



CONNECTIVITY STANDARDS ALLIANCE CERTIFICATION POLICY

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1 INTRODUCTION

This document defines policies related to CSA Certified, the certification and testing program of the Connectivity Standards Alliance. It describes:

- The CSA Certified Program
- Certification Types

- Certification Programs
- authorized test laboratories
- Golden Units and processes for selection and revision
- Test Harnesses
- Certification paths, including:
 - Testing
 - Certification by similarity and guidelines for retesting
 - Certification Transfer Program
 - Product Family Certification and guidelines for retesting

1.1 Scope and Purpose

This document defines the Certification Programs supported by the Connectivity Standards Alliance. This includes the process and rules for the entire life cycle of a program including specification validation, testing, grace period, etc. It is not the intent of this document to define the organizational entities responsible for managing any part of this process, except those required to be visible outside the Connectivity Standards Alliance, such as the authority to certify and resolve conflict.

1.2 Structure of this Document

This document first defines processes and rules that are common to many programs. Even in the common process there are levels and dependencies. After the common Sections, this document then defines each active program (legacy and current), in terms of requirements and additions to the common process.

1.3 References

This document refers to several other documents related to details of the certification policy.

- [R1] CSA document 13-0625: Technical Structure, Process and Procedures
- [R2] CSA document 08-0123: Test Event Rules of Engagement
- [R3] CSA document 05-3739: Zigbee Certified Logo and Trademark Policy
- [R4] CSA document 08-5185: Qualification and Validation of Test Service Providers
- [R5] CSA document 11-5456: Master Cluster List
- [R6] CSA document 05-3874: CSA Manufacturer Code Database
- [R7] CSA document 12-0114: Zigbee Green Power SrcID database

1.4 Abbreviations and Terminology

Table 1 – Abbreviations and Terminology

ATL	Authorized Test Laboratory
Cbs	Certification by Similarity

Certification Program	A well-defined process, that approves interpretation, validates conformance and interoperability to a set of specifications, and when successfully completed, allows the certification authority to issue a certificate
Certified Product	A Product that has been certified under the Product Certification Program
Compliant Platform	A Platform that has been certified under the Compliant Platform Certification Program
Compliant Platform Certification Program	A Certification Program that validates a Platform for purposes of certification
CTP	Certification Transfer Program
DUT	Device Under Test
ERP	Expert Review Panel
Golden Unit	A Compliant Platform or Certified Product chosen to be used as part of a Program to test interoperability.
GU	Golden Unit
MAC	Media Access Control
ODM	Original Design Manufacturer
OEM	Original Equipment Manufacturer
PFC	Product Family Certification
PHY	Physical Layer
PICS	Protocol Implementation Conformity Statement (list of supported functions)
Platform	An implementation of a Stack
Product	An implementation of a Standard
Product Certification Program	A Certification Program validating a Product for purposes of certification
Program	See Certification Program
RF	Radio Frequency
SKU	Stock Keeping Unit (unique model identifier)
Stack	An approved set of base specifications upon which a Standard is built (e.g. Zigbee PRO, RF4CE, etc.).
Standard	An approved set (or vertical Stack) of specifications, built upon a Stack, defining interoperable behavior, on which interoperable applications can be built (e.g. ZSE, Zigbee 3.0, ZRC, etc.).
Test Event	Organized event to test and validate specification implementations
Test Harness	Test harness that is developed for use in executing compliance testing and approved by Connectivity Standards Alliance
CSA Product	Product
CSA Standard	Standard
CSA	Connectivity Standards Alliance

2 CSA CERTIFIED PROGRAM

This Section describes the general process and rules that are common for all Certification Programs.

2.1 Description

CSA Certified is the overall program which enables certification of Products and Compliant Platforms that conform to Connectivity Standards Alliance Standards. The program defines various types of certifications and related policies including requirements for certification and testing programs and leverages the expertise of hundreds of engineers and business people to ensure only quality Products earn CSA Certified Product status.

CSA Certified generally follows international Standards for the definition and operation of a Certification Program. In particular, CSA Certified is designed as a Type 1b Certification Program as defined in ISO/IEC Guide 67: 2004. Type 1b systems consist of several types of activities:

- Determination of Product characteristics: This is achieved through testing of submitted samples performed by independent authorized test laboratories,
- Evaluation: This is achieved by formally evaluating the results of testing,
- Decision: This is the stage that controls granting, maintaining and extending suspending or withdrawing certification, and
- Licensing: Licensing refers to granting, suspending, or withdrawing the rights to use certificates or marks such as logos.

2.2 Testing Versus Certification

The CSA Certified program maintains a strict distinction between testing and certification. Testing is the process verifying conformance to CSA Standards. Certification is granting official recognition that a Product conforms to a CSA Standards and that a Product manufacturer conforms to all the relevant policies of the CSA Certified program.

Only Connectivity Standards Alliance may grant certification.

2.3 Connectivity Standards Alliance Responsibilities

The Test and Certification Oversight Committee (TCOC) of the Alliance Board of Directors shall be responsible for development of policies related to certification (including this document) and working with the CSA Certification Advisory working group and other technical working groups on certification related issues. The TCOC is made up of volunteers from members of the Alliance Board of Directors.

2.4 Alliance Director of Certifications

The Alliance Director of Certifications shall be named by Alliance management and will be responsible for a variety of functions related to administering the CSA certified program including processing of certification applications, issuing of certificates, consulting with the TCOC on certification and testing policy matters, and interpreting certification policies on a day-to-day basis.

In accordance with ISO/IEC Guide 65, the Director of Certifications has decision making authority in regard to granting certifications and other related tasks.

2.5 Expert Review Panel

The Expert Review Panel is a team of volunteers from member companies nominated by the Certification Advisory working group and approved by the TCOC. The Panel provides expert technical advice to the CSA Certified program. The function of the Panel is defined in document 08-5185 "Qualification and Validation of

Test Service Providers". An up-to-date list of the current Panel members is maintained at the front of the Certification Advisory working group meeting minutes document.

Aside from their role in validation of test laboratories, the Expert Review Panel may be called on from time to time to provide other expert advice in regard to other matters such as review of test plans, review of interoperability concerns discovered in the field or to assist the Alliance Director of Certifications in resolution of disputes.

2.6 Appeals

The Connectivity Standards Alliance has a procedure for the resolution of issues regarding the granting of certification.

Certification applicants may appeal a decision regarding certification if they believe this certification policy was applied in error. The basis of the appeal shall be (1) a specific concern about the misapplication of the policy, or (2) an error on the part of an authorized test laboratory or the Alliance Director of Certifications.

2.6.1 Appeals Process

The process for appeals shall be:

- Applicant shall send an appeal request to certification@csa-iot.org. The request shall document the issue, the specific basis of the appeal and the corrective action requested.
- Acknowledgement of receipt of the appeal by either the Alliance Director of Certifications or the President and Chief Executive Officer of Connectivity Standards Alliance shall be provided.
- The Alliance Director of Certifications and the President and Chief Executive Officer of Connectivity Standards Alliance shall consider the appeal.
- A preliminary decision shall be made either to have Connectivity Standards Alliance take corrective action or to reject the appeal.
- If corrective action by Connectivity Standards Alliance is to be taken, the Director of Certifications or the President and Chief Executive Officer of Connectivity Standards Alliance shall implement the corrective action.
- If the appeal is proposed for rejection, the appeal shall be forwarded to the Appeals Committee for consideration.
- A report on the status of the appeal shall be given to the applicant.
- The Appeals Committee shall consider the appeal.
- A decision shall be made either to have Connectivity Standards Alliance take corrective action or to reject the appeal.
- If corrective action by Connectivity Standards Alliance is to be taken, the Alliance Director of Certifications or the President and Chief Executive Officer of the Connectivity Standards Alliance shall implement the corrective action.
- If the appeal is rejected, the specific basis for rejection shall be documented.
- A report on the final disposition of the appeal shall be given to the applicant by either the Director of Certifications or the President and Chief Executive Officer of Connectivity Standards Alliance.

All parties shall treat any information related to an appeal as confidential information during the process.

2.6.2 Appeals Committee

The Connectivity Standards Alliance shall have a committee to address appeals. The Appeals Committee shall consist of the Chief Executive Officer of the Alliance, the chairperson of the TCOC and a representative of each authorized test laboratory. The Chief Executive Officer of the Alliance shall act as chairperson of the Appeals Committee.

To ensure the impartiality of the appeals process, any member of the Committee who may have any conflict of interest with the party making the appeal shall disclose the conflict. The member will not be allowed to vote or participate in Committee activities regarding the appeal. Conflicts of interest are defined as, at a minimum, a financial or competitive relationship with the appealing party. The Committee members themselves shall decide if other issues are conflicts of interest.

2.7 Certification Types

The Connectivity Standards Alliance offers two types of Standards compliance – Compliant Platform and Certified Product.

2.7.1 Compliant Platform

The Zigbee Compliant Platform program defines a rigorous evaluation and certification process for a Platform before it can be certified as a Compliant Platform and engineered into a Product. Each Platform is comprised of a radio and a microprocessor with storage running Zigbee firmware. The Platform is tested for compliance to a set of Zigbee specifications (See Section 6 (Certification Programs)).

