



Instruction

Z-Wave Alliance Certification Overview

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REVISION RECORD

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1 INTRODUCTION

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1.1 Overview

This document covers Z-Wave Plus Certification for 500 series devices and the Z-wave Plus v2 Certification program which is optional for 500 series devices but mandatory for 700 series devices. The terms “Z-Wave” and “Z-Wave Certification” apply to both Z-Wave Plus and Z-Wave Plus v2 in the context of this document. Z-Wave Plus and Z-Wave Plus v2 will be addressed separately where differences occur.

1.2 Purpose

The purpose of this document is to instruct OEM customers how to certify their Z-Wave enabled products and to help guide and document the certification process for individual products.

Z-Wave Plus and Z-Wave Plus v2 devices MUST be submitted for certification in an interactive, web-based process. A company account and a user account are needed to access the Certification Portal. Accounts can be requested via email to certadmin@z-wavealliance.org and must include the company name, company location (country) user’s first and last name and their email address.

Please refer to section 3.1 of this document for details regarding modifications to certified devices and certification maintenance.

1.3 Audience and Prerequisites

The audience of this document is primarily Z-Wave OEM customers. Furthermore, this document is used by the Z-Wave Alliance, Z-Wave Chip vendors, authorized Verification Test Partners and others which are part of the Z-Wave Certification process.

Z-Wave Alliance' Licensing agreements for Z-Wave require that developers certify the products they develop prior to manufacturing and selling them. The proper use of logos is also required by the licensing agreements. SDKs, technical material and additional information regarding certification can be downloaded from the Z-Wave Alliance member site after registering, and the Z-Wave Alliance Trademark and Distribution License (TDL) MUST be accepted to certify devices and software utilizing Z-Wave technology. Acceptance of the TDL is done on the web-based Certification Portal as part of a device certification submission.

1.4 Precedence of Definitions

In terms of reviewing products for Z-Wave Compliance, definitions are valid based on the following precedence of documents (“1” has highest precedence):

1.4.1 Z-Wave Plus Devices

1. The online Z-Wave Plus Certification Form [4]
2. This document: Z-Wave Certification Overview
3. Z-Wave Plus Device Type specification [6]
4. Z-Wave Plus Role Type Specification [5]
5. Z-Wave Command Class Specifications 0
 - a. Application CCs
 - b. Management CCs
 - c. Transport Encapsulation CCs
 - d. Network Protocol CCs
6. Z-Wave 500 Series Application Programming Guides 0

1.4.2 Z-Wave Plus v2 Devices

1. The online Z-Wave Plus v2 Certification Form [4]
2. This document: Z-Wave Certification Overview
3. Z-Wave Plus v2 Device Type specification, [7]
4. Z-Wave Plus Role Type Specification, [5]
5. Z-Wave Command Class Specifications 0
 - a. Application CCs
 - b. Management CCs
 - c. Transport Encapsulation CCs
 - d. Network Protocol CCs
6. Z-Wave Plus v2 Command Class Control Specification, [8]
7. Z-Wave 700 Series Application Programming Guides 0

1.5 Terms Used in the Z-Wave Certification Program

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.

The words “SHALL” and “MUST” specify aspects that are mandatory for compliance. Equally, “MUST NOT” has to 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 OEM but provides additional guidance. Future versions of Z-Wave MAY make aspects that are recommended at this time mandatory.

Throughout the Z-Wave Certification Program, 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 Plus and Z-Wave Plus v2 Compliance	Adherence to the Z-Wave standards is mandatory. The term “conformance” is used equivalently to the term “compliance”
Z-Wave Plus and Z-Wave Plus v2 Certification	Process of testing and verifying compliance to Z-Wave standards.
Self-certification	Developers/OEMs conduct testing to verify compliance to the Z-Wave Plus or Z-Wave Plus v2 standards before submitting the device for certification.
Verification	Confirmation of the Self-certification tests and compliance to the Z-Wave Plus or Z-Wave Plus v2 standards by the independent test houses.
Certification Fees	Fees paid by the developer/OEM to the test house for their services. These cover the costs for administration, review and verification testing in the test houses.

