Z-Wave Alliance Certification Overview

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Description:	Documentation of the Z-Wave Certification processes and related cost. Applicable from January 2025
Written By:	Certification Program Manager (CPM)
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Reviewed By:	PCWG
Approved By:	PCWG
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REVISION RECORD

Doc. Rev	Date	By	Pages affected	Brief description of changes
1	20200929	BRO	All	Initial creation
	20210705	BRO	Sec 2.9	Added test house contact information
			Sec 2.6.2	Added Market Cert Instructions
			Sec 2.6	New Cert Process image
			Sec 2.5	Certification tool update to include CTT Exclude form revision 1-8 for Z-Wave Plus products for re-certification
			Sec 2.7	Updated cert number format
			All	Moved text to appropriate sections, minor doc format changes
	20210920	BRO	Sec 2.4.2 Sec 3.1.5	Review only re-certification, noted as free of charge Z-Wave Plus v2 GW DT fee reduced to $6000 Replacing “Slave” with “End Device”
	20211112	BRO	Sec. 2.6.2 Sec. 2.6.3	Added relaxed Z-Wave Badge requirements for installer products Exception to Certification
	20211124	BRO	Sec. 2.6.3	Addition to certification exception
	20211216	BRO	all	Updated footer text
	20220114	BRO	Sec. 3.1.4	Added requirement for Limited Product Modification
	20220308	BRO	All Sec. 2.6.3 Sec. 1.4 Sec. 2.6.2 Sec. 2.4.2, 2.4.3, 4	Removed indications of Z-Wave Plus program still active for new cert certification exception: allowing WG consent, removed BoD approval step Replace preference of documentation list with Specification reference Remove REFERENCES section Added relaxed QR code and DSK requirement if Learn Mode is not supported Included sec. 2.4.3 and 4 into sec. 2.4.2
	20221011	BRO	Sec. 2.4.2 Sec. 3.1.4	Cost of adding ZW LR Adding ZW LR in limited product modification
	20230221	BRO	Sec. 2.3.3 All All Sec. 3.1.6 Sec. 3.3 Sec. 2 Sec. 2.5.2 Sec. 2 Sec. 2.1	Change in fees Renaming “SDK” to “Protocol (SDK)” Integrating process descriptions for the Protocol Certification Program Changing requirement for Protocol SDK upgrade Limited re-cert for Protocol products Inactive case cancellation Replacing “™” with “®” in combination with “Z-Wave” and “Z-Wave Plus” Remove requirement for 800 series products and certified protocol Requirement date for certifying protocol based on 800+ series

REVISION RECORD

Doc. Rev	Date	By	Pages affected	Brief description of changes
	20240416	CPM	Sec. 3.1.6 Sec. 3.6 Sec.2.3.3 Sec. 2.8 Sec. 2.4.1 Sec. 2.5.1 Sec. 2.5.2 Sec. 3.3 Sec. 2.7 Sec. 2	Clarified CTT requirements for review only Protocol upgrades. Added text that allows use of previously obtained Waivers in review only recert cases Corrective wording of Z/IP Change of Test Lab contact information Clarification on old and new Portal Added req for test Lab to upload CTT test solution Added link to Market Cert Spec Removing “CTT” Added Trident, removed Solutions as test Lab EOL new 500 series certifications
	20241204	CPM	All Sec. 2 Sec. 3.2 Sec. 4 Sec. 5.1 Sec. 6.1 Sec. 8.3 Sec. 8.7 Sec. 3	Layout changes, formatting and spelling correction, removal of repeated text, replaced chip “series” with generic terms when possible. Added Manufacturer ID requirement Added Developer Product Types, Controller SW and Sample Apps Clarifications to Certification types Updated fee schedule New recert option of old cases in new Portal Added new RF Test requirement for RF region changes Added Controller Design SW requirements Benchmark range test description
	20250117	CPM	Sec. 2.1	Update of link to technical specification

1 OVERVIEW

This document covers the Z-Wave Product Certification Program for End Device and Controller products, and the Z-Wave Protocol Certification Program for Silicon and Stack products.

1.1 PURPOSE

The certification process is designed to help developers ensure that Z-Wave has been correctly and robustly implemented and that the product will interoperate with other certified Z-Wave products from the same and other vendors, for the same and other applications.
The certification process is in its core a “self-certification” process. The case owner is responsible for ensuring that products are certified and remain certified during the product life cycle. This document defines the steps to follow and describes the detailed specification points that MUST be implemented as a minimum.

1.2 AUDIENCE AND PREREQUISITES

The audience of this document is primarily Z-Wave product and/or protocol developers. Furthermore, this document is used by the Z-Wave Alliance, authorized Verification Test Labs and others who are part of the Z-Wave Certification process.
Z-Wave Alliance’ Licensing agreements require that developers certify their Z-Wave products prior to selling them or market them as being Z-Wave compliant. The proper use of logos is also required by the licensing agreements. Specifications, and additional information regarding certification can be downloaded from the Z-Wave Alliance member site after registering.
The Z-Wave Alliance Trademark and Distribution License (TDL) MUST be accepted to certify products and software utilizing Z-Wave technology. Acceptance of the TDL is done on the web-based Certification Portal as part of a Product or Protocol certification submission.

