


## 시험 성적서

<p>한국정보통신기술협회</p> <p>네트워크시험인증단</p> <p>주소: 경기도 성남시 분당구 서현동 267-2</p> <p>전화: 031-724-0114, Fax: 031-724-0169</p>	<p>성적서번호: TTA-N-16-0272</p>	
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### 1. 의뢰자

- o 기관명 : KERI
- o 주소 : 경기도 안산시 상록구 항가울로 111 한국전기연구원(426-910)
- o 의뢰일자 : 2016. 04. 22.

### 2. 시험성적서의 용도 : 과제 검증용

### 3. 시료 : SEP2 DRLC System

### 4. 시험기간 : 2016. 04. 27. ~ 2016. 04. 28.

### 5. 시험환경 : 상온

### 6. 시험결과 : 시험결과보고서(TTA-N-16-0272-TR00) 첨부

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2016. 05. 23.

한국정보통신기술협회 회장 (인)





TPG-0024-1(00)



## Test Report

**Report No.: TTA-N-16-0272-TR00**

Test Name	:	IEEE 2030.5 (Smart Energy Profile 2) Conformance Test
Report for	:	KERI
Tested by	:	TTA with QualityLogic IEEE 2030.5 (SEP 2) Conformance Test Program
Product	:	SEP2 DRLC System
Signature	:	TTA
Sign		
Signed by		Junho Shin
Date		5-23-16
		
		Steve Banks
		5-20-16

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## 1. Report Information

This section contains information on the apparatus around the test.

### 1.1. Testing Laboratory

Company Name	TTA
City	Seongnam-City, Gyeonggi-do
Address	47, Bundang-ro, Bundang-gu
Postal code	463-824
Country	Republic of Korea
Telephone	+82-31-724-4620
Fax	+82-31-724-0169
URL	<a href="http://www.tta.or.kr">www.tta.or.kr</a>
Responsible person	Jonghyun Kim
e-mail	jongkim@tta.or.kr

### 1.2. Conformance Test Program Supplier

Company Name	QualityLogic
City	Simi Valley, CA
Address	2245 First St. #103
Postal code	93065
Country	USA
Telephone	+1-805-531-9030
Fax	+1-805-531-9045
URL	<a href="http://www.qualitylogic.com">www.qualitylogic.com</a>

### 1.3. Product Vendor

Company Name	KERI
City	Ansan-city
Address	Hanggaul-ro
Postal code	426-910
Country	Republic of Korea
Telephone	+82-31-698-3383
Contact person	Seo Jongkwan / Lee Jae-Jo
e-mail	yanuse723@keri.re.kr / jjlee@keri.re.kr

#### 1.4. Test Summary

The test was conducted using the test tool approved by CSEP(Consortium for Smart Energy Profile) who established standard test specification of SEP2(IEEE 2030.5). CSEP approved the 'SEP2 Functional Test Suite' and 'Ad Hoc Tester' of Qualitylogic Inc. as certification testers in February 2015. TTA runs and follows the SEP2 conformance test program using CSEP approved testers before official Certification program.

KERI required software to be tested using the tests described in the “Developing energy grid response system technology-Government project”. This test project followed QualityLogic’s approach to testing and evaluating IEEE 2030.5 as defined by the QualityLogic Inc. IEEE 2030.5Conformance Test Program.

KERI provided 1 sample of the client to be tested. This report contains the results for the following client SEP2 DRLC System 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 SEP2 DRLC System obtained compliant results for all of the IEEE 2030.5 Function Sets that were tested.

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

## 1.5. Device Under Test Identification

### 1.5.1. General Information

Product Type	Client
Product Name	SEP2 DRLC System
Product Version	1.0
IP Version	IPv6
Interface	Ethernet
Encoding	XML
Picture	

## 2. Test Configuration

### 2.1. Test Scope

The test have been run only checked below between server and client. The list must be filled and submitted to TTA before the test begins.