2 Z-WAVE CERTIFICATION OVERVIEW

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2.1 General Requirements

All products that use Z-Wave Technology MUST be certified. This includes software applications.

- Devices based on the 500 series chipset MUST be Z-Wave Plus or Z-Wave Plus v2 certified.
- Devices based on the 700 series chipset MUST be Z-Wave Plus v2 certified.
- Software applications based on a Z-Wave SDK MUST be certified to the appropriate Z-Wave Plus or Z-Wave Plus v2 standards.
- New devices can only be certified if they are based on active or maintained SDKs published by Z-Wave Alliance. Recertifications of existing devices can be based on active or maintained SDKs published by Z-Wave Alliance, unless specifically prohibited. Review only recertifications can be based on active, maintained, monitored or obsolete SDKs published by Z-Wave Alliance, unless specifically prohibited.
- Membership in the Z-Wave Alliance is required to certify devices to the Z-Wave standards. More information on <https://z-wavealliance.org/join/>
- Z-Wave Certification consists of two distinct parts; Technical Device Certification and Market Certification. BOTH are mandatory and device certifications cannot be issued until the device passes technical testing and the corresponding Market Certification.
 - Technical certification is managed by the Certification Manager and covers the device in regard to implementation and compliance to the Z-Wave standards and specifications.
 - Market Certification is managed by the Z-Wave Alliance and covers brand and logo usage, user manuals, etc.
- Certifications MUST be maintained. Any change to a certified device is subject to the maintenance requirements identified in Section 3 of this document. Failure to maintain device certifications will result in the revocation of the device's certification.
- Z-Wave Certification & Tools are updated twice a year

The certification process is designed to help OEM customers ensure that products have 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 OEM customer 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.

The Certification Manager will issue the Z-Wave Certification Number upon successful completion of the process.

2.2 Types of Products

General Products:

Devices 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 device and sold with it. Examples include but are not limited to:

- Self-contained devices 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 to the applicable Z-Wave Plus or Z-Wave Plus v2 standards.
- Static controllers, bridges, gateways or security panels relying on a separate Z-Wave hardware device like a USB stick for the RF functionality and interface to the Serial API. The Z-Wave hardware device 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 devices can have either integrated or cloud based UI software. The final end-user interface **MUST** be verified as compliant with the applicable Z-Wave Plus or Z-Wave Plus v2 standards.

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 devices. It **MUST** be capable of working with any certified hardware device 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 devices 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 devices for full functionality.
- The final end-user interface **MUST** be verified as compliant with the applicable Z-Wave Plus or Z-Wave Plus v2 standards.

Hardware Platform:

This type of device 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 device 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.
- Hardware platforms **MUST NOT** provide any functionalities other than the RF and interface to the Serial API.

2.3 Review/Testing Requirements

General Products

- Document review and inspection
- Review of Market Certification data
- Hardware / Software testing
- 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 device.

Software Applications

- Document review and inspection
- Review of Market Certification data
- 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

Hardware Platform

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

2.4 Certification Fees

2.4.1 Types of Certification

New/Full Certifications

Includes documentation review and technical testing.

- Form and document review – Verification that end user instructions include required information and meet certification requirements. Verify that if needed, special instructions required for testing the device has been provided. Quick test to verify DUT's NIF matches information in certification form.
- Tests performed include but are 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.

Recertifications

Tests performed depend on changes being made. Random spot checks of other functionalities are also performed.