1.3 TERMS USED IN THE Z-WAVE CERTIFICATION PROGRAMS

This document describes mandatory and optional aspects of the required compliance of a product to the Z-Wave Plus and Z-Wave Plus v2 standards and Protocol specifications
The words “SHALL” and “MUST” specify aspects that are mandatory for compliance. Equally, “MUST NOT” must be adhered to for compliance. Products that are in violation of any such statement are **NOT** Z-Wave compliant.
The words “MAY” “COULD”, and “MAY NOT” leave the choice to the implementer. “RECOMMENDED” also leaves the choice formally to the developer but provides additional guidance. Future versions of Z-Wave MAY make aspects that are recommended at this time mandatory.
Throughout the Z-Wave Certification Programs, the following terms are used:

Interoperability	Interoperability is the successful interworking of multiple products of various types from multiple manufacturers. These products MAY be based on multiple versions of Z-Wave. Interoperability always describes the interworking of two or more products, while Compliance relates to the conformity to the Z-Wave standard.
Z-Wave Compliance	Adherence to the Z-Wave standards is mandatory. The term “conformance” is used equivalently to the term “compliance”
Z-Wave Certification	Process of testing and verifying compliance with Z-Wave standards.
Self-certification	Developers conduct testing to verify compliance with the Z-Wave standards before submitting the product for certification.
Verification	Confirmation of the Self-certification tests and compliance to the Z-Wave standards by the independent test Lab.
Certification Fees	Fees paid by the developer/product owner to the test Lab or the Z-Wave Alliance for their services. These cover the costs for administration, review, and verification testing by the test houses.
Case owner	The general definition of the person responsible for submitting a product for certification and used equivalently to the term “developer”
ZWA	Referring to the Z-Wave Alliance

2 GENERAL REQUIREMENTS

- Any product that appears as being Z-Wave compliant MUST be certified. This includes software applications. Only when a product has passed certification and a certification number has been issued, may the product owner sell and market the product as being Z-Wave compliant.
    - Selling and/or marketing non-compliant and/or non-certified products is in direct violation of the Z-Wave licensing agreements and will be referred to the Z-Wave Alliance' Board of Directors for legal action.
- Certifications MUST be maintained. Any change to a certified product is subject to the maintenance requirements identified in Section 3 of this document. Failure to maintain Product or Protocol certifications will result in the revocation of the already achieved certification.
- Membership in the Z-Wave Alliance is required to certify products to the Z-Wave standards. More information on https://z-wavealliance.org/join/
- If your company is already a Z-Wave Alliance member, go to https://sdomembers.z-wavealliance.org/user/register to register for a user account on the Certification Portal.
- A Manufacturer ID is required for technical certification. The ID must reflect the company that owns the brand. The ID can be requested by submitting a pull request in the GitHub repository https://github.com/Z-Wave-Alliance/zwave_xml/blob/main/zw_manufacturers.xml or by email to certadmin@z-wavealliance.org. Once obtained, the ID will be published within the Z-Wave developers' community.
- **From December 2024** new End Device and Controller products MUST be based upon a certified Protocol version except for products using 500 or 700 series chipsets from Silicon Labs.
- **From January 1st, 2025**, it will no longer be possible to certify new products based on the 500 series chipset from Silicon Labs.

2.1 SPECIFICATION REFERENCES

Z-Wave Specifications are the basis of Z-Wave Certification.

Technical Specifications

Specifications developed and maintained by the Z-Wave Alliance Technical Working Groups, such as the Application Working Group (AWG), Core Stack Working Group (CSWG), Open Source Working Group (OSWG), Product Certification & Ecosystem Working Group (PCWG). Every test and technical requirement presented in the Certification Form and the Compliance Test Tool (CTT) can be directly referenced to the in-force specification package available here.
Z-Wave Open Source Specification

Market Certification Specifications

Specifications developed and maintained by the Product Certification & Ecosystem Working Group (PCWG) together with the Z-Wave Alliance Marketing Committee (MC).
The Market Certification Specification mainly focuses on the correct use of Z-Wave logo, marks, and badges and whether these are correctly used in the product manuals and correctly presented on the products and their packaging. Detailed requirements can be found in the Market Certification Specification document available here
https://sdomembers.z-wavealliance.org/document/dl/1469

2.2 Certification Contact Information

Questions regarding Z-Wave certification, the content or interpretations of this Certification document can be directed to the Certification Team or Certification Program Manager by email to: certadmin@z-wavealliance.org

Questions related to Z-Wave development can be addressed to any of the Z-Wave Alliance technical working groups on the ZWA member site Causeway https://sdomembers.z-wavealliance.org/

- **Application Working Group** Z-Wave Alliance - Application Working Group Discussions
- **Core Stack Working Group** Z-Wave Alliance - Core Stack Working Group Discussions
- **Product Security Working Group** Z-Wave Alliance - Product Security Working Group Discussions
- **Open Source Working Group** Z-Wave Alliance - Open Source Working Group Discussions
- **Product Certification & Ecosystem Working Group** Z-Wave Alliance - Product Certification & Ecosystem Working Group Discussions

3 TYPES OF PRODUCTS AND TEST REQUIREMENTS

For all products where range testing is applicable, the following range tests will be performed by the Test Lab and the highest achieved range will be registered in certification

- For classic devices (non-Long Range) 40 meters (minimum requirement) and 75 meters
- For Long Range devices 400 meters (minimum requirement) and 700 meters

3.1 Consumer Products

Products manufactured for the end user market

General Products:

Products combining the Z-Wave hardware interface and the software/application to provide full Z-Wave functionality. The Z-Wave hardware interface can be either integrated or a separate add-on module designed specifically for use with the product and sold with it. Examples include but are not limited to:

- Self-contained products like light switches, thermostats & door locks.
- Static controllers, bridges, gateways, or security panels with integrated Z-Wave CHIPs/modules and either integrated or cloud-based UI software**.** The final end-user interface MUST be verified as compliant with the applicable Z-Wave standards.
- Static controllers, bridges, gateways, or security panels relying on a separate Z-Wave hardware product like a USB stick for the RF functionality and interface to the Serial API. The Z-Wave hardware product can already be certified, or it can be certified as part of the General Product. If it is certified as part of the product, then it cannot be sold separately. These products can have either integrated or cloud-based UI software. The final end-user interface MUST be verified as compliant with the applicable Z-Wave standards.

