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1. Overview

The OPC Foundation Certification program complements the existing OPC specifications that have been used to create many thousands of products available in the international market.

The scope of Certification is to establish a high level of quality to be achieved by all OPC based products to maximize interoperability, reliability and robustness, and usability.

The certification of a product is independent from any testing conducted by the manufacturer and is specific to the correct implementation and behavior of their OPC interfaces.

A certification test lab recognized and sanctioned by the OPC Foundation will conduct the testing as defined by the OPC Foundation Compliance Working Group. All work will be conducted within a controlled test environment, see section 13.1 Test Environment Preparation.

A product which passes all of the test requirements will be certified by the OPC Foundation and an official logo will be issued to CUSTOMER for their marketing material.

This specification describes the rules, validation, and testing defined within the OPC Foundation Certification program that all Certification Test Labs follow.
2. Reference Documents

The following references are required for applying for certification testing:

- Application Form: http://opcfoundation.org/certification/schedule-testing

The following references provide additional information to complement this specification:


The following specifications describe OPC technology used by the certification program:

- OPC DA 2.05a Specification http://www.opcfoundation.org/classic/da205a
3. Certification Specification

This specification defines certification program. Complementary test case documentation \(^1\) is defined for each of the OPC interfaces and/or technology that is available for testing and include:

<table>
<thead>
<tr>
<th>Specification Part</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certification Specification</td>
<td>Describes the certification program, the process, and the rules etc.</td>
</tr>
<tr>
<td>Test Cases – UA Server</td>
<td>Describes the tests and expectations that apply to an OPC UA Server.</td>
</tr>
<tr>
<td></td>
<td><a href="https://opcfoundation.org/developer-tools/certification-specifications/ua-server-test-cases/">https://opcfoundation.org/developer-tools/certification-specifications/ua-server-test-cases/</a></td>
</tr>
<tr>
<td>Test Cases – UA Client</td>
<td>Describes the tests and expectations that apply to an OPC UA Client.</td>
</tr>
<tr>
<td>Test Cases – Classic DA Server</td>
<td>Describes the tests and expectations that apply to an OPC Classic Data Access (DA) Server 2.05a and/or 3.0.</td>
</tr>
<tr>
<td>Test Cases – Classic DA Client</td>
<td>Describes the tests and expectations that apply to an OPC Classic Data Access (DA) Client 2.05a and/or 3.0.</td>
</tr>
</tbody>
</table>

\(^1\) All of the test case specifications are subject to ongoing improvements and changes as approved by the Compliance Working Group.
4. Terms and Definitions

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>CUSTOMER</td>
<td>An OPC Foundation member or non-member whose product will be tested.</td>
</tr>
<tr>
<td>Certification Test</td>
<td>A certification test lab that will conduct the independent certification</td>
</tr>
<tr>
<td>Lab</td>
<td>testing of an OPC product from an OPC Foundation member.</td>
</tr>
<tr>
<td>CTT</td>
<td>OPC Classic Compliance Test Tool; a specialized client that will connect to</td>
</tr>
<tr>
<td></td>
<td>an OPC Server to conduct automated tests to determine a Server’s compliance</td>
</tr>
<tr>
<td></td>
<td>to the OPC specifications.</td>
</tr>
<tr>
<td>Interoperability</td>
<td>The ability for an application to successfully communicate with and share</td>
</tr>
<tr>
<td></td>
<td>data with a product from another vendor.</td>
</tr>
<tr>
<td>OPC Analyzer</td>
<td>An OPC Classic DA2.05a and 3.0 Client/Server that resides between a Client</td>
</tr>
<tr>
<td></td>
<td>(being tested) and a Server, and is used to inspect OPC communications and</td>
</tr>
<tr>
<td></td>
<td>to conduct error injection tests.</td>
</tr>
<tr>
<td>UA CTT</td>
<td>The Unified Architecture Compliance Test Tool. A single tool that can test a</td>
</tr>
<tr>
<td></td>
<td>UA Server and/or UA Client. This tool combines the features of the CTT and</td>
</tr>
<tr>
<td></td>
<td>OPC Analyzer.</td>
</tr>
<tr>
<td>Plugins</td>
<td>A component that contains functionality used to extend an application’s</td>
</tr>
<tr>
<td></td>
<td>ability, when loaded.</td>
</tr>
<tr>
<td>Test Plan</td>
<td>A list of tests that a Certification Test Lab will use to test a test candidate.</td>
</tr>
<tr>
<td>Test Environment</td>
<td>The PC based environment, including the PC hardware, operating system,</td>
</tr>
<tr>
<td></td>
<td>device drivers, and any additional software and/or components etc.</td>
</tr>
<tr>
<td>Test Candidate</td>
<td>A product being tested in the Certification Test Lab.</td>
</tr>
</tbody>
</table>

