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Smart Metering Implementation Programme (SMIP)

User Integration Testing Approach Document (UITAD) for Release 2.0

Document Control

Revision History

|  |  |  |  |
| --- | --- | --- | --- |
| Revision Date | Summary of Changes | ChangesMarked | Version Number |
| 13/12/2017 | Initial Draft | n/a | 0.1 |
| 16/01/2018 | Changes following TAG feedback provided on 08/01/2018 | yes | 0.2 |
| 14/02/2018 | Changes following TAG discussions on 23.01.2018 | yes | 0.3 |
| 02/03/2018 | Changes following TAG discussions on 21.02.2018 and 01.03.2018 and incorporating changes as a result of TAG feedback on version 0.3 | yes | 0.4 |
| 19/03/2018 | Changes as a result of TAG feedback and SEC Panel decisions dated 09.03.2018 | yes | 1.0 |
| 17/04/2018 | Changes to entry criteria to remove DIT testing with SMETS2v3 meters as a dependency on UIT start | Yes | 1.1 |
| 17/05/2018 | No fundamental changes. Updated Table 1 on references to latest version of SVTAD, ETAD and CTSD. UIT12 requirement wording amended to align with SVTAD v1.6. Some minor drafting changes to language in section 5.1.1, 5.1.2 and 5.1.3 following final BEIS review. | no | 1.2 |

Reviewers

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Title / Responsibility | Release Date | Version Number |
| Viviane daSilva | Head of DCC Testing Services | 13/12/2017 | 0.1 |
| Simon Harrison | Head of DCC Test Assurance | 13/12/2017 | 0.1 |
|  | Testing Advisory Group | 08/01/2018 | 0.1 |
|  | Testing Advisory Group | 16/01/2018 | 0.2 |
| Rupal Patel | Head of DCC Test Assurance | 14/02/2018 | 0.3 |
| Viviane daSilva | Head of DCC Testing Services | 14/02/2018 | 0.3 |
|  | Testing Advisory Group | 21/02/2018 | 0.3 |
| Viviane daSilva | Head of DCC Testing Services | 02/03/2018 | 0.4 |
| Richard Hilton | Release 2.0 Programme Director | 02/03/2018 | 0.4 |
|  | Testing Advisory Group | 02/03/2018 | 0.4 |
| Viviane daSilva | Head of DCC Testing Services | 19/03/2018 | 1.0 |
| Richard Hilton | Release 2.0 Programme Director | 19/03/2018 | 1.0 |

Approvals

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Signature | Title / Responsibility | Release Date | Version Number |
| Viviane daSilva |  | Head of DCC Testing Services | 13/12/2017 | 0.1 |
| Viviane daSilva |  | Head of DCC Testing Services | 14/02/2018 | 0.3 |
| Viviane daSilva |  | Head of DCC Testing Services | 02/03/2018 | 0.4 |
| Richard Hilton |  | Release 2.0 Programme Director | 02/03/2018 | 0.4 |
| Dan Lambert |  | Chief Operating Officer | 02/03/2018 | 0.4 |
| Viviane daSilva |  | Head of DCC Testing Services | 19/03/2018 | 1.0 |
| Richard Hilton |  | Release 2.0 Programme Director | 19/03/2018 | 1.0 |
| Dan Lambert |  | Chief Operating Officer | 19/03/2018 | 1.0 |
| Richard Hilton |  | Release 2.0 Programme Director | 18/04/2018 | 1.1 |

**References**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Ref | Title | Source | Date | Version |
| 1 | Glossary of Testing Terms | ISTQB | Mar 2016 | 3.1 |
| 2 | Joint Test Strategy (JTS) | DCC | Apr 2015 | 3.5 |
| 3 | SEC Variation Test Approach Document (SVTAD) | DCC | May 2018 | 1.6 |
| 4 | Testing Issue Resolution Process | DCC | Feb 2018 | 1.3 |
| 5 | Common Test Scenarios Document (CTSD) | DCC | March 2018  | 1.3 |
| 6 | Enduring Test Approach Document | DCC | March 2018 | 1.2 |
| 7 | Environment Guide for UIT Participants | DCC | Jan 2018 | 0.1 |
| 8 | Test Communications Hub Definition | DCC | Feb 2018 | 1.0 |

1. References

Where this document references sections of the Smart Energy Code (SEC), those references shall be construed by reference to any intended future variations to those Sections (and the SEC Subsidiary Documents associated with those Sections) which are due to take effect at Release 2.0 Go Live as specified by the Secretary of State.

