ZIGBEE® ALLIANCE CERTIFICATION POLICY

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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
- Testing programs and authorized test service providers
- Golden Units and processes for selection and revision

ZigBee Alliance working groups and members contribute the content for this document. If you are interested in contributing to any of the groups and activities, we would welcome your participation in the relevant committees.

2 COPYRIGHT AND DISCLAIMER

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3 REFERENCES

3.1 Documents

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

Certification by Similarity – 09-5448

ZigBee Certified Logo and Trademark Policy – 05-3739

Qualification and Validation of Test Service Providers – 08-5185

Test Event Rules of Engagement – 08-0123

3.2 Abbreviations and Terminology

Table 1 – Abbreviations and Terminology

DUT	Device Under Test
GU	Golden Unit
MAC	Media Access Control
MSP	Manufacturer Specific Profile
OEM	Original Equipment Manufacturer
PHY	Physical Layer
PICS	Protocol Implementation Conformity Statement (list of supported functions)
Profile ID	Identification number of any application
RF	Radio Frequency
SKU	Stock Keeping Unit (unique model identifier)
ZARC	ZigBee Architecture Review Committee
ZQG	ZigBee Qualification Working Group

4 ZIGBEE CERTIFIED PROGRAM

4.1 Introduction

The ZigBee Alliance is a global ecosystem of organizations developing smart and innovative wireless standards enabling green products for consumers, commercial, and industrial markets. The Alliance provides green, low-power and open global wireless networking standards based on IEEE® 802.15.4 focused on monitoring, control and sensor applications.

The goal of the ZigBee Alliance is to provide innovative, reliable and easy-to-use wireless standards giving people control of their world like never before. Because no other standard delivers as many control choices for so many different types of devices, professionals from around the world design ZigBee solutions for global use helping make products both cost and energy efficient.

The ZigBee Alliance provides a unique combination of low-cost, low-power and robust standards across the consumer, commercial and industrial markets that have been recognized by numerous industry groups and governments. Because no other standards deliver as many control choices for so such a wide range of different types of devices, it is uniquely suited to address the needs of a variety of markets including energy management, home and commercial automation, health care, retail, telecom and consumer electronic devices.

4.2 Description

ZigBee Certified is the program which enables certification of products 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:

- 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.

4.3 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 individual products conform to ZigBee standards and that product manufacturers are conforming to all the relevant policies of the ZigBee Certified program.

Only the ZigBee Alliance may grant certification.

4.4 ZigBee Qualification Group

The ZigBee Qualification Group (ZQG) shall be responsible for development of policies related to certification (including this document) and working with other technical working groups on certification related issues. ZQG is made up of volunteers from member organizations of the Alliance.

4.5 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 ZigBee certified including processing of certification applications, issuing of certificates, consulting with ZQG 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.

4.6 Expert Review Panel

The Expert Review Panel is a team volunteers from member companies appointed by the ZQG and confirmed by the ZARC. The Panel provides expert technical advice to the ZigBee Certified program. The function of the Panel is defined in document 08-5815 "Qualification and Validation of Test Service Providers". An up-to-date list of the current Panel members is maintained at the front of the ZQG weekly call meeting minutes document.

Aside from their role in validation of test service providers, the Expert Review Panel maybe 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.

4.7 Appeals

The ZigBee Alliance shall have 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.

4.7.1 APPEALS PROCESS

The process for appeals shall be:

1) 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.
    a. Acknowledgement of receipt of the appeal by either the Director of ZigBee Certified or the Executive Director of the ZigBee Alliance.
2) The Director of ZigBee Certified and the Executive Director of the ZigBee Alliance shall consider the appeal.
    a. A preliminary decision shall be made either to take corrective action or to reject the appeal.
    b. If corrective action is to be taken, the Director of ZigBee Certified or the Executive Director of the ZigBee Alliance shall implement the corrective action.
    c. If the appeal is proposed for rejection, the appeal shall be forwarded to the Appeals Committee for consideration.
    d. A report on the status of the appeal shall be given to the applicant.
3) The Appeals Committee shall consider the appeal.
    a. A decision shall be made either to take corrective action or to reject the appeal.
    b. If corrective action is to be taken, the Director of ZigBee Certified or the Executive Director of the ZigBee Alliance shall implement the corrective action.
    c. If the appeal is rejected, the specific basis for rejection shall be documented.
4) A report on the final disposition of the appeal shall be given to the applicant by either the Director of ZigBee Certified or the Executive Director of the ZigBee Alliance.

