi-Fi CERTIFIED WPA3

- Enable more robust authentication
- Deliver increased cryptographic strength
- Disallow outdated legacy protocols
- Require use of Protected Management Frames (PMF)

# Silicon Labs' Wi-Fi SoC & WFA Certifications

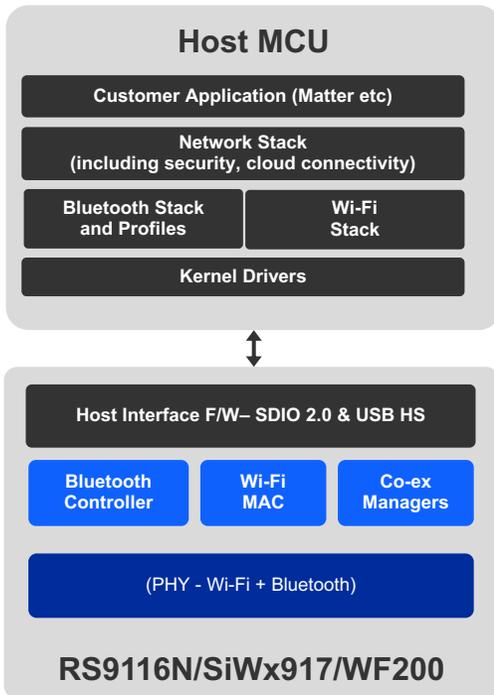
	Wi-Fi 4		Wi-Fi 6
	WF200	RS9116	SiWx917
Features			
Wi-Fi (2.4 GHz)	Wi-Fi 4	Wi-Fi 4	Wi-Fi 6
BT Low Energy (LE)		✓	✓
BT Classic (Audio)		✓	
Low Power Modes	PS-POLL	PS-POLL, Optimized for Listen Interval	PS-POLL, Optimized for Listen Interval, TWT
Wi-Fi Features	OFDM	OFDM	OFDM, OFDMA, MU-MIMO
Wi-Fi WPA3 Security	✓	✓	✓
ARM® Apps MCU (SoC Mode)			✓
ML Accelerator, PSRAM Interface, MCU Security (PSA-L2)			✓
Ultra Low Power		✓	✓
Matter	✓	✓	✓
Wi-Fi Certification	<b>Wi-Fi CERTIFIED n *</b> <b>Wi-Fi CERTIFIED WPA3*</b>	<b>Wi-Fi CERTIFIED n</b> <b>Wi-Fi CERTIFIED WPA3</b>	<b>Wi-Fi CERTIFIED 6*</b> <b>Wi-Fi Agile Multiband *</b> <b>Wi-Fi CERTIFIED WPA3*</b>

# Silicon Labs' Wi-Fi Software Architectures & WFA Certifications

## RCP WFA Certification \*

### RCP

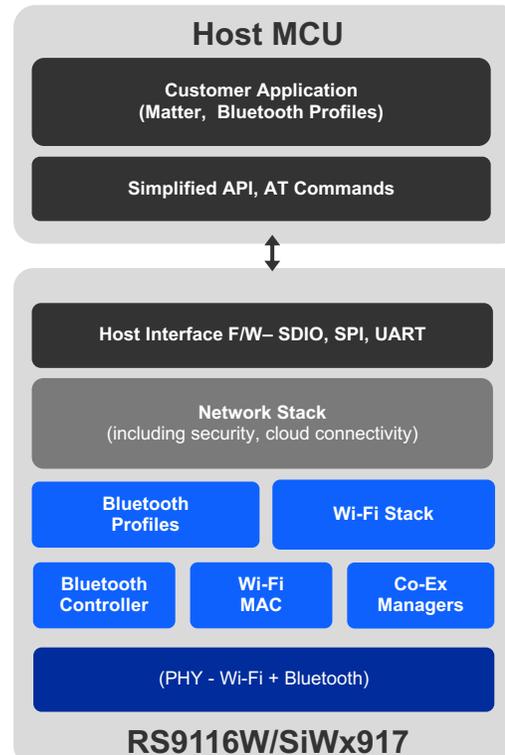
- Host runs Linux OS, wireless, networking and security stacks
- RS9116/SiWx917 supports Wi-Fi and Bluetooth radio
- WF200 supports Wi-Fi Only