5. Document Revision History

<table>
<thead>
<tr>
<th>Date</th>
<th>Revision</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 24, 2013</td>
<td>Initial version</td>
<td>1.0</td>
</tr>
</tbody>
</table>
6. Certification Test Lab

1) A “Certification Test Lab” is an independent entity that exists to conduct official certification testing of OPC products on behalf of the OPC Foundation.

2) OPC Foundation members (herein referred to as “CUSTOMER”) submit their product(s) to a Certification Test Lab for certification testing.

3) A Certification Test Lab must be officially sanctioned by the OPC Foundation.

4) A Certification Test Lab must operate in accordance with IEC 17025 General requirements for the competence of testing and calibration laboratories specification which describes the processes that a test lab must adhere to.

7. Certification Testing Services

7.1 Testing Services

1) Products adopting the following OPC Specifications are eligible for certification testing:
   a) OPC Unified Architecture
   b) OPC Classic Data Access 2.05a and 3.0

2) The scope of testing is covered in section 12 Test Coverage.

7.1.1 OPC Server testing

1) Includes the following testing services:
   a) **Compliance**: Tested against the Compliance Test Tool (herein referred to as “CTT”). Compliance testing also includes manual testing to be conducted by a Certification Test Lab engineer. See section 15 Test Tools.
   b) **Interoperability**: Tested against 5 Reference Clients. See section 15.3 Reference Products.
   c) **Robustness**: Tested for communications loss & recovery etc. See section 12.3 Robustness.
   d) **Efficiency**: Stress-tested over 36 hours. See section 12.5 36 hour Efficiency.
   e) **Usability**: Tested for best practices and other tests not possible via a CTT. See section 12.4 Usability.
7.1.2  OPC Client testing

1) Includes the following testing services:
   a) **Compliance**: Testing based on the manual testing and observations a Certification Test Lab engineer. See section 15 Test Tools.
   b) **Interoperability**: Tested against 5 Reference Servers. See section 15.3 Reference Products.
   c) **Robustness**: Tested for Server communications loss & recovery etc. See section 12.3 Robustness & Recovery.
   d) **Efficiency**: Tested over 36 hours (resource leak identification). See 12.5 36 hour Efficiency.
   e) **Usability**: Tested for best practices and other tests not possible via a CTT. See 12.4 Usability.

7.1.3  Hybrid products (Server AND Client)

1) A combination of testing listed in 7.1.1 OPC Server testing and 7.1.2 OPC Client testing.
7.2 Costs

1) OPC Foundation CORPORATE members are entitled to receive FREE testing services based on their membership classification:

<table>
<thead>
<tr>
<th>Classification</th>
<th>Number of OPC Products Per Year (credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>4</td>
</tr>
<tr>
<td>B</td>
<td>3</td>
</tr>
<tr>
<td>C</td>
<td>2</td>
</tr>
<tr>
<td>D</td>
<td>1</td>
</tr>
</tbody>
</table>

2) Free testing is currently offered at the Scottsdale, AZ Certification Test Lab facilities only; other labs may charge for testing products.

3) Testing services that are not covered as Free Testing will be charged at a rate of US$1,000 per day.

4) The costs for testing covers the following:
   a) Gathering data, information, and deliverables needed for conducting testing.
   b) Preparing the test environment.
   c) Conducting the certification testing.
   d) Preparing the test reports.
   e) One retest.

5) CUSTOMER must pay for work conducted by a Certification Test Lab, as agreed.

7.3 Failure to pay for PAID FOR services:

1) Certification Test Lab must report to the OPC Foundation a CUSTOMER that is not fulfilling their financial obligations.

2) The OPC Foundation, at its discretion, may conduct an investigation and invoke any disciplinary action it seems fit.