**Abbreviations & Acronyms**

This document uses standard testing terminology but for the avoidance of doubt, the meanings of abbreviations and acronyms are shown below.

|  |  |
| --- | --- |
| Abbreviation | Meaning |
| BEIS | Department for Business, Energy & Industrial Strategy |
| CHTS | Communications Hub Technical Specification |
| CSP | Communications Service Provider |
| CTSD | Common Test Scenarios Document |
| DBCH | Dual Band Communications Hub |
| DCC | Data Communications Company |
| DIT | Device Integration Testing |
| DSP | Data Service Provider |
| E2E | End to End Testing |
| GFI | GBCS Interface Test for Industry |
| HAN | Home Area Network |
| IRB | Issue Resolution Board |
| ISMS | Information Security Management System |
| ITCH | Instrumented Test Communications Hubs |
| PIT | Pre Integration Testing |
| PTCH | Prototype Test Communications Hub |
| SBCH | Single Band Communications Hub |
| SEC | Smart Energy Code |
| R2 | Release 2.0 |
| SIT | Systems Integration Testing |
| SMETS | Smart Metering Equipment Technical Specifications |
| SMKI | Smart Meter Key Infrastructure |
| SM WAN | Smart Metering Wide Area Network |
| SP | DCC Service Provider |
| SVTAD | SEC Variation Testing Approach Document |
| TAG | Testing Advisory Group |
| TSP | Trusted Service Provider |
| TTO | Transition to Operations |
| UEPT | User Entry Process Testing |
| UIT | User Integration Testing |

1. Abbreviations & Acronyms

**Narrative Text**

In a number of places this document contains background narrative text, rather than specific rights or obligations (for example in the Introduction section). Whilst not required in the UIT Approach Document, this narrative text is provided for background context for stakeholders.

**Glossary**

The table below defines only terms that are specifically not as defined in Section A (Definitions and Interpretations) of the SEC[[1]](#footnote-1) This document uses standard testing terminology, a glossary *(Reference 1)* of which can be found on the International Software Testing Qualification Board website [www.istqb.org](http://www.istqb.org)

|  |  |
| --- | --- |
| Term | Meaning |
| 1.1 Communications Hubs (“1.1 CHs”) | Means single-band and Dual Band Communications Hubs which comply with, or are designed to comply with, the requirements of CHTS v1.1 and GBCS v2.0 |
| DCC Meter Protocol Emulators | Testing Stubs developed by DCC to emulate the functional aspects of smart metering Devices |
| Modified DCC Total System | Means the DCC System as modified in order to meet (or to be designed to meet) the DCC’s obligations under the SEC as at Release 2.0 go live, together with the Communications Hubs that form part of Enrolled Smart Metering Systems. |
| Instrumented Test Communications Hub | Means a Test Communications Hub that includes an interface making diagnostic information relating to the HAN available. The interface will allow Users to capture HAN activity in real time using a Windows PC. |

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# Introduction

## Context

This document sets out the manner in which the Release 2.0 User Integration Testing (UIT) phase will be conducted for the Release 2.0 Smart Metering eco-system, which is depicted in Figure 1, below.



1. The Smart Metering Solution

The R2 programme plan allows for a period of User Integration Testing against the DCC Total System, as modified by Release 2.0, prior its release into live operations. User Entry Process Testing (UEPT) and User System and Device Testing may be conducted by eligible Testing Participants, in a new UIT B test environment, ahead of Release 2.0 Go Live.

## Objectives of this Document

The high level objectives of this document are captured in Table 4 below and it is intended that it should be detailed enough to allow the DCC and Testing Participants to plan and execute Release 2 UIT with some reference to additional documentation.

|  |  |  |
| --- | --- | --- |
| Item | Objective | Rationale |
| 1 | Provide Milestones and Key Dates | This will provide clarity in relation to all activities and dates that are significant for Test Participants in relation to R2.0 UIT in the UIT B test environment |
| 2 | Describe TP entry Process and Criteria | To ensure that TPs understand exactly what is required and how readiness will be assessed ahead of UEPT and/or E2E testing commencement |
| 3 | Describe resource allocation | This will include descriptions of the UIT B environment, how labs will be set up and the allocation of meter sets (including CH) to TPs |
| 4 | Describe suggested approaches to Testing in the time boxed period | Given the lessons learned from R1.3 and recent adjustments to UIT ways of working, the DCC will outline a number of suggested approaches that will enable a qualitative assessment of R2.0  |
| 5 | Describe Testing Support for R2.0 UIT  | The document will describe how the DCC will support all aspects of testing in both UEPT and E2E. |

1. Objectives of the UIT Test Approach

## UIT Requirements

The Release 2.0 UIT requirements are as described in UIT Requirements and are taken directly from the R2 SEC Variation Test Approach Document (SVTAD) (*Reference 3)*.

