ZIGBEE ALLIANCE CERTIFICATION POLICY

June 14, 2018

Zigbee Alliance Document Numbers
Published as: 07-4842-10
Editor’s Copy: 15-0288 r09
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1 INTRODUCTION

This document defines policies related to ZigBee Certified, the certification and testing program of the Zigbee® Alliance. It describes:

- The Zigbee Certified Program
- Types of certification
- Levels of Certification
- Certification Programs
- Testing programs and authorized test service providers
- Golden Units and processes for selection and revision
- Certification by Similarity and Guidelines for Retesting

1.1 Scope and Purpose

This document defines the certification programs supported by the Zigbee 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 participation level of the Zigbee 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.

- 13-0625 Technical Structure, Process and Procedures
- 08-0123 Test Event Rules of Engagement
- 05-3739 Zigbee Certified Logo and Trademark Policy
- 08-5185 Qualification and Validation of Test Service Providers
- 11-5456 Master Cluster List

1.4 Abbreviations and Terminology

| 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 |
| DUT | Device Under Test |
## 2 Zigbee Certified Program

This section describes the general process and rules that are common for all certification programs.

### 2.1 Description

Zigbee Certified is the overall program which enables certification of Products and Compliant Platforms that conform to Zigbee 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 Zigbee Certified Product status.

Zigbee Certified generally follows international standards for the definition and operation of a certification program. In particular, Zigbee 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:

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<table>
<thead>
<tr>
<th>Golden Unit</th>
<th>A Compliant Platform or Certified Product chosen to be used as part of a Program to test interoperability.</th>
</tr>
</thead>
<tbody>
<tr>
<td>GU</td>
<td>Golden Unit</td>
</tr>
<tr>
<td>MAC</td>
<td>Media Access Control</td>
</tr>
<tr>
<td>ODM</td>
<td>Original Design Manufacturer</td>
</tr>
<tr>
<td>OEM</td>
<td>Original Equipment Manufacturer</td>
</tr>
<tr>
<td>PHY</td>
<td>Physical Layer</td>
</tr>
<tr>
<td>PICS</td>
<td>Protocol Implementation Conformity Statement (list of supported functions)</td>
</tr>
<tr>
<td>Platform</td>
<td>An implementation of a Stack</td>
</tr>
<tr>
<td>Product</td>
<td>An implementation of a Standard</td>
</tr>
<tr>
<td>Product Certification Program</td>
<td>A Certification Program validating a Product for purposes of certification</td>
</tr>
<tr>
<td>Program</td>
<td>see Certification Program</td>
</tr>
<tr>
<td>RF</td>
<td>Radio Frequency</td>
</tr>
<tr>
<td>SKU</td>
<td>Stock Keeping Unit (unique model identifier)</td>
</tr>
<tr>
<td>Stack</td>
<td>An approved set of base specifications upon which a Standard is built (e.g. Zigbee PRO, RF4CE, etc).</td>
</tr>
<tr>
<td>Standard</td>
<td>A 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).</td>
</tr>
<tr>
<td>Test Event</td>
<td>organized event to test and validate specification implementations</td>
</tr>
<tr>
<td>Test Harness</td>
<td>test harness that is developed by an authorized test service provider for use in executing testing and approved by the Zigbee Alliance</td>
</tr>
<tr>
<td>Zigbee product</td>
<td>Product</td>
</tr>
<tr>
<td>Zigbee standard</td>
<td>Standard</td>
</tr>
</tbody>
</table>
• Determination of Product characteristics: This is achieved through testing of submitted samples performed by independent authorized test service providers.
• 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.
• Licensing: Licensing refers to granting, suspending, or withdrawing the rights to use certificates or marks such as logos.

2.2 Testing Versus Certification

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

Only the Zigbee Alliance may grant certification.

2.3 Zigbee Responsibilities

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

2.4 Director of Zigbee Certified

The Director of Zigbee Certified shall be named by Alliance management and will be responsible for a variety of functions related to administering the Zigbee 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 Zigbee Certified has decision making authority in regards 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 Zigbee 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 service providers, the Expert Review Panel may be called on from time to time to provide other expert advice in regards to other matters such as review of test plans, review of interoperability concerns discovered in the field or to assist the Director of Zigbee Certified in resolution of disputes.

2.6 Appeals

The Zigbee 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 service provider or the Director of Zigbee Certified.

2.6.1 Appeals Process

The process for appeals shall be:
• Applicant shall send an appeal request to certification@zigbee.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 Director of Zigbee Certified or the Chief Executive Officer of the Zigbee Alliance shall be provided.

• The Director of Zigbee Certified and the Chief Executive Officer of the Zigbee Alliance shall consider the appeal.

• A preliminary decision shall be made either to take corrective action or to reject the appeal.

