



LXI Consortium Policy for Certifying Conformance to LXI Consortium Standards

Version 1.5 LXI Specification

Revision 2.0

December 2018 Publication Date

Notice of Rights All rights reserved. This document is the property of the LXI Consortium. It may be reproduced, unaltered, in whole or in part, provided the LXI copyright notice is retained on every document page.

Notice of Liability The information contained in this document is subject to change without notice.

The LXI Consortium, Inc. makes no warranty of any kind with regard to this material, including but not limited to, the implied warranties of merchantability and fitness for a particular purpose. The LXI Consortium, Inc. shall not be liable for errors or omissions contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this material.

In publishing and making this document available, the LXI Consortium is not suggesting or rendering professional or other services for, or on behalf of, any person or entity. Nor is the LXI Consortium undertaking to perform any duty owed by any other person or entity to another. Any person utilizing this or any other LXI Consortium document, should rely on the advice of a competent professional in determining the exercise of reasonable care in any given circumstances.

Trademark LXI is a registered trademark of the LXI Consortium.

Revision history

<i>Revision</i>	<i>Description</i>
2.0 Dec 3, 2018	Changes for LXI Self Certification
1.5 Nov 8, 2016	Changes to reflect Version 1.5
1.4 Mar 6, 2011	Changes to bring document up to latest changes and decisions regarding the publication of LXI Device Specification 2011. Changed the word product to device in most cases. Updated Appendix for Applications for conformance. Updated dates for PVE and NVS.
1.3 Dec 16, 2010	Minor changes to dates and applications for conformance in appendix
1.2 Aug 8, 2010	Modifications conformance dates and technical justification
1.1 June 3, 2010	Modifications to adapt to new versions of the LXI Standard – LXI Device Specification 2010 and LXI Wired Trigger Bus and Terminator Specification
1.0 Aug 20, 2009	Draft from LXI Conformance Committee

LXI CONSORTIUM POLICY FOR CERTIFYING CONFORMANCE TO LXI CONSORTIUM STANDARDS.....	2
REVISION HISTORY	3
1 OVERVIEW	3
1.1 PURPOSE AND SCOPE OF THIS DOCUMENT.....	3
1.2 RELATIONSHIP TO LXI CONSORTIUM LEGAL POLICIES	3
1.3 DEFINITION OF THE TERM ‘LXI STANDARD’	3
2 GENERAL CONFORMANCE SPECIFICATIONS	4
2.1 INTRODUCTION.....	4
2.2 INTENT OF THE CONFORMANCE SPECIFICATIONS	4
2.3 GENERAL CONFORMANCE PROCESS.....	4
2.3.1 Introduction	4
2.3.2 Perform vendor In-House Testing.	4
2.3.3 Fulfill LXI Standard specific Conformance Requirements	4
2.3.4 Submit required Documentation.....	4
2.3.5 Actions by LXI Conformance Committee and Board of Directors	5
2.3.6 Conformant Devices Registry.....	5
2.4 CONFORMANCE CERTIFICATION TESTING METHODS	6
2.4.1 Introduction	6
2.4.2 Self-Certification	6
2.4.3 Certification by an authorized Test Laboratory	6
2.4.4 Certification by Technical Justification	6
2.5 CONFORMANCE GRIEVANCE PROCESS	7
2.5.1 Introduction	7
2.5.2 Raising Concerns.....	7
2.5.3 LXI Consortium Evaluation of Concerns	7
2.5.4 Arbitration	8
2.5.5 Censure.....	10
2.5.6 Closure.....	10
3 CONFORMANCE TO LXI WIRED TRIGGER BUS CABLE AND TERMINATOR SPECIFICATIONS.....	11
3.1 INTRODUCTION.....	11
3.2 VERSION SPECIFIC CONFORMANCE RESTRICTIONS.....	11
3.3 CONFORMANCE REQUIREMENTS SPECIFIC TO THE LXI STANDARD <i>LXI WIRED TRIGGER BUS CABLE AND TERMINATOR SPECIFICATION</i>	11
3.3.1 Conformance Testing.....	11
3.3.2 Additional required Documentation for Conformance Testing.	11
4 CONFORMANCE TO LXI STANDARD FOR LXI DEVICES	12
4.1 INTRODUCTION.....	12
4.2 VERSION SPECIFIC CONFORMANCE RESTRICTIONS.....	12
4.3 CONFORMANCE REQUIREMENTS SPECIFIC TO THE <i>LXI DEVICE SPECIFICATION 2016</i>	12
4.3.1 Conformance Testing.....	12
4.3.2 Additional required documentation for conformance testing.	13
4.3.3 Conformance Test Suites for LXI Conformance Testing	13
4.3.4 Use of the Conformance Test Suites by authorized Test Laboratories.	13
4.3.5 Certification of LXI Devices based on Technical Justification	13
4.3.6 Self-Certification of LXI Devices.....	17

1 Overview

1.1 Purpose and Scope of this Document

This document specifies the conformance policy of the LXI Consortium. The document includes general policy specifications applicable to all LXI Consortium standards as well as specifications applicable to each of the LXI Consortium standards.