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

4.7.2 APPEALS COMMITTEE

The ZigBee Alliance shall have a committee to address appeals. The Appeals Committee shall consist of the Executive Director of the Alliance, the chairperson of the ZQG and a representative of each authorized test service provider. The Executive Director 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.

4.8 Types of Certification

The ZigBee Alliance offers two levels of standards compliance – ZigBee Compliant Platforms and ZigBee Certified Products. A particular type of ZigBee Certified Product certification, Manufacturer Specific Profile certification, is available to products that do not use public application profiles.

4.8.1 ZIGBEE COMPLIANT PLATFORM

The ZigBee Compliant Platform program conducts a rigorous evaluation of all platforms before they can be engineered into products. Each platform is comprised of a radio and a microprocessor with storage running ZigBee firmware. The platform is tested for compliance to a ZigBee specification.

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 ZigBee Compliant Platform. ZigBee Compliant Platform certification is applicable to manufacturers of semiconductors and software and others intending to sell platforms that adhere to the ZigBee Alliance specifications to end-product manufacturers.

As shown in Figure 1 a ZigBee Compliant Platform certification consists of verifying conformance up to the ZigBee Compliant Platform layer.

4.8.2 ZIGBEE CERTIFIED PRODUCT

The ZigBee Certified Product program tests any product using an Alliance developed standard, or more technically, a public application profile. The product must be fully compliant to the standard and execute all mandatory commands successfully. Successful certification allows the product to be recognized by the Alliance as a ZigBee Certified product and use the ZigBee Certified product logo. A ZigBee Compliant Platform is a fundamental building block of a ZigBee Certified Product and use of a certified ZigBee Compliant Platform is a mandatory prerequisite to assessment as a ZigBee Certified Product

As shown in Figure 1 a ZigBee Certified Product certification consists of verifying conformance up to the ZigBee Certified Product or Manufacturer Specific Profile layers.

4.8.3 MANUFACTURER SPECIFIC PROFILE

ZigBee Manufacturer Specific certification addresses end products built upon a ZigBee Compliant Platform and using Manufacturer Specific (non-public) application profiles.

Testing is intended to ensure that products using these profiles can coexist with other products and networks. Manufacturer Specific Profile end products can be called ZigBee Certified Product in marketing and product related documentation. However, these products will not be able to bear the ZigBee Certified Product Logo on the product itself or the packaging.

Figure 1 illustrates how certifications map to the ZigBee Alliance Stack and Application Profile Types.