• If corrective action is to be taken, the Director of Zigbee Certified or the Chief Executive Officer of the Zigbee 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 take corrective action or to reject the appeal.

• If corrective action is to be taken, the Director of Zigbee Certified or the Chief Executive Officer of the Zigbee 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 Zigbee Certified or the Chief Executive Officer of the Zigbee Alliance.

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

2.6.2 Appeals Committee

The Zigbee 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 service provider. The Chief Executive Officer of the Alliance shall act as chairperson of the Appeals Committee.

In order to insure 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 Levels of Certification

The Zigbee Alliance offers two levels 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 for certification or compliance testing and to be granted certification, a company must be a member in good standing of the Zigbee Alliance. The Alliance has several different types of membership which are documented on its web site: [http://www.zigbee.org](http://www.zigbee.org).

#### 2.8.2 Conformance to Standard

Conformance is verified by testing performed by an authorized test service provider 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 test service providers shall report any information relevant regarding the Product’s conformance to a standard in the test report.

#### 2.8.3 Documentation of Product

The Zigbee 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 service provider 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 to be certified.

**Testing:** Testing for conformance to a Standard is performed by Alliance authorized test service providers using test plans developed by the Alliance. The Alliance maintains a list of authorized test...
service providers on its web site at http://www.zigbee.org. Each test service provider has a process for
Product submission and will provide details on how to submit Products. All test service providers 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, in order to be considered to have passed a test plan.

**Reporting:** Test service providers 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.zigbee.org and consists of the information
described in section 2.8.3 above.

**Processing:** The Alliance staff processes applications under the direction of the Director of Zigbee
Certified. 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 the Zigbee 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.

A test service provider may occasionally submit non-compliant results to the Director of Zigbee Certified for
him/her to make a decision on the issue of certification.

### 2.10 Certificates

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

### 2.11 Logo Usage

The Zigbee Alliance has created logos, interoperability icons, and text to be used to identify various Products
that are Zigbee Certified.

The “Zigbee Designations and Logo Policy” defines these and describes Zigbee trademarks that can be used by
member companies. This document is available as 05-3739.

### 2.12 Length of Certification

Once a Product is certified, it remains certified for the lifetime of the Product unless the Zigbee 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 Zigbee Alliance may also revoke certification or participation in the certification process if any 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 service providers.
- The manufacturer fails to follow all Alliance certification requirements.
- The manufacturer is misusing Zigbee Alliance trademarks. Examples of misuse include (but are not limited to) misapplying logos/icons, using logos with Products that have not been certified or otherwise not following the Zigbee Certified Logo and Trademark Policy.
- The manufacturer has engaged in any form of misconduct which compromises the integrity of the Zigbee Alliance or the Zigbee Certified program.
- The manufacturer leaves the Zigbee Alliance and continues using logos, trademarks or any other branding.
- The member is in violation of the member agreement, license, trademark, or bylaws.

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 Zigbee Certified program: testing and certification.

Testing fees are set by the individual authorized test service providers.

Certification fees are set by the Zigbee Alliance and vary based on the type of membership in the Alliance. The current fee schedule is available at http://www.zigbee.org or by contacting the Alliance.

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 Zigbee Standard or Stack is performed by Alliance authorized test service providers 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. In order 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 Zigbee Alliance will maintain the list of current test plans, associated PICS, any errata on the Zigbee Alliance website.

### 3.2 Authorized Test Service Providers

The Zigbee Alliance authorizes independent test service providers to administer the testing associated with the Zigbee Certified program. The process for selecting and qualifying test service providers is maintained in document 08-5185.

The current list of authorized test service providers is maintained at the Alliance website:

[http://www.zigbee.org](http://www.zigbee.org)

### 3.3 Test Harness

A test harness is an automated test tool that is design 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 Zigbee Certified test programs.

#### 3.3.1 Zigbee Alliance Test Harness

The Zigbee 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 service providers in the execution of testing activities for the given certification program.

Maintenance of a Zigbee Alliance test harness and associated test scripts is managed, updated and validated through existing Zigbee Alliance processes (supported by member efforts).

#### 3.3.2 Test House Test Harness

Where there is no applicable Zigbee Alliance test harness available for a given certification program, Authorized Test Service Providers 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 Zigbee Alliance shall have access to these Authorized Test Service Provider 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 Zigbee authorized test service providers.
- 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.
- Test service providers 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.
- Test service providers can provide more information
- For the purposes of testing test (security) certificates are to be used

3.4.3 Testing Samples

Vendor applying for certification must leave at least one sample of the Device Under Test (DUT), if required by the test service provider 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
- Any software/tools pertaining to the device and its certification necessary to reproduce the test plan

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

3.5 Reporting of Test Results

Authorized test service provider shall report results of successful tests directly to the Zigbee 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, Zigbee device type, and other information necessary to identify the device
- Type of Test: 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
3.6 Certification by Similarity

The Zigbee 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 Zigbee 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 Zigbee 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 the Zigbee Alliance:

One of the implementations, but no more than one, may be a Test Harness from an authorized test service provider.