Segment	Function Set	Client
Core	CERT	Yes
	DCAP	None
	DNS	Yes
	TLS	Yes
	TM	Yes
Optional	APPS	No
	COM	No
	DSGN	No
	DRLC	Yes
	EDEV	No
	RSPS	No
	TP	No
	UPT	No

### 2.2. Test Environment

The test has been run with the following external conditions throughout the session.

Nominal	
Temperature in the range 15°C to 35 °C	Yes
Relative humidity in the range 20% to 75 %	Yes

### 2.3. Test Procedures

The test has been run on 27<sup>th</sup> ~ 28<sup>th</sup> April and 17<sup>th</sup> May in 2016 with QualityLogic Inc. IEEE 2030.5 Conformance Test Program. The CSEP approved QualityLogic Test Tools used were the Version V1.11 Release of the Functional Test Suite (FTS) Client Tester and Ad Hoc Client Tester.

### 3. Test Results

#### 3.1. Summary Convention

The following “Result” convention is used in this summary

Result Items	Description
PASS	All test cases that have been executed have passed.
FAIL	At least one test case has failed.
WARN	At least one test case generated a WARN result, while all others have passed.
ABORT	The test suite execution has been aborted. The abort may be caused by the user, or by an internal error.
VOID	At least one test case generated a VOID result, while all others have passed.
WAIVED	Not supported by test tool yet.

#### 3.2. Summary of Test Results

Type	Test Code	Description	Results	Comment
Core	CERT	Support Certificate	WAIVED	
	DNS	Support Discovery	PASS	
	TLS	Support Security	PASS	
	TM	Support Time	PASS	
Optional	DRLC	Support Demand Response and Load Control	PASS	

Detailed testing and results are contained below.

#### 3.3. Test Items Results

##### 3.3.1. Results Items convention

The following convention is used in this test report.

Result Items	Description
Compliant	The DUT met the requirements of the corresponding criteria
Non-compliant	The DUT 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

**3.3.2. Client Functional Test cases****CERT**

Test Item	Description	Results	Comments
CERT2	Support for Device certificates	ENS	
CERT4	Additional certs for SEP 2.0 devices tests	Unable to Test	

**DNS**

Test Item	Description	Results	Comments
DNS01	xmDNS requests and multicast responses SHALL be transmitted (and received) on site-local multicast address FF05::FB (if IPv6) or 239.255.255.251 (if IPv4), using destination port 5353 and domain name ".site."	Compliant	

**TLS**

Test Item	Description	Results	Comments
TLS14	SFDI is the SHA256 of the entire certificate truncated from the left to 36 bits	Compliant	
TLS18	Support 6 Digit PIN [5 decimal digits + checksum]	Compliant	
TLS28	Authentication of TLS Server Device Certificate is done using the inherent PKI RFC5246-Section7	Compliant	
TLS30	If client has a device certificate, authentication of TLS client Device Certificate is done using the inherent PKI RFC5246-Section7	Compliant	
TLS32	If client has a self signed certificate, server checks for correctness.	Compliant	
TLS38	CipherSuite : TLS_ECDHE_ECDSA_WITH_AES_128_GCM_SHA256	Compliant	

**TM(FTS Test)**

Test Item	Description	Results	Comments
APPS1	Support for HTTP header fields marked "Mandatory" with "SEP2 Use"	Compliant	
DSGN17	Clients must ignore query strings in hrefs but must not remove them	Compliant	
TM2	Devices with user displays SHALL support local time and daylight savings time offsets.	Compliant	