|  |  |
| --- | --- |
| Ref | Requirement |
| UIT.1 | UIT will enable Parties to test Release 2.0 functionality |
| UIT.2 | UIT will be planned to allow earlier availability of functionality from SIT for Parties to test against their systems and Devices, ahead of the completion of the full Release |
| UIT.3 | UIT will include the provision of a Prototype Test Communications Hub for remote test labs, to enable the testing and diagnosis of HAN interoperability and HAN performance |
| UIT.4 | UIT will include the provision of an Instrumented Test Communications Hub for DCC and remote test labs, to allow participants to diagnose and assure HAN performance and interoperability with other Devices, and undertake functional testing[[2]](#footnote-2) |
| UIT.5 | The deployment of new releases to UIT will be subject to specific entry criteria and testing to ensure minimal risk of disruption to ongoing participant testing in the environment  |
| UIT.6 | UIT security testing of DCC user authentication and authorisation, including protection of data and E2E messaging security |
| UIT.7 | UIT testing shall include the capability for participants to verify all installation and maintenance activities for CHs as described in the SEC |
| UIT.8 | UIT testing must include the capability for participants to verify their end-to-end data is operating correctly over DUIS and SSI, and in SSI reports |
| UIT.9 | UIT testing must include the capability for DCC operations to verify their processes using SSI, SSMI, and reports as in the production environment but based on actual participant activities |
| UIT.10 | UIT testing shall allow for users to test with the mesh technology[[3]](#footnote-3) |
| UIT.11 | DCC will make meters available[[4]](#footnote-4) to be requested for testing by Users who are not in a position to install and commission meters themselves – e.g. Network Operator Parties |
| UIT.12 | Supplier Parties with commissioned Devices are required to execute User Regression Testing as described in Clause 5 of the Test Approach Document |

1. UIT Requirements

## Lessons Learned from R1.3 UIT

In drafting this R2 UIT Approach Document the DCC has considered the lessons learned from R1.3 which are captured below in Table 6

|  |  |  |  |
| --- | --- | --- | --- |
| Item | Lesson Learned |  | Benefits |
| 1 | UIT period not of sufficient duration to get a thorough assessment of release quality | UIT testing period extended | * Better assessment of R2.0 quality before Production uplift
 |
| 2 | UEPT creating higher demand on available resources than expected | DCC looking at ways to create greater efficiency and faster transition between testing phases | * Customers in E2E sooner
* Greater number of device sets available for E2E
 |
| 3 | R1.3 testing was based upon a big bang technical step change between UEPT and E2E | DCC will transition new products (e.g. CHs and Devices etc) into UIT in phases as well as offering more efficient ways of working alongside open E2E | * Greater testing efficiency
* Fewer test issues overall
* Faster transition to Live
 |
| 4 | Device set allocation has not been as efficient as it otherwise might have been | DCC are currently reviewing and trialling more dynamic ways of allocating sets whilst ensuring better utilisation | * More customers testing for more of the time
 |
| 5 | Customer on-boarding not as efficient as otherwise could have been | DCC will better define timescales and processes for on-boarding into UEPT and E2E  | * Earliest possible commencement of testing
* Reduction in lost testing time
 |

1. R1.3 Lessons Learned

## Document Scope

This document will describe all aspects of Release 2.0 UIT phase in the UIT B environment and fits within the documentation hierarchy as depicted in Figure 1 below.



1. R2 Test Documentation Hierarchy

This Approach document is subservient to the SVTAD which should be read in conjunction with this UIT Test Approach Document. The above diagram also includes the following key documents that are associated with UIT activities and processes:

* Common Test Scenarios Document (CTSD) (*Reference 5*) – recently updated by DCC

In addition to the above there are other key documents to be updated and/or created and that compliment all of the above:

* Enduring Test Approach Document (ETAD) (*Reference 6*) – recently published by the DCC
* Environment UIT Guide for Testing Participants (*Reference 7*) – currently being developed by the DCC
* Test Communications Hub Definition (*Reference 8*) – currently being developed by the DCC

## Audience

The audience for this document is DCC, its Service Providers and SEC Parties who are eligible to become Testing Participants. BEIS and the SEC Panel Testing Advisory Group will also have visibility of this document and will review the content. This document will ultimately be made publicly available on the DCC external website. SEC Panel will be called upon to recommend approval of UIT Entry and Exit as well as any associated “criteria”.

## Document Approval

Following consultation with TAG Members and SEC Panel this UITAD will be reviewed and approved by BEIS before publication to the DCC website

# R2 UIT Planning & Key Milestones

This section will focus upon providing clarity for all R2 milestones that have specific implications for Testing Participants wishing to test Release 2.0 within the UIT B environment.