A “separate implementation” is defined as an implementation developed independently from other implementations by a different member of the Zigbee 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.

In order 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 Zigbee 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 specifications it implements. A GU is a specific combination of hardware, software, firmware and errata including revision numbers for each. GUs represent an important infrastructure for Zigbee testing programs.

One or more 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
- Testing 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.

4.1 Golden Unit Selection

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

The Zigbee Alliance will announce a specification release interoperability testing series. This interoperability testing series will constitute the GU selection round. During the initial certification process of new specifications for platforms there are three phases:

Phase 1. Proof of Concept Test Events are held during which the test plan is fully developed and implemented to validate the specification or modify as required.

Phase 2. Gating Test Events mark the cutoff of Interop Test Events. Participation at all prior Gating Test Events is required to participate in subsequent test events.

Phase 3. The Specification Validation Event 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 Specification Validation Event. Participation in a SVE implies a commitment to become a Golden Unit

Upon completion of the interoperability testing series, platforms which have successfully completed the series will be eligible for certification.

Participation solely in the Specification Validation Event does not guarantee being selected as a GU. Platforms may become GUs subject to completing certification and conformance to Section 4.2 Vendor Commitments as a Golden Unit Provider.

The Director of Zigbee Certified shall select the GUs. The selection will be made from devices that participated in the Specification Validation Event with preference given to the devices that tested against the most implementations.

An additional requirement in becoming a GU provider is that the test service provider provides the GU test logs to the Zigbee Alliance which will post them to the document server. The Director of Zigbee Certified shall work with the vendor in making the test log files anonymous

GUs shall be established and provided to the test service providers before certification can commence. The approved test service providers will then be in a position to commence testing of additional platforms as part of the certification process. A test program may not begin until GUs have been selected.

GU vendors 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 vendors.
4.2 Vendor Commitments as a Golden Unit Provider

4.2.1 Requirements for Compliant Platforms Golden Units

Vendors 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 service providers for its ongoing use as a GU
- Provide ten units per Zigbee authorized test service provider (enough to support one site per Zigbee authorized test service provider), free of charge
- Make available additional GUs (to Zigbee authorized test service providers) during the 1st 6mo's for the purposes of breakage replacement and additional purchase

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 Zigbee Certified. 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, the Zigbee Alliance shall send an official note to the GU vendor as well as test service providers 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 vendor 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 service providers to attend and verify the
  changes. This test event shall be only open to those GU vendors and the test service providers.
  At least one test service provider shall attend that event.

• Send the new revision(s) of the GU to all test service providers who will then test them internally and submit the results to the Zigbee Alliance.

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

The vendors shall then send the new GUs to all test service providers (in case of a firmware upgrade, sending the revised firmware would be sufficient as long as test service providers 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 service providers.

Note that in case that new hardware is needed, the number of GUs to be sent to test service providers shall be determined by the Director of Zigbee Certified.

If a GU vendor cannot update their units within the timeline specified by the Director of Zigbee Certified, the Director of Zigbee Certified can then decide to make a new call 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 test service providers 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 Zigbee 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, the Zigbee 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 vendors to go through certification again. However, the Zigbee Alliance encourages vendors to resubmit their devices to test service providers for verification of compliance to those changes.

The Zigbee 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, the Zigbee 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, the Zigbee 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 vendor fails to successfully complete such testing within the time specified by the Director of Zigbee Certified, 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 Zigbee Certified Program
2) Section 3 Testing
   a. Including section 3.3.2 Test House Test Harness, but not 3.3.1 Zigbee Alliance Test Harness
3) Section 4 Golden Unit
4) Section 5.2 Revisions to Specifications
   a. 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):

1) Section 2 Zigbee Certified Program
2) Section 3 Testing
a. Including section 3.3.2 Test House Test Harness, but not 3.3.1 Zigbee Alliance Test Harness

3) Section 4 Golden Unit

4) Section 5.2 Revisions to Specifications

a. 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):

1) Section 2 Zigbee Certified Program
2) Section 3 Testing

a. Including section 3.3.1 Zigbee Alliance Test Harness, but not 3.3.2 Test House Test Harness

3) Section 5.2 Revisions to Specifications

a. 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):

1) Section 2 Zigbee Certified Program
2) Section 3 Testing
   a. Including section 3.3.1 Zigbee Alliance Test Harness, but not 3.3.2 Test House Test Harness
3) Section 5.2 Revisions to Specifications
   a. 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):

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


7 CERTIFICATION BY SIMILARITY

The Zigbee Alliance offers a Certification by Similarity program to member companies. The Certification by Similarity (CbS) program allows a Zigbee Product that is derived from a previously tested and certified Zigbee 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 Zigbee compliance tests.