This program ensures the supply chain has a solid foundation for Products destined for personal or commercial use. Successfully completing this testing allows the member to have its Platform recognized by the Alliance as a Compliant Platform.

2.7.2 Certified Product

A Certified Product program defines the testing requirements and a process to validate a Product's conformance to a Standard (See Section 6 (Certification Programs)). The Product must be fully compliant to the Standard(s) and successfully execute all mandatory and implemented optional commands. Successful certification allows the Product to be recognized by the Alliance as a Certified Product and use a Certified Product logo. A Compliant Platform is a fundamental building block of a Certified Product. With few exceptions (defined in this document), the use of a certified Compliant Platform is a mandatory prerequisite to assessment as a Certified Product.

2.8 Requirements for Certification

Certification may be awarded based on a Product's successful completion of the process defined in a Certified program (See Section 6 (Certification Programs)).

2.8.1 Membership

To submit a Product or Platform for certification or compliance testing and to be granted certification, a company must be a member in good standing of the Connectivity Standards Alliance. The Alliance has several different types of membership which are documented on its web site: <http://www.csa-iot.org>.

2.8.2 Conformance to Standard

Conformance is verified by testing performed by an authorized test laboratory and demonstrated by a test report documenting successful completion of the entire test plan including all test cases for mandatory features and test cases for any implemented optional features as identified by the PICS. The authorized test laboratories shall report any information relevant regarding the Product's conformance to a Standard in the test report.

2.8.3 Documentation of Product

The Connectivity Standards Alliance shall require information sufficient to identify a Product before granting certification including:

- 1) Declaration of Conformity (DoC or DOC):
 - a) Version numbers of Product hardware, software, and firmware
 - b) For a Product, a Stock Keeping Unit (SKU) and/or Universal Product Code
 - c) For a Product, the Compliant Platform upon which the Product is based
 - d) Signature of a representative of the Product manufacturer
 - e) Signature of a representative of the authorized test laboratory performing Product testing
- 2) Protocol Implementation Conformance Statements (PICS):
 - a) including mandatory and optional features supported by the Product
- 3) Non-declaratory information that is also requested:
 - a) Product description
 - b) Product photo

2.9 Process for Certification

The certification process begins after the manufacturer completes development of the Product or Platform to be certified.

Testing: Testing for conformance to a Standard is performed by Alliance authorized test laboratories using test plans developed by the Alliance. The Alliance maintains a list of authorized test laboratories on its web site at <http://www.csa-iot.org>. Each authorized test laboratory has a process for Product submission and will provide details on how to submit Products. All authorized test laboratories will require submission of a Declaration of Conformity and a Protocol Implementation Conformance Statement for the submitted Product. In order to successfully pass test plans, a Product must pass all mandatory test cases and any optional test cases that are applicable to the Product based on the functionality it supports. In addition to the explicit functionality being checked by the test cases, the submitted Product must not exhibit any behavior which is contrary to the behavior detailed in the underlying specifications, to be considered to have passed a test plan.

Reporting: Authorized test laboratories will submit test results directly to the Alliance.

Application: The Alliance grants certifications based on an application. The application is web based and is available in the Member's Area of <http://www.csa-iot.org> and consists of the information described in Section 2.8.3 above.

Processing: The Alliance staff processes applications under the direction of the Alliance Director of Certifications. Applications are processed for completeness to all requirements as described in Alliance policies including:

- Submission of all required documentation
- Membership in the Alliance
- Completion of testing
- Payment of applicable fees

Certification: Only Connectivity Standards Alliance may grant certification and a Product is only certified when the Alliance issues certification. The Alliance will issue certificates as evidence of successful certification.

An authorized test laboratory may occasionally submit non-compliant results to the Director of Certifications for him/her to make a decision on the issue of certification.

2.10 Certificates

The Connectivity Standards Alliance shall provide a certificate which will serve as evidence that a particular Product is CSA Certified.

2.11 Logo Usage

The Connectivity Standards Alliance owns the trademarks and logos that may be used to identify various Products that are CSA Certified.

Use of any Connectivity Standards Alliance trademarks and logos, including for labelling Products as certified by Connectivity Standards Alliance is limited to Alliance members and is subject to the Connectivity Standards Alliance Trademark and Logo Usage Guidelines and Terms available at www.csa-iot.org.

2.12 Length of Certification

Once a Product is certified, it remains certified for the lifetime of the Product unless Connectivity Standards Alliance revokes the certification or the Product is modified.

Modifications include any changes to the Product. However, not all modifications will require retesting of a Product in order to be certified. The Alliance maintains guidelines about modifications that require retesting and will determine whether retesting is required for any particular modification.

For complete information, refer to Section 3.6 (Certification by Similarity).

2.13 Revocation of Certification

The Connectivity Standards Alliance may also revoke certification or participation in the certification process if one or more of the following occurs:

- A Product is found to be hazardous as defined in ISO Guide 27-1983.
- The manufacturer has made any material misstatement of fact, or omission of fact, to the Alliance or its authorized test laboratories.
- The manufacturer fails to follow all Alliance certification requirements.
- The manufacturer fails to use Connectivity Standards Alliance trademarks and logos in accordance with the Connectivity Standards Alliance Trademark and Logo Usage Guidelines and Terms available at www.csa-iot.org. Examples of failure to use in accordance with the Connectivity Standards Alliance Trademark and Logo Usage Guidelines and Terms include (but are not limited to) misapplying logos/icons, and using logos with Products that have not been certified.
- The manufacturer has engaged in any form of misconduct which compromises the integrity of Connectivity Standards Alliance or the CSA Certified program.
- The manufacturer leaves Connectivity Standards Alliance and continues using logos, trademarks or any other Connectivity Standards Alliance branding.
- The member is in violation of the member agreement, other agreement with Connectivity Standards Alliance, or a Connectivity Standards Alliance policy or procedure.

Prior to revoking any certification, the Alliance shall notify the manufacturer with details and steps needed to resolve issues and take corrective action. After revocation, and the manufacturer made corrective action and successfully resolve all issues, the Alliance may, at its discretion, restore the certification or issue a new certification.

Corrective action shall follow ISO Guide 27-1983 “Guidelines for corrective action to be taken by a certification body in the event of misuse of its mark of conformity”.

2.14 Testing and Certification Fees

There are two fees associated with the CSA Certified program: testing and certification.

Testing fees are set by the individual authorized test laboratories.

Certification fees are set by Connectivity Standards Alliance and vary based on the type of membership in the Alliance. The current fee schedule is available at <http://www.csa-iot.org> or by contacting the Alliance.

2.15 Manufacturer-specific identification and information usage

Upon request, the Connectivity Standards Alliance assigns to a Member a manufacturer-specific identification which is maintained by the Alliance. An example of such a manufacturer-specific identification is a unique Manufacturer Code, maintained in the “CSA Manufacturer Code Database” [R6] or a unique pool of GPD SourceIDs, maintained in the “Zigbee Green Power SrcID database” [R7].

Member companies are responsible for obtaining the applicable manufacturer-specific identification prior to certifying a product with the Alliance, and for using it correctly.

Members are responsible for correctly identifying manufacturer-specific functionality, if any, following the Alliance technical specifications.

A company SHALL only use their own manufacturer-specific identification to identify their own devices and their functionality. Usage of another party’s manufacturer-specific identification is only permitted with a proof of consent of that party.

This usage policy also applies to the Certification Transfer Program. A company certifying a product via the Certification Transfer Program SHALL obtain its own manufacturer-specific identification to use within their newly certified product. Usage of the manufacturer-specific identification of the previously Certified Product is only permitted with a proof of consent of the manufacturer of that Product.

3 TESTING

This Section defines the process for testing that is common to Certification Programs and the final development of Certification Programs. Testing for conformance to CSA Standard or Stack is performed by Alliance authorized test laboratories using test plans developed by the Alliance.

3.1 Test Plans

The test plan must, at a minimum, cover all PICS related items. This must be confirmed by means of a PICS-to-Test-Case mapping. The test plan will undergo standard approval as part of the process detailed in Policies & Procedures (document 13-0625) before formal release. To be finalized, and approved, a test plan must undergo validation at a Specification Validation Event (SVE). More details regarding the SVE can be found in document 08-123 Test Event Rules of Engagement. Features that are certifiable are listed in document 11-5456 Master Cluster List.

The Connectivity Standards Alliance will maintain the list of current test plans, associated PICS, any errata on the Connectivity Standards Alliance website.

3.2 Authorized Test Laboratories

The Connectivity Standards Alliance authorizes independent test laboratories to administer the testing associated with the CSA Certified program. The process for selecting and qualifying test laboratories is maintained in document 08-5185.

The current list of authorized test laboratories is maintained at the Alliance web site: <http://www.csa-iot.org>.

3.3 Test Harness

A Test Harness is an automated test tool that is designed to execute a defined test procedure and deliver Pass/Fail decision based on the observed behavior of a Device Under Test based on well-defined criteria. Test harnesses could be in use in the various CSA Certified test programs.