- Limited Product Modification may include:
 - Changes in up to 4 Standard Command Classes
 - Changes in 1 Advanced Command Class
 - Derivative Software for additional Controllers (Same Z-Wave code and functionality, different hardware)
 - Derivative Software for mobile devices (Software for IOS, Android etc. Must access & control Z-Wave network through primary certified application)
 - Change to firmware in a hardware device
 - SDK Update (Re-test level is specified in the corresponding Software Release Note)
- Review Only, a technical or non-technical product modification that do 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 underlying FW (not including Z-Wave Chip FW 0)
 - Frequency change

2.4.2 Certification Fees

The fees listed are in USD and MUST be settled in advance. The test house may accept other currencies based on the exchange rate in effect at the time of submission.

Included in the fee for a new certification is one re-test of a submitted device or firmware version in Adhoc phase. If additional re-testing in Adhoc is needed, the OEM may inquire the test house if they offer that service. Any related fee is agreed with the test house directly.

Line Item	Device Type	New Certification	Re-Certification
1	End Device	3000	1500
2	Controllers (Any Device or Role Type except Z-Wave Plus v2 Gateway	6000	3500
3	Z-Wave Plus v2 Gateway Device Type	8000	4500
4	Hardware Device	1000	1000
	Additional fee		
5	LibS2 test for Controllers not based upon Z/IP	4000	2000
6	Long Range	1000	500

2.4.3 Invoicing and Payment of Fees

All fees for Documentation and Hardware/Software Application testing are invoiced by and paid to the selected test partner for their services.

All taxes, money transfer fees, currency exchange fees and shipment costs are paid by customer.

2.5 Certification Forms

- Z-Wave Plus, Z-Wave Plus v2 and Market Certification utilize an online web-based certification form for compliance testing/verification in the Z-Wave Certification Portal. Access to the Certification Portal z-wavecertification.z-wavealliance.org requires a company and user account. Multiple user accounts MAY be created for a company and requests MUST be submitted by email to the Certification Manager certadmin@z-wavealliance.org and include the company name, user's name (first & last) and the user's email address.
- Z-Wave is an evolving technology and the certification forms are updated periodically to stay in sync with the changes. The developer MUST use the latest version of the appropriate form when submitting a device for certification.
 - Z-Wave Plus and Z-Wave Plus v2: Only the current form will be available on the Portal when creating new submissions however; there is a grace period during which a submission created before a form is updated MAY still be accepted. The Portal will warn a user when the form they are using is outdated and can no longer be accepted.
- The vast majority of form changes are to clarify requirements, simplify the form or add/update Command Class Specifications and/or Role and Device Type Specifications. The Portal only provides a basic revision record in the wiki so the revision records in the Command Class, Role Type and Device Type specification documents should be used as a reference.

