



AN1502: SiWx917 Wi-Fi Alliance Certification

This document outlines the certification programs to which the Silicon Labs devices underwent certification and an overview of the certification process. Additionally, it serves as a guide for customers in expediting the design of Wi-Fi CERTIFIED™ End Products.

KEY POINTS

- Outline Wi-Fi Certification Process for SiWx917
- Summary of SiWx917 WFA Certifications

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1. Introduction

Silicon Labs is committed to facilitating programs and avenues to develop “Qualified Solutions” that can be used to assist customers in expediting the certification of their “End Products” for Wi-Fi® technology.

The Wi-Fi Alliance is a global organization whose primary mission is to promote and advance the adoption of Wi-Fi technology worldwide. The alliance works to ensure that Wi-Fi products meet certain standards for interoperability, security, and performance, thereby enhancing the overall user experience. Devices are certified by testing against Wi-Fi Alliance test plans. Wi-Fi Alliance certification testing validates that the Device Under Test (DUT) meets interoperability and program requirements.

Overall, the Wi-Fi Alliance plays a crucial role in maintaining and advancing the quality and compatibility of Wi-Fi technology, which has become an integral part of our modern digital infrastructure.

This document outlines the certification programs to which the Silicon Labs devices underwent certification and an overview of the certification process. Additionally, it serves as a guide for customers in expediting the design of Wi-Fi CERTIFIED™ End Products.

2. Certification Process

Any customer/OEM willing to apply for WFA Certification for their product should be registered as a member of Wi-Fi Alliance.

- Member shall apply to WFA resulting in the issuance of a CID (Certification Identification Number)
- The member collaborates with a convenient ATL (Authorized Test Laboratory) based on factors like location, time zone, etc. to arrange a test schedule, make financial arrangements, and provide the necessary equipment for the DUT (Device Under Test).
- In case the targeted device for certification is an ASD (Application Specific Device) and it cannot support the complete throughput requirements, the member needs to work with the ATL to arrive at an ASD test plan intended for that certification.
- WFA provides an Automation Framework with a Sigma Agent containing commands that need to be implemented by members to take necessary action on the DUT. This automation framework needs porting of the Sigma Agent based on the host platform being used while going for certification.
- The ATL conducts tests and furnishes test reports to both the member and the Wi-Fi Alliance for approval.
- In the event of a test failure, the member has the option to undergo re-testing. (Additional ATL fees may apply). However, the member is given time for fixes in the same cycle.
- The staff evaluates the results. Upon confirmation of the membership status, successful testing, and absence of other grounds for withholding certification, the product is granted certification.

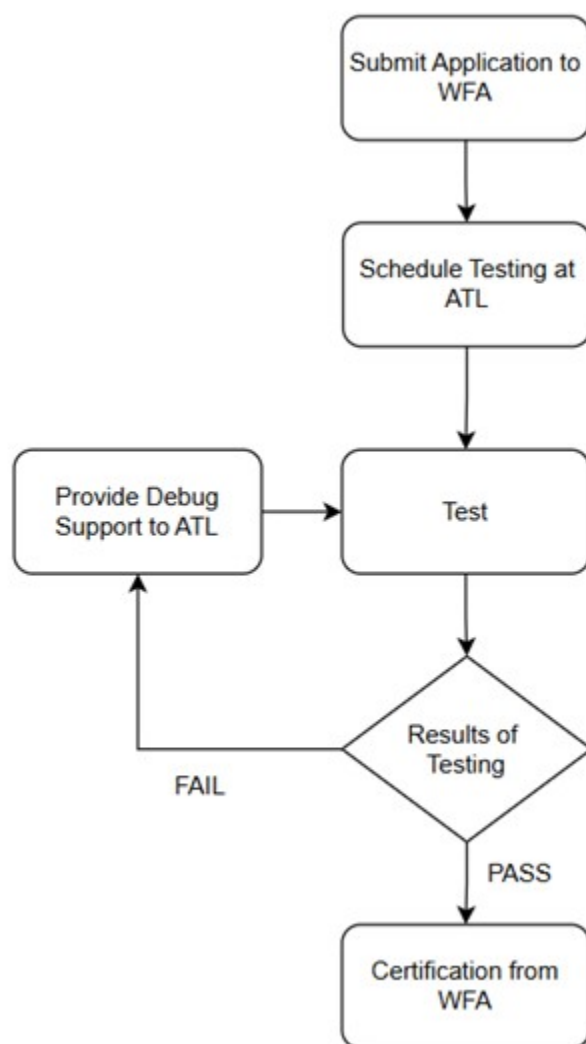


Figure 2.1. WFA Certification Process

3. Summary of Certifications

The SiWx917 underwent certification in the Connectivity, Security, and Optimization categories as part of the Wi-Fi Alliance. This is a station certification program. Below are the certification categories.