1.2 Relationship to LXI Consortium Legal Policies

This document shall be interpreted in the context of the LXI Consortium document *LXI Consortium Trademark, Patent and Licensing Policies*. That document specifies the terms under which the LXI trademark and logo may be used as well as requirements relating to intellectual property rights.

The document *LXI Consortium Trademark, Patent and Licensing Policies* specifies that certification under the conformance specifications of this document must be obtained as a condition for obtaining a license to use the LXI Consortium trademark and logo in connection with any device claiming conformance to a standard of the LXI Consortium.

1.3 Definition of the Term ‘LXI Standard’

The term ‘LXI Standard’ shall refer to an approved standard owned by the LXI Consortium. Copies of these standards may be obtained from the LXI Consortium web site at the following location:
<http://www.lxistandard.org/Specifications/Default.aspx>

2 General Conformance Specifications

2.1 Introduction

The LXI conformance specifications define the general rules and agreements under which vendor shall apply and be granted permission to label their device with the LXI Logo, use the LXI logo in marketing literature and other collateral mediums, and advertise their equipment as conformant to an LXI Standard.

Regulatory requirements and governmental type approval requirements are outside the scope of the LXI Conformance specifications. It is the sole responsibility of the vendor claiming conformance of a device to a standard of the LXI Consortium to fulfill the applicable governmental or other industry regulatory requirements before device launch and use.

Passing the LXI Conformance Process demonstrates a certain measure of conformance and interoperability, but devices are not tested for every rule in the applicable LXI Standard.

The vendor has the ultimate responsibility to ensure that its device complies with the applicable LXI Standards and interoperates with other devices conforming to the same standards.

2.2 Intent of the Conformance Specifications

The Conformance Specifications are designed to ensure that the “Interoperability” goal of the LXI Consortium is met to the fullest extent possible while still allowing vendors to bring devices to market with the minimum of overhead in both time and cost.

2.3 General Conformance Process

2.3.1 Introduction

The major vendor initiated steps and responsibilities in the conformance process are outlined in subsections 2.3.2, 2.3.3 and 2.3.4.

2.3.2 Perform vendor In-House Testing.

Perform vendor in-house testing of the device to the applicable LXI Standard. This testing shall be guided by the conformance specifications in this document for the applicable LXI Standard. See sections 3 and 4.

2.3.3 Fulfill LXI Standard specific Conformance Requirements

Fulfill the conformance certification specifications for the applicable LXI Standard. See sections 3 and 4. Depending on the applicable LXI Standard, one or more of the certification testing methods of section 2.4 will be used.

2.3.4 Submit required Documentation.

Submit the required documentation to the LXI Conformance Committee at LXIConformance@lxistandard.org.

The required documentation consists of:

1. The version of the form '*Application for Certification to LXI Device Specification 2016*' applicable to the standard, see [LXI Specifications](#)
2. The documentation specified in any conformance requirements of the applicable LXI Standard and in the conformance specification of this document for the applicable LXI Standard
3. The documents required for use of the LXI trademark and logo as specified in the document *LXI Consortium Trademark, Patent and Licensing Policies*.
4. Any applicable license fee (applicable to non-members and university grade members seeking licensing).

2.3.5 Actions by LXI Conformance Committee and Board of Directors

The application and accompanying documentation will be reviewed by the LXI Conformance Committee. If the committee approves the application, it shall grant approval as a device conformant to the applicable LXI Standard. This approval shall include any conformance annotations required by an LXI Standard, e.g. LXI functional Core specification and Extensions for the *LXI Device Specification 2016*.

Approval shall be by an administrative action by the Chair of the LXI Conformance Committee if the application is complete and no issues are unresolved.

If the LXI Conformance Committee determines that only minor conformance deficiencies exist, it can grant a conditional approval. In this case the conditional approval must be accompanied by documentation clearly enumerating the deficiencies, and the plan and timetable for their resolution. Conditional approval may be converted to full approval upon resolution of the deficiencies to the satisfaction of the LXI Conformance Committee.

Received applications and documentation will be considered in turn at the next or at the 2nd regular meeting of the LXI Conformance Committee following the mandatory document distribution time specified in the *LXI Consortium Operating Procedures*.