## NCP / SoC WFA Certification \*

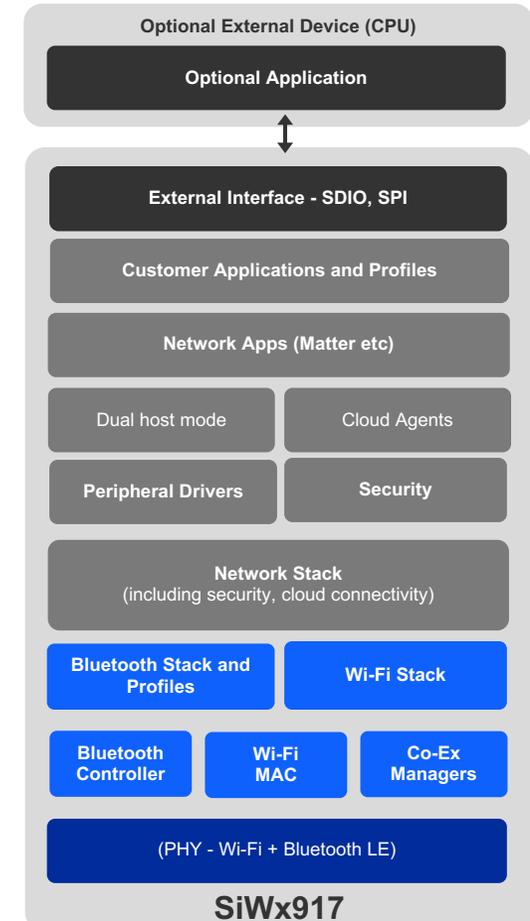
### NCP

- Host runs RTOS, customer application, cloud agent, Matter
- RS9116/SiWx917 runs Wi-Fi and Bluetooth radio, wireless and networking stacks



### SoC

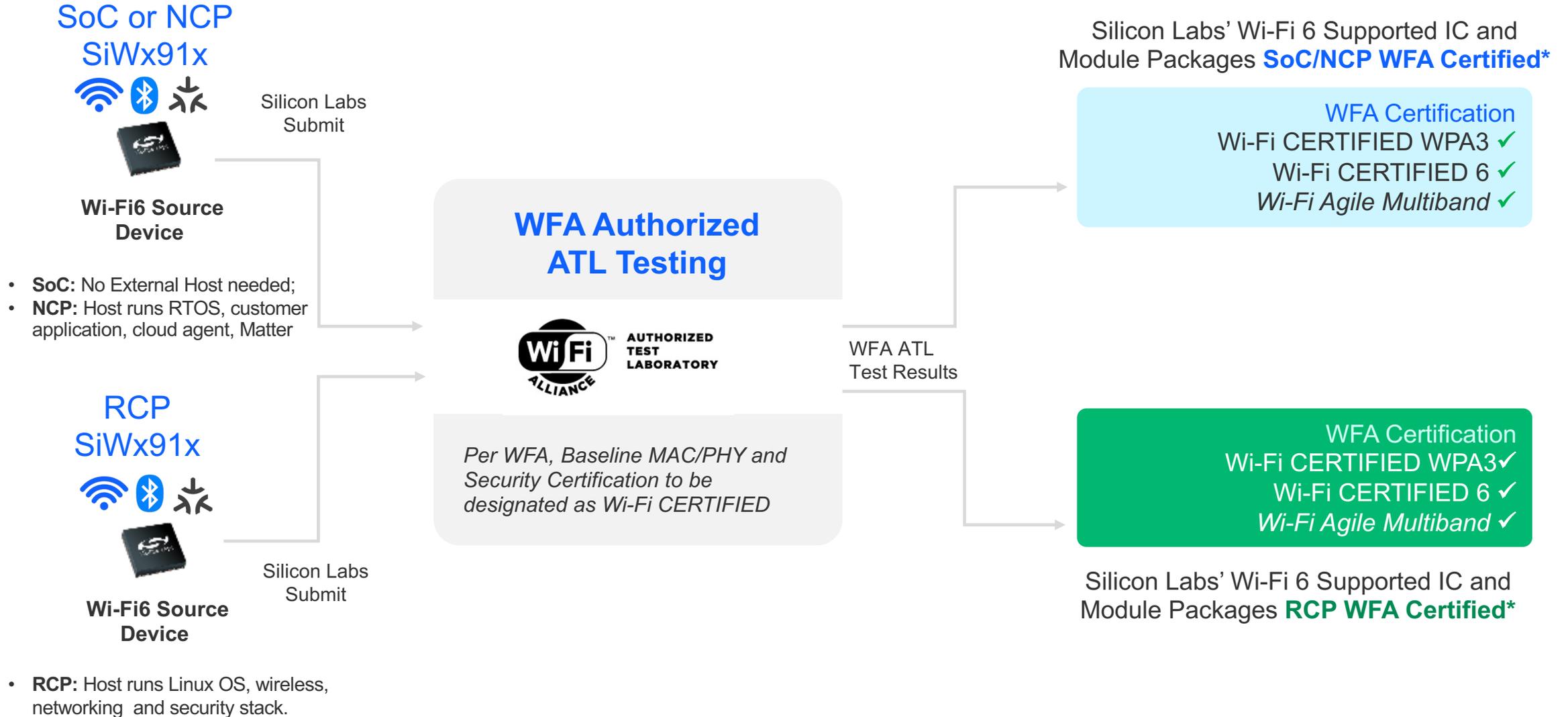
- No Host needed
- All code runs on SiWx917