## DRLC(FTS Test)

Test Item	Description	Results	Comments
APPS1	Support for HTTP header fields marked "Mandatory" with "SEP2 Use"	Compliant	
DSGN2	TCP ports for HTTP and HTTPS provided with xmdNS service advertisement	Compliant	
DSGN17	Clients must ignore query strings in hrefs but must not remove them	Compliant	
COM6	A client SHALL consider the current event complete if a superseding event is started.	Compliant	
COM11	Clients SHALL verify the EventStatus of an Event before acting upon it.	Compliant	
COM13	When clients receive events with a specified end time in the past, the event SHALL be ignored.	Compliant	
COM15	A client receives an Event and calculates an Effective Start Time (Start Time + Start Randomization) in the past and a Specified End Time in the future ((Effective Start Time < Current Time) AND (Specified End Time > Current Time))	Compliant	
COM16	When a client detects an Overlapping Event condition, the Event with the latest creation time will take precedence over the previous Event. If the previous Event is scheduled and not active and if the Event responseRequired indicates, the client SHALL POST a Response (referencing the previous Event) with the Status of "The Event has been superseded." After the Response has been successfully POSTed, the client SHALL ignore the previous Event scheduled.	Compliant	
COM17	When a client detects an Overlapping Event condition, the Event with the latest creation time will take precedence over the previous Event. If the previous Event is active, the client SHALL change directly from its current state to the requested state at the effective start time of the Overlapping Event. If the Event responseRequired indicates, the client SHALL POST a response (referencing the previous Event) with a Status of 'The event has been superseded' at the effective start time of the Overlapping Event.	Compliant	

COM18	For Successive Events clients SHALL use the earlier Event 's Effective End Time as the Effective Start Time of the later Event. Events are not reported as superseded and Clients should report Event statuses as they normally would for a set of Successive Events. Note: This means that a group of Successive Events without Duration Randomization will run successively using the initial Start Randomization for each of the Events in the group.	Compliant	
COM20	Those clients whose EndDeviceCategoryType is not listed in the future event but whose EndDeviceCategoryType was included in the original event SHALL continue to execute per the parameters of the original event.	Compliant	
COM24	When an event is removed from the server (e.g., due to limited storage space for the event list) clients SHALL NOT assume the event has been cancelled.	Compliant	
COM25	the device SHALL randomly select a number in seconds from zero to the randomizeStart specified for this event.	Compliant	
COM27	If the value is negative, randomization SHALL be applied before the specified Start Time of the event.	Compliant	
COM30	Clients that use fixed pseudo random values SHALL scale the applied randomization based on the range indicated by the given randomizeStart or randomizeDuration. Stated differently, fixed pseudo random values SHALL indicate a percentage of the randomizeStart or randomizeDuration to be applied. Fixed pseudo randomization is when a given device has a value that is applied for all randomizations.	Compliant	
COM34	Cancellation of an active Event SHALL cause clients to apply the greater of (absolute value of randomizeStart attribute) and (absolute value of randomizeDuration) to the abbreviated Event.	Compliant	
COM49	Clients SHALL poll the lists for new Events at least once every 15 minutes	Compliant	
COM60	If an event is in progress and user override occurs, the client SHALL respond to the user override without randomization.	Compliant	
DR16	Demand Response/Load Control client devices SHALL be capable of internally storing and supporting at least 3 unique EndDeviceControl instances.	Compliant	
DR22	Events flagged as drProgramMandatory are strongly RECOMMENDED to be acted upon	Compliant	
DR24.1	Clients SHOULD present a warning to indicate that this event has been flagged as	Compliant	

DR24.2	mandatory by their service provider.	Compliant	
DR25	After the overrideDuration time of an EndDeviceControl has elapsed, the client device SHALL return to execution of the EndDeviceControl for the remaining Effective Scheduled Period.	Compliant	
DR29	Device supports Duty Cycle	Compliant	
DR34	If a temperature offset is sent that causes the heating or cooling temperature set point to exceed the limit boundaries that are programmed into the device, the device SHALL respond by setting the temperature at the limit.	Compliant	
DR37	Device supports SetPoint	Compliant	
DR84_1	DRLC client devices that change their consumption behavior based on the demand response signals received	Compliant	
DR84_2		Compliant	
RSP3	The client SHALL POST the responses to the indicated URI based on the rules indicated by the responseRequired bitfield of the event.	Compliant	
TM34	If a client discovers an Event-based function set and cannot also retrieve a Time resource from this same server, it SHALL NOT act on the events from this Event-based function set.	Compliant	