Within two weeks after consideration by the LXI Conformance Committee, the LXI Consortium will notify the vendor that the application has been approved or denied. If approved the vendor has the rights to use the LXI Trademark and advertise their device as LXI Conformant in accordance with the restrictions stated in the applicable standard and the document *LXI Consortium Trademark, Patent and Licensing Policies*. If denied, the notification will explain why and detail what steps the vendor can take to resolve the issue(s).

2.3.6 Conformant Devices Registry

Devices receiving LXI Conformance Committee certification approval are listed in a publicly viewable registry maintained by the LXI Consortium:

<http://www.lxistandard.org/Products/ProductList.aspx>

2.4 Conformance Certification Testing Methods

2.4.1 Introduction

The LXI Consortium has specified the three mechanisms in the following subsections that meet the requirements of section 2.3.3 for demonstrating conformance to an LXI Standard. Which one(s) are applicable to a particular LXI Standard is specified in the section associated with that standard.

2.4.2 Self-Certification

Vendors of devices shall use normal in-house quality control procedures to verify that the device is conformant to all specifications in the standard.

If the standard provides options or includes specifications for multiple types of devices, only those options and types applicable to the device need be tested. However certification to options and types may only be applied for if the testing included these options and types.

An authorized representative of the vendor shall sign a statement certifying that the testing has been completed with all applicable specifications met as required by the applicable LXI Standard and any specific conformance requirements of the section of this document specific to that standard. The required statement is part of the '*Application for Certification to LXI Device Specification 2016*'

2.4.3 Certification by an authorized Test Laboratory

Vendors shall submit a representative sample of the device to one of the LXI Consortium approved test laboratories. Upon successful completion of the certification testing, the test laboratory will sign the appropriate section of the '*Application for Certification to LXI Device Specification 2016*' indicating that the conformance testing was successful.

This testing shall be conducted by vendor-initiated contact with test laboratory.

On occasion conformance testing to one or more LXI Standards is conducted by Consortium authorized test laboratories in conjunction with a general meeting of the Consortium. If a general meeting includes provision for conformance testing, an announcement to this effect will be sent to the general membership list of the Consortium. Vendors wishing to test device in conjunction with a general meeting must register their intent in response to this announcement and complete any registration material provided with the announcement.

If the testing is done in conjunction with a general meeting of the Consortium the presence of such a representative is required.

2.4.4 Certification by Technical Justification

By applying for approval based on Technical Justification the vendor asserts that it has a direct legacy from and traceability to an existing device that has already received approval from the LXI Conformance Committee or the LXI Board of Directors and with the certification testing to a particular edition of an LXI Standard done under the terms of section 2.4.3. Technical Justification is open only to LXI Consortium members. Technical Justification cannot be used for upgrades to a device to a more recent version of the applicable standard. See the section of this document pertaining to the applicable LXI Standard for any additional requirements for Technical Justification.

2.5 Conformance Grievance Process

2.5.1 Introduction

This section describes the LXI Consortium grievance process for resolving conformance, compatibility, and interoperability issues. This process

1. Provides a way for companies or individuals to raise concerns regarding illegitimate claims of conformance to an LXI Standard,
2. Provides a way for the LXI Consortium to evaluate those complaints in a timely and equitable fashion, and
3. Establishes how the LXI Consortium responds to both legitimate and false complaints regarding conformance to an LXI Standard.

2.5.2 Raising Concerns

To raise concerns about conformance to an LXI Standard, a company, or individual shall inform the LXI Consortium in writing of the complaint. The paper letter or email should be sent to the LXI Consortium contact address which can be obtained from the LXI Consortium web site at <http://www.lxistandard.org>. This letter must include:

1. Complete contact information for the person or company making the complaint.
2. The name of the vendor of the device in question that claims conformance to an LXI Standard.
3. The identification of the device in question including device name, model, general description, etc.
4. The software/firmware/hardware version of the device if applicable
5. Any compliance claims made about the device.
6. Description of non-conforming behaviour and/or misrepresentation of conformance in collateral mediums connected with the device.

2.5.3 LXI Consortium Evaluation of Concerns

When the LXI Consortium receives a complaint regarding conformance of a device to an LXI Standard, it will immediately notify the company that provides the device in question of the complaint. Within 30 days, the company must respond to the LXI Consortium. If the company does not respond, it is assumed to be claiming that there is no infraction and the arbitration process of section 2.5.4 will be started.

If the company confirms the infraction, it will be given six months (in addition to the remainder of the 30 day response period) to either correct the specific flaws in the device or collateral mediums in question or remove claims of compliance to an LXI Standard and the removal of any use of the LXI trademark or logo in connection with the device in question. If the situation is not corrected within six months, the LXI Consortium will begin the censure process of section 2.5.5.