- Review and testing requirements

- Document review and inspection
- Review of Market Certification data
- Hardware / Software testing including but not limited to network management (inclusion, exclusion, replication, rediscovery, etc.), Device/Role Type, Command Class, CTT (Compliance Test Tool) and RF tests according to the certification form.
- Controllers:
    - The end user interface MUST be tested and verified compliant.
    - Network management functions MUST be made available to the end user if the end user owns the product.

Software Application:

This is a software program that is designed to access a separate Z-Wave certified hardware interface/platform and provides the UI for control of the Z-Wave network products. It MUST be capable of working with any certified hardware product that utilizes the same hardware interface and OS. All software applications are considered updatable products.

- Older software certified to the Classic Z-Wave standards MAY be used with hardware products certified to either Classic Z-Wave, Z-Wave Plus or Z-Wave Plus v2 standards.
- Software certified to the Z-Wave Plus standards MUST be used with Z-Wave Plus or Z-Wave Plus v2 certified hardware products for full functionality.
- Software applications based on a Z-Wave protocol MUST be certified to the appropriate Z-Wave standards.
- The final end-user interface MUST be verified as compliant with the applicable Z-Wave standards.

- Review and testing requirements

- Document review and inspection
- Review of Market Certification data
- Software testing (with certified hardware), including but not limited to network management (inclusion, exclusion, replication, rediscovery, etc.), Device/Role Type, Command Class, CTT (Compliance Test Tool) and RF tests according to the certification form.
- Controller Software:
    - The end user interface MUST be tested and verified compliant.
    - Network management functions MUST be made available to the end user.

Hardware Platform:

This type of product utilizes a standard interface like USB or Serial to provide RF functionality and a Z-Wave hardware interface via the standard Z-Wave Serial API. Although it can be sold as a stand-alone product like a USB stick, it cannot be shipped and/or sold with uncertified software.

- USB-HID and proprietary interfaces cannot be certified as hardware platforms, unless within the specified range of Z-Wave API commands.
- Hardware platforms **MUST NOT** provide any functionalities other than the RF and interface to the Serial API.

- Review and testing requirements

- Hardware testing (with certified application software or Z-Wave Alliance' PC Controller software)
- Review of Market Certification data

3.2 Development Products

Silicon and SW made available for consumer product development and certification.

Protocol Products:

Protocol stack based upon a specific chipset type,

- A Z-Wave Protocol product MUST comply with the standards provided by the Z-Wave Alliance Open Source Working Group.
- Since January 1st, 2025, Protocol products MUST pass certification in order to be selectable for Product certification.

- Review and testing requirements

- Technical testing of Z-Wave silicon and stack to ensure that the implementation is in conformance with the test specifications from the Core Stack Working Group. PHY-, MAC-, and Network layer included.
- Full or One-Region Software testing based on the test specifications from the Z-Wave Alliance Core Stack Working Group
- Test log review

Controller Design SW:

A software framework that is made available for controller manufacturers, including pre-certified Security S2

- Controller Design SW MUST comply with the requirements specified in “S2 Certification” in the Certification Portal form.
- Only certified or registered SW revisions will be selectable for controller manufacturers in certification.

- Review and testing requirements

- Document review and inspection
- Software testing (with certified hardware)
- Controller Software:
    - The end user interface MUST be tested and verified compliant.
    - Network management functions MUST be made available to the end user.

Sample Applications:

A software framework that is made available for developers to facilitate the implementation of Z-Wave in consumer products.

- Review and testing requirements

- Document review and inspection
- Software testing (with certified hardware)
- Controller Software:
    - The end user interface MUST be tested and verified compliant.
    - Network management functions MUST be made available to the end user.

4 CERTIFICATION TYPES

For all product types the ZWA offers two types of certifications. Both types consist of two distinct parts, Technical Certification and Market Certification. Both parts must pass their individual reviews except for Development Products, these are only required to pass the technical part in Z-Wave certification

- Technical Certification covers implementation and compliance with the Z-Wave standards and technical specifications.
- Market Certification covers the correct usage of brand and logo and the correct terminology in user manuals, etc.

When a product has completed certification successfully, the certification remains valid indefinitely.

4.1 New Certification

Products implementing Z-Wave for the first time or certified products that introduce a number of new features or changes that go beyond the limitations for recertification. Changes beyond limitations may include:

- Change in Device Type or Role Type
- Change in Library
- Change in chip (with one exception in Review Only)

4.2 Recertification:

Any certified product that is modified MUST be recertified. Depending on the scope of modifications, the product may apply for a Limited Product Modification recertification or a Review Only recertification.

Depending on Product type, exceptions and additional requirements may apply. For more information go to section 8 of this document “Changes and Modifications of Certified Products”

For any recertification applies, that the case is based upon the same form revision as the original product.

Recertification can be based on an active Protocol unless specifically prohibited. Review only recertification can be based on an active or obsolete Protocol unless specifically prohibited.

For Z-Wave Plus program products based upon form revision 1-8 (all included), it is not possible to conduct a review only re-certification. Any change to such a product must be re-tested in accordance with the latest form requirements.