3) Certification Test Lab will be within its rights to refuse future work from CUSTOMER.

7.4 Additional Testing Services

1) Additional services may be provided at a Certification Test Lab for added value; different Certification Test Labs may offer different services.
8. **Certifiable Products**

1) Any product that contains interfaces based on an OPC specification is subject to certification testing.

2) Products that offer a “core” architecture where “plugins” seamlessly interact with that core require Certification testing. Additionally:
   a) The “plugins” themselves will become certified.
   b) The “core” or “framework” architecture itself will become inherently certified provided that a minimum of 2 plugins are used concurrently as part of the testing.
   c) CUSTOMER may ‘claim unofficially’ that their framework is certified, although the OPC Foundation website, official certificate, and all printed material must clearly state the plugins that were actually tested and certified.

9. **Certification Requirements**

1) A Certification Test Lab will only accept products for testing that are in a Release state.

2) OPC Server products must provide evidence they can pass all tests in the current version of the OPC Compliance Test Tool available at the OPC Foundation website.

3) OPC Client products must provide written assurance that a product has received error injection testing using current version(s) OPC Client testing tools provided at the OPC Foundation website.

4) The CUSTOMER must be willing to provide:
   a) A copy of any software and/or any hardware device(s) as necessary. See 13.2 Hardware required (to be obtained from CUSTOMER) and 13.3 Software Required by the Certification Test Lab (from CUSTOMER).
   b) All applicable LICENSES and DRIVERS.
   c) A CONFIGURATION to assist the Certification Test Lab in creating the test environment.
   d) A human resource who will be readily available to assist in the testing as well as provide help and assistance where necessary.

10. **Certification Process**

1) CUSTOMER will submit an application for testing and functionality checklist to the Director of Compliance, who will then:
   a) Conduct an assessment to verify the test candidate meets the criteria.
   b) Schedule a date for certification testing.
   c) Notify the CUSTOMER of the application status and test date.
   d) Notify and provide all information to the Certification Test Lab.
2) The Certification Test Lab will prepare the test environment:
   a) A Certification Test Lab may use a virtualized environment or a dedicated PC.
   b) A Certification Test Lab will create a test environment based on CUSTOMER specifications, such as: CPU, RAM, Disk Space, and architecture (x86, x64), Operating system etc.
   c) A Certification Test Lab will install and configure the environment as necessary to host the test candidate and facilitate all tests that will be conducted.
   d) Establish contact with a CUSTOMER technical resource; this may include orientation training of the product if an engineer will not be physically present at the Certification Test Lab.

3) The official certification testing will take place on the agreed date.

4) If a product passes the certification testing within a Certification Test Lab:
   a) CUSTOMER will receive detailed test reports of all testing that was conducted.
   b) CUSTOMER will be requested to review the test results and to submit any objections and/or complaints with regards any part of the testing conducted, see section 17 Complaints.
   c) An agreement will be sent and a signed copy must be returned to confirm that all testing services are complete and that any conclusion(s) determined by the Certification Test Lab are agreed. The Certification Test Lab will then:
      i) Issue the CERTIFIED logo and Logo License Agreement \(^2\) which must be signed by CUSTOMER and returned to Certification Test Lab.
      ii) Issue a Certificate number.
      iii) Issue an official (embossed) CERTIFIED certificate identifying the manufacturer, product, the interfaces tested, expiration date, and the Certification Test Lab that conducted the testing.
      iv) The OPC Foundation website will list the name of the product, version, and tested profiles.
      v) Formally close the test project.
      vi) Certification Test Lab will archive the test environment and any documentation.

5) If a product fails the certification testing within a Certification Test Lab:
   a) CUSTOMER will receive detailed test reports of all testing that was conducted, along with any supplemental information the Certification Test Lab may be able to provide.
   b) Certification Test Lab will schedule a retest date with CUSTOMER.
   c) Certification Test Lab may elect to invoice CUSTOMER for testing services rendered thus far, or to delay invoicing until testing is complete (assuming certification is achieved).

The logo license agreement is a formal agreement that describes the usage policy of the “Certified” logo. The agreement must be signed and returned to the OPC Foundation before a customer can display the logo.
11. Certification Rules

11.1 Certification Period

1) The Certification period is THREE (3) years commencing the date of Certification from an approved OPC Foundation Certification Test Lab and ending 36 months later upon the last day of the month.