If the company claims the device is conformant to the applicable LXI Standard, the arbitration process of section 2.5.4 is initiated.

If it is determined that the device in question was never submitted for or never received certification per the specifications of this document and the terms of the document *LXI Consortium Trademark, Patent and Licensing Policies*, the vendor will be notified by the LXI Board of Directors and given 30 days to initiate the conformance process specified in section 2.3 and the section(s) for the applicable LXI Standards. The LXI Consortium may in addition require that the vendor cease to use the LXI trademark or logo in connection with the device in question until the device is properly certified. The LXI Consortium may also take additional measures as outlined in the document *LXI Consortium Trademark, Patent and Licensing Policies*.

2.5.4 Arbitration

2.5.4.1 Arbitration Process

The arbitration process may be invoked under the conditions specified in section 2.5.3.

To resolve the complaint, a Conformance Review Committee, chartered as a subcommittee of the LXI Technical Committee, will review and comment on claims. The Technical Committee chairman is responsible for creating the Conformance Review Committee and ensuring that all members of the Technical Committee have an opportunity to volunteer for the Conformance Review Committee.

The Technical Committee chairman will initiate this process no later than the 2nd regular meeting of the Technical Committee after being notified of the dispute. The membership of the Conformance Review Committee shall be made up of volunteer members from the Technical Committee and they shall elect an impartial chair from their membership. The committee may include both a representative of the vendor of the device subject to the complaint and/or the person or company that initiated the complaint regarding the device in question neither of which persons are required to be a member of the Technical Committee.

The Conformance Review Committee will:

1. Review the complaint and all relevant documentation.
2. Discuss the problem either in person or via phone meeting with the vendor of the device in question.
3. Invite the vendor of the device in question to submit within 2 weeks any documentation to support a claim of conformance of the device in question, the correctness of collateral mediums related to the device, or other documentation that refutes the complaint in question.
4. After review of all documentation and any discussions with the complaining party and the vendor of the device or collateral mediums in question, the Conformance Review Committee will formulate an authoritative opinion regarding the facts of the matter. The committee shall create a document either stating that the device or collateral mediums in question appears to be conformant to the applicable LXI Standard or stating the specific problems with the device or collateral mediums in question, including references of the appropriate LXI Standards to which the device or collateral mediums in question is non-conformant.

The Conformance Review Committee shall find and report to the Technical Committee one of the following outcomes:

1. The flaw in the device or collateral mediums is found to be based on a lack of clarity in the applicable LXI Standard. In this case the Conformance Review Committee will forward the matter to the Technical Committee as a request for clarification using the form ***Request for Interpretation of an LXI Standard Document***. In this case the Technical Committee shall recommend to the Board of Directors that the vendor be granted a conditional conformance approval per section 2.3.5 subject to resolution after the applicable LXI Standard is clarified.
2. The device in question is found to be conformant to the applicable LXI Standard and was properly conformance certified as specified in this document, the ***LXI Consortium Trademark, Patent and Licensing Policies*** and that any applicable license fees were paid and that any collateral mediums associated with this device correctly represent this conformance and otherwise are consistent with the specifications in the ***LXI Consortium***

Trademark, Patent and Licensing Policies. In this case the matter is finished and no corrective action is required of the vendor with respect to the device in question.

3. The device in question is found to be non-conformant to the applicable LXI Standard or was not properly conformance certified as specified in this document and the **LXI Consortium Trademark, Patent and Licensing Policies** or that any applicable license fees were not paid or the conformance is misrepresented in related collateral mediums or is falsely or incorrectly using the LXI Consortium trademark or logo. If the vendor agrees in writing to remedy the situation, the vendor will be given one month from the time they are informed of the decision of the Conformance Review Committee to remedy the situation by either:
 - a. Updating the device and collateral mediums related to the device and obtaining conformance certification of the device as specified in this document, the **LXI Consortium Trademark, Patent and Licensing Policies** and the payment of any applicable license fees or
 - b. Removing the LXI trademark or logo on the device and any claims of conformance of this device to an LXI Standard in collateral mediums.

The Chairman of the Technical Committee shall verify that the Conformance Review Committee has completed the task assigned. If the tasks are not complete the Conformance Review Committee will be advised of the missing items. Once the documentation is complete the Chair of the Technical Committee shall report the findings to the Board of Directors, the complainant, and the vendor of the device or collateral mediums in question.