\* In progress – available Q3'23

# Silicon Labs Provides Two Wi-Fi 6 WFA Certifications

SOC certification is a derivative of NCP certification  
No additional certification needed



\* Planned

# Leverage Silicon Labs' Products for Derivative Certification

## Derivative Certification:

1. Customer product does not affect Wi-Fi functionality
2. Leverages test results of an existing Silicon Labs Wi-Fi CERTIFIED Solution via the WFA Derivative Certifications Policy
3. No additional testing required by customer
4. Customer files paperwork for certification with WFA

## Customer / Partner Product(s) Utilize Silicon Labs' Wi-Fi Solution as is

Silicon Labs' Wi-Fi 6 Supported IC and Module Packages **SoC/NCP WFA Certified Solution**

Silicon Labs' Wi-Fi 6 Supported IC and Module Packages **RCP WFA Certified Solution**

### Customer / Partner Derivative Product(s)

Product 1

Product A

·  
·  
·

·  
·  
·

Product N

Product Y

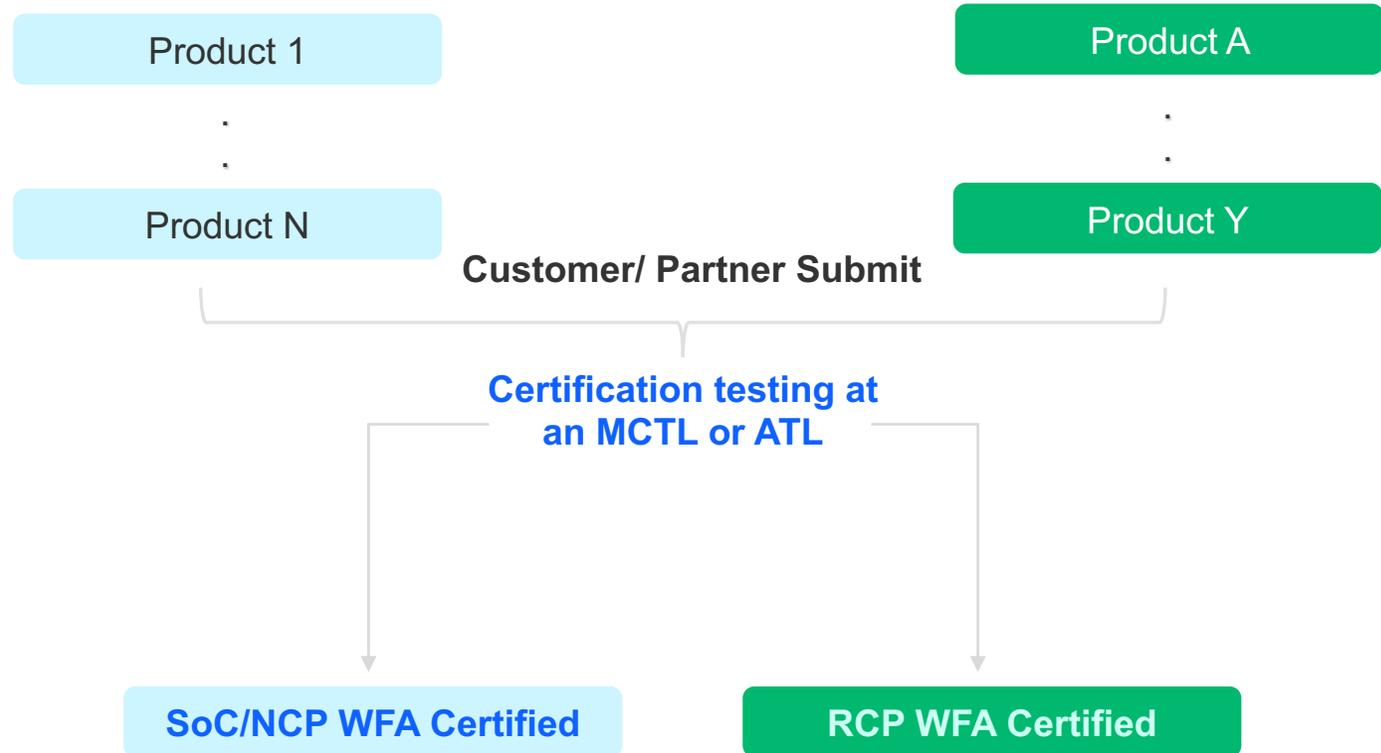
Changes in the new product **MUST NOT** affect the Wi-Fi functionality