## UIT Plan on a Page

The current R2 UIT Plan on a Page can be found at Appendix A and will be maintained up until the date upon which this UITAD is approved and published on the DCC website. Following publication any plan changes will be notified via existing channels for such plan updates

## Key Milestones

The key milestones for Testing Participants are captured within Table 7 below and will be maintained up until the date upon which this UITAD is approved and published on the DCC website. Following publication any milestone date changes will be notified via existing channels for such plan updates:

|  |  |  |
| --- | --- | --- |
| Milestone | Description | Current Date |
| First Order date for UIT B RTL Service | RTL order can be placed for UIT B from this date. Lead time is as per Service Catalogue | 22/01/2018 |
| First Order date for UIT Test CH (SB) | SB TCH orders can be placed for UIT B from this date. Lead time is as per Service Catalogue | 22/01/2018 |
| R2 UIT Approach Document Published | The date at which the final version of this document is designated into the SEC | 15/03/2018 |
| R2 CTSD Published | The date at which the final version of this document is issued to BEIS for designated into the SEC | 28/02/2018 |
| R2 UEPT User Guide Published | The date at which the final version of this document is published to the DCC SharePoint | 15/03/2018 |
| R2 Environment Guide for UIT Participants Published | The date at which the final version of this document is published to the DCC SharePoint | 15/03/2018 |
| R2 Customer Order deadline for RTL Services and CHs | The last date at which customers can order RTL services in order to be ready for the start of UIT B testing | 19/02/2018 |
| R2 TP 60 Day Notice Period for UIT Entry | The last date upon which TPs must provide 60 days’ notice of commencement of UIT; where the TP expects to commence from the first day of R2 UIT. Greater notice may be provided. Later notice will lead to a later start date for testing | 19/02/2018 |
| R2 Customer Onboarding Commence | On-boarding activities can commence on the day following the TP giving notice as above | 20/02/2018 |
| SB CH Firmware available for UIT B (CSP N) | The date by which the RTL version of firmware will be supplied for CSP N SB CHs | SIT Exit + 1week |
| SB CH Firmware available for UIT B (CSP C/S) | The date by which the RTL version of firmware will be supplied for CSP C/S SB CHs | SIT Exit + 4week |
| First Order date for DB TCH and ITCH (wired) (CSP C/S) | The first date upon which these devices may be ordered by TPs. Lead time will be 12 weeks | TCH - 08/03/2018ITCH - 08/03/2018 |
| First Order date for DB TCH and ITCH (wireless) (CSP N) | The first date upon which these devices may be ordered by TPs. Lead time will be 12 weeks | TCH - 08/03/2018ITCH - 08/03/2018  |
| Last Order date for UIT B CHs and RTL Services for R1 Regression Testing in RTLs | The last date by which Suppliers must order test CHs and/or RTL Services should they be obligated to carry out R1 Regression Testing in UIT B and wish to execute the testing in RTLs (based upon the UIT B window ending on the 07/09/2018) | 28/03/2018 |
| R2 Pre-UIT Commence | The date at which Pre-UIT is planned to commence | 16/04/2018 |
| R2 Pre-UIT Complete | The date at which Pre-UIT is planned to end | 17/05/2018 |
| R2 UIT Entry Gate 1 (UEPT and Single Band Testing) | The date upon which the DCC will run the Entry Gate for SB testing in UIT | 18/05/2018 |
| UIT TSG 2.0/SBCH Commence | The date upon which UIT testing may commence for SB devices | 21/05/2018 |
| Latest start date for R1 Regression Testing | The latest date by which those obligated parties (see SVTAD) must be ready to commence R1 Regression Testing in UIT (based on current UIT end date of 07/09) | 27/06/2018 |
| R2 UIT Entry Gate 2 (Dual Band Testing) | The date upon which the DCC will run the Entry Gate for Dual Band testing in UIT | 16/07/2018 |
| DB CH Firmware available for UIT B (CSP N) | The date by which the RTL version of firmware will be supplied for CSP N DB CHs | SIT Exit + 1week |
| DB CH Firmware available for UIT B (CSP C/S) | The date by which the RTL version of firmware will be supplied for CSP C/S DB CHs | SIT Exit + 4week |
| UIT TSG 2.0/DBCH Commence | The date upon which UIT testing may commence for DB devices | 19/07/2018 |
| R2 End of UIT testing Window | The last day of the UIT testing window when DCC will make the DCC Go Live submission | 07/09/2018 |
| R2 UIT Phase Complete | The date by which DCC anticipates a decision from the Secretary of State in relation to the DCC Go Live submission | 13/09/2018 |
| R2 Go Live | The date at which the DCC R2 solution has completed deployment to the Production environment | 30/09/2018 |
| R2 Available in UIT A | The date at which the DCC R2 solution has completed deployment to the UIT A environment | 23/09/2018 |

1. Key Customer facing UIT Milestones

## RAID

This section identifies the most significant RAID items in relation to this period of Release 2.0 UIT. This section will be updated as the document is further developed and the R2 programme progresses.

