



IEEE2030.5 CONFORMANCE TESTING REPORT FOR:

**Kitu Systems, Inc.
San Diego, California
USA**

BY:

**UL LLC
RTP, NC USA
Based on the QualityLogic IEEE 2030.5 Conformance Test Program**

Product: Raspberry Pi Server Version 1.0

**DATE: 2016-02-03
PROJECT:ERROR! REFERENCE SOURCE NOT FOUND. 4787273838**

Release Control Record

Issue No.	Reason for Change	Date Issued	Modified by
1	None, Original	2016-02-03	-

Report Information

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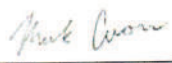
Testing Conducted For
Kitu Systems, Inc.
San Diego, California
USA

Equipment Under Test (EUT) Raspberry Pi Server Version 1.0


UL Project Number 4787273838
Date 2016-02-03

Signatures

For UL LLC:

Signed: 
Tested by: Mark Cuoccio
Date: 2016-02-03

For Quality Logic, Inc:

Signed: 
Date: 3-15-16

UL LLC reports apply only to the specific samples tested under stated test conditions. All samples tested were in good operating condition throughout the entire test program. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical software, electrical and mechanical components. UL LLC shall have no liability for any deductions, inferences or generalizations drawn by the client or others from UL LLC issued reports. This report shall not be used to claim, constitute or imply product certification, approval, or endorsement.

EXECUTIVE SUMMARY

Kitu Systems, Inc. recognizes UL as a global independent safety science company offering expertise across many different businesses, including Interoperability testing. For this expertise, Kitu Systems, Inc. required software to be tested using the tests described in the Consortium for SEP 2 Interoperability (CSEP), “Interoperability Certification Test Plan v1.0”, specified in this test report, using the CSEP approved certification test tools from QualityLogic.. This project followed QualityLogic’s approach to testing and evaluating IEEE 2030.5 as defined by the QualityLogic Inc. IEEE 2030.5 Conformance Test Program.

Kitu Systems, Inc. provided 1 sample(s) of the server to be tested. This report contains the results for the following server design: Raspberry Pi Server Version 1.0. Testing was conducted to determine the software’s ability to comply with the requirements and its ability to communicate with IEEE 2030.5. No certification mark or certificate of compliance was issued as a result of this testing. The Raspberry Pi Server Version 1.0 obtained compliant results for all of the IEEE 2030.5 Function Sets that were tested. Three Function Sets were not tested due to a QualityLogic Test Tool issue which will be corrected in future Conformance Tests.

The conformance testing was focused on basic IEEE 2030.5 **application protocol** and required optional function sets. The testing confirms that the device/software tested can communicate correctly with other IEEE 2030.5 devices/software.

The testing was segmented into function sets as identified below. The following table specifies the results for the testing:

Segment	Function Set	Client	Server
Core	CERT	N/A	Unable to Test
	DCAP	N/A	Pass
	DNS	N/A	Pass
	TLS	N/A	Pass
	TM	N/A	Pass
Optional	APPS	N/A	Pass
	COM	N/A	Pass
	DSGN	N/A	Pass
	DRLC	N/A	Pass ¹
	EDEV	N/A	Unable to Test
	RSPS	N/A	Pass
	TP	N/A	Pass
	UPT	N/A	Pass

¹ All DRLC tests were completed with conforming results except Test DSGN28, which could not be conducted due to a test tool issue. See the attached report for details.

Detailed testing and results are contained in the attached report.

TEST RESULTS SUMMARY

The Raspberry Pi Server Version 1.0 was subjected to the requested tests with the results noted in the table below. The CSEP approved QualityLogic Test Tools used were the Version V1.0 Release of the Functional Test Suite (FTS) Server Tester and Ad Hoc Server Tester.

Column Heading Definitions for Summary of Test Results Table

The following Summary of Test Results table contains these columns of information:

- **FTS Suite** column gives the name of the IEEE 2030.5 Function Set and the test cases were consistent with the CSEP defined Test Specification.
- **Test** column gives the test name from the CSEP, “Interoperability Certification Test Plan v1.0”¹.
- **Results** column gives the results of the evaluation (Compliant, Non-compliant, etc.).
 - **Compliant:** The EUT met the requirements of the corresponding criteria.
 - **Non-compliant:** The EUT did not meet the requirements of the corresponding criteria.
 - **NA:** The criteria were Not Applicable to Equipment Under Test {Explanation Required}
 - **ENS:** The specific feature was Not Supported by the customer.
 - **Unable to Test:** the test case could not be completed due to a QualityLogic Test Tool issue.
- **Comments** see PICS chart below for details

¹ The CSEP Test Plan is copyright CSEP and is available to members of the Wi-Fi, Zigbee and HomePlug Alliances and the Bluetooth SIG.