Limited Product Modification applies to Z-Wave Plus products based on Protocol v6.71.xx or newer, and for Z-Wave Plus v2 products. Types of modifications may include:

- Changes in up to & including **4** Standard Command Classes (Technical changes beyond this will apply for new certification.)
- Changes in **1** Advanced Command Class including Security, Multi Channel, Multi Channel Association, Firmware Update Meta Data, Multi Command Command Classes. (Technical changes beyond this will apply for new certification.)
- Derivative Software for additional Controllers (same Z-Wave code and functionality, different hardware)
- Derivative Software for mobile products (Software for iOS, Android etc. must access and control Z-Wave network through primary certified application.)
- Change to firmware in a hardware product.
- Adding Long Range
- Long Range RF region change

Review Only, a technical or non-technical product modification that does not affect network performance, Z-Wave functionality and/or Z-Wave behavior may include:

- Brand
- Product Name and/or number
- GUI/Software (cosmetic or not involving Z-Wave functionality)
- Update of underlaying FW (not including Z-Wave Chip FW 0)
- RF region change (not including Long Range)
- Exchanging 500 series chip version SD3502 with SD3503 and vice versa.
- Protocol SW update

4.3 Z-Wave Certification Number Formats

A Z-Wave certification number is assigned to each certified product. The purpose of certification number is to allow that each Z-Wave certified product type can be identified and tracked in the market. A new number is assigned whenever a product is recertified.
With the exception of ZC06 the number format is: ZC 2-digit version/-/2-digit year/2-digit month/4-digit number e.g., ZC12-20031521 for Product Certifications
For Protocol Certifications the number format is: ZPC 2-digit version/-/2-digit year/2-digit month/4-digit
Listed are all Z-Wave certification programs ever used and its related certification number formats. The year entered below is just to indicate the original launch of the specific program. The numbers marked in red are no longer issued.

QFN Certification	Classic Certification	Z-Wave Plus Cert	Z-Wave Plus v2	Protocol Certification
ZC09-13xxxxxx	*ZC06-xxxxxx*	*ZC10-17xxxxxx*	*ZC12-19xxxxxx*	*ZPC01-23xxxxxx*
	ZC08-13xxxxxx	*ZC13-21xxxxxx*	*ZC14-21xxxxxx*	

5 CERTIFICATION FEES AND PAYMENT

Fees for New Certifications and Recertifications are settled with the selected test Lab as pre-payment. The Z-Wave Alliance will charge the case owner for fees related to Review Only recertifications once the case is submitted. Verification will continue once payment is received.

The fees listed are guideline prices in **USD**. The test Lab may accept other currencies based on the exchange rate in effect at the time of submission. All taxes, money transfer fees, currency exchange fees and shipment costs are paid by the case owner.
A one-time re-test during Ad hoc phase is Included in the fee for new certification.
Pre-certification, additional re-testing or other product related services and fees must be agreed with the test Lab directly.

Note: If a test Lab is directly involved or related to a company who is directly involved in product development, the same test Lab cannot conduct the official verification.

5.1 Fee Schedule

	Product Type	Certification Type		
		New Certification	Recertification	
			Limited Product Modification	Review Only
1	End Device Product (End Node Role Type and Supporting Device Type)	$3600	$1950	$450
2	Controller Product (Any Controller Role Type or Controlling Device Type)	$6600	$4950	$450
3	Hardware Product	$1600	$1450	$450
4	Silicon/Stack Product Type (Based on an hourly fee) • Full Test Suite • One Region Test Suite	From: $39600 $27600	 NA NA	 $450 $450
5	Long Range RF region change for any physical • End Device Product • Controller Product • Hardware Product		$950	
	Additional fee			
6	S2 certification test for controllers not based upon pre-certified Controller Design SW e.g. Z/IP Gateway or Unify SDK	$4000	$2000	
7	Long Range adding to already certified product or including in new certification.	$1000	$500	

5.2 Authorized Z-Wave Test Labs

Institute of Digital Guangdong (IDG)

Compliance testing of End Device Products based on Z-Wave Plus and Z-Wave Plus v2 standards and specifications.

Contact: Eason Lu, Email: lys@lita-group.com, Phone: +86 13798023680
Address: 101, 268 Kefeng Road, Lianhe Street, HuangPu District, 510535 Guangzhou, China

MK Logic GmbH

Compliance testing of End Device Products and Controllers based on Z- Wave Plus and Z-Wave Plus v2 standards and specifications. Z-Wave Protocol Certification

Contact: Sandy Reisinger, Email: z-wave@mk-logic.de, Phone: +49 375 / 39098696
Address: Hauptmarkt 9/10, 08056 Zwickau, Germany

Trident IoT, LLC

Compliance testing of End Device Products based on Z-Wave Plus and Z-Wave Plus v2 standards and specifications.

Contact: Laura Otto, Email: certifications@tridentiot.com, Phone: +1 908-2477134
Address: 1 Burnett RD, Mendham, NJ 07945, USA

Z-Wave Alliance

Review Only recertifications

Contact: Z-Wave Alliance Cert Team, Email: certadmin@z-wavealliance.org
Address: 3855 SW 153rd Drive, Beaverton, OR 97003, USA

6 Z-WAVE CERTIFICATION TOOLS

The Z-Wave Certification Programs & Tools are updated biannually in Q2 and Q4. Every update is announced in the Certification Portal and on the Z-Wave Alliance Certification Overview page https://z-wavealliance.org/certification–overview/

6.1 Z-Wave Certification Portal (ZCP)

Current Portal (ZWA ZCP)

Z-Wave Certification utilizes an online web-based certification form for compliance testing/verification in the Z-Wave Alliance Certification Portal. Access to the Certification Portal https://certification.z–wavealliance.org requires Z-Wave Alliance membership and user registration. Referring to section 2 for further information.

Old Portal (Legacy ZCP)

As of July 2021, the Z-Wave Alliance Certification Portal replaced the old Portal. The old Portal will remain open for re-certifications under the following URL: https://z-wavecertification.z–wavealliance.org. Original user accounts apply. When recertifying legacy products created in the old Portal, users must clone the original case to the current ZWA Portal and complete the certification there, including the Market Certification part.

Certification Forms

Z-Wave is an evolving technology and the certification forms in the Portal are updated twice a year to accommodate Z-Wave Specifications. The developer MUST use the latest version of the appropriate form when submitting a new product for certification.
Only the most current form will be available on the Portal when creating new cases, however a 60-day grace period from the release of a new form revision, will allow submission in the older form. The Portal will issue a warning to the user if the form they are using is outdated and no longer accepted.