### Risks

|  |  |  |
| --- | --- | --- |
| Reference | Description | Mitigation |
| R001 | Delays to completion of earlier Test Phases leads to delay in UIT commencement | Use of time contingency |
| R002 | Delays to the readiness of the UIT B Test Environment leads to delay in R2 UIT testing commencement | Use of time contingency |
| R003 | Delays to the commencement of R2 UIT testing leads to equal delay to the end of the window; creating a delay to R2 Go Live and knock on impact to SMETS1 UIT  | R2 promoted to UIT A and Production once the R1 Regression Risk is addressed in order to:* Allow TPs to continue testing R2 in UIT A
* Free up UIT B to allow SMETS1 UIT to remain on plan
 |
| R004 | Users do not carry out R1 Regression testing of their R1.x User Systems against the R2 DCC Total Solution during the UIT B testing window leaving regression risk when R2 DCC Total Solution goes live | DCC is seeking, through consultation, to obligate Parties to complete such Regression Testing within the UIT B window |

### Assumptions

|  |  |
| --- | --- |
| Reference | Description |
| A001 | Users will be ready to commence UIT from the date of the UIT Entry Gate being successfully achieved (currently 18th May 2018) |
| A002 | User testing will include Regression testing R1.x User Systems against R2 DCC Total Solution to address R004 above |
| A003 | During the period of R2 testing in UIT B and in the absence of any indication of demand from Customers it is assumed that there will be a reduction in demand for testing support in UIT A which maintains the same overall level of demand. |

### Issues

|  |  |
| --- | --- |
| Reference | Description |
|  | None at this point |

### Dependencies

|  |  |
| --- | --- |
| Reference | Description |
| D001 | Availability of the UIT-B environment, Communications Hubs and supporting User guidance |
| D002 | Completion of previous, gating Test Phases (e.g. SIT and DIT) |

##

## Key Testing Periods

There will be two key periods of testing in UIT B for R2 as outlined below:

### Pre-UIT

This Phase will be used by the DCC to ensure that the UIT environment has been built as expected and is ready for UEPT and User System and Device Testing. During this period DCC will also progress customer on-boarding activities including Connectivity Testing of User systems to the DCC UIT B environment.

The specific testing to be carried out by DCC will include:

* UIT B Deployment Testing
* Service Testing which is made up of:
	+ R1.x Automated Regression
	+ R1.x Manual Regression of some R1.x Business Scenarios
* UEPT Dry Run Testing by DCC
	+ Targeted R1.x Regression
	+ Testing of R2.0 SRs (modified R1.x and new for R2.0)

### UIT

UIT provides the opportunity for UEPT and E2E Testing. In the case of R2 there will be two significant periods of testing in E2E covering both Single and Dual Band CH and Device testing

#### UEPT

In order for a Testing Participant to carry out E2E testing, against any particular functionality, testing is required against all SRs that deliver that same functionality. Ordinarily this testing would be performed within formal UEPT. In R2, as was the case for R1.3, there will be a number of options for Testing Participants to test against any such UEPT scope. These options are covered in more detail within section 3 below.

#### E2E for Single Band

This E2E testing period will support a period of testing with Single Band CHs and Devices. This will be divided into two key areas:

* Regression Testing of R1.x SB CHs and Devices against the new R2 version of DCC systems
* Testing of R2 SB CHs and Devices against the new R2 version of the remaining DCC systems.

The DCC approach to supporting this period of testing is described in section 3 below.

#### E2E for Dual Band

This E2E testing period will support a period User testing with Dual Band CHs and Devices against the new R2 version of the remaining DCC systems. The DCC approach to supporting this period of testing is described in section 3 below.

## Governance

R2.0 UIT will be governed within the overall governance framework for all of Release 2.0. This framework will include two key Entry Gates that will govern when particular types of testing may commence in UIT B.

## DCC UIT Entry Gates

The DCC will hold two key UIT Entry Gates, the first being to govern the opening of the UIT window for R2 and the subsequent commencement of UEPT and E2E testing for Single Band. The second will govern the start of UEPT and E2E testing for Dual Band.

### UIT Entry Gate 1 (UEPT and Single Band Testing)

DCC will commence tracking progress against the UIT entry criteria from as early as March 2018 to ensure that any potential issues are dealt with as early as possible. DCC has defined the detailed entry criteria and these have been provided at Appendix B. The table below shows the currently proposed, high level entry criteria for UIT Entry Gate 1 (UEPT and Single Band Testing).