# Leverage Silicon Labs' Products for Quick Track Certifications

## Quick Track:

1. Customer product may affect Wi-Fi functionality
2. Conformance testing needed at a MCTL or WFA Authorized Test Lab (ATL)

## Customer / Partner Product(s) Utilize Silicon Labs' Wi-Fi Solution to Customize Wi-Fi



Changes in the new product [CAN](#) affect the Wi-Fi functionality

# Silicon Labs' Certification Summary and Benefits

## Based on Silicon Labs' Wi-Fi Certifications (Source Product )

Silicon Labs' Wi-Fi 6 Supported  
IC and Module Packages  
**SoC/NCP WFA Certified**

Silicon Labs' Wi-Fi 6 Supported  
IC and Module Packages  
**RCP WFA Certified**

### Customer / Partner Product(s)

Component	Quick Track	Derivative Certification
Applications	Modifiable	Modifiable
OS	Modifiable	Modifiable
Wi-Fi Driver	Modifiable	Not Modifiable
Physical Interface	Modifiable	Not Modifiable
Wi-Fi Firmware (Binary Code)	Not Modifiable	Not Modifiable
Wi-Fi Chip	Not Modifiable	Not Modifiable
Wi-Fi RF Components on the PCBA	Modifiable	Not Modifiable
Antenna	Modifiable	Not Modifiable
Network Stack	Modifiable	Not Modifiable
Testing Needed	Yes	No

### Derivative Certification:

- The new product must operate in the same manner as the Wi-Fi CERTIFIED Source Product
- Any changes in the new product **MUST NOT** affect the wireless functionality.
- **Changing the product application code DOES NOT affect WFA Certification.**

### Quick Track Certification:

- Enables customer to make changes in their product that CAN affect the Wi-Fi wireless functionality
- **Changing the product application code DOES NOT affect WFA Certification.**

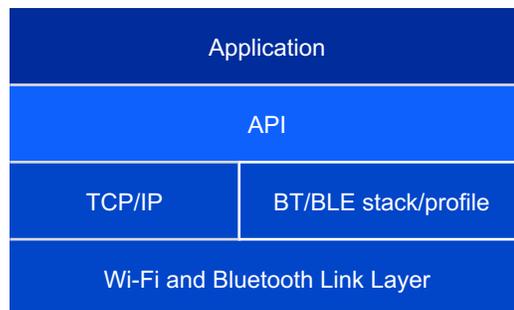
Wi-Fi CERTIFIED provides confidence in compliance, interoperability, security and saves significant testing cost and time

# Silicon Labs - Complete Solution for Enabling Wi-Fi Products



## SoCs AND MODULES

Industry leading Ultra Low Power Wi-Fi 4 and Wi-Fi 6 SoCs and pre-certified modules



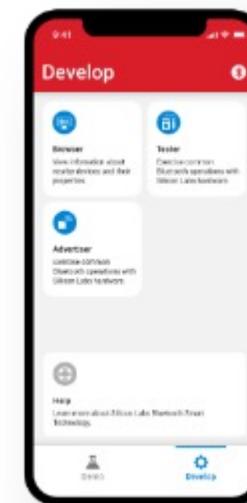
## EMBEDDED SOFTWARE

Wi-Fi SDK with Integrated Wi-Fi, BT/BLE and IP networking stacks



## DEVELOPMENT TOOLS

Evaluation Kit hardware and Studio software simplify development and speed time to market



## MOBILE APPLICATIONS

EFR Connect for Wi-Fi Provisioning using BLE

# Q&A



**WI-FI SERIES**



## WI-FI SERIES

### tech **t**alks **UPCOMING SESSIONS**

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FEB 2<sup>ND</sup> | Wi-Fi 6 Benefits for IoT Applications

MAR 2<sup>ND</sup> | Designing Low-Power Applications with Wi-Fi 6

MAR 30<sup>TH</sup> | Fast Track Your Wi-Fi 6 Device Certification

**APR 27<sup>TH</sup> | Design with our New Multiprotocol Wi-Fi Module**

MAY 25<sup>TH</sup> | Building Smart Home Devices with Always-On Wi-Fi 6

JUN 22<sup>ND</sup> | Developing Wi-Fi 6 Sensors Using SiWx917 and Matter

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# Thank You



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