2.6 Steps in the Device Certification Process

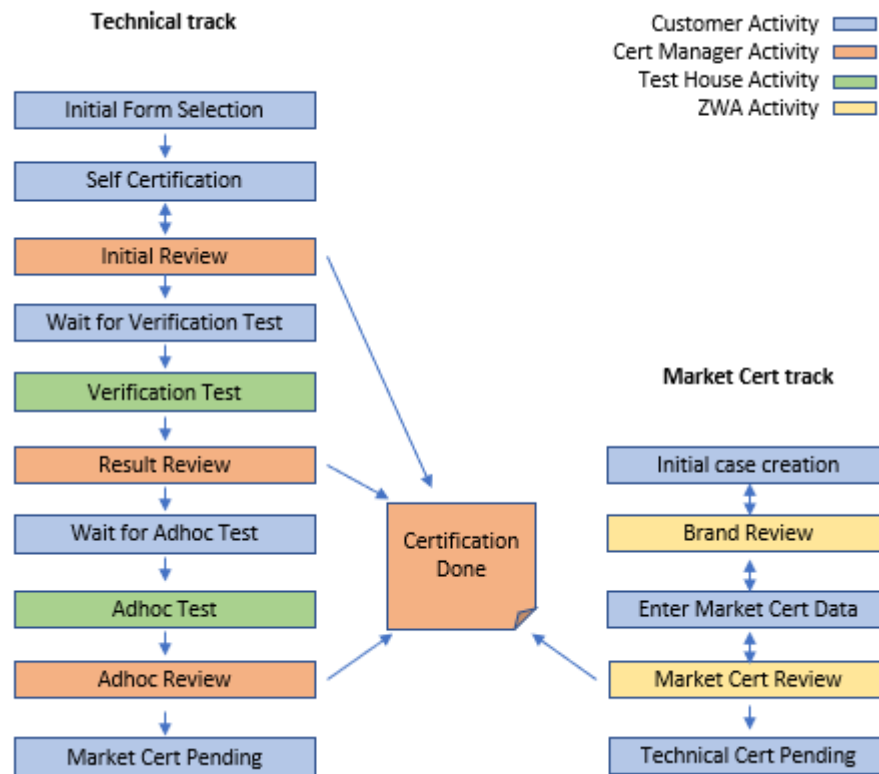


Figure 1, Steps in the Device Certification Process

1. The OEM customer designs and develops the product. Z-Wave design recommendations, reference designs, and other materials are available in the SDK or on the tech support website to aid in this process.
 - a. The OEM decides which CHIP will be used and the desired Z-Wave functionalities of the device during the definition stage of product development. Depending on this direction, the next step is to choose which Device & Role Types and Command Classes are to be implemented. The Z-Wave Plus or Z-Wave Plus v2 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.
 - b. New developers will need to have a Manufacturer's ID number assigned. This can be requested by email to the Certification Manager certadmin@z-wavealliance.org. All requests MUST include the full company address and a primary contact for certification issues. Once their first device is certified the ID will be published within the Z-Wave developers' community.

2. The OEM conducts the Self-certification and submits the Certification Form

- a. As part of the Self-certification, the OEM conducts tests to confirm functionality and compliance to Z-Wave specifications. Tests shall be conducted for all aspects of the implementation where compliance is claimed in the Certification Form. Z-Wave Plus and Z-wave Plus v2 testing guidelines are provided in the Compliance Test Tool (CTT) that MUST be used in Command Class related tests for both Z-Wave Plus and Z-wave Plus v2 devices.
- b. The latest version of the appropriate certification form MUST be used when submitting a new device for certification.
 - i. Only the latest version of the online form will be available on the Certification Portal for new devices.
- c. Prior to submission for review, the developer MUST read and accept the Trademark and Distribution License as specified on the online Portal.
- d. Certifications are issued to the company submitting the online Z-Wave Plus or Z-Wave Plus v2 form.
- e. Z-Wave Plus and Z-Wave Plus v2 submissions are done online at the end of the self-certification phase. Each variation of a device MUST be certified separately. The type of certification required depends on the differences between the devices. Refer to Section 3 for details.

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3. The certification system automatically assigns a case number to the device.
 - a. Z-Wave Plus and Z-Wave Plus v2: when the online certification form is submitted. Prior to submission, all cases are labeled "Pre-Cert".

This case number is used to track the device through the entire testing and certification process and to commence Market Certification. All communications regarding this device **MUST** reference this case number in the subject line of the email message.
 4. The Z-Wave Certification Manager conducts the Initial Review of the Certification form. The online system automatically notifies the developer and test house when Z-Wave forms are approved. The developer can start communicating with the test house regarding payment of the fees and sample/documentation submissions as soon as the form has been approved.
 - a. If the Initial Certification Review fails:
 - i. Z-Wave Plus and Z-Wave Plus v2 - The developer is automatically notified by the system that the online form needs to be corrected/updated and then re-submitted.
 5. Z-Wave Plus and Z-Wave Plus v2 require Market Certification which is managed by the Z-Wave Alliance. The developer will need the case number assigned in number 3 above to create a Market Certification case and provide Market Certification data. This **SHOULD** be started as soon as a case number is assigned, and **MUST** be completed before a certification can be issued.
 - a. First review in Market Certification is to verify Z-Wave Alliance membership which is mandatory.