1. High Level Entry Criteria for UIT Entry Gate 1

### UIT Entry Gate 2 (Dual Band Testing)

The DCC will continue monitoring progress towards this second entry gate. The high level criteria for this gate are shown in Table 9 below. The detailed criteria have also been developed and are provided in Appendix C



1. High Level Entry Criteria for UIT Entry Gate 2

# Testing Approaches

DCC recommends a number of testing approaches that are expected to bring specific benefits to Testing Participants and which may enable a more efficient and objective assessment of Release 2.0 UIT testing outcomes. The approaches and associated benefits are described in the following chapters

## UEPT

DCC expects that all R1.x UEPT will continue to be carried out within the UIT A Environment. For Release 2.0 functionality, R2 UEPT testing scope must be conducted within UIT B before any User System and Device Testing may take place in End-2-End testing against that functionality. There are two options for Testing Participants to complete the required UEPT scope of testing in UIT B:

1. The Testing Participant may carry out any such UEPT testing scope in formal UEPT using a DCC Device Set; or
2. The Testing Participant may carry out such UEPT testing scope in E2E testing using an allocated E2E Meter Set. In this instance the Testing Participant must:
	1. Provide the DCC with the dates when they will conduct R2 mandatory testing
	2. Provide evidence of testing to the DCC for review and acceptance
	3. Conduct such tests ahead of carrying out User System and Device Testing with the same SRs

DCC has described the scope of R2 UEPT within the updated CTSD (*Reference 5*)

## E2E

Efficient End-2-End Testing is essential where limited time is available to make an assessment of overall solution performance. DCC recommends a more structured use of the following approaches to End-2-End Testing for Release 2.0 UIT.

### E2E (Open)

Open End-2-End is a term which describes the current, general approach taken to testing in the UIT A environment for R1.x. Test Participants may test any aspect of User System and Device Testing at any time and without any need for sharing test plans. This approach provides significant flexibility to Testing Participants but doesn’t represent the most efficient means of assessing the overall quality of the End-2-End systems including User Systems, the DCC Total Solution and User Devices. DCC will continue to support this approach to End-2-End Testing in UIT B however would strongly recommend a greater use of the other testing approaches described in this section; particularly in reaching an objective assessment in support a positive R2 Go Live decision in 2018.

### E2E (Joint Testing)

Following Go Live for Release 1.3 DCC trialled an alternative approach to End-2-End Testing in UIT A. The approach brought together multiple Testing Participants with a single objective of jointly testing a particular smart metering Business Process. A testing Pilot was conducted with 5 Testing Participants during September and October of 2017 with Change of Supplier being the scope agreed. The Pilot was successful and realised the expected benefits as described below:

* Better coordination of effort across all parties for the key Business Process
* DCC able to provide specific technical expertise to the task
* Faster, more efficient testing with common issues dealt with only once
* Cross party learning and knowledge sharing
* Fewer defects raised resulting in more efficient triage process
* Better overall assessment of the functionality associated to this Business Process

Testing Participants have since engaged in the shaping of further Joint Testing approaches with the goal of driving additional collective benefits and hence faster testing outcomes.

DCC recommends that this approach be used more routinely in Release 2.0 UIT such that it becomes the primary route to making an objective assessment of the Release 2.0 smart metering solution from the UIT perspective. The DCC would be agreeable to adjusting the Testing Services to support such Joint Testing.

### E2E (Device Testing)

A Testing Participant wishing to conduct Device Testing with Devices and which is not eligible to undertake UEPT (e.g. a Device Manufacturer) is limited as described in section 7.1 below.

Following Go Live for Release 1.3 DCC trialled an alternative approach to Device Testing in UIT A. The approach intended to allow such Testing Participants to reach an assessment of Device quality without having to satisfy the terms in section 7.1. This was possible because DCC is able to simulate the Service User related functionality and thereby send and receive Service Requests and receive Responses.

A testing Pilot was undertaken with 3 Testing Participants (Device Manufacturers) during September and October of 2017 with the objective being to assess the technical viability of such an approach. A testing scope was agreed and executed against the various donor Devices and reports created in order to share results. Testing was conducted as a mixture of both Automation and Manual testing and the activity was time bound in order to assess the efficiency of this approach.

The outcomes were as expected with the following key benefits derived:

* Testing Participants able to test Devices without the restrictive constraints described earlier
* Devices able to be assessed/tested independently of a Service User for the first time
* Scope can be tailored to meet specific testing outcomes
* Accessible to other Testing Participants such as Service Users enabling an assessment of Devices against a known functional DCC baseline.

DCC recommends that this approach might be used more routinely in Release 2.0 UIT such that it becomes a supporting aspect in making an objective assessment of the Release 2.0 smart metering solution from the UIT perspective.

This is optional but DCC would be agreeable, where there is demand, to a Change to the Testing Services to support such Device Testing; which can be conducted in the following two ways:

#### Repeatable Standard Scope

DCC would seek to agree a standard, repeatable testing scope which would enable an overall assessment of general Device functional performance against the full suite of Service Requests. This might be broken down into two key areas:

* R1.x Regression – to ensure the Device has not regressed and is functionally complete against the R1.x scope of Service Requests
* R2.0 Assessment – to ensure the Device correctly performs functionally against the R2.0 scope of Service Requests (including those R1.3 Service Requests that have been updated for R2.0)

This assessment may be carried out at any time, independently of Open End-2-End Testing and whilst a Testing Participant (Supplier) is conducting UEPT. The donor Device would be I&C within a reference Meter Set of “known performance”.