2.5.4.2 Outcomes of the Arbitration Process

If the complaining party or the vendor of the device or collateral mediums in question is not satisfied with the written conclusions of the Conformance Review Committee, the party or the vendor may summarize the situation in writing to the LXI Board of Directors and request they take action on it.

The Board of Directors shall review the findings of the Conformance Review Committee and any submission from the complaining party or the vendor of the device or collateral mediums in question. If it does not agree with these findings, a new Conformance Review Committee will be formed to repeat the work of the previous committee.

If the Board of Directors is in agreement with the Conformance Review Committee that the device in question is non-conformant to the applicable LXI Standard or was not properly conformance certified as specified in this document and the **LXI Consortium Trademark, Patent and Licensing Policies** or that any applicable license fees were not paid or the conformance is misrepresented in related collateral mediums or is falsely or incorrectly using the LXI Consortium trademark or logo, the vendor of the device in question shall remedy the situation by either:

1. Updating the device and collateral mediums related to the device and obtaining conformance certification of the device as specified in this document, the **LXI Consortium Trademark, Patent and Licensing Policies** and the payment of any applicable license fees or
2. Removing the LXI trademark or logo on the device and any claims of conformance of this device to an LXI Standard in collateral mediums.

Failure to remedy the situation within one month of notification shall result in censure as specified in section 2.5.5.

If the Board of Directors is in agreement with the Conformance Review Committee that the device in question is conformant to the applicable LXI Standard, was properly conformance certified as specified in this document and the *LXI Consortium Trademark, Patent and Licensing Policies*, that any applicable license fees were paid that the conformance is correctly represented in related collateral mediums and is correctly using the LXI Consortium trademark or logo, then no action is required of the vendor of the device in question and the complaining party shall be notified that their complaint has been found to be invalid.

2.5.5 Censure

If the vendor of the device or collateral mediums in question fails to remedy the situation in the prescribed period, the LXI Board of Directors shall take the following actions:

1. It shall pass a resolution indicating that the device in question is non-conformant to the applicable LXI Standard or was not properly conformance certified as specified in this document and the *LXI Consortium Trademark, Patent and Licensing Policies* or that any applicable license fees were not paid or the conformance is misrepresented in related collateral mediums or is falsely or incorrectly using the LXI Consortium trademark or logo and that the vendor has failed to correct this situation in the required time period.
2. It shall send a letter to the vendor of the device or collateral mediums in question stating that the provider is not allowed to use any LXI Consortium trademarks or logos in reference to the device in question.
3. It shall remove any registration information concerning the device in question from the publicly available LXI Consortium website.

At its discretion, the Board of Directors may also:

1. Remove the vendor of the device in question from the LXI membership as specified in the *LXI Consortium Operating Procedures*.
2. Issue a press release stating the conformance situation with respect to the vendor and problems with the device in question.
3. Take other actions specified in the document and the *LXI Consortium Trademark, Patent and Licensing Policies*.

2.5.6 Closure

All parties involved shall be notified of the results of the process.

If the vendor of the device in question subsequently corrects the problem by updating the device and collateral mediums related to the device and obtaining conformance certification of the device as specified in this document, the *LXI Consortium Trademark, Patent and Licensing Policies* and the payment of any applicable license fees, it may request that the LXI Consortium update its judgment on the LXI Device.

3 Conformance to *LXI Wired Trigger Bus Cable and Terminator Specifications*

3.1 Introduction

Section 3 specifies conformance requirements specific to the LXI Standard *LXI Wired Trigger Bus Cable and Terminator Specifications*

3.2 Version specific Conformance Restrictions

Certification is restricted to the versions of the *LXI Wired Trigger Bus Cable and Terminator Specifications* as specified below.

Certification shall be to Version 2.00, May 18, 2011 Edition.

3.3 Conformance Requirements specific to the LXI Standard *LXI Wired Trigger Bus Cable and Terminator Specification*

3.3.1 Conformance Testing

Conformance shall be by vendor self-certification as specified in section 2.4.2.

3.3.2 Additional required Documentation for Conformance Testing.

No additional documentation is required beyond that specified in sections 2.4.2 and 2.3.4.