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6. A product enters the test queue when everything has been received by the test house. This includes payment, samples and product instructions/documentation. The number of products in this queue varies and information regarding queue length can only be provided when the test house has received everything.
 - a. 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 developer will have to re-submit as a new case if this occurs.
 - i. Devices having to be resubmitted MUST be compliant with the specifications in place at the time of resubmission and utilize the latest version of the certification form.
 - b. Two test samples of a submitted device are required. Samples submitted to the test partner are not returned to the Developer/OEM. These are retained by the test partner for reference in case of issues and for use during interoperability testing.
 7. The Z-Wave Test Partner conducts the Verification Tests.
 - a. The Verification Tests cover all aspects of Z-Wave Plus or Z-Wave Plus v2 compliance as defined in the specification documents and certification form. Depending on the type of device and whether it is a Z-Wave Plus or Z-Wave Plus v2 device this MAY include but is not limited to the examples listed below.
 - i. Use of the proper software libraries for the intended market.
 - ii. General compliance requirements like use of a production release SDK, selected Device Class or Device & Role Type is appropriate for the intended application/use of the device, implementation of all mandatory Command Classes for the device being submitted and tolerance toward unexpected frame lengths.
 - iii. Verification of the programmed values in the Manufacturer Specific CC, Version CC, Z-Wave Plus Info CC and NVR flash page.
 - iv. Common device 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.
 - v. Specific requirements based on the applicable Device Class or Device & Role Type. These are listed in the applicable specification document.
 - vi. Controllers are tested to verify their ability to include all certified devices, 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 devices regardless of brand/manufacture. The end-user interface MUST be submitted and verified as compliant.

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- vii. All implemented Command Classes MUST provide appropriate and correct functionality.
 - 1. Supported Command Classes MUST implement all commands in the CC.
 - 2. Z-Wave Plus: When Command Class control is mandated by the Device Type, a controlling node MUST implement the ability to interview, read and set other nodes using the given Command Class and the controlling node MUST be able to use all commands of the controlled Command Class.
 - 3. Z-Wave Plus v2: Mandatory Command Class control is identified in the Command Class Control Specification [10].
 - viii. 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.
- b. If questions arise during the Verification Test, the Test Partner contacts the OEM directly.
 - c. Depending on the number of devices already in queue, the goal is to start testing within two weeks of the device entering “Wait for Verification” -phase. The actual testing time will then depend on the type of device, its complexity and if prepared through self-certification & testing.
 - d. Automatic notifications regarding completion of testing for Z-Wave Plus and Z-Wave Plus v2 devices are sent to the Certification Manager.

8. The Z-Wave Certification Manager reviews the Verification Test results.

- a. If the device passes all the tests, a certification number will be issued, and the OEM can move forward.

Z-Wave Plus and Z-wave Plus v2:

- i. The corresponding Market Certification MUST have been approved.
- b. If the device fails due to a few minor issues*, the OEM will be notified that it is going into Ad Hoc review and the OEM will be granted 30 days to work directly with the test partner to fix the issues and pass the tests. OEM is not allowed to change functionality of the device during Ad Hoc.
 - i. Ad Hoc is NOT an approval to produce or sell the device while issues are being resolved.
 - ii. 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
 - iii. Failure to resolve the issues within this time frame will result in the case being closed without certification. The OEM will have to submit new documents and start the process over. This includes new fees.
- c. If the device fails due to major issues*, the OEM will be notified that it failed and that they will have to submit new documents and start the process over. This includes full new fees.

* Parameters for minor and major issues are defined below.

- 1. Five (5) document issues count as one (1) command class/protocol issue:
- 2. Minor Issues: Technical issues in up to 5 command classes/protocol items
- 3. Major issues: Technical issues in 6 or more command classes/protocol items
- d. Failure to complete the Market Certification and receive the alliance's approval of it will result in the case being closed without a device certification being issued. This is considered a certification failure and the device will have to be resubmitted as a new certification with new fees.