2) Certification Extensions are permitted if the test candidate, the testing tools, and test cases have not changed since the last certification. The product is not required to be resubmitted to the lab and can be recertified as is.

11.2 Expiration

1) A product will lose its Certification status the day after the expiration date matures.

2) Products whose certification status has expired will be shown as not certified on the OPC Foundation website.

3) Use of the official certified logo is prohibited for products whose certification status has expired.

11.3 Certified Products, Maintenance Revisions and Releases

1) Product maintenance, revisions and new features are inevitable in all products. In some cases there will be a need to retest and recertify a product.

2) Products whose MAJOR version number changes are subject to recertification testing in the Certification Test Lab.

3) Products whose MINOR version number changes may be subject to recertification testing in the Certification Test Lab (see item 4 below).

4) Honesty: The manufacturer of the certified product is asked to exercise good judgment to determine if the changes made to their product justify recertification testing in the Certification Test Lab.

5) Fraudulence: A manufacturer who knowingly commits fraud by misrepresenting the certification status of their modified product will have their certification revoked (see section 11.4 Certification Revocation below).

11.4 Certification Revocation

1) The OPC Foundation may at its discretion revoke the Certification of a certified product.

2) If Certification is revoked and the CUSTOMER has not corrected the problem within a ninety (90) day grace period then the product will show as not certified on the OPC Foundation website.
11.4.1 Abuse of the System

1) Willful misrepresentation that a product is certified is considered an abuse of the system. This includes claiming Certification for a product not tested in a Certification Test Lab, claiming certification for functionality/behavior that was not tested, or claiming certification after the certification has expired etc.

11.4.2 Recalling of Work

1) A Certification Test Lab may recall the Certification status of a tested product when:
   a) Certification Test Lab identifies an area of the product that was not tested correctly or satisfactorily.
   b) If the testing conducted within a Certification Test Lab was later found to be defective/incorrect.

2) If a recall occurs then:
   a) Certification Test Lab must submit in writing to CUSTOMER the justification for the recall.
   b) CUSTOMER will have NINETY (90) days with which to work with the Certification Test Lab including any engineering time and retesting services.
   c) The cost of retesting is forfeited by the Certification Test Lab.

12. Test Coverage

1) Test coverage and all test cases are defined by the Compliance Working Group and are defined in detail in external Test Case documents which are accessible to all OPC Foundation members. See section 3 Certification Specification.

2) Certification testing of OPC products is intended to provide as much coverage of the OPC Specifications as possible. This statement acknowledges that some areas of the OPC Specifications cannot be tested.

3) The scope of testing conducted by a Certification Test Lab is expected to continually evolve and improve. However, the scope of testing conducted will remain in synchronization with the test case specifications that are available to the membership.

12.1 Compliance

1) An OPC Server must be able to pass all applicable tests within the OPC Foundation Compliance Test Tool. If one or more failures are encountered then the test is considered a failure.

2) Compliance tests that cannot be automated will be performed manually by a Certification Test Lab engineer and are also expected to pass; a single failure means the test is considered a failure.

3) An OPC Client must be able to pass all of the applicable error injection tests contained within the OPC Foundation OPC Analyzer (for OPC Classic) or OPC UA CTT (for Unified Architecture). If one or more failures are encountered then the test is considered a failure.
4) Hybrid products (those that are both an OPC Server and an OPC Client) will be subject to the tests defined for each product type as defined in points 1) and 3).

12.2 Interoperability

1) A test candidate must be checked against a minimum of 5 Reference Products for interoperability which includes the ability to connect, browse, read, write, subscribe, receive data changes and events, and invoke methods etc. as supported by the test candidate.

2) An incompatibility found in the test candidate will be considered a failure of the testing.

3) An incompatibility found in the reference product will be investigated by the Certification Test Lab who will then either:
   a) Elect to skip the specific IOP test for the specific reference product found to contain the fault.
   b) Work with the vendor of the reference product to obtain a fix and then retest.

12.3 Robustness & Recovery

1) A test candidate must be checked for its ability to handle and the loss of communications to other OPC products and to other data-sources such as a PLCs.