3.3.1 Connectivity Standards Alliance Test Harness

The Connectivity Standards Alliance may have a Test Harness developed for use in one or more of its Certification Programs defined in this document. Where the Alliance has its own Test Harness, this harness shall be the one official Test Harness used by all authorized test laboratories in the execution of testing activities for the given Certification Program.

Maintenance of a Connectivity Standards Alliance Test Harness and associated test scripts is managed, updated and validated through existing Connectivity Standards Alliance processes (supported by member efforts).

3.3.2 Authorized Test Laboratory Test Harness

Where there is no applicable Connectivity Standards Alliance Test Harness available for a given Certification Program, Authorized Test Laboratories may (at their own discretion) create Test Harnesses (or other test tools) for the execution of the testing procedures associated with the given program. The Connectivity Standards Alliance shall have access to these Authorized Test Laboratories developed testing tool(s) for the sole purpose of auditing the service provider's conformance to the test validation procedures (See document 08-5185).

3.4 Requirements for Testing

3.4.1 Compliant Platform Testing

The guidelines for Compliant Platform testing are as follows:

- Platforms submitted for testing must be built on compliant IEEE 802.15.4 PHY/MAC layers, Compliance to IEEE 802.15.4 shall be determined by successful completion of the testing requirements described on document 14-0332 (Zigbee IEEE 802.15.4 Level Test Specification) at one of the Alliance authorized test laboratories,
- Manufacturers must provide any technical support structure required to assist in the implementation of their Product into the test environment,
- The test is non-destructive and will be applied using the functionalities given by the specific Platform tested, and
- Authorized Test Laboratories can provide more information.

3.4.2 Certified Product Testing

The guidelines for Certified Product testing are:

- A Product submitted for testing must be built on a certified Compliant Platform,
- Manufacturers must provide any technical support structure required to assist in the implementation of their Product into the test environment,
- The test is non-destructive and will be applied using the functionalities given by the Product tested,
- Authorized Test Laboratories can provide more information, and
- For the purposes of testing test (security) certificates are to be used.

3.4.3 Testing Samples

Manufacturer applying for certification must leave at least one sample of the Device Under Test (DUT), if required by the authorized test laboratory to satisfy ISO17025. These samples will be used for traceability and reference in case of future contention of results or when deemed necessary. A sample consists of:

- Exact hardware that the device will be certified on,
- Same firmware as the one the DUT passed the certification testing on, and
- Any software/tools pertaining to the device and its certification necessary to reproduce the test plan testing.

In the case where the authorized test laboratory in question already has the hardware configuration (from previous certification or otherwise), and if the authorized test laboratory has the tools (both hardware and software) needed to flash new firmware onto the devices, a manufacturer may simply send the authorized test laboratory a copy of the new firmware as the sample for the DUT.

3.5 Reporting of Test Results

Authorized test laboratory shall report results of successful tests directly to Connectivity Standards Alliance. Unsuccessful test results are not reported to the Alliance unless an application for certification has been made and the Alliance requests reporting of test results.

The test reports shall conform to reporting as defined by ISO/IEC 17025:2005 Section 5.10 and at a minimum shall include:

- Test Information: Location and dates of testing, any tracking or other information necessary to trace results such as test project numbers, responsible testing engineer,
- Tested Device: Company, address, contact information, Product name, hardware and software Product versions, serial number, device type, and other information necessary to identify the device,
- Certification Type: Compliant Platform, or Certified Product,
- Standards: Name and version information,
- Test Plan: documentation of Test Plan and version numbers used or a list of test cases if a complete test plan is not used,
- Test Equipment: Documentation of any equipment used in the test including Test Harness, script, sniffers, GUs, and other information necessary to identify the testing equipment including version information,
- Test Results: List of individual tests conducted with individual test results,
- Test Results Summary: Overall Pass / Fail,
- Test Results Observations: Observations outside the scope of the test cases, and
- Signatures: Test engineer, any reviewer or quality engineers.

3.6 Certification by Similarity

The Connectivity Standards Alliance offers a Certification by Similarity program. The program allows a Product that is derived from a previously tested and certified Product to be considered for certification based on its similarity to the tested certified Product depending on the differences between the two. The purpose of the program is to speed time-to-market and to minimize costs.

For complete information on this process See Section 7 (Certification by Similarity).

3.7 Testing Events

A Connectivity Standards Alliance Test Event is defined in document 08-0123 Test Event Rules of Engagement.

3.8 Features Not Previously Certified

A feature that has not been previously tested during an official specification Test Event cannot be certified. A feature is defined as an attribute of an implementation such as support for a particular cluster in a Connectivity Standards Alliance Standard. A feature becomes validated (and therefore testable and certifiable) only when the following condition(s) are satisfied:

Three separate implementations of the feature must be tested against three separate implementations of the complementary side of that feature (e.g. server against client) through Connectivity Standards Alliance:

- One of the implementations, but no more than one, may be a Test Harness from an authorized test laboratory.
- A “separate implementation” is defined as an implementation developed independently from other implementations by a different member of Connectivity Standards Alliance.
- When a test case is testing the handling of illegal or non-standard behaviour the requirement to test against three implementations is relaxed and testing against a single implementation (Test Harness or Golden Unit) that exhibits the non-standard behaviour is acceptable. Otherwise the requirement is to test against three implementations.
- The testing described above will be subject to the same rules and requirements as Specification Validation Events, defined in document 08-0123 Test Event Rules of Engagement.
- Once all testing is complete, the specifications for which the testing has been done shall be updated to reflect the change.
- For a device using a previously non-certifiable feature to become certified, all requirements for certification must be met including successful completion of the entire test plan as described in this policy.
- If three separate implementations are not available for testing, the feature cannot be validated. A device implementing that feature may not be certified and the manufacturer has a choice to either:
 - Wait for the other implementations to become available
 - Certify the rest of the Product and identify the non-certifiable feature(s) as Manufacturer Specific (i.e., cluster ID, profile ID, command ID, or other Connectivity Standards Alliance approved method)

4 GOLDEN UNIT

A Golden Unit (GU) is a Compliant Platform or a Certified Product that is designated as reference instantiation of the specification(s) it implements. A GU is a specific combination of hardware, software, firmware and/or errata including revision numbers for each. GUs represent an important infrastructure for Certification Programs.

GUs are used to test against Platforms and Products during the testing leading towards certification. Specifically, they are used for:

- Evaluating the expected behavior of the device under test (DUT)
- Testing the DUT for interoperability and conformance to the test specification

When the specification is silent or ambiguous, the behavior of the GUs will be used as the reference for evaluating the expected behavior of the device under test.

GU providers are Connectivity Standards Alliance members and are likely to have been actively involved in creation of the relevant specification and have been actively participating in the interoperability testing series in vendor-neutral environments. This represents a significant commitment by the GU manufacturers.

4.1 Golden Unit Selection

For each release of a specification, the following procedure will be used to establish GUs for that release.

The Connectivity Standards Alliance will announce a specification release interoperability testing series associated with the development of a new standard specification or the revision of an existing one. This interoperability testing series will constitute the GU selection round. During the development process for new (or revised) specifications there are three phases of testing:

- Phase 1. Proof of Concept & Interoperability Test Events – These events are held while the test plan is being developed and implemented to proof concepts being considered for inclusion in the specification and to begin testing and validation of early implementations.
- Phase 2. Gating Test Events – These events mark the end of the Proof of Concept & Interoperability Test Events. Participation at all prior Gating Test Events is required to continue participating in subsequent Gating Test Events. A variety of Gating Test Events may be scheduled.
- Phase 3. Specification Validation Event(s) (SVEs) – This is the final Gating Test Event where participants must test all mandatory features. Attendance at each Gating Test Event is required to participate in the SVE. Participation in a SVE implies a desire to become a Golden Unit.

Upon completion of the three phase testing series, implementations which have successfully completed the series will be eligible for certification provided that all testing requirements have been met at the final SVE.

Participation in the Specification Validation Event does not guarantee being selected as a GU. Implementations become GUs after completing certification and the Director of Certifications confirms in writing the GU candidate provider's conformance to Section 4.2 Manufacturer Commitments as a Golden Unit Provider.

The Director of Certifications shall select the GU candidates. The selection will be made from implementations that participated in the SVE with preference given to those that tested against the most implementations.

An additional requirement in becoming a GU provider is that the authorized test laboratory provides the GU test logs to Connectivity Standards Alliance which will post them to the document server. The Director of Certifications will work with the manufacturer in making the test log files anonymous.

During the GU selection process, GU candidates will be notified by the Director of Certifications with regards to any outstanding items required regarding their implementation in order to finalize its certification and

complete its selection as a GU. GU candidate providers will be provided with a timeframe by which all outstanding items must be completed by in order for their GU candidacy to remain valid. The timeframe for outstanding item completion will be the same for all GU candidates.

Upon the conclusion of the timeframe allowed for completion of outstanding items, the Director of Certifications will make final GU selections from those candidates that successfully completed all outstanding items. If there is an insufficient number of candidates within the prescribed timeframe, the Director of Certifications may extend the timeframe, which extension shall be applicable to all GU candidates. For purposes of determining an appropriate number of candidates, the Director of Certifications will make such determination based on the guidelines set forth in this policy.