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9. The OEM manufactures and ships Z-Wave products **after** certification testing has been successfully completed and the certification has been issued.
- a. The OEM monitors manufacturing and ensures that the guidelines of the Z-Wave Certification Maintenance are followed before any relevant product change is introduced.
 - b. Manufacturing and shipping/selling non-compliant and/or non-certified devices is in direct violation of the Z-Wave licensing agreements.
 - c. Brand/logo usage
 - i. Z-Wave Plus and Z-Wave Plus v2: Use of the logos is administered by the Z-Wave Alliance. For materials and usage guidelines please contact certadmin@z-wavealliance.org
 - ii. The use of Z-Wave and/or Z-Wave Plus logos in the promotion of uncertified devices will be referred to Z-Wave Alliance' Board of Directors for legal action.

2.7 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.

1. The original certification number format was:

"ZC" <2-digit year> <2-digit months> <4 digit number>

Example: **ZC06-050024 (no longer issued)**

2. The certification number format corresponding to version 8.x of the **Z-Wave** Certification Form (Classic Z-Wave Certification) was:

"ZC08" dash <2-digit year> <2-digit months> <4 digit number>

Example: **ZC08-13050024 (no longer issued)**

3. The certification number format corresponding to **Z-Wave Plus** certifications is:

"ZC10" dash <2-digit year> <2-digit months> <4 digit number>

Example: **ZC10-17010024**

This format is used for both the old Word document-based certifications and the new web-based certifications however; the last four digits for web-based certifications start with "5" instead of "0". Example: Old system: ZC10-16010xxx; new system: ZC10-16015xxx

4. The certification number format corresponding to **Z-Wave Plus v2** certifications is the same as Z-Wave Plus however, the prefix is ZC12 instead of ZC10:

"ZC12" dash <2-digit year> <2-digit months> <4 digit number>

Example: **ZC12-1901xxxx**

5. The certification number format corresponding to **Custom CHIP Implementation** certifications was:

"ZC09" dash <2-digit year> <2-digit months> <4 digit number>

Example: **ZC09-13080024 (no longer issued)**

2.8 Certification Contact Information

All communication regarding Z-Wave certification and any questions you MAY have concerning the contents or interpretations of this Certification document can be directed to the Certification Manager by email to: certadmin@z-wavealliance.org

Questions regarding technical approach and development should be directed to the chip vendors Support Team. For Silicon Labs: <https://www.silabs.com/support>

Address of Z-Wave Certification Unit

The Z-Wave Alliance | 3855 SW 153rd Drive, Beaverton, OR 97003 USA | Tel: +1.503.619.0851

2.9 Test Partners

There are currently three independent test partners; Zertified in Philadelphia, Pennsylvania USA, Pepper-One in Zwickau, Germany and the Institute of Digital Guangdong (IDG) in Guangzhou, China. Contact information is available in the Z-Wave Certification Form on the Certification Portal.

- **IDG** is available for End Device verification
- **Zertified** is available for End Device and Controller verification
- **Pepper One** is available for End Device and Controller verification and Custom S2 implementation testing.
- **Certification Manager** will handle review only re-certifications

3 Z-WAVE CERTIFICATION MAINTENANCE

This section defines the rule for maintenance of the Z-Wave Certification of a product. Furthermore, it defines how exceptions in the regular certification process are handled.

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3.1 Changes and Modifications of Z-Wave Certified Products

If at any time after the issuing of the Certification the OEM plans to make any revisions or modifications to the product, the OEM **MUST** follow the rules for Certification Maintenance described in this section.

The general rule is that any such change is considered to create a new product for which the regular Z-Wave certification process described in this document applies. A Z-Wave Plus or Z-Wave Plus v2 Certification Form **MUST** be submitted for each product affected.