2) The ability for the product to recover the lost connection and restore the session back to the original state (prior to the communications loss).

3) The test-candidate must demonstrate separation of connection problems, meaning:
   a) A Server that loses one Client connection does not affect connections with other Clients.
   b) A Client that loses a Server connection does not affect connections with other Servers.

12.4 Usability

1) The installation and removal of the test candidate

2) The availability of sufficient help documentation

3) Sufficient tools are provided to enable the end user to setup, configure, use, and troubleshoot the test candidate.
12.5 36 hour Efficiency

1) The test candidate will be configured to run for a period of 36 hours to monitor system resources (such as memory, disk space, or CPU clock cycles) to make sure that they do not leak.

2) Tools such as the Windows Performance Monitor will measure various Windows and application performance indicators where possible.

3) The test candidate will be configured in to provide significant code coverage to find any inefficiency which will include error handling and recovery.

4) The test candidate will be configured to work with a significant number of tags/nodes, to handle multiple operations to be utilized throughout the test including: Writes, Reads, Subscriptions, and Browsing etc.

5) Automation techniques will be used to simulate network communications losses to OPC connections and/or PLC/device connections.

13. Test Preparation

13.1 Test Environment Preparation

1) Certification Test Lab will:
   a) Create the necessary test environment based on the information received from CUSTOMER via the Product Checklist Questions.
   b) Configure the product per the instructions and configuration provided by CUSTOMER.
   c) Verify the product is in working order prior to certification testing and work with CUSTOMER to fix any problems ahead of time and guarantee the test environment is ready for testing.

2) CUSTOMER may provide a working test environment (such as a virtual image etc.)

13.2 Hardware required (to be obtained from CUSTOMER)

1) The test candidate, if the product to be tested is embedded within a device.

2) Any PLC/Device/DCS must be provided to Certification Test Lab if an OPC product acquires data from such a device. A Certification Test Lab may request more than one unit/device for usability testing:
   a) The device
   b) Power adapters and cable(s)
   c) Communications cable(s)
   d) Installation and Configuration instructions
   e) Device drivers and/or software installation media as applicable
   f) Copy protection/licensing hardware such as Dongles or USB keys etc.
13.3 Software Required by the Certification Test Lab (from CUSTOMER)

1) The test candidate, if it is software.
2) Copy protection/licensing – if software based.
3) Additional configuration programs (if applicable) and/or drivers etc.

14. Testing Participation

1) When testing a product the CUSTOMER may choose to participate:
   a) In-person: A representative from the CUSTOMER will be present at the Certification Test Lab premises.
   b) Remotely: A representative from the CUSTOMER will leverage remote access software to view and interact with their product within the test environment while under the constant supervision of a Certification Test Lab representative.
      A Certification Test Lab will make every effort to enable remote participation when needed.
   c) On-demand: CUSTOMER participates only when the Certification Test Lab requires assistance.

15. Test Tools

1) Certification Test Lab will use the current version of the standard test tools that are available online for all OPC Foundation members to download and use at their own premises.

2) The Certification Test Lab is not permitted to use variants of the standard test tools, test scripts or test cases that OPC Foundation members do not have access to, without CUSTOMER permission. The use of a test tool variant is described below:
   a) The variant version must be intended for full public release.
   b) Newly test scripts are not used to determine a pass/fail status without CUSTOMER approval.
   c) Existing test scripts (common to the current public release version) are unchanged, with the exception of bug fixes. Failing the test of these test scripts is subject to CUSTOMER approval prior to determining the pass/fail status.
15.1 OPC Server Testing, Test Tools

1) Compliance Test Tool versions for testing OPC Servers are subject to change, but currently include:

<table>
<thead>
<tr>
<th>Compliance Test Tool</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unified Architecture</td>
<td>1.1.334.200</td>
</tr>
<tr>
<td>Classic Data Access 2.05a</td>
<td>2.0.21</td>
</tr>
<tr>
<td>Classic Data Access 3.00</td>
<td>1.0.17</td>
</tr>
<tr>
<td>Classic Historical Data Access</td>
<td>1.0.8</td>
</tr>
<tr>
<td>Classic Alarms &amp; Events</td>
<td>1.0.14</td>
</tr>
<tr>
<td>Classic XML DA</td>
<td>1.0.8</td>
</tr>
</tbody>
</table>