Once the timeframe has expired (including any extensions), provided there are a sufficient number of GUs selected, the Director of Certifications will provide written notice to GU candidates that the GU selection process is closed. Any GU candidate who failed to complete its outstanding items by the date of the notice will not be eligible for selection as a GU. The Connectivity Standards Alliance member that proposed such failed GU candidate is eligible to participate in future specification revisions in accordance with the terms and conditions in this policy.

GUs must be established and provided to the authorized test laboratories before a Certification Program can be open to the Connectivity Standards Alliance general membership. The approved authorized test laboratories will then be in a position to commence testing of additional implementations as part of the certification process. A test program may not begin until GUs have been selected and provided to the authorized test laboratories.

4.2 Manufacturer Commitments as a Golden Unit Provider

4.2.1 Requirements for Compliant Platforms Golden Units

Manufacturers of GUs used for Compliant Platform testing shall:

- Implement all mandatory and optional functions;
- Act as a Zigbee Coordinator, Router and End Device;
- Support all device operations (*e.g.*, Zigbee Trust Centers, Network Managers, etc.);
- Allow for negative testing (*i.e.*, be able to produce stimulus that is incorrect, or in error, with respect to the Platform specification) as required by the test specification;
- Provide a clearly documented interface, including descriptive operational documentation, which enables the running of all test cases and the test specification;
- Maintain Compliant Platform status for that device, so long as the specification to which that device applies to is in effect, See Section 4.3;
- Provide technical support to the Zigbee authorized test laboratories for its ongoing use as a GU;
- Provide to each Zigbee authorized test laboratory, free of charge, as many units as specified by the Director of Certifications. The CSA authorized test laboratory may unpack, power on and test (*e.g.*, smoke test) each of the units prior to confirming to the Director of Certifications that the units have been delivered; and
- Make available additional GUs (to Alliance authorized test laboratories) for the purposes of breakage replacement (free of charge) and for additional purchase.

Written Confirmation of the Director of Certifications Required to Become GU – Implementations become GUs only after the Director of Certifications confirms in writing to the applicable manufacturer that such implementation has completed certification, has successfully completed all the items in Sections 4.1 and 4.2 and is a GU. No GU applicant may publicize, represent, reference, state or otherwise claim to have a GU or be the

manufacturer of a GU except with respect to the specific GU implementation for which the Director of Certifications has delivered a written confirmation as set forth above.

4.3 Updating Golden Units

4.3.1 Conditions for Updating Platform Golden Units

Updating of the GUs shall be determined by the Director of Certifications. Circumstances warranting updating a GU include:

- Approval of Change Control Board comments (CCB) that affect the behavior of the GUs
- Revision to the specification, test specifications or PICS document that affect the behavior of the GUs
- Errors or bugs are found in the GU
- A GU is not available anymore (discontinued, etc.)

4.3.2 Process of Updating Platform Golden Units

If an update is deemed necessary, Connectivity Standards Alliance shall send an official note to the GU manufacturer as well as authorized test laboratories detailing the following:

- Reasons for the need to update
- Timeline to update
- All supporting information/documentation to update (example: new specification revision, CCB references, specific bugs to fix, etc.)

Once the manufacturer implements the needed changes, the new revision(s) of the GUs need to be revalidated. Revalidation of a Golden Unit requires successful testing completion according to the retest requirements for Compliant Platform as described in Section 7 (Certification by Similarity). To the end of revalidating Golden Units, there are two possibilities:

- Set a Test Event for the manufacturers and test laboratory to attend and verify the changes. This Test Event shall be only open to those GU manufacturers and the test laboratory. At least one test laboratory shall attend that event.
- Send the new revision(s) of the GUs to all test laboratories who will then test them internally and submit the results to Connectivity Standards Alliance.

If the result of the testing is considered a pass the new revisions will then be officially accepted as the new GUs and the official list of GUs pertaining to that specification must be modified to reflect the changes.

The manufacturers shall then send the new GUs to all test laboratories (in case of a firmware upgrade, sending the revised firmware would be sufficient as long as test laboratories have the tools to upgrade the firmware on their units). At that point, the new GUs shall replace the old ones in official testing at the test laboratories.

Note that in case that new hardware is needed, the number of GUs to be sent to test laboratories shall be determined by the Director of Certifications.

If a GU manufacturer cannot update their units within the timeline specified by the Director of Certifications, the Director of Certifications can then decide to make a new request for a GU to replace that specific Platform/device.

Any Golden Unit going through the revalidation process, shall be removed from the active rosters of Golden Units until the revalidation process is successfully completed and all necessary updates (HW and/or SW) have been completed at all authorized test laboratories and shall not be used in the testing of units for the applicable Standard.

5 MODIFICATIONS AND REVISIONS

This Section described the process and requirements for certification when a Product has already been certified.

5.1 Modification of Products

Certification is awarded to particular version of a Product. Any modification to that Product will result in a new version and that version may not claim certification without going through the CSA Certified program.

The new version of the Product may not require testing in order to be certified. Changes that affect conformance to the Standard (hardware, firmware or software changes) will usually require testing. The Alliance maintains requirements for testing of changes to Products. For complete information, see Section 7 (Certification by Similarity).

The original version of the Product retains certification for the life of the Product, unless revoked by action of the Alliance.

5.2 Revisions to Specifications

In the interests of continuous improvement in the quality of the compliance program, Connectivity Standards Alliance may, from time to time, change the compliance testing procedures through a change to a test plan. Because a Product's certification is good for the life of the Product, there will be no requirements for manufacturers to go through certification again. However, Connectivity Standards Alliance encourages manufacturers to resubmit their devices to authorized test laboratories for verification of compliance to those changes.

The Connectivity Standards Alliance will maintain records sufficient to identify the version of a test plan under which certified Products were tested.

5.2.1 Grace Period for Testing

When a test plan or specification is revised, Connectivity Standards Alliance will declare a grace period during which manufacturers in their development cycles can still certify to an old test plan and specification. However, after the grace period is over, all devices going through certification must be tested against latest test plan and specification.

The work group creating the Standard will recommend a grace period for revisions affecting Products to be approved by the appropriate Technical Sub-Committee, the Marketing work group and the Board Stratcom when the specification has reached 1.0 status. This grace period will be based on the amount of changes introduced by the new specification and the current state of deployment of devices based on the previous version of the specification or similar considerations. The default grace period if the work group does not recommend a change is 6 months.

5.2.2 Major Revisions Affecting Interoperability

In exceptional circumstances, Connectivity Standards Alliance reserves the right to mandate resubmission of Compliant Platforms for testing against a revised Compliant Platform test plan. This may occur, for instance, where a serious deficiency in the test plan or process is uncovered, leading to Platform interoperability issues. In the event that the Alliance mandates such resubmission and the manufacturer fails to successfully complete such testing within the time specified by the Director of Certifications, the Alliance may move to revoke certification of the Compliant Platform.

6 CERTIFICATION PROGRAMS

This Section describes existing Certification Programs, in terms of requirements and additions to the common process. Except where noted, each Product or Compliant Platform Certification Program uses the common rules and process described in the previous Sections. When there is a choice of options (i.e. Golden Units or no Golden Units), or dependencies (e.g. Platform vs. Product) then this is described here.

6.1 Zigbee PRO Stack

The Zigbee PRO Stack may be used under a number of Standards. Each Standard specifies the Stack revisions that it requires, or at least the minimum required.

6.1.1 Zigbee PRO Compliant Platform Certification Program

The Platform implementation SHALL conform to these Stack specifications as appropriate to the declared PICS:

- 802.15.4 2011 or later as required by the Zigbee PRO specification
- Zigbee PRO specification
- Zigbee Green Power Proxy Basic and all other Zigbee Green Power components remain as optional features of the Zigbee PRO specification.
 - Any Platform which implements any of the Zigbee Green Power features (including Proxy Basic) will be subject to ALL applicable testing.
 - Upon successful completion of the certification process, Platforms implementing any Zigbee Green Power feature will be identified as such in the Compliant Platform listing on the Alliance's public website.

The program SHALL be defined by the following Sections, and specific Sections that pertain to a Compliant Platform (not a Product):

- 1) Section 2 CSA Certified Program
- 2) Section 3 Testing
 - a. Including Section 3.3.2 Authorized Test Laboratory Test Harness, but not 3.3.1 Connectivity Standards Alliance Test Harness
- 3) Section 4 Golden Unit
- 4) Section 5.2 Revisions to Specifications
 - b. The grace period SHALL be recommended by the work group as part of the 1.0 approval.

6.1.2 Legacy Profile Product Certification Program

A legacy Profile Standard is built upon the Zigbee PRO Stack. A Product implementation SHALL be built upon a Zigbee PRO Compliant Platform and conform to the Zigbee PRO Stack specification revision as required by the Profile Standard:

The Product implementation SHALL conform to these Standard specifications as appropriate to the declared PICS:

- Zigbee Cluster Library
- A legacy Profile Standard, such as ZHA, ZSE, ZLL, ZBA, etc.