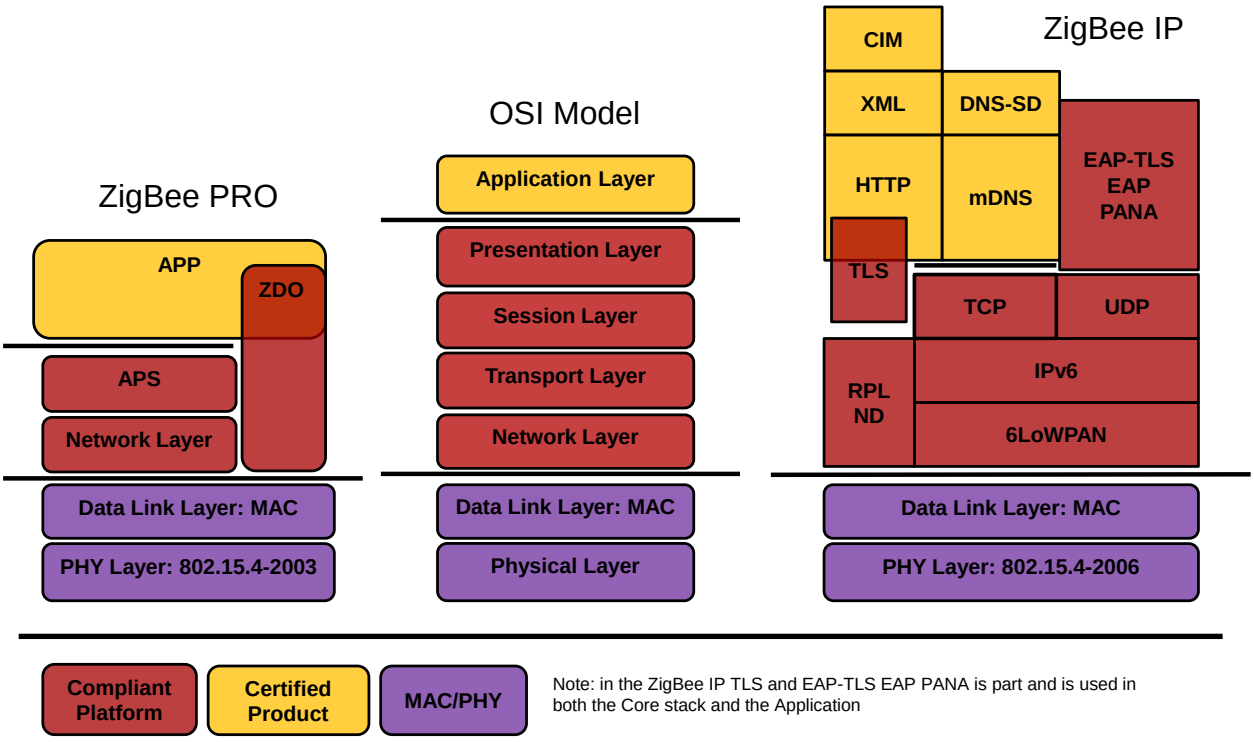

Figure 1 Example mappings of types of certifications.

4.9 Requirements for Certification

Certification may be granted to a product based on an application submitted to the ZigBee Alliance.

4.9.1 MEMBERSHIP

To submit a product for certification or compliance testing and to be granted certification, a company must be a member of the ZigBee Alliance. The Alliance has several different types of membership which are documented on its web site: http://www.zigbee.org

4.9.2 CONFORMANCE TO STANDARD

Certification shall be awarded based on a product's conformance to a ZigBee 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 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.

4.9.3 DOCUMENTATION OF PRODUCT

The ZigBee Alliance shall require information sufficient to identify a product before granting certification including

- Declaration of Conformity including:
  - Version numbers of product hardware, software, and firmware
  - For end products, a Stock Keeping Unit (SKU) and/or Universal Product Code
  - For end products, the ZigBee Compliant Platform upon which the product is based
  - Signature of a representative of the product manufacturer
  - Signature of a representative of the authorized test service provider performing product testing
- PICS including mandatory and optional features supported by the product
- Product description
- For all products, a product photo

4.10 Process for Certification

The certification process begins after the manufacturer completes development of the product to be certified.

1) ***Testing:*** Testing for conformance to ZigBee standards 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 unique processes 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 (platform or profile) in order to be considered to have passed a test plan.
2) ***Reporting:*** Test service providers will submit test results to the Alliance.
3) ***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 0 above.
4) ***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
   a. Submission of all required documentation
   b. Membership in the Alliance
   c. Completion of testing
   d. Payment of applicable fees
5) ***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 Certification for him/her to make a decision on the issue of certification.

4.11 Certificates

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

4.12 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.

4.13 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 "Certification by Similarity and Retesting Guidelines" document external reference 09-5448.

Figure 2 Sample ZigBee Certified Product logo with ZigBee Home Automation interoperability icon.