#### Scope defined by Testing Participant

Here the DCC may support the creation of a test plan defined by the Testing Participant enabling focus on specific areas of functionality; perhaps if retesting against previously failed aspects of functionality. The scope defined would have to be such that it was likely to fit into a defined time box. This option will be discussed should there be demand.

# DCC expectations upon Parties

With a clear requirement to reach an assessment of progress in Release 2.0 UIT (within the time-boxed period) ahead of Go Live, DCC would highlight that Parties will have some risk that their existing R1.x User Systems may not continue to function correctly with the R2 DCC Total Solution. This is a risk that cannot be mitigated through any form of DCC testing (DCC does not have access to User Systems).

The only means of mitigating this risk ahead of Go Live is for Parties to regression test their R1.x User Systems in UIT B within the testing window and accordingly existing Users will be required to participate in such regression testing.

## Approach to Testing

Section 3 describes the supported approaches to testing in Release 2.0 UIT. DCC would set an expectation that Testing Participants follow a structured approach to testing, within the time-boxed period, such that an objective assessment could be made. The primary objective would be to Regression test User Systems as the first priority. There are three further key areas of testing required before all R2 Devices and Communications Hubs should be used in Production.

### Regression testing of Single Band R1.x Devices and Comms Hubs

DCC would expect that Testing Participants complete Regression Testing of R1 User Systems against the R2 DCC Total Solution as the first priority. DCC may make a positive R2 Go Live proposal where no significant issues were found during any Regression testing of R1.x User Systems.

### Functional testing of Single Band R2.0 Devices and Comms Hubs

Testing Participants may then continue with testing of Single Band R2 Devices and Communications Hubs in the UIT B window or indeed continue in UIT A beyond Go Live. Parties will decide the appropriate point at which to roll out such Devices and Communications Hubs depending upon all UIT testing outcomes.

### Functional testing of Dual Band R2.0 Devices and Comms Hubs

Testing Participants may commence testing of Dual Band R2.0 Devices and Communications Hubs in the UIT B window as soon as UIT Entry Gate 2 (Dual Band) is achieved; subject to the requirement to first complete any mandated UEPT. Testing Participants may continue with the testing of Dual Band R2.0 Devices and Communications Hubs in the UIT B window or indeed continue in UIT A beyond Go Live. Parties will decide the appropriate point at which to roll out such Devices and Communications Hubs depending upon all UIT testing outcomes.

## Test Plans

DCC envisages that Testing Participants may also continue End-2-End Testing in the current E2E (Open) approach. In order for DCC to better support this activity Testing Participants would be requested to share information regarding the areas of functionality being tested at any given time. This would enable DCC to better plan support leading to more efficient testing outcomes for Testing Participants.

In order to ensure the continuity of R1.x functionality in live services, following the deployment of DCC R2 core code, Suppliers may be obliged to conduct User Regression Testing prior to the DCC Go Live date. The SVTAD (*Reference 3*) describes the obligations and which Suppliers are to be obligated.

# UIT Exit Criteria

The R2 UIT Exit Criteria expects that User Regression Testing be successfully executed to aid DCC in making an informed DCC Go Live decision.

Successful completion of such regression testing is to be judged against the following criteria; where the UIT B environment has been available for testing for at least 80 working days:

1. 100% of agreed scope executed by each Supplier that is obligated
2. No new (i.e. not replicable in either Production or UIT A) S1 or S2 defects found against R1 functionality across DCC or Supplier systems

Note: In respect of defects as per ii) above:

* Suppliers should presume that such defects exit in Production unless proven otherwise
* Suppliers will have the responsibility to test in UIT-A, where necessary, to determine if a defect is replicable in Production

Suppliers are expected to self-certify the results of such regression testing, as obligated within the SVTAD, in a format which will be provided to all obligated parties, by DCC, prior to the commencement of R1 Regression Testing.

DCC may, where justifiable, seek to relax the above exit criteria through agreement with the SEC Panel and the Secretary of State.

### Entry Criteria for Suppliers obligated to undertake User Regression Testing

The following Entry Criteria apply in relation to User Regression Testing:

* Regression testing plan agreed with DCC (as described in 5.1.3)
* Connectivity testing completed (connection of DUIS 1 User Test Systems to DUIS 1 URL in DCC UIT B environment)
* Devices for regression testing ready in DCC labs and/or RTLs

### Supplier preparedness for obligated User Regression Testing

Suppliers should prepare themselves for such regression testing, however DCC would suggest that Suppliers should also:

* notify the DCC of their intention to test, in UIT B, within the prescribed timescales
* ensure their own UIT B test systems are compliant with the DUIS 1 Schema (i.e. only send DUIS requests in the DUIS 1 Schema) and are connected to the DUIS 1 URL in the DCC UIT B environment.
* have specified, to the DCC, the CH firmware version they require in the DCC Test Labs

Regression testing may also be conducted within Remote Test Labs (RTL), however should a Supplier wish to carry out such regression testing in RTLs then they should:

* have ordered any required test R1 CHs for use in RTLs, bearing in mind the published lead times
* have ordered any required RTL Services (i.e. WAN connectivity), bearing in mind the published lead times

Suppliers may request the use of R1 DCC Emulators for use in DCC Labs rather than use own meters, if desired. Requests should be made to the DCC no later than 20 working days prior to commencement of testing.