The program SHALL be defined by the following Sections that pertain to a Certified Product (not a Platform):

- 5) Section 2 CSA Certified Program
- 6) Section 3 Testing
 - c. Including Section 3.3.2 Authorized Test Laboratory Test Harness, but not 3.3.1 Connectivity Standards Alliance Test Harness
- 7) Section 4 Golden Unit

8) Section 5.2 Revisions to Specifications

- d. The grace period SHALL be recommended by the work group as part of the 1.0 approval.

Note: After the grace period following the release of Zigbee 3.0 Standard, there will only be a Legacy Profile Product Certification Program for Zigbee Smart Energy (ZSE).

6.1.3 Zigbee 3.0 Product Certification Program

The Zigbee 3.0 Standard is built upon the Zigbee PRO Stack. A Product implementation SHALL be built upon a Zigbee PRO Compliant Platform and conform to the Zigbee PRO Stack revision as required by the Zigbee 3.0 Standard:

The Product implementation SHALL conform to these Standard specifications as appropriate to the declared PICS:

- Application Architecture
- Base Device Behavior specification
- Green Power specification requirements for a Zigbee Router (Green Power Basic Proxy)
 - a. Zigbee Green Power Proxy Basic is a mandatory feature for all Zigbee 3.0 routing capable devices. However,
 - i. If the Zigbee 3.0 routing capable Product was built using a Zigbee Pro Compliant Platform which implements (and was properly certified for) the Zigbee Green Power Proxy Basic feature and it has not been modified, the Zigbee 3 Product will only be subject to a SINGLE Zigbee Green Power Proxy Basic test case as follows:
 - 1. Test Case 5.3.1.4 if the Compliant Platform used was certified before August 1, 2017
 - 2. Test Case 5.4.1.23 if the Compliant Platform used was certified on or after August 1, 2017
 - ii. If the Zigbee 3 routing capable Product was built on a Zigbee PRO Compliant Platforms which DOES NOT implement the Zigbee Green Power Proxy Basic feature or HAS NOT been properly certified for it (or it has been modified), then the Product is subject to ALL applicable Zigbee Green Power Proxy Basic test cases.
- Zigbee Cluster Library
- One or more application device specifications

The program SHALL be defined by the following Sections that pertain to a Certified Product (not a Platform):

9) Section 2 CSA Certified Program

10) Section 3 Testing

- e. Including Section 3.3.1 Connectivity Standards Alliance Test Harness, but not 3.3.2 Authorized Test Laboratory Test Harness

11) Section 5.2 Revisions to Specifications

- f. The grace period SHALL be recommended by the work group as part of the 1.0 approval.

6.2 Green Power Device Stack

The Green Power Device Stack supports a single Green Power Device Standard. There is no Complaint Platform Program.

6.2.1 Green Power Device Product Certification Program

The Product implementation SHALL conform to these Standard specifications as appropriate to the declared PICS:

- 802.15.4 2011 or later as required by the Green Power specification
- Green Power specification requirements for a Green Power Device

The program SHALL be defined by the following Sections that pertain to a Certified Product (not a Platform):

- 12) Section 2 CSA Certified Program
- 13) Section 3 Testing
 - g. Including Section 3.3.1 Connectivity Standards Alliance Test Harness, but not 3.3.2 Authorized Test Laboratory Test Harness
- 14) Section 5.2 Revisions to Specifications
 - h. The grace period SHALL be recommended by the work group as part of the 1.0 approval.

6.3 RF4CE Stack

The RF4CE Stack supports a single Remote Control Standard.

6.3.1 RF4CE Compliant Platform Program

The Platform implementation SHALL conform to these Stack specifications as appropriate to the declared PICS:

- 802.15.4 2006 or later as specified by RF4CE specification
- RF4CE specification

6.3.2 Remote Control Product Certification Program

The Remote Control Standard is built upon the RF4CE Stack. A Product implementation SHALL be built upon a Zigbee RF4CE Compliant Platform and conform to the RF4CE Standard revision as required by the Remote Control Standard.

The Product implementation SHALL conform to the Standard specifications as appropriate to the declared PICS:

- ZRC specification

The program SHALL be defined by the following Sections that pertain to a Certified Product (not a Platform):

- 15) Section 2 CSA Certified Program
- 16) Section 3 Testing
 - i. Including Section 3.3.2 Authorized Test Laboratory Test Harness, but not 3.3.1 Connectivity Standards Alliance Test Harness
- 17) Section 4 Golden Unit
- 18) Section 5.2 Revisions to Specifications
 - j. The grace period SHALL be recommended by the work group as part of 1.0 approval.

7 CERTIFICATION BY SIMILARITY

The Connectivity Standards Alliance offers a Certification by Similarity program to member companies. The Certification by Similarity (CbS) program allows a CSA Product that is derived from a previously tested and certified CSA Product to be granted certification based on its similarity to a previously tested certified Product. The purpose of the CbS program is to speed time-to-market and to minimize certification costs. It is not intended to eliminate the requirement that a Product actually passes CSA compliance tests.

7.1 Policy

The only authority to grant Certification by Similarity to a Product is Connectivity Standards Alliance. No test laboratory or any other entity is authorized to grant or pursue Certification by Similarity requests on behalf of Connectivity Standards Alliance.

The new Product must be derived from and be substantially similar to a CSA certified Product that has successfully undergone full and complete compliance testing. CbS addresses changes such as color, enclosures, language, etc. that do not affect the conformance of the Product to CSA Standards. The new Product cannot be compared to another Product that itself has been granted Certification by Similarity without additional testing having been performed. More details on the guidelines that govern the CbS, and thus the need (or lack of) for testing, can be found in [Section 8.6](#) of this document.

If the original certified Product on which the Certification by Similarity is based is older than three years, then complete testing is required of the new Product.

CbS does not waive or change the requirement for certifiers of Products to be members of the Alliance, to follow the Connectivity Standards Alliance Trademark and Logo Usage Guidelines and Terms, or to comply with any policies of Connectivity Standards Alliance.

7.2 Certification by Similarity Guidelines

When Products are very similar, testing of one Product may allow the other similar Products to be added to the Integrators List (Approved List) without re-testing. Furthermore, some changes to certain Products may be deemed harmless to the existing certification for that specific Product, in which case the newer revision will automatically be certified by similarity.

The decision on whether or not a Product will qualify for Certification by Similarity (CbS) will be the responsibility of CSA's Certification body according to the procedure highlighted above. The ultimate responsibility for making sure that all Product variations and models are certified (whether through actual certification and/or via CbS), ultimately lies with each manufacturer.

Audits by Connectivity Standards Alliance that reveal discrepancies between shipping Product and samples tested may be cause for required re-test, revocation of certification, and/or legal action. Only Connectivity Standards Alliance members have the right to use the Connectivity Standards Alliance trademarks and logo, and such usage is subject to the Connectivity Standards Alliance Trademark and Logo Usage Guidelines and Terms.

7.3 Certification by Similarity Guidelines Procedure

- 1) An applicant (Product developer) submits a Testing Exemption Request Form (found below) at certification@csa-iot.org in lieu of testing.
- 2) When applicable, Connectivity Standards Alliance will obtain specification sheets/drawings of both the originally certified and new Products.
- 3) A review of the Testing Exemption Request Form and specification sheets/drawings will be performed by the Director of Certifications. One or more of the authorized test laboratories and/or other experts (e.g. Connectivity Standards Alliance Expert Review Panel) may be consulted by Connectivity Standards Alliance, keeping in mind the confidential sensitivities that come with an unreleased Product.

- 4) The Connectivity Standards Alliance will issue its assessment to the applicant within one (1) calendar week. One of two outcomes is possible:
- 5) Certification by Similarity is granted. The applicant must complete a standard application for certification in the www.csa-iot.org Member's Area and the Alliance will process the application as any other certification.
- 6) Certification by Similarity is denied. The Product is required to go through testing at one of the authorized test laboratories.

When testing is required the Product developer will follow standard procedures for testing and certification.

7.4 Guidelines for "Retest"

The guidelines for retests can be found in Section 8.6 of this document.

If you think retest is not required, your company can submit a Testing Exemption Request Form (provided below) for consideration by Connectivity Standards Alliance.

7.5 Testing Exemption Request Form

Companies must submit a Testing Exemption Request Form to certification@csa-iot.org for their Product/Platform/HW to be considered to be exempt from a spot check or full testing.

The form can be found in Section 8 (Testing Exemption Request Form).

7.6 Retest Requirements for Compliant Platform Certification

7.6.1 Retest not required

I/O additions on the dev board

7.6.2 Full retest required

Bug fixes that substantively affect the Platform functionality require a full retest.

7.6.3 Spot check required

A spot check tests specific areas affected plus random spot check of other areas against Golden Units.

- Porting of the Stack (with no changes) to a new hardware
- Bug fixes that do not substantively affect the functionality
- Update to the Stack (including non-Zigbee related code update)
- Microcontroller change (with the PHY/MAC staying the same)
- Addition of a new feature/module to the Zigbee firmware

7.6.4 IEEE 802.15.4 retesting required

See Retest requirements for 802.15.4 compliant radios

7.7 Retest Requirements for Certified Products

7.7.1 Retest not required

- Product packaging changes (color, shape, etc.)