Important: For Z-Wave Plus program products based upon form revision 1-8 (all included), it is not possible to conduct a review only re-certification. Any change to such a product must be re-tested in accordance with the latest form requirements.

The majority of form changes are to clarify requirements, simplify the form or add/update Command Class Specifications and/or Role and Product Type Specifications. The Portal provides a basic revision record in the wiki, but directions to the relevant Command Class, Role Type and Device Type specification documents.

6.2 Z-Wave Compliance Test Tool (CTT)

Using the Compliance Test Tool, also referred to as the CTT, is mandatory in the self-certification phase. The CTT offers 80% coverage of automated tests required, based upon the information provided in the form.
Passing all tests in the CTT is not a guarantee that the product will pass certification but an indication that the product at least will pass the same tests when verified by the test house.
The CTT is updated together with the certification forms and is accessible from the Portal.

6.3 Z-Wave End Device Emulator (EDE)

A .NET application with a platform-independent backend and a Windows UI which allows users to emulate Z-Wave end devices and create a fully functioning network. The EDE is designed to be used during Z-Wave Controller product development and is not a required part of the certification. The EDE can be downloaded from here https://sdomembers.z–wavealliance.org/document/dl/1833

6.4 Z-Wave Test System (ZTS)

The ZTS is still under development but to the extent possible the ZTS MUST be used in verification and self-certification of Z-Wave Protocol https://github.com/Z-Wave–Alliance/z-wave–test-system. For self-certification access to the OSWG Z-Wave-Test-System GitHub repository is required. User request must be forwarded to administration@z–wavealliance.org

7 CERTIFICATION PROCESS

Figure 1 is a view of the different phases in the technical and in the market certification part. For consumer products both parts MUST pass their individual reviews for the product to pass certification. For Development Products the Market Certification part does not apply, but any use of the Z-Wave name, logo, brand, or badge MUST be in accordance with the requirements. Upon successful completion of the process, an official Z-Wave Certification Number is issued through the Portal, with notification to the case owner.

Any case submitted in the Certification Portal, that is not finalized and remains **inactive** for 11 months will receive one notification, one month before it is automatically cancelled.

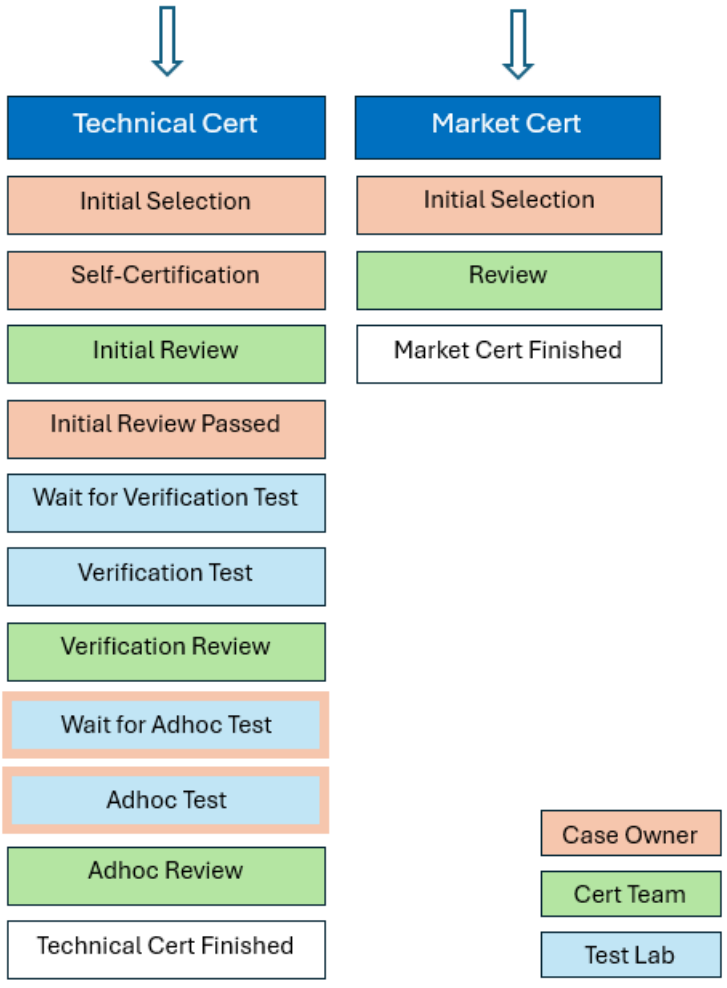

Fig. 1, Phases in the certification process

7.1 Technical Certification

Below describes the steps in technical certification but a step by step guide is also available in the Certification Portal "Getting Started" section ZCP - Getting Started - Z-Wave Certification Wiki

1. **Creating a case in the Certification Portal.**

- First step is for user to create a case in the Certification Portal by filling in the certification form. Most form items provide a direct reference to the specification requirement, for detailed explanation (e.g., RT:06.110003.1 or DT:00.11.0026.1)
- The case owner decides which CHIP will be used and the desired Z-Wave functionalities of the product during the definition stage of product development. Depending on this direction, the next step is to choose which Device Types and Role Types and Command Classes are to be implemented. The Z-Wave Technical Certification Form should be used in this step to help identify protocol implementation requirements as well as record detailed aspects of the targeted Z-Wave compliance.

2. **Self-certification and submission**

- As part of the Self-certification, the case owner conducts tests to confirm functionality and compliance with Z-Wave specifications. Tests shall be conducted for all aspects of the implementation where compliance is claimed in the Certification Form. Z-Wave testing guidelines are provided in the Compliance Test Tool (CTT) that MUST be used in Command Class related tests, and in the Z-Wave Test System for Protocol products to test the implementation of the MAC and Network layers.
- The latest version of the appropriate certification form MUST be used when submitting a new product for certification.
  - Only the latest version of the online form will be available on the Certification Portal for new products.
- Prior to submission for initial review, the developer MUST read and accept the Trademark and Distribution License as specified on the online Portal.
- Certifications are issued to the company submitting the online Z-Wave Certification Form.
- Z-Wave Certification submissions are done online at the end of the self-certification phase. Each variation of a product MUST be certified separately. The type of certification required depends on the differences between the products. Refer to Section 3 for details.