Summary of Test Results

FTS Suite	Test	Results	Comments
DCAP	APPS1	Compliant	
	APPS36	Compliant	
	DSGN2	Compliant	
	DSGN3	Compliant	
	DSGN4	Compliant	
	DSGN28	Compliant	
	DSGN7	Compliant	
	DCAP1	Compliant	
DRLC	APPS1	Compliant	
	APPS36	ENS	
	DSGN2	Compliant	
	DSGN3	Compliant	
	DSGN4	Compliant	
	DSGN28	Unable to Test	Test Tool unable to complete this test
	DSGN23	Compliant	
	DSGN7	Compliant	Warning on DSGN12, DSGN11, DSGN13, DSGN7, DSGN8, DSGN10, DSNG14, DSGN15, DSGN20, DSGN21, DSGN27 PICS check
	COM37	Compliant	
	COM21	Compliant	
	COM68	Compliant	
	DR10	Compliant	Warning on DSGN12 PICS check
	DR12	Compliant	
	DR85	Compliant	
	DR94	Compliant	
	RSP2	Compliant	
RSP6	Compliant		

FTS Suite	Test	Results	Comments
EDEV	APPS1	Compliant	
	APPS36	ENS	
	APPS25	Compliant	Warning on DSGN4 PICS check
	DSGN2	Compliant	Warning on DSGN4 PICS check
	DSGN3	Compliant	Warning on DSGN4 PICS check
	DSGN4	Compliant	Warning on DSGN4 PICS check
	DSGN33	Compliant	Warning on DSGN4 PICS check
	DSGN28	Compliant	Warning on DSGN4, DSGN12 PICS check
	DSGN23	Compliant	Warning on DSGN4, DSGN11, DSGN12 PICS check
	DSGN7	Compliant	Warning on DSGN4, DSGN12 PICS check
	EDEV1	Unable to Test	Test Tool unable to complete this test
	EDEV14	Compliant	Verified with Test Procedure
TP	APPS1	Compliant	
	APPS36	ENS	
	DSGN2	Compliant	
	DSGN3	Compliant	
	DSGN4	Compliant	
	DSGN28	Compliant	Warning on DSNG12 PICS check
	DSGN23	Compliant	
	DSGN7	Compliant	Warning DSGN12, DSGN11, DSGN13 PICS check
	COM37	Compliant	
	COM21	Compliant	
	COM68	Compliant	
	TP4	Compliant	Warning on DSNG12, TP6 and TP29 PICS check
	TP25	Compliant	Warning on TP6 PICS check
	TP76	Compliant	Warning on TP6 PICS check
	TP92	ENS	
	TP94	Compliant	Warning on TP6, DSGN12 PICS check
	TP96	ENS	
TP100	ENS		

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FTS Suite	Test	Results	Comments
TM	APPS1	Compliant	
	APPS36	ENS	
	DSGN2	Compliant	
	DSGN3	Compliant	
	DSGN28	Compliant	
	DSGN7	Compliant	
	TM5	Compliant	
	TM10	Compliant	
	TM19	Compliant	Warning on DSGN4 PICS check
UPT	APPS1	Compliant	
	APPS36	ENS	
	DSGN2	Compliant	
	DSGN3	Compliant	
	DSGN4	Compliant	
	DSGN28	Compliant	Warning on DSGN12 PICS check
	DSGN23	Compliant	
	DSGN7	Compliant	Warning on DSGN12, DSGN11, DSGN13, DSGN7, DSGN8, DSGN10, DSNG14, DSGN15, DSGN20, DSGN21, DSGN27 PICS check
	UPT68	Compliant	
	UPT35	Compliant	
CERT	CERT2	Unable to Test	Test Tool missing "Valid-Dev-Cert-1-Client", "Valid-Mica-PolicyQualifier" and "Valid-SelfSigned-Device-Cert"
DNS	DNS01	Compliant	
	DNS38	Compliant	
	DNS29	N/A	Test case waived by CSEP

FTS Suite	Test	Results	Comments
TLS	TLS14	Compliant	
	TLS18	Compliant	
	TLS30	Compliant	
	TLS32	Unable to Test	Test Tool unable to complete this test
	TLS37	Unable to Test	Test Tool unable to complete this test
	TLS38	Compliant	
	TLS43	Unable to Test	Test Tool unable to complete this test