Table 3.1. WFA Certification Categories

CLASSIFICATION	CERTIFICATION
Connectivity	<ul style="list-style-type: none">• 2.4 GHz Spectrum Capabilities• Wi-Fi CERTIFIED 6® Release 2• Wi-Fi CERTIFIED™ b• Wi-Fi CERTIFIED™ g• Wi-Fi CERTIFIED™ n
Optimization	<ul style="list-style-type: none">• WMM®• Wi-Fi Agile Multiband™
Security	<ul style="list-style-type: none">• Protected Management Frames• WPA2™-Personal 2021-01• WPA3™-Personal 2023-12

Note: SiWx917 supports Wi-Fi CERTIFIED 6 with 20MHz STA-only certification and Wi-Fi Agile Multiband™.

4. Wi-Fi Alliance accredited Test Labs

Wi-Fi Alliance certification procedures are conducted in three distinct types of test laboratories, following established guidelines. They include:

- **Authorized testing Laboratories - ATL:** ATLs are responsible for conducting the rigorous testing required for Wi-Fi devices to achieve Wi-Fi Alliance certification. ATLs are accredited to perform certification testing for Wi-Fi Alliance® members. Laboratories can be contacted directly for details on testing logistics, pricing, and any development/debugging services they offer. They perform Flex Track and Quick Track certification testing.
- **Solution Test Laboratories - STL:** A Solution Provider that has received accreditation from the Wi-Fi Alliance for testing and validating Qualified Solution candidates and Wi-Fi CERTIFIED products.
- **Member Conformance Test Laboratory - MCTL:** The member's in-house lab utilizes the QuickTrack Test Tool for testing their end product. This is typically an end product developer's laboratory.

5. Qualified Solution

The [Qualified Solution](#) is foundational to QuickTrack, a path for achieving Wi-Fi CERTIFIED end products. QuickTrack is tailored to products based on Qualified Solutions that have already completed Wi-Fi core testing. QuickTrack allows targeted modifications to Wi-Fi components and functionality.

A Solution Provider creates a Qualified Solution by determining the Wi-Fi Component Combination (Wi-Fi CC) and Wi-Fi capabilities that the product contains.

The Wi-Fi CC components tracked by Wi-Fi Alliance consist of:

- Chipset
- RF architecture
- Firmware
- Driver
- Operating System (OS)
- Physical interface
- RF components
- Antenna

A Solution Provider may have additional components that make up the Qualified Solution, but Wi-Fi Alliance will only record the Wi-Fi components listed above in the Certification System as a Wi-Fi CC.

Solution Providers can use Qualified Solution variants for their own products and/or provide their customers a choice between different Wi-Fi components or Wi-Fi capabilities from the same Qualified Solution.

An end product developer may use any Qualified Solution variant available in the Certification System. If an end product developer needs to make a change to their Wi-Fi CERTIFIED end product, they may create an end product variant.

An end product developer shall use QuickTrack to test changes to any of the following Qualified Solution components:

- Operating System (OS)
- Physical interface
- RF components
- Antenna

Changes to the following components of the Wi-Fi CC may require core testing. Wi-Fi Alliance may allow an end product developer to use QuickTrack to test changes to these components as long as Wi-Fi CERTIFIED assurances are met. It is the responsibility of both the Solution Provider and the end product developer to maintain Wi-Fi CERTIFIED assurances when making changes to these components:

- Firmware
- Driver

A Solution Provider or end product developer shall not modify the following components of a Wi-Fi CC in a variant:

- Chipset
- RF architecture (including spatial streams and the number of radios)

Changes to these components require creation of a new product, i.e., new Qualified Solution or new Wi-Fi CERTIFIED end product.

Note: This section is taken from [Quick Track Qualified Solution Policy](#) for informational purpose and Silicon Labs doesn't own any rights to this Section.

6. Wi-Fi Certification Paths

Eligible members will have the following options for certification:

- **New Certification - Flex Track:** Interoperability and conformance methodology to test and certify members' end products using Wi-Fi Alliance test plans and test beds.
- **Variation Certification - Quick Track:** Wi-Fi Alliance methodology to test and certify end products when developed based on a Qualified Solution that includes a change to components and/or capabilities and maintains Wi-Fi interoperability. An end product may undergo QuickTrack testing at either an MCTL, STL, or ATL.
- **Derivative Certification:** Wi-Fi Certified product that has been modified but does not impact the Wi-Fi operation

For Example,

- The End Product user wants WFA certification for their IoT sensor device that uses a Silicon Labs SiWx917 module, then the Derivative certification would be ideal here – where the Silicon Labs Qualified Solution is used without modification to Wi-Fi CC components.