7.1 Policy

The only authority to grant Certification by Similarity to a Product is the Zigbee Alliance. No test service provider or any other entity is authorized to grant or pursue Certification by Similarity requests on behalf of the Zigbee Alliance.

The new Product must be derived from and be substantially similar to a Zigbee 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 conformity of the Product to Zigbee 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 the requirement for certifiers of Products to be members of the Alliance, follow logo usage guidelines, or comply with any policies of the Zigbee 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 Zigbee’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 vendor.

Audits by the Zigbee Alliance that reveal discrepancies between shipping Product and samples tested may be cause for required re-test, revocation of certification, and/or legal action. Companies’ rights to use the Zigbee Logo are covered in the standard logo license agreement.

7.3 Certification by Similarity Guidelines Procedure

1) An applicant (Product developer) submits a Testing Exemption Request Form (found below) at certification@zigbee.org in lieu of testing.

2) When applicable, the Zigbee 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 Zigbee Certified. One or more of the authorized test service providers and/or other experts (e.g. Zigbee Alliance Expert Review Panel) may be consulted by the Zigbee Alliance, keeping in mind the confidential sensitivities that come with an unreleased Product.

4) The Zigbee Alliance will issue its assessment to the vendor 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.zigbee.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 service providers.

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 the Zigbee Alliance.

### 7.5 Testing Exemption Request Form

Companies must submit a Testing Exemption Request Form to certification@zigbee.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 9 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 Zigbee 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 Zigbee 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

This 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 or a non-member company) and the certification of this new product by leveraging the Certification by Similarity principles (described in this policy).

8.1 Certification Transfer Program details

This program supports the embedding of a previously certified product (from a Participant or Promoter member company) into a new product enclosure from any member or non-member company. The previously certified product SHALL not be changed from its certified configuration (read: no hardware nor software changes).

The originally Certified Product implementation SHALL conform to the 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 program SHALL be defined by the following sections that pertain to a Certified Product (NOT a Platform):

1) Section 2 Zigbee Certified Program
2) Section 7 Certification by Similarity Testing

Products certifying 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 and remit all appropriate fees as designated by the Zigbee Alliance Board of Directors.
## 9 TESTING EXEMPTION REQUEST FORM

<table>
<thead>
<tr>
<th>Product Developer Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company Name:</td>
</tr>
<tr>
<td>Contact Name: (First, Last)</td>
</tr>
<tr>
<td>Contact Email:</td>
</tr>
<tr>
<td>Work Phone:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Original Certified Product Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Name</td>
</tr>
<tr>
<td>Software Revision:</td>
</tr>
<tr>
<td>Hardware Revision:</td>
</tr>
<tr>
<td>Zigbee Certificate ID</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Product Submitted for Testing Exemption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Name</td>
</tr>
<tr>
<td>Zigbee Specification(s) Rev.#(s) and any Errata at Time of Request</td>
</tr>
<tr>
<td>Software Revision:</td>
</tr>
<tr>
<td>Hardware Revision:</td>
</tr>
</tbody>
</table>

Note: Revision number is the number used to distinguish this specific build of the Product from a subsequent or prior one.
**Detailed Differences:**

Note: Please explain in detail the differences between the Product currently on the Integrators List / Approved List and the item you are submitting for certification by similarity. (Please do not use terms that only your company or your specific industry understands.)

<table>
<thead>
<tr>
<th>Has the schematic changed?</th>
<th>Yes:</th>
<th>No:</th>
</tr>
</thead>
<tbody>
<tr>
<td>If YES, Please Explain:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Have any components changed (including RF hardware):</th>
<th>Yes:</th>
<th>No:</th>
</tr>
</thead>
<tbody>
<tr>
<td>If YES, Please Explain:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has the Zigbee Component Enclosure Changed? (Structural, Material or Density)</td>
<td>Yes:</td>
<td>No:</td>
</tr>
<tr>
<td>---</td>
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</tr>
<tr>
<td>If YES, Please Explain:</td>
<td></td>
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<tr>
<td>Does the change expose new functionality?</td>
<td>Yes:</td>
<td>No:</td>
</tr>
<tr>
<td>If YES, Please Explain:</td>
<td></td>
<td></td>
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<tr>
<td>Has the firmware changed?</td>
<td>Yes:</td>
<td>No:</td>
</tr>
<tr>
<td>If YES, Please Explain:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has the Product driver changed (if applicable)?</td>
<td>Yes:</td>
<td>No:</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
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<td>-------</td>
</tr>
<tr>
<td>If YES, Please Explain:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Signature: ____________________________________________

Name (Print): __________________________________________

Date: __________________________________________