Failure to maintain certifications and/or comply with the requirements identified in this section for certification maintenance will result in revocation of the original certification.

3.1.1 “Different Products” with regard to Z-Wave Certification

An OEM MAY create a new product by modifying an existing certified product. Such “different products” MUST be certified like any other Z-Wave product.

A Z-Wave product is considered a “different product” if at least one of the following conditions applies:

- Differences in the product’s Z-Wave network and/or application behavior
- Different SDK or protocol library used. This includes situations where for example, an EU library MUST be changed to a Chinese library for a 500 series device 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 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.

The following categories have been established to identify various degrees of change, the conditions to qualify for each category and the corresponding certification requirements. If the conditions are not fully met, the regular Certification process MUST be followed.

3.1.2 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 free of Certification Fees. The OEM MUST submit updated Certification Forms for each product and will receive the Certification Number after review and approval of the new Market Certification. A Verification Test is typically not being conducted.

Example:

- A manufacturer currently sells a certified device 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 device 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 device.

The certifying company is the owner of the certification. Transferring ownership to a different company/OEM applies for a new certification with full fees.

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

In case of technical changes that do not affect Z-Wave behavior; the OEM needs to submit a new Certification Form. The form **MUST** contain a brief explanation on the change including a clarification why that change does not affect Z-Wave behavior.

After completion of the review and approval of the new Market Certification, the Z-Wave Certification can be re-issued for the modified product. There is no Certification Fee in these cases.

Examples:

- Design changes are made in the AC circuitry of a certified lighting control device to comply with revised UL or CE standards and the manufacturer changes the hardware version number of the device for tracking purposes. The device utilizes a standard Z-Wave module from Z-Wave Alliance 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 device 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 frequency 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 device utilizes a standard Z-Wave module from Z-Wave Alliance 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 device 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.

3.1.4 Limited Product Modifications and Product Modifications

The following parameters will apply to Z-Wave Plus devices based on SDKs v6.71.xx, v6.81.xx or newer and Z-wave Plus v2 devices.

Limited product modifications are considered all changes to a product where the number of added, removed, or modified “Standard” command classes is up to 4. Product Modifications encompass all changes exceeding those allowed for Limited Product Modifications.

Each “Advanced” command class counts as 4 command classes due to the comprehensive testing that is required for verification of Z-Wave compliance. Any change besides documentation and one “Advanced” command class will require a full certification.

- “Advanced” Command Classes include Security, Multi-Channel, Multi-Channel Association, Firmware Meta Data and Multi-Command Command Classes.

Examples:

- Limited Product Modifications: Recertification
 - Changes in up to & including four (4) Standard command classes; no other changes
- Product Modifications: Full certification is required.
 - Changes to one (1) Advanced command class and one (1) Standard command class

3.1.5 Frequency-Only changes

The change in operating frequency 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 device. 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 frequency. Due to this, all frequency-only recertifications including those for 500 series devices is handled as review-only recertifications.

Frequency-only re-certifications will be accepted even if the SDK version used in the original device is obsolete, however the Certification Form – e.g. Z-Wave Plus or Z-Wave Plus v2 Certification – MUST be the same as the one used when submitting the original device.

Any changes in addition to the RF change will require testing and either a recertification or full new certification. This will be determined by the number and scope of additional changes being made.

Important Note: Changing the type of protocol library requires a full new certification. An example of this would be changing from the Slave Routing library to the Slave_Enhanced_232 library.

3.1.6 Change in SDK Used

A change in the Z-Wave software development kit utilized for a specific device 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.

The level of certification required can be read in the corresponding Software Release Note (SRN) and only applies if the only product change is an upgrade of the SDK and no other capabilities are modified.

A new SDK Branch (e.g. 7.12.1, 7.13.1) is launched twice a year based upon the Z-Wave Specification releases 6 months prior.