15.2 OPC Client Testing, Test Tools

1) Compliance Test Tool versions for testing OPC Clients are subject to change, but currently include:

<table>
<thead>
<tr>
<th>Compliance Test Tool</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unified Architecture</td>
<td>1.1.334.200</td>
</tr>
<tr>
<td>OPC Analyzer</td>
<td>1.02.1014</td>
</tr>
</tbody>
</table>

15.3 Reference Products

1) Reference products are commercially available products donated by OPC Foundation members; also including the official OPC Foundation test clients and/or servers for OPC UA and OPC Classic.

2) Reference products complement the test tools used in a Certification Test Lab.

3) A reference product is one that has been successfully tested by the Certification Test Lab.

4) A product being tested is expected to be able to successfully interoperate with a minimum of any FOUR randomly selected commercial reference products and ONE from the OPC Foundation.

16. Analysis & Sharing of Test Results

1) Each test that Certification Test Lab conducts will be graded as either:
   - **Pass**: the result meets the expectations
   - **Pass + Warning**: the result does not fully satisfy the expectations, but is acceptable.
   - **Fail**: the result does not meet the expectations

2) Any single fail indicates the complete failure of the certification test.
3) The results of all tests are recorded in a private database, where:
   a) The Certification Test Lab manager will review and approve the results of the test match the expectations of each test as defined by the Compliance Working Group.
   b) The database is secure, not public, and is regularly backed-up.

4) Certification Test Lab will provide to CUSTOMER the following:
   a) A master report showing the all test cases executed, their expected results versus the actual results observed during testing, and any notes recorded for each test.
   b) A report of failed tests
   c) An easy to read summary report
   d) A series of charts to show a curve of resource efficiency testing conducted over 36 hours.

5) All results and reports are CONFIDENTIAL:
   a) Certification Test Lab is not permitted to share any test information or results of a test, except when a product is certified.
   b) Certification Test Lab is expected to store all test rest results and reports on OPC Foundation networks, in a secure location inaccessible to non OPC Foundation personnel.
   c) CUSTOMER is permitted to share their results and reports within their organization, and with their customers.

16.1 Retesting

1) Products that have failed Certification testing must be retested to become certified. See 10 Certification Process

2) There are no limitations to the number of times a product can be retested in the Certification Test Lab prior to certification.

3) Product testing conducted as part of free testing will be subject to the daily rate once CUSTOMER has exceeded their allotment of free testing. See 7.2 Costs.
17. Complaints

17.1 Customer Rights

1) CUSTOMER has the right to complain about any of the following:
   a) The quality of service received or poor customer service experienced
   b) The quality of testing conducted
   c) The quality of documentation and/or test reports received
   d) The analysis/assertions of testing resulting in false Positives or false Negatives
   e) A lack of information before, during or after testing
   f) A lack of participation during testing
   g) The quality of the Certification program itself

2) When filing a complaint, the customer must provide evidence to support their compliant(s).

3) All complaints will result in a complete and thorough investigation.

17.2 Procedure

1) The customer must submit their complaint in writing to the Director of Certification & Compliance.

2) The Director of Certification & Compliance will review the claim and initiate an investigation in accordance with the procedures outlined in IEC17025.

3) The Compliance Working Group will be informed of any complaints with regards to test cases or the certification program to facilitate any corrections or improvements as necessary.

4) CUSTOMER will be informed of the outcome of the investigation, any meetings, and decisions that were made.
18. **Ongoing Improvements**

1) The Certification program is subject to continuous change and improvements under the guidance of the Compliance Working Group.

2) It is the responsibility for a Certification Test Lab to monitor its own performance, effectiveness in testing, and abiding by the procedures defined by the Compliance Working Group.

3) It is the responsibility of a Certification Test Lab to conduct regular meetings to discuss areas of improvements and to report any deficiencies or problems to the Compliance Working Group.

4) Improvements made to the system, methods of testing, test execution steps or the interpretation of results cannot be applied to any product that is currently being tested without written notice to CUSTOMER who has the right to refuse the stated changes.

5) Test cases, expectations, and steps in which tests are conducted are subject to change, and only those processes and test cases available online are to be used.

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