- Changes in interface that do not affect CSA or Radio functionality (color display v/s B&W, push button light switch v/s paddle switch, etc.)
- HW configuration changes that do not affect ZB (changing location of a read switch, change of metrology, change of button location, etc)

7.7.2 Full retest required

- Addition/exposure of a new feature and/or cluster to the CSA firmware
- HW, SW or FW changes for the device(s) that the Stack and app are running on (with the exception of those items called out above in Retest not required)
- Layout change of the module used

7.7.3 Spot check required

Note: Considering that the level of effort and price to certify Products are relatively small, it would be cheaper and faster to retest fully if needed than deal with the procedures and maintenance of spot check requests and upkeep.

7.7.4 IEEE 802.15.4 retesting required

See 7.8 Retest Requirements for 802.15.4 Compliant Radios

Note: The exact nature of the IEEE 802.15.4 retesting needs to be defined. As part of regulatory Radio testing, Products have to be supplied with a number of test modes. It is intended that the IEEE 802.15.4 retesting would only use these existing test modes (to reduce the development burden on the Product manufacturer)

7.8 Retest Requirements for 802.15.4 Compliant Radios

7.8.1 Full retest required

- Change in Radio IC
- Changes in SW, FW affecting Radio functionality
- Changes requiring retest by regulatory authorities

7.8.2 Spot check required

- Change/Addition of a PA (All Tx tests shall be run, Rx tests shall be spot checked)
- Change/Addition of LNA (All Rx tests shall be run, Tx tests shall be spot checked)
- Change of all other components connected externally to the Radio IC
- Change in RF/EMI/EMR enclosures
- Change in packaging affecting RF/EMI/EMR characteristics
- Change in board layout

7.8.3 Retest not required

Change in I/O interface to the board

7.8.4 Spot check rules (Firmware/Platform)

- Full retest of functionality that has been changed or where bugs were fixed
- Full coverage of the all the other areas through spot check (one test case per function)
- In case of any failure on the spot check areas, the Product is considered as a fail and a full retest is needed

7.8.5 Spot check rules (PHY)

- Full test (all test cases) of the first and last channel in the band (Channel 11 and 26 for 2.4GHz)
- Spot check for the rest of the channels (2 channels per test case)
- In case of any failure during the spot check, the Product is considered as a fail and a full retest is needed

8 CERTIFICATION TRANSFER PROGRAM

The Connectivity Standards Alliance certification transfer program supports the use of a previously Certified Product from a Participant or Promoter member company as part of a new Product (from a member company). Participation in the Connectivity Standards Alliance certification transfer program is subject to the terms and conditions of the Connectivity Standards Alliance Certification Transfer Program Agreement.

8.1 Certification Transfer Program details

The Connectivity Standards Alliance certification transfer program supports the embedding of a previously Certified Product (from a Participant or Promoter member company) into a new Product enclosure from any member company. The previously Certified Product SHALL NOT be changed from its certified configuration (Read: No **hardware** changes other than a new Product enclosure and no **software** changes.) The only permitted **firmware** changes SHALL relate to manufacturer and device specific descriptions. The manufacturer of the previously Certified Product, registered for the Certification Transfer Program, MUST make provision to configure the manufacturer and device specific data without modifying (incl. recompiling) the firmware.

The originally Certified Product implementation SHALL conform to the following Standard specifications as appropriate to the declared PICS:

- Zigbee 3.0 Specification & requirements as defined in Section [6.1.3](#)
- Zigbee Smart Energy Specification & requirements as defined in Section [6.1.2](#)
- Green Power end devices as defined in Section 6.2.1.

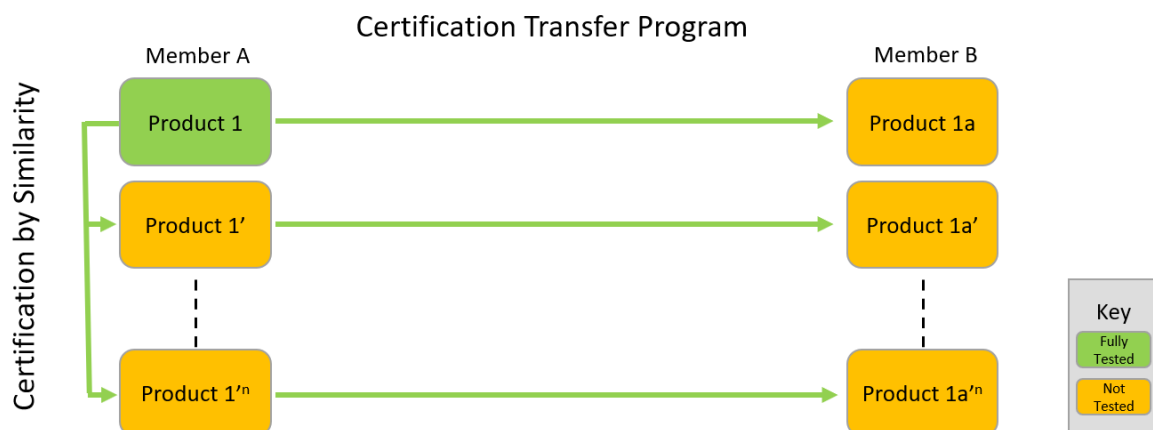
The original Certified Product implementation SHALL have obtained its certification by one of the following certification paths:

- Full testing in accordance with Section 2
- Certification by Similarity as per Section 7.7

Products certified under this program SHALL conform with all additional requirements below:

- Certifying Product SHALL seek certification under the same program, device type and device capabilities as the originally Certified Product.
 - Availability of certification is subject to the same timelines and grace period as the original programs.
- Certifying companies shall submit a Certification Transfer Application via the Alliance web tool, agree to the Connectivity Standards Alliance Certification Transfer Program Agreement and remit all appropriate fees as designated by the Connectivity Standards Alliance Board of Directors.

8.2 Graphical Representation of the Permitted Certifications



9 PRODUCT FAMILY CERTIFICATION PROGRAM

The Connectivity Standards Alliance offers a Product Family Certification program. For this program the Alliance defines a Product Family to be that where each member of the Product Family is a direct variant of a single Parent Product. The Parent Product SHALL be the most feature complete variant in the whole Family. The other products within the Family shall be termed Family Member Products of the Product Family. In addition, the differences between the variants must not affect the conformance of the Family Member Products to Alliance Specifications. Each Product Family Member must be of the same device type.

Examples of such Family Member Products are those with different regional power plug variants, or products which are depopulated or low-cost variants with less third-party physical interfaces. For the avoidance of doubt, Product Family Certification does not cover products which are Similar but not variants of a single Parent Product. Such similar products SHALL be certified using the Certification by Similarity Program.

This program allows a manufacturer to certify a Product Family, including multiple Family Member Products of the Family at the same time, on a single certification application, based on the Parent Product within the Family.

The purpose of the program is to speed time-to-market and to minimize costs, both for the Alliance and the certifying Member.

9.1 Product Family Certification Policy

The only authority to grant Product Family Certification to a Parent Product or a number of Family Member Products is the Connectivity Standards Alliance. No test laboratory or any other entity is authorized to grant or pursue Product Family Certification requests on behalf of the Connectivity Standards Alliance.

The Product Family Certification SHALL only allow changes between Product variants that do not affect the conformance of the Family Member Products to Alliance Standards.

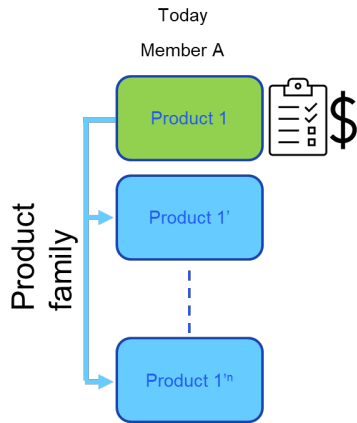
The Parent Product in a Product Family must be certified in one of two ways. Either the Parent Product has successfully undergone full and complete compliance testing. Or, the Parent Product qualifies for Certification by Similarity, based on another, fully tested product - provided, as per CbS rules, that the certification of that fully tested product is not older than three years.

The other Family Member Products in the Product Family must be variants of the Parent Product and be substantially similar to it, with the allowable changes not affecting conformance to Alliance Standards.

The Parent Product might have been originally certified as a single product, without any reference to the Product Family Certification Program, even before the launch date of the Product Family Certification program - provided, the certification of the Parent Product is not older than 3 years.

At the time of application for the initial Product Family Certification, the procedures and fees defined for the Product Family Certification program apply.