3. Certification case number.

- A certification case number is assigned when submitted. The case number is used to track the product through the entire testing and certification process. All communications regarding this product MUST reference this case number in the subject line of the email message.
- Prior to submission, all cases are Labeled “Pre-Cert”.

4. **Initial Review.**

Conducted by the certification team. The system automatically notifies the case owner and the selected test house when a form has passed Initial Review. The case owner can then start communicating with the test house regarding payment of the fees and sample/documentation submissions.

- If the Initial Review fails, the developer is automatically notified by the system that the online form needs to be corrected/updated and then re-submitted.

5. **Wait for Verification**

When everything has been received by the Test Lab, including payment, samples, and product instructions/documentation, the product enters a wait queue. The number of products in this queue varies and information regarding queue length can only be provided when the Test Lab has received everything.

- Everything required to enter the test queue MUST be received by the test house within **60 days** of the initial review. Failure to meet this requirement will result in the case being closed. The case owner will have to re-submit a new case if this occurs.
  - Products having to be resubmitted MUST be compliant with the specifications in place at the time of re-submission and utilize the latest version of the certification form.
- Two test samples of a submitted product are required. Samples submitted to the Test Lab are not returned to the case owner. These are retained by the Test Lab for reference in case of issues and for use during interoperability testing.

6. Verification by Test Lab

- The Verification Tests cover all aspects of Z-Wave compliance as defined in the specification documents, the certification form and the CTT or the Z-Wave Test System. Depending on the type of product and certification this MAY include but is not limited to the examples listed below.
  - Use of the proper software libraries for the intended market.
  - General compliance requirements like use of a certified protocol, selected Product Class or Device Type and Role Type is appropriate for the intended application/use of the product, implementation of all mandatory Command Classes for the product being submitted and tolerance toward unexpected frame lengths.
  - Verification of the programmed values in the Manufacturer Specific CC, Version CC, Z-Wave Plus Info CC and NVR flash page.
    - Common product requirements like Node Information Frame format, use of Explorer Frames, Inclusion/Exclusion into/from existing networks, use of Normal Power Mode and Network Wide Inclusion.
    - Specific requirements based on the applicable Product Class or Device Type and Role Type.
      These are listed in the applicable specification document.
    - Controllers are tested to verify their ability to include all certified products, the ability to be included into existing networks, network management functionality, and that a minimum level of control as defined in the specifications is provided for all products regardless of brand/manufacturer. The end-user interface MUST be submitted and verified as compliant.
    - All implemented Command Classes MUST provide appropriate and correct functionality.
      - Supported Command Classes MUST implement all commands in the CC.
      - Mandatory Command Class control is identified in the Command Class Control Specification.
    - End user documentation is reviewed to ensure all mandatory requirements are met. The certification form is also reviewed to ensure all implemented functionalities are correctly identified.
    - When limited product modifications tests performed depend on changes being made. Random spot checks of other functionalities are also performed.
- If questions arise during the Verification Test, the Test Lab will contact the case owner directly.
- Depending on the number of products already in queue, the goal is to start testing within two weeks of the product entering “Wait for Verification” -phase. The actual testing time will then depend on the type of product, its complexity and if prepared through self-certification & testing.

- Test Lab must upload the passed CTT test solution to the case and automatic notifications of testing completed are then sent to the Certification Team.

7. <u>Review of the Verification Test results.</u>

- If the product passes all the tests, a certification number will be issued by the certification team, providing that the corresponding Market certification (if the product type requires) also passes.
- If the product fails due to a few minor issues*, the case owner will be notified that it is going into Ad Hoc review and the case owner will be granted **30 days** to work directly with the test Lab to fix the issues and pass the tests. The case owner is not allowed to change the functionality of the product during Ad Hoc.
  - Ad Hoc is NOT an approval to produce or sell the product while issues are being resolved.
  - Ad Hoc testing includes one re-submission to fix the issues identified in the test report. Additional charges may apply if more than one re-submission is required to fix all issues. Please refer to section 2.4.2 Certification Fees
  - Failure to resolve the issues within this time frame will result in the case being closed without certification. Case owner can only re-submit the product by starting the process over, providing new documentation and settling the corresponding fees for new certification.
- The case owner will be notified if the product fails due to major issues. Case owner can only re- submit the product by starting the process over, providing new documentation and settling the corresponding fees for new certification. Parameters for minor and major issues are defined below.
  - Five (5) document issues count as one (1) command class/protocol issue:
  - Minor Issues: Technical issues in up to 5 command classes/protocol items
  - Major issues: Technical issues in 6 or more command classes/protocol items
- Not passing the Market Certification part if the product type requires is considered a certification failure. Case owner can only re-submit the product by starting the process over, providing new documentation and settling the corresponding fees for new certification.

7.2 Market Certification

The Market Certification part is mainly focusing on the correct use of Z-Wave logo, marks, and badges and whether these are correctly used in the product manuals and correctly presented on the products and its packaging. Detailed requirements can be found in the Market Certification Specification doc https://sdomembers.z-wavealliance.org/document/dl/1469

1. Product Information and Brand

This step is where submitters will input descriptions for their products. These should be concise and include information about how the product functions as a Z-Wave product. Submitters are also required to submit proof of their brand on the product being considered for certification. These photos must be an image showing the product itself – not a mockup – with the brand on the product.

2. Product Image

The product submitter must provide a photo of the product against a white background. This will be publicly available and listed on the Z-Wave Alliance product catalog.