4.14 Revocation of Certification

The ZigBee Alliance may also revoke certification or participation in the certification process if any of the following occurs:

1) A product is found to be hazardous as defined in ISO Guide 27-1983.
2) The manufacturer has made any material misstatement of fact, or omission of fact, to the Alliance or its authorized test service providers.
3) The manufacturer fails to follow all Alliance certification requirements.
4) 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.
5) The manufacturer has engaged in any form of misconduct which compromises the integrity of the ZigBee Alliance or the ZigBee Certified program.
6) The manufacturer leaves the ZigBee Alliance and continues using logos, trademarks or any other branding in violation of member agreement 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".

4.15 Testing and Certification Fees

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

The ZigBee Alliance does not set testing fees. These are set by 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.

5 TESTING

Testing for conformance to ZigBee standards is performed by Alliance authorized test service providers using test plans developed by the Alliance.

5.1 Test Plans

It is the responsibility of the relevant technical working group to develop test plans.

For ZigBee Compliant Platforms, test plans are developed by the Core Stack Group. For ZigBee Certified Products, the work group responsible for a particular standard develops the test plan. For example, the Home Automation Working group develops the test plan used in certification for ZigBee Home Automation products. The work groups also develop PICS.

The test plan must, at a minimum, cover all PICS related items. Once completed the test plan must be passed to the ZQG for initial review prior to submission to the ZARC. The ZQG review will be advisory in nature and will provide feedback on the feasibility/practicality of implementing the tests detailed within the plan.

The test plan will undergo standard approval as part of the process detailed in ZARC policies (document 10-6112) before formal release. *In order to be finalized, and prior to becoming eligible for final ZARC approval a test plan must undergo validation at a Specification Validation Event (SVE). More details regarding the SVE can be found in document 08-0123.* Any features not certifiable as part of the initial approval will be marked as such within the document and will be approved at a later date in accordance with the procedures defined in document 11-5516.

The ZigBee Alliance will maintain the list of current test plans, associated PICS, any errata, and list of Golden Units (GUs) on the members' website.

5.2 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 web site: http://www.zigbee.org

5.3 Test Harnesses

Test harnesses may be developed by authorized test service providers for use in executing testing. The Alliance does not develop or distribute test harnesses.

Test harnesses are not certified by the Alliance unless they comply with all requirements of a ZigBee Certified Product. Only authorized test service providers may claim to provide test harnesses used in ZigBee testing.

5.4 Requirements for Testing

5.4.1 ZIGBEE COMPLIANT PLATFORM TESTING

The guidelines for ZigBee Compliant Platform testing are as follows:

- Platforms submitted for testing must be built on compliant 802.15.4 PHY/MAC layers
- 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 profile tested.
- Test service providers can provide more information

5.4.2 ZigBee Certified Product Testing

The guidelines for ZigBee Certified Product testing are:

- Devices submitted for testing must be built on already certified ZigBee Compliant Platforms
- 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 profile tested.
- Test service providers can provide more information
- For the purposes of testing test certificates are to be used

5.4.3 Testing Samples

Vendor applying for certification must leave at least two (2) instances of the Device Under Test (DUT) at the test service provider location. 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 testing

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. This would save the vendor from having to give out multiple sets of identical hardware.

5.5 Reporting of Test Results

Authorized test service provider shall report results of successful tests 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: ZigBee Compliant Platform, ZigBee Certified Product, or Manufacturer Specific 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
- Signatures: Test engineer, any reviewer or quality engineers

5.6 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 ZigBee 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 certification costs.

For complete information on this process see document 09-5448.

5.7 Testing Events

ZigBee Alliance Test Events provide a place for product developers to verify their interpretation and implementation of ZigBee standards. As such implementations are defined as products or other systems or devices which use a ZigBee Alliance standard or specification.

The Alliance documents information about test events and participation in document 08-0123 “Test Event Rules of Engagement”.