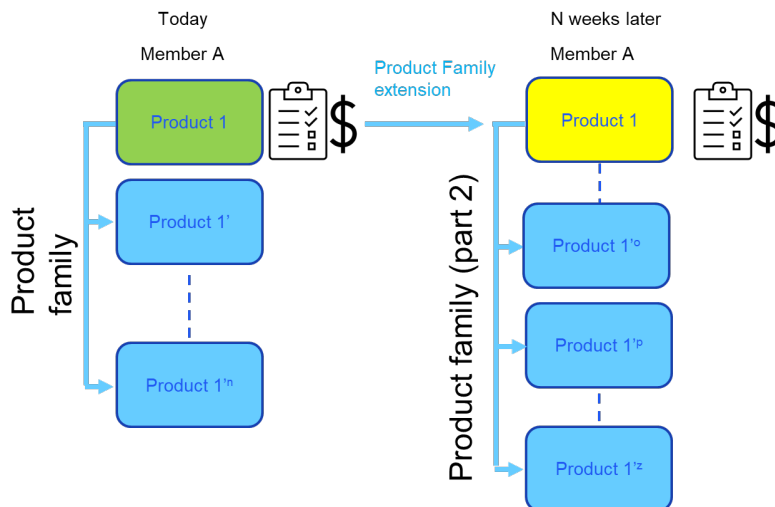
Product family: initial introduction



Parent Product, fully tested or full CbS documentation, incl. PICS, DB listing
Not tested, entry in the original product's DoC, no additional certification fee, DB listing
Reference to the Parent Product: incl. full documentation and PICS

Once a Product Family has been certified, it can be extended with further Family Member Products.

Product family: extension

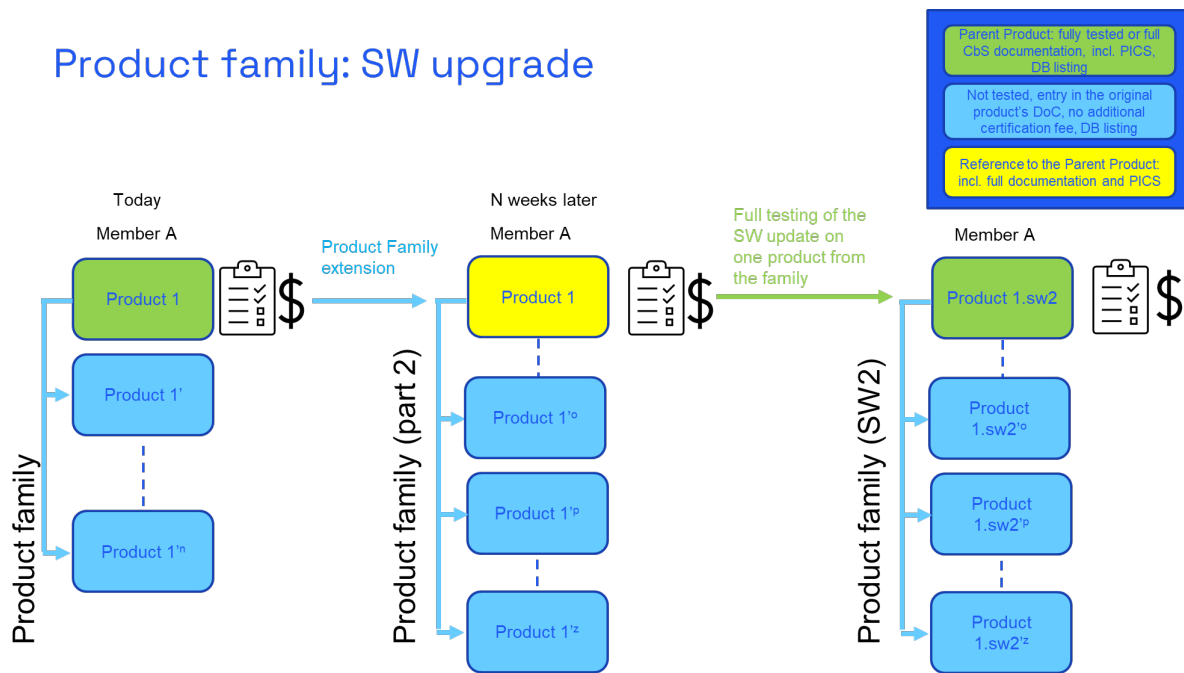


Parent Product, fully tested or full CbS documentation, incl. PICS, DB listing
Not tested, entry in the original product's DoC, no additional certification fee, DB listing
Reference to the Parent Product: incl. full documentation and PICS

The Product Family can also undergo recertification (for example in the case of updates to firmware).

More details on the guidelines that govern the Product Family Certification can be found in [Section 9.2](#) of this document.

Product family: SW upgrade



If the original certified Parent Product on which the Product Family Certification is based is older than three (3) years, then complete testing is required for the most feature complete product which will become the new Parent Product for that Product Family. Once this is completed, extensions with additional Family Member Products can be made.

Product Family Certification program does not waive or change the requirement for certifiers of products to be members of the Alliance, to follow the Alliance Trademark and Logo Usage Guidelines and Terms, or to comply with any policies of the Alliance.

9.1.1 Product family certification versus other certification programs

The table below provides examples illustrating applicability of the Product Family Certification program. It lists exemplary change type, i.e. different modified product features and components, and the resulting applicable certification program.

If a change type is not explicitly listed in the table, please contact the Alliance certification team for further guidance.

Table: Differences between 2 products of the same vendor – and the applicable certification program

How to read this table: The assumption is that a vendor A has a Parent Product X and another product Y, which differs from product X. Depending on what the difference is (as specified in the leftmost column of the table), a particular certification path will be applicable for product Y.

The table below applies equally in case of products X and Y submitted for certification at the same time (see section 9.3.1 Initial Procedure for submission for a Product Family Certification), and in case of product Y submitted later than product X (see section 9.3.2 Procedure to extend a Product Family Certification).

Each row of the table lists a single difference between the two products; all other product properties are assumed to be identical.

The table also applies for the case where there are multiple changes between two products. If they require different certification path, then the most demanding program is applicable; listed here from the least to the most demanding certification path: Product Family Certification, Certification by Similarity, Full testing.

A vendor can always choose to certify product Y via a more demanding program, including full testing.

Type of change in product Y compared to a fully tested product X	Examples of that type of change	Applicable certification program
Production/on-site configuration	Product name string, ManufacturerID string within the Basic cluster, other read only attributes of the Basic cluster (Requires same product base name, but may have different SKU numbers, ManufacturerID in the OTA image)	Product Family Certification
Production/on-site configuration	Same product sold under different brand names of sub-companies (local awareness for existing popular brand) in different geographies.	Product Family Certification
CSA Software other than configuration: disabling a feature, no other software change; no hardware change	Product X was certified with 2 identical endpoints, Product Y has 1 of those endpoints; there is no other change	Product Family Certification
CSA Software other than configuration: disabling a feature, no other software change	Product X was certified with 7 optional clusters, Product Y only has 4 of those clusters; no other change	CbS
CSA Software other than configuration: different attribute set/different feature set within a cluster	Product X was certified for a cluster with a set of optional attributes, Product Y has a different set of optional attributes in that same cluster e.g. different set of controls for the motor device; different color modes of the color control cluster of a light bulb; different type of occupancy sensor with different set of attributes;	Full Testing
CSA Software other than configuration: enabling a new feature	Product X was certified with 2 identical endpoints, Product Y adds 1 endpoints;	Full Testing
CSA Software other than configuration: enabling a new feature	Product X was certified with 7 optional clusters, Product Y only has 4 of those clusters, but adds 2 more optional clusters	Full Testing
CSA Software other than configuration: other changes in the code	Code refactoring, fixing a security bug, CCB fix; new stack drop	Full Testing
Software NOT affecting the CSA Software	new language for the UI, new driver for the USB port	Product Family Certification
Firmware (in case of multi-board solution: for (any) of the board(s) hosting CSA functionality)	OS update	Full Testing
CSA radio	Usage of different radio chipset	Full Testing

Electronics not affecting CSA radio	Different external power supply	Product Family Certification
Electronics not affecting CSA radio	Different power receptacle/connector pins	Product Family Certification
Electronics not affecting CSA radio	Adding/removing a neutral wire connection to existing dimmer	Product Family Certification
Electronics not affecting CSA radio	different wattage of a light source (more lumens)	Product Family Certification
Electronics not affecting CSA radio	different length of a light strip (more LEDs)	Product Family Certification
Electronics not affecting CSA radio	different width of blinds	Product Family Certification
Electronics not affecting CSA radio	adding USB port (there was none before)	CbS
Electronics not affecting CSA radio	Adding a second USB port	Product Family Certification
Electronics not affecting CSA radio	additional UI button	Product Family Certification
Electronics not affecting CSA radio	Removing 1 of 2 USB ports	Product Family Certification
Electronics not affecting CSA radio	Removing USB ports completely	CbS
Electronics not affecting CSA radio	2A light switch vs 10A switch	Product Family Certification
Electronics not affecting CSA radio	Circuit breaker with same functionality but different thresholds for action.	Product Family Certification
Electronics not affecting CSA radio	Smoke detector with same functionality but different thresholds for alarm.	Product Family Certification
Electronics not affecting CSA radio	Circuit breaker, 120V vs 200V vs 300V	Product Family Certification
Mechanical form factor/casing not affecting CSA radio	Different color of the casing	Product Family Certification
Mechanical form factor/casing not affecting CSA radio	different shape for the casing for a switch module (engine) [e.g. round /rectangular, square, e.g. due to regional requirements]	Product Family Certification
Mechanical form factor/casing not affecting CSA radio	Different finishing material of the casing for a switch module (engine)	Product Family Certification
Mechanical form factor/casing not affecting CSA radio	Different finishing/ material of a product casing (e.g. for indoor and outdoor)	CbS
Mechanical form factor/casing not affecting CSA radio	different color for the casing for a switch module (engine)	Product Family Certification

Mechanical form factor/casing not affecting CSA radio	different light bulb form factor,	Product Family Certification
Mechanical form factor/casing not affecting CSA radio	different socket for a light bulb (part of it being regionally-influenced)	Product Family Certification
Mechanical form factor/casing not affecting CSA radio	different cable connection terminals (e.g., screwed - Norway preference vs. screwless/spring-loaded – France preference)	Product Family Certification
Mechanical elements not affecting CSA radio	Different types of mechanical door lock mechanisms, as enumerated in the LockType attribute of the Door Lock cluster: e.g. dead bolt lock, mortise lock, latch bolt lock, tubular lock, dead latch lock. Locks with an without mechanical key override rim	CbS
Mechanical elements not affecting CSA radio	Door lock: type of keypad (e.g. pushbutton keypad or capacitive touch keypad)	CbS
In case of multi-board products: changing any of the boards		Full Testing

9.2 Product Family Certification Guidelines

The decision on whether or not a number of Products will qualify for Product Family Certification will be the sole responsibility of the Alliance's Certification body according to the procedure highlighted above. The ultimate responsibility for making sure that all product variations and models are certified (whether through full testing, via CbS and/or via Product Family Certification), lies with each manufacturer.