3. Manuals

The product submitter must submit manuals and any relevant documentation for review. These manuals must be readable in English even if the final product will not be sold in English-speaking markets. The intent of this section is so that Z-Wave Alliance may be sure that product documentation explicitly outlines the following requirements:

- Z-Wave trademark is acknowledged and used correctly: **Z-Wave®** and **Z-Wave Plus®**
- Interoperability of Z-Wave products is acknowledged.
- SmartStart, if supported, is described appropriately, and spelled correctly.
- The S2 DSK information is available on the product per requirements established in specifications, as well as available on product packaging if required and applicable.
- Association Groups and Command Classes are detailed in the product documentation to allow ease of reference to installers and customers.

4. Z-Wave Marks

In this step, submitters must provide documentation that Z-Wave Plus or Z-Wave Long Range badges, and Z-Wave logos are applied correctly to their products and their products' packaging. For the most up-to-date versions of the badge, please visit this page: https://sdomembers.z-wavealliance.org/wg/Members/home/certification-resources

Z-Wave badges must fit the minimum size requirement of 13mm x 11mm and MUST be applied to the products and packaging. The Z-Wave Alliance requires photos of the final product and the final package. If a physical version of your product is not available for review by the time it is submitted for certification review, you may submit digital mockups showing the Z- Wave badge or Security S2 markings.

NOTE: Out of date badges will NOT be accepted. Z-Wave Alliance Members MUST use the most up-to-date badges on their products. Any misuse of Z-Wave logos in the promotion of uncertified products will be referred to Z-Wave Alliance' Board of Directors for legal action.

The Z-Wave badge on the packaging requirement may be waived if the product is to be **directly installed by the Manufacturer or Brand's direct service organization**. The Z-Wave badge will be required to be placed on the package if the product and packaging will be sent to distributors or resellers, channel Labs, or where sales may take place through online, retail, or wholesale means.

Please refer to the Badge Usage Policy and Z-Wave Logo Guidelines at the link above for full details on the badge and logo requirements as they relate to your products and your marketing collateral.

5. Security 2/SmartStart Markings

All products supporting SmartStart must provide a representation of the DSK (whether the full DSK or a QR Code and PIN combination) on the product. If the product's size precludes using the full DSK, the QR Code and PIN combination may be used **as long as** the full DSK is printed on the product's packaging or as an insert in the product's packaging. For full requirements of the S2 Security markings, please refer to the relevant document in the link above.

Please note that the DSK or QR Code must be shown on the product itself. Digital inserts or product renders are not allowed and will be rejected.

If the product does not support Learn Mode, then DSK Labeling does not apply. If the product does not support to be included in a network using SmartStart inclusion, then QR Labeling does not apply.

6. Legacy products

The Market cert process for legacy products created in the old Portal is different from current system. Please visit https://marketcert.z-wavealliance.org/help/help.html for further information or contact certadmin@z-wavealliance.org

8 CHANGES AND MODIFICATIONS OF CERTIFIED PRODUCTS

A developer MAY create a new product by modifying an existing certified product. A modified product MUST be certified like any other Z-Wave product.
A Z-Wave product is considered modified if at least one of the following conditions applies:

- Differences in the product's Z-Wave network and/or application behavior
- Different protocol library used. This includes situations where for example, an EU library MUST be changed to a Chinese library for a 500 series product even though the base frequency is the same for both regions (868.42 MHz).
- Differences in the product's RF performance or frequency, e.g., caused by changes to the electronics, the RF PCB layout, the antenna type / position, and/or change of subassemblies, the form and/or material of the product's enclosure, etc.
- Different chip
- Different product name and/or different part number
- Different manufacturer and/or brand name

Changes in the color of a product are not considered to create a different product, provided that such change does not affect the RF performance of a product (e.g., by changing the enclosure material, type of paint etc.). This is also the case if the product's part numbers differ, provided that all color variants share a common portion of the part number.

If any of the conditions are not met, the regular Z-Wave Certification process and full fees apply.

8.1 Non-technical Product Modifications

Changes to product names, changes in part numbers, changes in brand names, and changes in the manufacturer name are examples of modifications that are considered non-technical in nature in the Z-Wave Certification process. While such changes also require changing the values for the Manufacturer Specific command class, they are still considered non-technical product modifications if no other changes to Z-Wave functionality are being made.
Non-technical changes are processed as Review Only recertifications. The case owner MUST submit updated Certification Forms for each product and will receive the Certification Number after review and approval of the new Market Certification.
Example:

- A manufacturer currently sells a certified product under their company's brand name. They want to sell a private Label version to a new customer under that customer's brand name. Product Labeling, model number, packaging and at least one of the Manufacturer Specific values will be different; however, there are no other changes to the product or instructions, so this is considered a non-technical product modification. A new certification form MUST be submitted however, this will qualify for a review only re-certification. A Market Certification will be needed for the new product.
- Transferring ownership of a certification to a different company applies for a new certification with full fees.

8.2 Technical Changes that do not Affect Z-Wave Network Behavior

For technical changes that do not affect Z-Wave behavior the case owner MUST submit a new Certification Form. and in the form, case owner MUST clarify why the change do not affect Z-Wave behavior.

Examples:

- Design changes are made in the AC circuitry of a certified lighting control product to comply with revised UL or CE standards and the developer changes the hardware version number of the product for tracking purposes. The product utilizes a standard Z-Wave module and based on the developer's self-testing, the design change has no effect on Z-Wave RF performance/range. There are no other changes to the product, so this is considered a technical change that does not affect network behavior. A certification form with new range test data MUST be submitted however, this will qualify for a review only re-certification as long as the range and CER is still within acceptable limits.