4 Conformance to LXI Standard for LXI Devices

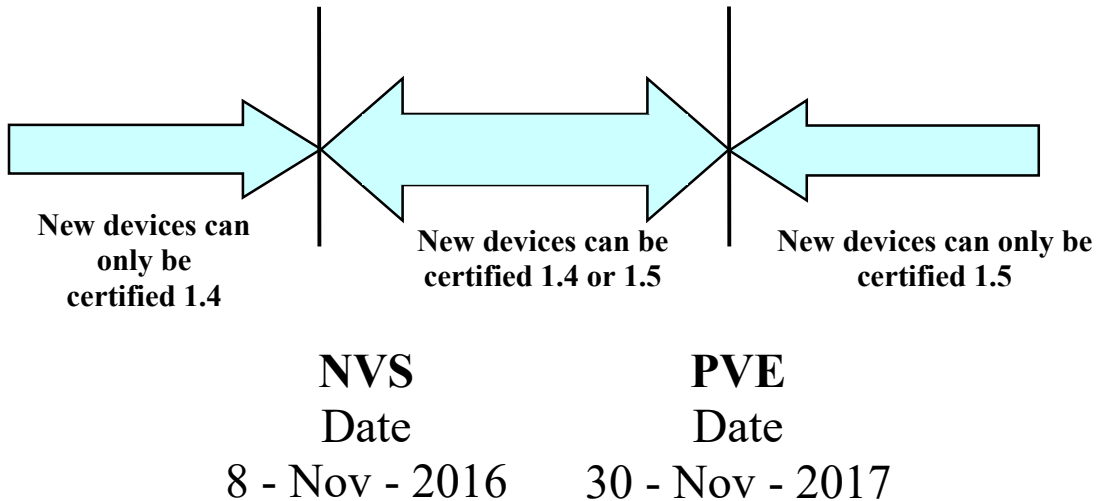
4.1 Introduction

Section 4 specifies conformance requirements specific to the previous LXI Standard - *LXI Device Specification 2011* and the new LXI Standard - *LXI Device Specification 2016*.

4.2 Version specific Conformance Restrictions

Certification is restricted to the versions of the *LXI Device Specification 2016* as specified below.

The Previous Version End (PVE) date is the date when the transition period ends. After the PVE Date, “New” devices can no longer be certified to Version 1.4 of the previous standard *LXI Device Specification 2011*. For Version 1.5 of the *LXI Device Specification 2016*, the PVE Date is Nov 30, 2017. The dates specified coincide with LXI Consortium Plugfests where certification of instruments is provided.



4.3 Conformance Requirements specific to the *LXI Device Specification 2016*.

4.3.1 Conformance Testing

There are three conformance options applicable to this standard:

1. Certification by an LXI Consortium authorized test laboratory per section 2.4.3.
2. Certification by technical justification per section 2.4.4.
3. Certification by self-certification per section 2.4.2

4.3.2 Additional required documentation for conformance testing.

No additional documentation is required beyond that specified in sections 2.3.4 and whichever of 2.4.2, 2.4.3 or 2.4.4 is applicable.

4.3.3 Conformance Test Suites for LXI Conformance Testing

The Consortium currently allows two different conformance test suites for all classes of LXI Devices as specified in the *LXI Device Specification 2016*:

- a) LXI Conformance Test Suite
- b) TSEP Kerberos Test Suite

The LXI Conformance Test Suite is the original test suite that has been updated as the LXI specification has evolved over the years. The LXI Conformance Test Suite is free to download from the LXI website. Access requires an account and is for LXI members only.

The LXI Conformance Test Suite with configurations for different versions of the *LXI Device Specification 2016* how to set it up, and example documents can be found at <http://www.lxistandard.org/members/Conformance%20Committee>

The TSEP Kerberos Test Suite is a test suite that requires a special piece of hardware that must be purchased from TSEP (www.tsep.com). You connect a computer to the Kerberos box with a LAN cable and plug the device under test into the Kerberos box. The software tests run on the Kerberos box and a remote-control software application runs on the computer.

Either one of the conformance test suites can be used by vendors for any in-house pre-certification testing prior to applying for conformance testing per section 4.3.4 and 4.3.5.

The TSEP Kerberos Test Suite is the conformance test suite which shall be used for conformance testing per section 4.3.6.

Both conformance test suites will be maintained as the LXI standard evolves.

4.3.4 Use of the Conformance Test Suites by authorized Test Laboratories.

Either one of the conformance test suites will be used as part of the certification process by Consortium authorized Test Laboratories.

4.3.5 Certification of LXI Devices based on Technical Justification

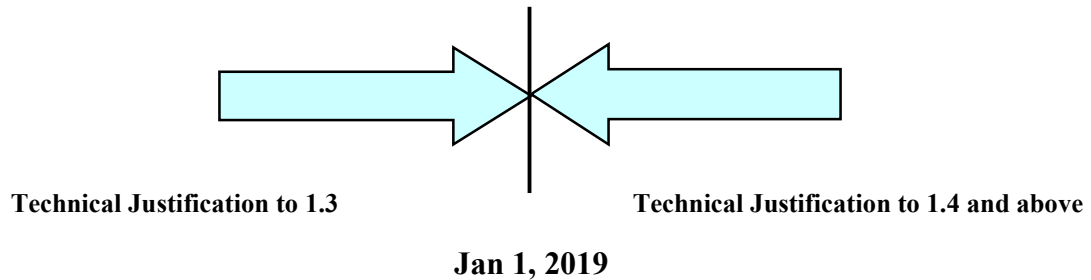
4.3.5.1 Introduction

A follow-on device that uses the platform of a previous device that has been certified to an earlier version of the LXI Device Specification can apply for Technical Justification to that prior version of the standard if the device can be shown to pass the original LXI conformance test for the earlier version and it has not undergone significant changes to the original LXI implementation code.