5.8 Features Not Previously Certified

A feature that has not been previously tested during an official specification validation 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:

1. 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. (This is the same requirement for testing in a new application profile or network stack.)
    a. One of the implementations, but no more than one, may be a test harness from an authorized test service provider.
    b. A “separate implementation” is defined as an implementation developed independently from other implementations usually by a different member of the Alliance.
    c. 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.
2. 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”.
3. Once all testing is complete, the documentation for the profile in which the testing has been done shall be updated to reflect the change. Per ZARC policy, the list of non-certifiable features must be listed at the front of the application specification.

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, command ID, or other ZigBee Alliance approved method)

5.8.1 Features Previously Validated in Other Profiles

For features that have been validated in other profiles during an official specification validation event the following applies:

- If a feature is tested (with a validated test plan and through test events) in a profile (A), that feature can be certified in any other profile (B) just by running the appropriate tests from that appropriate test plan (in this case, test plan of profile (A))
- The tests have to be run as part of profile (B), i.e. the profile ID of the device being tested under which the cluster is must be profile (B)
- No new testing event is needed

6 GOLDEN UNITS

Golden Units ("GUs") are ZigBee Compliant Platforms or ZigBee Certified Products that are designated as reference instantiations of the specifications they implement. GUs are a specific combination of hardware, software, firmware and errata including revision numbers for each. These GUs represent an important infrastructure for ZigBee testing 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
- 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.

6.1 Golden Unit Selection

For each release of a ZigBee platform or ZigBee profile 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 and profiles, there are three phases:

- Phase 1 - Interop 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 or products 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 or products may become GUs subject to completing certification and agreement to "Vendor Commitments as GU 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 test service provider shall work with the vendor in making the test log files anonymous if the vendor does not wish for the log files to be readily recognizable by other member companies.

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 or products 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.

6.2 Vendor Commitments as a Golden Unit Provider

6.2.1 Requirements for ZigBee 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 6.3
- 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

6.2.2 Requirements for ZigBee Certified Products Golden Units

Because GUs used for ZigBee certified product testing are not intended to implement functions that violate the profile specification, negative testing for product testing will not be implemented.

Vendors of Golden Units for certified product testing shall:

- Implement at least one ZigBee device within a ZigBee standard (e.g., Simple Metering Device of ZigBee Smart Energy standard)
- Support all the mandatory clusters of the ZigBee device type within a ZigBee standard as well as the optional clusters/features for which the device is a GU
- Provide descriptive operational documentation, which enables the running of test cases in the test specification
- Maintain certified device status for that device, so long as the specification to which that device applies to is in effect, see section 6.3
- Provide technical support to the ZigBee authorized test service providers for its ongoing use as a GU
- Provide an appropriate number of GUs to each authorized test service provider. The ZQG will specify the number of GUs required based on the requirements of the particular test plan. Typically, this number is 4 – 6 GUs per ZigBee authorized test service provider
- Make available additional GUs (to ZigBee authorized test service providers) during the 1st 6mo's for the purposes of breakage replacement and additional purchase

If the GU implements optional clusters, these supported optional clusters shall also be available for product testing.

6.2.3 Manufacturer Specific Profile

Testing of a ZigBee Manufacturer Specific (MSP) does not require the instantiation of specific MSP GUs. Any unit capable of reproducing the steps described in the test specification may be used for MSP testing.

6.3 Updating Golden Units

6.3.1 Conditions for Updating 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 GUs is not available anymore (discontinued, etc.)

6.3.2 Process of Updating the 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 revisions of the GUs need to be revalidated. To that end, 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 revisions of the GUs 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 GUs 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.

7 MODIFICATIONS AND REVISIONS

7.1 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 ZigBee standards (hardware, firmware or software changes) will usually require testing. The Alliance maintains requirements for testing of changes to products. For complete information, see document 09-5448.

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

7.2 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.

7.2.1 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 grace period for revisions affecting compliant platforms will be six months.

The work group creating the standard will recommend a grace period for revisions affecting end products to be approved by the ZQG. 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.

7.2.2 MAJOR REVISIONS AFFECTING INTEROPERABILITY

In exceptional circumstances, the ZigBee Alliance reserves the right to mandate resubmission of ZigBee Compliant Platforms for testing against a revised ZigBee 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

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