- A plug-in dimmer certified for the EU RF region and marketed in France is modified for sale in Germany. Product Labeling, model number, packaging and at least one of the Manufacturer Specific values is changing for the new market and the only technical change to the product is the style of plug. The product utilizes a standard Z-Wave module and based on the developer's self-testing, the design change has no effect on Z-Wave RF performance/range. There are no other changes to the product, so this is considered a technical change that does not affect network behavior. A new certification form with new range test data MUST be submitted however, this will qualify for a review only re-certification if the range and CER is still within acceptable limits.

- For Consumer Products 500 series chip version SD3502 and SD3503 carry the same IC and software. Exchanging SD3502 with SD3503 and vice versa therefore applies for a Review Only re-certification. Exchanging any other chip requires full new certification.

8.3 RF Region-Only Changes

For classic devices (not Long Range devices)

applies that the change in operating radio frequency region (RF region) of a product (e.g., creating an EU variant from a US product) will qualify as a technical change that will not affect Z-Wave behavior, a review only re-certification if this is the only change to the product. The 700 series chips & modules are universal in that with the use of an applicable SAW filter, the same chip/module can be used for any RF region. Due to this, all RF region-only changes including those for 500 series products are handled as review-only recertifications.
RF region-only re-certifications will be accepted even if the SW/Protocol version used in the original product is obsolete, however the Certification Form MUST be the same as the one used when submitting the original product.

For Long Range (LR) devices

A change in radio frequency region (RF region) (e.g. creating EU_LR variant of a US_LR product) will qualify as a technical change that must be tested. Such a change qualifies for a re-certification, an “RF-Test” within Limited Product Modification, if no other changes have been made.

8.4 Change in Protocol SW used in consumer products.

Upgrading the Z-Wave Protocol SW does require re-certification. However, the level of certification required, the amount of testing needed, and the associated fees depend on the scope of the change.

- If upgrading the protocol version from one vendor to a version from a different protocol vendor, it will require a full new certification.
- When upgrading the protocol SW version to a newer version but from the same SW vendor and if there are no changes to any Z-Wave functionalities or to the command classes originally selected, the change will apply for a Review Only recertification provided that the product passes a new CTT self-certification test, using the latest CTT version. The complete CTT test solution must then be uploaded in the certification form file section for review.
    - For Z-Wave Plus products certified in the old Portal and Z-Wave Plus v2 products using form revision 1-4 applies that test cases in the CTT must be based on interview data from the Z-Wave device.
    - For Z-Wave Plus v2 products using form revision 5 or newer, test cases in the CTT must be based on data uploaded from the Certification Portal case.

8.5 Modifications of Updatable Products

Many types of Z-Wave products MAY be modified relatively frequently by downloading new versions of the software or installing new firmware. Examples include Z-Wave applications that run on PCs or tablets, products that support the Firmware Update CC where the end-user can install new firmware versions, or products like static controllers, gateways, security panels or set-t o p boxes that can be updated either locally or automatically from a central service facility. Z-Wave products including lighting controls, door locks and thermostats can also be easily updated if the Firmware Update Meta Data Command Class is supported.

Once an updatable product is certified in accordance with the certification process A one-page Compliance Statement MAY be used to maintain the certification if the changes are only for underlying firmware and do not affect Z-Wave functionality. This form can be requested from the Certification Team by email to certadmin@z-wavealliance.org

Updates that create a new/additional product (different brand, model number, etc.) MUST be certified accordingly regardless of whether Z-Wave functionality is affected.

8.6 Changes and Modifications of certified Z-Wave Protocol products

During a period of **one year**, the vendor may update and submit the same product for re-certification if the changes apply. A one-year period starts with the completion of a new certification of an original product. **Any** submission past the one-year period applies for a new certification disregarding the scope of changes.
Recertification requires completion of a new self-certification using the Z-Wave Test System and upload of the full test solution to the Certification Portal case for review.

Changes that apply for Limited Recertification.

- Implementing Long Range
- Switching between 2-channel and 3-channel regions

Changes that apply for New Certification.

- Any change to the Protocol **if not** based upon Z-Wave Alliance Source Code.
- any change in silicon except by similarity will require a new certification. E.g., if the die is the same used in a series of SoCs, SIPs or modules, this is considered similarity.

8.7 Controller Design SW

For vendors:

- Vendors of Z-Wave Controller Design SW MUST report to the cert admin when new revisions/versions are released, these will be added to the selectable list without recert requirements.
- Any release after one year from the original full cert MUST complete a limited recertification (an upgrade at this level should be reviewed by Test Lab), unless additional changes apply for a full new cert.

For Users:

- Upgrading the product with never revisions/versions of the same Controller Design SW from same vendor is allowed.
- Recertifying this upgrade is recommended and unless additional changes this will apply for a limited recertification.

8.8 Updates required due to compliance issues being discovered after certification.

As stated in Section 2.1, General Requirements, it is the responsibility of the developer/case owner to maintain their certifications. If compliance issues are discovered after a certification is issued when the developer/case owner MUST fix the problems and bring the product back into compliance. The scope of the issue(s) and required fixes will determine whether the existing certification can be maintained or if a recertification will be needed.

8.9 Exception to comply with in-force specifications.

Any Z-Wave product that is submitted for certification MUST comply with the in-force specifications.
Exceptions to comply with in-force specific requirements can only be granted if the relevant Z-Wave Alliance Working Group approves to modify or remove a requirement with the next specification update.
Developer can initiate a discussion with the relevant working group and if approved within the group an exception form can then be requested from the Certification Team certadmin@z-wavealliance.org

The exception form must include the list of individual certification form items that are affected, and a link that verifies the working group change approval (e.g., GitHub pull request approval or approved comment on Causeway).
For certified products that have been granted a permanent exception, this exception will still apply when the case is submitted for Review Only re-certification.

8.10 Revocation of Certifications

Failure to fix a compliance issue MAY result in the product certification being revoked. Product certifications MAY also be revoked if it is determined that the certification was obtained based on incomplete, false, or misleading data in the certification form submitted.