A Branch is certifiable a year from first release so if SDK Branch version 7.13.1 is launched on 6/30 2020, the Branch and all its related SDK maintenance versions will be discontinued on 6/30 2021.

3.1.7 Any Other Product Modification

If the conditions for the “limited product modification”, “change that does not affect Z-Wave behavior”, and the “non-technical product modification” are not met, the regular Z-Wave Certification process and full fees apply.

3.2 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 product like static controllers, gateways, security panels or set-top boxes that can be updated either locally or automatically from a central service facility. Z-Wave devices including lighting controls, door locks and thermostats can also be easily updated if the Firmware Update Meta Data Command Class is supported.

The OEM MUST apply the following process for Certification and certification maintenance of updateable devices and software applications:

- The OEM conducts the full Z-Wave Certification process for the initial certification of the product.
- Subsequent updates are handled in the following manner:
 - Updates affecting Z-Wave functionality MUST be recertified to determine whether the changes require re-certification or full certification. Examples include but are not limited to:
 - Hardware change
 - Changes that affects the RF performance of the product
 - New major release / major revision of the OEM's product
 - Changes to the functional Z-Wave UI and/or Z-Wave functionality
 - Integration of a new major revision of the Z-Wave protocol
 - A one-page Compliance Statement [11] MAY be used to maintain an existing certification if the changes are only for underlying firmware and do not affect Z-Wave functionality. This form can be requested from Certification Manager by email to certadmin@z-wavealliance.org
 - Updates that create a new/additional device (different brand, model number, etc.) MUST be submitted on the appropriate Z-Wave certification form [4] regardless of whether Z-Wave functionality is affected. Each form MUST stand alone as a comprehensive record of what is being certified.

3.3 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/OEM to maintain their certifications. If compliance issues are discovered after a certification is issued when the developer/OEM MUST fix the problems and bring the device 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.

500 series devices MUST be certified under either the Z-Wave Plus or Z-wave Plus v2 Certification program. All 700 series devices MUST be certified under the Z-wave Plus v2 Certification program. If a device is updated from one series to another e.g. 300 to 500 or 500 to 700, the device MUST be submitted as a full new Z-Wave Plus or Z-Wave Plus v2 certification.

3.4 Grandfathering of Existing Products

All existing Z-Wave certifications for non-updatable products remain valid indefinitely regardless of the changes to certification criteria mentioned in this document. However, if re-certification of a product is required, the newest version of the relevant specifications and Z-Wave Certification documents MUST be used.

Certifications for updatable products are tied to the software/firmware version. If no changes are made, the certification will remain valid indefinitely. Please refer to Section 3.2 if changes are made.

3.5 Revocation of Certifications

Failure to fix a compliance issue MAY result in the device certification being revoked. Device 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.

4 EXTRA SERVICES OFFERED BY TEST PARTNERS

OEM/Developer may inquire a Z-Wave test partner if they offer extra service/support. This is agreed with the test partner directly.

Note that if “Test Partner A” is selected to assist in product development, one of the other test partners **MUST** be used for the actual certification.

REFERENCES

Please refer to the latest revision of the document.

<https://sdomembers.z-wavealliance.org/wg/Members/workgroup/home>

- [1] Z-Wave Command Class Specifications:
 - Application CCs
 - Management CCs
 - Transport Encapsulation CCs
 - Network Protocol CCs
- [2] Z-Wave Device Class Specification.doc
- [3] Z-Wave Plus and Z-Wave Plus v2 Online Certification Forms
- [4] Z-Wave Certification Fee Schedule
- [5] Z-Wave Plus Role Type Specification.doc
- [6] Z-Wave Plus Device Type Specification.doc
- [7] Z-Wave Plus v2 Device Type Specification.doc
- [8] Z-Wave Command Class Control Specification.doc
- [9] Z-Wave Compliance Statement for Updateable Devices