For this, the customer would need to become a member of the Wi-Fi Alliance and obtain a Certification ID.

- The End Product user wants to certify their end-product that uses a SiWx917 chipset in NCP mode with change to the RF frontend.

Then the Quick Track path would be ideal here. For this, the customer would need to become a member of the Wi-Fi Alliance and obtain a Certification ID.

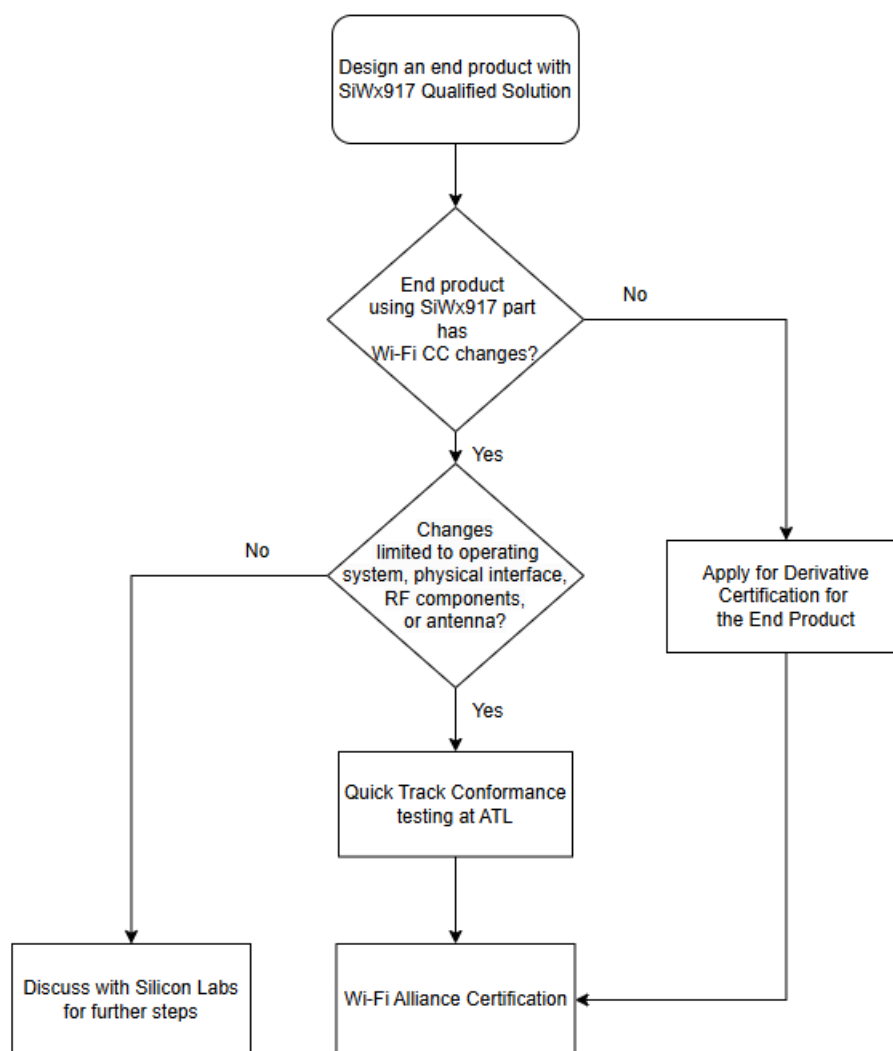


Figure 6.1. WFA Certification Flow for end customer using SiWx917 Qualified Solution

Table 6.1. WFA Certification Customization Options

Component	Flex Track	Quick Track	Derivative
Chipset	Applicable	Not Applicable	Not Applicable
Driver	Applicable	Exceptions possible, apply for exceptions in the certification system	Not Applicable
Firmware	Applicable	Exceptions possible, apply for exceptions in the certification system	Not Applicable
RF Architecture	Applicable	Not Applicable	Not Applicable
OS	Applicable	Applicable	Not Applicable
Physical Interface	Applicable	Applicable	Not Applicable
RF Components	Applicable	Applicable	Not Applicable
Antenna	Applicable	Applicable	Not Applicable
Testing and Eligibility			
Testing	Interop & Compliance + Conformance	Only conformance testing	No testing
Eligible Members	All except Implementer membership types	All except Implementer membership types	All membership types