4.3.5.2 Version specific limitations to Technical Justification

Vendors are encouraged to update their follow-on devices to the latest version of the LXI Standard. Significant changes to device or platform are opportunities to make those updates. Newer versions of the LXI Standard enhance the interoperability of LXI Devices in a system environment and constitute a benefit to the customer.

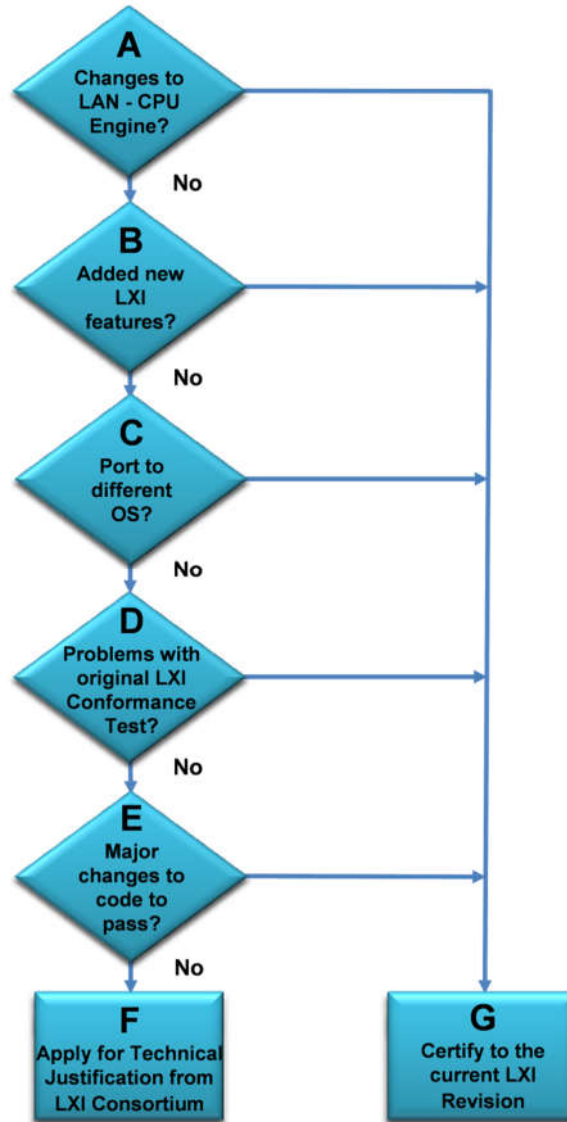
New devices built upon previous LXI compliant platforms conformant to version 1.3 of the LXI Device Specification will not be approved LXI Compliant by Technical Justification after **Jan 1, 2019**. Those new devices will have to adhere to Section 4.2 of this document related to version specific conformance requirements.



4.3.5.3 Requirements for Certification of an LXI Device Based on Technical Justification

To determine whether a device is eligible for certification to an earlier version of the LXI Standard based on Technical Justification, the requirements detailed in the flow chart below and the following annotations to that flow chart must all be satisfied. An authorized representative of the vendor is required to certify that these requirements have been met in the Technical Justification section of the form *Application for Certification to LXI Device Specification 2016*.

Technical Justification - Requirements Flow Chart:



The following sections explain the blocks in the above figure.

- A. Have there been changes to LAN or Compute engine?
 - o Some hardware changes are necessary over time to maintain device or platform viability and manufacturability. There is always a fine line between when a device undergoes so many changes in hardware (and resulting OS and firmware changes) and whether it should certify to the newest version of the standard. It is ultimately the Vendor's responsibility to determine whether such changes constitute a need to certify. If minimal changes to original LXI implementation code occur, and the