Audits by Connectivity Standards Alliance that reveal discrepancies between shipping product and samples tested or certified as part of a Product Family may be cause for required re-test, revocation of certification, and/or legal action. Only Connectivity Standards Alliance member companies have the right to use the Connectivity Standards Alliance trademarks and logo, and such usage is subject to the Connectivity Standards Alliance Trademark and Logo Usage Guidelines and Terms.

9.3 Product Family Certification Procedure

9.3.1 Initial Procedure for submission for a Product Family Certification

- 1) The applicant must complete a standard application for certification in the Alliance Member's Area at <https://csa-iot.org/>. An applicant (Product developer) submits applicable documentation of a Parent Product (incl. DoC, applicable PICS documents and, in case of Parent Product certified by full testing, the test results).
The Parent Product must either have successfully undergone full and complete compliance testing or it must qualify for Certification by Similarity, based on another, fully tested product.
- 2) The applicant extends the DoC with a list of all the Family Member Products of that Product Family to be part of the same certification application, listing their unique product identifiers and the differences with respect to the Parent Product for that Product Family. Those additional Family Member Products of the Product Family are expected to use the same HW, SW and FW as the Parent Product, and as indicated in the DoC.
- 3) When applicable, Connectivity Standards Alliance will obtain specification sheets/drawings of both the Parent Product and Family Member Products.

- 4) A review of the DoC will be performed by the Alliance Certification Team under the direction of the Alliance Director of Certifications. The review will encompass the assessment of the full documentation of the Parent Product and the Family Member Product list. One or more of the Authorized Test Laboratories and/or other experts (e.g. CSA Expert Review Panel) may be consulted by Connectivity Standards Alliance, keeping in mind the confidential sensitivities that come with an unreleased Product.
- 5) The Connectivity Standards Alliance will issue its assessment to the applicant within one (1) calendar week. One of two outcomes is possible:
 - a. Product Family Certification is granted for the Parent Product and all listed Family Member Products of the Product Family and the Alliance will process the application as any other certification.
 - b. Product Family Certification is denied for one or more Family Member Products of the Product Family.

Those Family Member Products for which Product Family Certification is denied, need to go through a different form of certification, as applicable: testing at one of the Authorized Test Laboratories or Certification by Similarity.

For the Family Member Products for which the certification is granted, including the Parent Product, the Alliance will process the application as any other certification.
- 6) At the time that the Product Family certification is issued, a unique Family identifier shall be assigned. This will uniquely identify the Family for certification purposes in the future.

9.3.2 Procedure to extend a Product Family Certification

Once a Product Family Certification has been issued, the original applicant of the Product Family may submit a new application to extend the Product Family by adding extra Family Member Products.

- 7) When extending the Product Family Certification, the applicant shall submit a new DoC which lists the originally certified Parent Product, the originally certified Family Member Products which continue to be part of this Family, and the new Family Member Products to be added. The DoC SHALL include the unique Family identifier (from step 6 in section 9.3.1) to reference the specific Family to be extended. The applicant SHALL provide a listing of the unique product identifiers of the Family Member Products and the differences with respect to the Parent Product that has undergone full testing (as listed in step 1 in section 9.3.1). Those additional Family Member Products of the Product Family are expected to use the same HW, SW and FW as the Parent Product, and as indicated in the DoC.
- 8) For such extension submissions, the Parent Product of the Product Family must have been certified against the applicable Alliance Standards less than 3 years prior to the submission date of the Product Family application for extension.
- 9) When applicable, Connectivity Standards Alliance will obtain new specification sheets/drawings of both the Parent Product and new Family Member Products to be added.
- 10) A review of the DoC will be performed by the Alliance Certification Team under the direction of the Alliance Director of Certifications. The review will encompass the assessment of the full documentation of the Parent Product (excluding the original test result) and the further Family Product Family list, to ascertain that the previously certified products are unmodified. One or more of the Authorized Test Laboratories and/or other experts (e.g. CSA Expert Review Panel) may be consulted by Connectivity Standards Alliance, keeping in mind the confidential sensitivities that come with an unreleased Product.
- 11) The Connectivity Standards Alliance will issue its assessment to the applicant within one (1) calendar week. One of two outcomes is possible:
 - a. Product Family Certification is granted for all the new listed Family Member Products of the Product Family and the Alliance will process the application as any other certification.
 - b. Product Family Certification is denied for one or more of the new listed Family Member Products of the Product Family.

Those Family Member Products for which Product Family Certification is denied, need to go

through a different form of certification, as applicable: testing at one of the Authorized Test Laboratories or Certification by Similarity.

For the new Family Member Products for which the certification is granted, the Alliance will process the application as any other certification.

9.3.3 Procedure to re-certify a Product Family

Once a Product Family Certification has been issued, the original applicant of the Product Family may submit a new application to re-certify the Product Family (e.g. because of a SW update due to fixing SW bugs).

- 12) The applicant SHALL submit a new DoC including the unique Family identifier (from step 6 in section 9.3.1) to reference the specific Family to be recertified.
- 13) The Parent Product of the Family as submitted for the Product Family recertification SHALL be the most feature rich device in this Family.
- 14) At the time of the recertification, all Family Member Products for which the certification is being applied for SHALL be listed in the application. Those Family Member Products may have been certified as part of original Product Family Certification (see sec. 9.3.1) and/or Product Family extension (see sec. 9.3.2).
- 15) The process for recertification shall then follow the steps 1-5 as detailed in section 9.3.1.

When testing is required the Product developer will follow standard procedures for testing and certification.

9.4 Procedure to re-certify products using the same HW, SW and FW

A vendor might have certified a number of products that are exactly identical in terms of their CSA-defined functionality: use the same HW (radio), SW and FW. If the SW/FW in those products requires update, and thus re-certification, the vendor is allowed to fully test the new software on one of the previously certified products and list the other previously certified products on the certification submission as part of Product Family Certification, so that all products can be recertified for the new software.

This procedure can be used regardless of how the products that are exactly identical in terms of their CSA-defined functionality have been initially certified: through full certification, CbS or Product Family Certification.

9.5 Product Family Certification vs Certification Transfer Program

Every certified Family Member Product can be offered for Certification Transfer Program.

10 CERTIFIED PRODUCTS SOLD IN SETS

If an individual product was certified with the Connectivity Standards Alliance, that product can subsequently be sold without any modification as a part of any set (e.g. blister pack) with other unmodified certified products, without a need for re-certification or registration of the product set as such.

11 TESTING EXEMPTION REQUEST FORM

Product Developer Information	
Company Name:	
Contact Name: (First, Last)	
Contact Email:	
Work Phone:	
Original Certified Product Information	
Product Name	
Software Revision:	
Hardware Revision:	
CSA Certificate ID	
Product Submitted for Testing Exemption	
Product Name	
CSA Specification(s) Rev.#(s) and any Errata at Time of Request	
Software Revision:	
Hardware Revision:	
<p>Note: Revision number is the number used to distinguish this specific build of the Product from a subsequent or prior one.</p>	

<p>Has the CSA Component Enclosure Changed? (Structural, Material or Density)</p>	<p>Yes: <input type="checkbox"/> <input type="checkbox"/> No: <input type="checkbox"/></p>
<p>If YES, Please Explain:</p>	
<p>Does the change expose new functionality?</p>	<p>Yes: <input type="checkbox"/> <input type="checkbox"/> No: <input type="checkbox"/></p>
<p>If YES, Please Explain:</p>	
<p>Has the firmware changed?</p>	<p>Yes: <input type="checkbox"/> <input type="checkbox"/> No: <input type="checkbox"/></p>
<p>If YES, Please Explain:</p>	

Has the Product driver changed (if applicable)?	Yes: <input type="checkbox"/> No: <input type="checkbox"/>
If YES, Please Explain:	

Signature: _____

Name (Print): _____

Date: _____