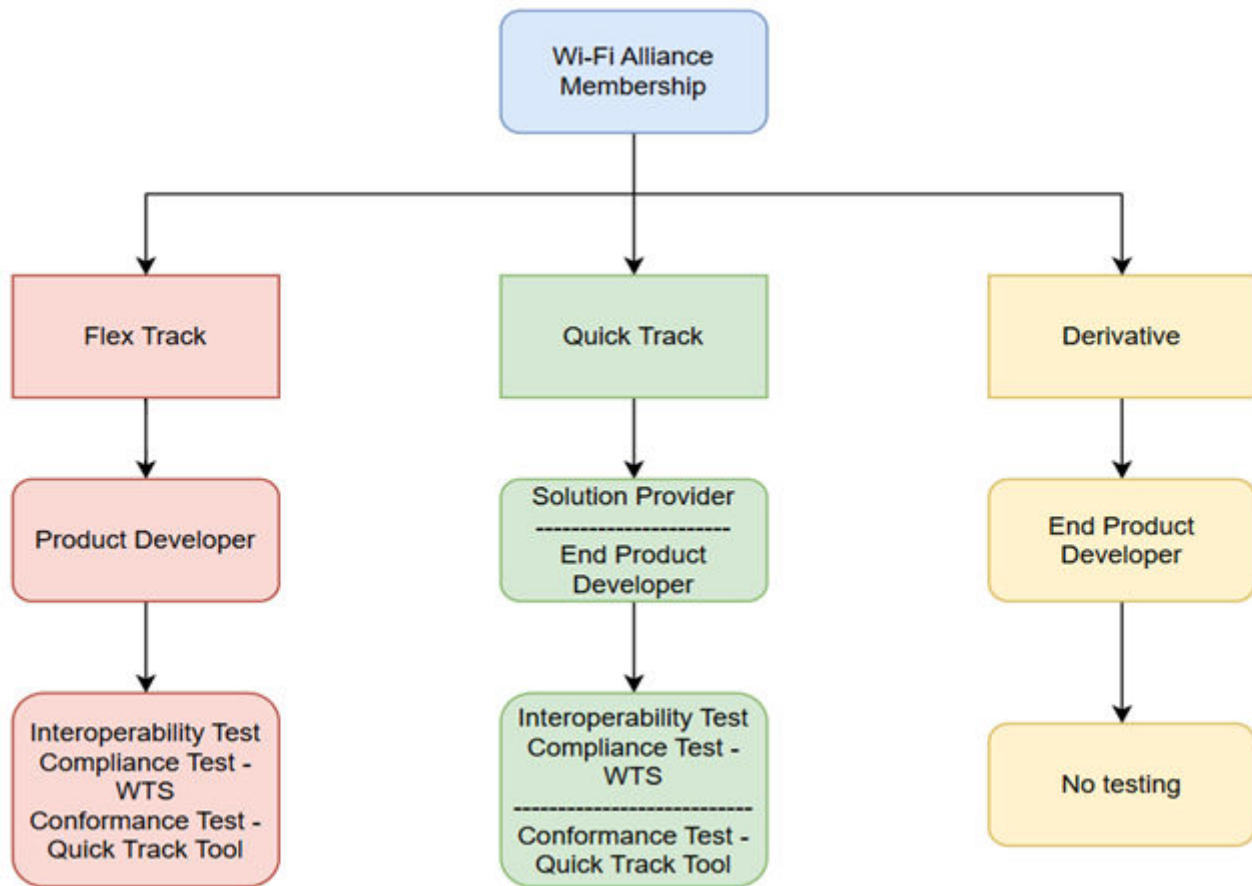


Figure 6.2. WFA Certification in different Certification Tracks

7. Abbreviations

Following are the list of abbreviations used throughout the document.

- WFA - Wi-Fi Alliance
- ATL - Authorized Test Laboratory
- OEM - Original Equipment Manufacturer
- ASD - Application Specific Device
- AMB - Agile Multi-Band
- NCP - Network Co-Processor
- CC - Component Combination

8. References

Following are the list of references:

1. [Wi-Fi Alliance Certification Process](#)
2. [Quick Track Qualified Solution](#)
3. [Certification Overview](#)

9. Revision History

Revision 1.0

February, 2025

Initial release.

Simplicity Studio

One-click access to MCU and wireless tools, documentation, software, source code libraries & more. Available for Windows, Mac and Linux!



IoT Portfolio
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SW/HW
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