- instrument passes the original conformance test suite, it is reasonable to claim Technical Justification.
- However, with most changes to LAN or compute engine hardware, the Vendor should be prepared to certify to the newest version of the standard, since the operation of the original LXI implementation code is likely to change.
- B. Have new LXI Features been added?
- Most versions of the standard contain recommendations. If you add the Recommendation to the device, there is often a Rule you must adhere to for proper implementation of that function. Those Recommendations are deemed easy to verify, and the Vendor need only prove the functions work by internally running the Conformance Test Suite for the LXI Standard version used for the original certification. Proof of functionality of the newly added functions must be included with application for Technical Justification.
 - Adding Auto-MDIX is a Recommendation that includes no associated Rule. Therefore, no testing proof is necessary. However, this comes about by changing to a different LAN PHY and associated hardware and driver. Running Conformance Test Suite for the LXI Standard version used for the original certification should determine if there are changes to the LXI implementation code required. Changes to LXI implementation code in order to pass the conformance tests should be evaluated carefully by the vendor (see E).
 - Adding functions from newer revisions of the standard require Certification to the current revision of the standard.
 - If you are adding additional LXI Extension Functions, you must certify to the current revision of the standard. For example, if you add IEEE 1588 timing or LAN triggering, or the Wired Trigger bus, you must certify to the current version of the standard.
- C. Has the device been ported to a different OS?
- For example, changing from VxWorks to Windows or from WinCE to Windows IoT 10 are significant changes. In general, changing to a different OS can make a significant difference in the operation of the instrument.
 - Upgrading or patching the existing OS is not likely to cause significant changes to LXI implementation code. Issues may be found when re-running the original LXI conformance tests (see D).
- D. Has the device passed the original Conformance Test Suite for the applicable revision of the standard?
- The extent of the changes needed to pass the original Conformance Test Suite will be the ultimate determination of whether you need to certify to the newest version of the standard. If you have had to significantly change the LXI implementation code in order to pass the original LXI conformance tests, you must certify to the current revision of the standard.
 - You must send the results of your tests along with your application for Technical Justification together with the form '*Application for Certification to LXI Device Specification 2016*'.
- E. Are significant changes to code (or hardware?) needed to pass the original Conformance Test Suite?
- It is difficult to specify all the combinations of changes to a device that could cause it to fail conformance. Changes that affect LXI implementation code related to the operation of the LXI Functional Core and Extensions are of the most concern.
 - Examples of failures that simply need to be fixed until they pass and do not need to Certify are:
 - Adding or modifying web pages that have HTML defects

- Misspellings of text generated for web pages
 - Enabling LAN services that were inadvertently disabled by firmware due to common memory storage in flash or on disc.
 - Fixing errors in documentation or IVI Driver defects
 - Failures that need to be fixed and that are related to the operation of LXI Functional Core and Extensions require that the device be certified to the current revision of the standard. Examples:
 - Auto IP no longer works properly
 - DHCP server is disconnected and instrument does not attempt to renew its lease after the specified lease period expires
 - Instrument does not restart its LAN when reconnecting after Fault condition
 - Instrument not reporting correct host name or VISA resource string
 - Instrument not responding to Ping request
 - mDNS protocol no longer working properly
 - IEEE 1588 or LAN Triggering no longer works properly
- F. Apply for certification under Technical Justification
- Complete all requirements of section 2.4.4 and 4.3.5
 - Submit a copy of the application form for the specific standard ***Application for Certification to LXI Device Specification 2016*** along with the results of the LXI Conformance Test Suite from item D above to the Chair of the LXI Conformance Committee at

LXIConformance@lxistandard.org

- G. Certify the device to the current revision of the LXI Standard since Technical Justification is not applicable.
- Complete all requirements of section 2.4.3, 4.3.3 and 4.3.4

4.3.6 Self-Certification of LXI Devices

Self-Certification is restricted to LXI Consortium member companies in good standing using the TSEP Kerberos Test Suite for conformance testing per section 4.3.6.

Self-Certification is applicable for the *LXI Device Specification 2016* and the following LXI Extended Functions:

- LXI VXI-11 Discovery and Identification
- LXI HiSLIP
- LXI IPv6

Self-Certification Requirements for LXI Consortium Member Companies:

- Have at least one certified LXI device prior to the first application for Self-Certification.
- Use the TSEP Kerberos Test Suite for LXI conformance testing and keep it up-to-date.
- Provide either a principal or alternate representative trained and certified by an LXI Consortium-approved test house during LXI “Plug Fests” (meetings for conformance testing on new LXI instruments).

The LXI Conformance Committee will maintain a list of LXI member companies approved for self-certification.

An authorized representative of the LXI member company shall sign a statement certifying that the conformance testing with the TSEP Kerberos Test Suite has been completed with all applicable specifications met as required by the applicable LXI Standard and any specific conformance requirements of the section of this document specific to that standard. The required statement is part of the '*Application for Certification to LXI Device Specification 2016*'