PICS

DSGN4	<p>All resources contain links to subordinate resources to support URI flexibility.</p> <p>Explanation: This check was attempted to check for different link attributes in the returned resource, such as an EndDevice. The Kitu server returned a resource with minimal attribute which is allowed per spec while the test harness checked for other attributes which it didn't find. In turn, it caused a VOID warning to be generated.</p>
DSGN7	<p>Query string parameter 's': first ordinal value of '0'.</p> <p>Explanation: This check was attempted for testing of query string parameter check of a list. The Kitu server returned a single value rather than list based resource or returned an empty ActiveEndDeviceControlList which is allowed. Since there was no list to check for first ordinal value, this check was unable to checked causing the VOID warning.</p>
DSGN10	<p>Query string parameter 'a': format of the parameter SHALL be a 64-bit decimal number with identical semantics as that of the TimeType. No actual test step was reported for this PICS check.</p> <p>Explanation: This check was attempted for testing of query string parameter check of a list. The Kitu server returned a single value rather than list based resource or returned an empty ActiveEndDeviceControlList which is allowed. Since there was no list to check for first ordinal value, this check was unable to checked causing the VOID warning.</p>
DSGN11	<p>Query string parameter 'l': If omitted, the default limit shall be '1'. This PICS check was properly handled. This is a test harness issue and manually verified.</p> <p>Explanation: This check was attempted for testing of query string parameter check of a list. The Kitu server returned a single value rather than list based resource or returned an empty ActiveEndDeviceControlList which is allowed. Since there was no list to check for first ordinal value, this check was unable to checked causing the VOID warning.</p>
DSGN12	<p>Query string parameter 'l': Servers may return a list smaller than what the client specified with 'l'. This PICS check was not able to be verified because the DUT did not return a list smaller than one listed in the "l" parameter. This is an optional behavior, so the "warning" did not affect the device passing the test case.</p> <p>Explanation: This check was attempted for testing of query string parameter check of a list. The Kitu server returned a single value rather than list based resource or returned an empty ActiveEndDeviceControlList which is allowed. Since there was no list to check for first ordinal value, this check was unable to checked causing the VOID warning.</p>

DSGN13	<p>If start and after parameters are used simultaneously, after string shall have precedence. The start position shall be relative to the after parameter. No actual test step was reported for this PICS check.</p> <p>Explanation: This check was attempted for testing of query string parameter check of a list. The Kitu server returned a single value rather than list based resource or returned an empty ActiveEndDeviceControlList which is allowed. Since there was no list to check for first ordinal value, this check was unable to checked causing the VOID warning.</p>
DSGN14	<p>If a particular query string is used more than once, first occurrence (left to right) shall be used and others ignored. No actual test step was reported for this PICS check.</p> <p>Explanation: This check was attempted for testing of query string parameter check of a list. The Kitu server returned a single value rather than list based resource or returned an empty ActiveEndDeviceControlList which is allowed. Since there was no list to check for first ordinal value, this check was unable to checked causing the VOID warning.</p>
DSGN15	<p>Unknown query parameters must be ignored and must not generate an HTTP error. No actual test step was reported for this PICS check.</p> <p>Explanation: This check was attempted for testing of query string parameter check of a list. The Kitu server returned a single value rather than list based resource or returned an empty ActiveEndDeviceControlList which is allowed. Since there was no list to check for first ordinal value, this check was unable to checked causing the VOID warning.</p>
DSGN20	<p>List resources shall support 's' and 'l' parameters. No actual test step was reported for this PICS check.</p> <p>Explanation: This check was attempted for testing of query string parameter check of a list. The Kitu server returned a single value rather than list based resource or returned an empty ActiveEndDeviceControlList which is allowed. Since there was no list to check for first ordinal value, this check was unable to checked causing the VOID warning.</p>
DSGN21	<p>List resources that support a time based time based primary key shall support the 'a' query parameter. No actual test step was reported for this PICS check.</p> <p>Explanation: This check was attempted for testing of query string parameter check of a list. The Kitu server returned a single value rather than list based resource or returned an empty ActiveEndDeviceControlList which is allowed. Since there was no list to check for first ordinal value, this check was unable to checked causing the VOID warning.</p>
DSGN27	<p>Non list resources shall not support the defined query string parameters. Query strings for non list resources should be ignored. No actual test step was reported for this PICS check.</p> <p>Explanation: This check was attempted for testing of query string parameter check of a list. The Kitu server returned a single value rather than list based resource or returned an empty ActiveEndDeviceControlList which is allowed. Since there was no list to check for first ordinal value, this check was unable to checked causing the VOID warning.</p>
DSGN8	<p>Query string parameter 's': If not specified, default start parameter is '0'. No actual test step was reported for this PICS check.</p> <p>Explanation: This check was attempted for testing of query string parameter check of a list. The Kitu server returned a single value rather than list based resource or returned an empty ActiveEndDeviceControlList which is allowed. Since there was no list to check for first ordinal value, this check was unable to checked causing the VOID warning.</p>
TP29	<p>Servers SHOULD be capable of internally storing and supporting five ConsumptionTariffInterval elements per TimeTariffInterval instance.</p> <p>Explanation: This check is an optional feature to store at least five elements. Kitu server returned one element.</p>
TP6	<p>Servers SHOULD be capable of internally storing and supporting three TariffProfile instances.</p> <p>Explanation: This check is an optional feature to store at least three elements. Kitu server returned one element.</p>

END OF IEEE2030.5 (SEP2.0) UL CONFORMANCE TESTING REPORT
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