DCC will allocate Device Sets in the DCC Labs for use in carrying out such R1 Regression Testing in UIT B. DCC may prioritise the allocation of Device Sets to R1 Regression Testing ahead of other Supplier testing activities in UIT B.

### User Regression Testing scope and plans

The scope of User Regression Testing tests for a suppliers shall include a representative set of Service Requests that the supplier uses in its communications in relation to Devices comprising Enrolled Smart Metering Systems; either atomically or within business scenarios

Suppliers shall seek to agree the scope of their User Regression Testing, with the DCC, at least 5 working days prior to the commencement of such testing. Test plans should be provided to DCC at least 20 days prior to commencement of such testing.

Test plans should provide sufficient information to allow the DCC to assess suitability in addressing the R1 regression risk and should, at the very least, describe the scope of testing to be undertaken and the configuration of user systems, CHs and Devices to be used.

# Onboarding of Test Participants

Onboarding of Test Participants into UIT B for Release 2.0 will involve Parties either switching test environments from UIT A to UIT B or connecting new UIT B facing User test systems. In addition, new R2.0 compliant Devices will need to be installed in CSP Test Labs and RTLs.

There are a number of complexities related to these activities which have currently been described within an On-Boarding pack issued to TDEG members and subject of a workshop hosted, by DCC, on 22nd January.

The information and direction provided by this On-Boarding pack is to be subsumed into the “Environment Guide for UIT Participants” (*Reference 7*) which is to be published in due course. This document will describe the approach, policies and procedures for users testing across multiple UIT environments and will include, as a minimum, details of Device certification and mobility, triage, defect and fix management, change management, Device management in UIT.

# Conduct of Testing

The DCC will manage the R2 UIT phase in conjunction with its Service Providers and will provide a testing environment, software and services (including Testing Issue resolution support) which can be used by any eligible Testing Participant for the purpose of conducting UEPT and End-to-End Testing.

## Overview and Objectives

As UEPT and End-to-End Testing can be conducted concurrently, any Testing Participant that completes UEPT in a particular User Role (and receives a Test Completion Certificate from the DCC) can then commence End-to-End testing in that User Role.

The tests which Testing Participants may conduct in the UIT Testing phase are:

* User Entry Process Tests (UEPT); and  User System and Device Testing.

Testing Participants that have completed any required UEPT in a particular User Role will not need to repeat it in that User Role prior to conducting User Systems and Device Testing.

One testing environment will be provided (UIT B), which will be shared between UEPT and End-to-End Testing. This will support the concurrent UEPT and E2E activities. The environment will allow the Testing Participant to use:

* The DCC physical test lab: UEPT must be conducted against Devices (provided by the DCC) in the DCC physical test labs. These test labs may also be used for User System and Device Testing; and/or
* The ‘Remote Test Service’: where Testing Participants conduct User System Testing and Device Testing using Devices located within their own test labs (Remote Test Labs).

The completion of UEPT for a particular User Role and SREPT is a mandatory requirement for any Testing Participant that wishes to become a User and take services from the DCC in that User Role.

User System Testing and Device Testing are voluntary activities and any Testing Participant with a valid reason to perform the tests against the DCC can use the test environments for this purpose[[5]](#footnote-5). These Testing Participants include:

* Energy Suppliers;
* Network Parties;
* Other Users;
* Device Manufacturers;
* Shared service providers;  Other software providers; and  Test houses.

A Testing Participant wishing to conduct Device Testing with Devices and which is not eligible to undertake UEPT (e.g. a Device Manufacturer) must first:

* demonstrate that it is capable of sending DUIS Service Requests and receiving Service Responses by establishing a DCC Gateway Connection and performing a DUIS Connectivity Test, as defined in the Common Test Scenarios Document; and
* provide evidence that all DUIS Service Requests can be generated; the form of this evidence may include test results and will be agreed on an individual basis with each Testing Participant.

Should two (or more) Testing Participants wish to co-operate for certain User System or Device tests, such as Change of Supplier, then they may do so, without any need for DCC authorisation. Note that the DCC may need to be informed of changes of supplier, to ensure that the data is available to support this.

## Use of the Test Services and Test Environments

The explicit charges associated with the use of:

* The Remote Test Service by any category of Testing Participant; and
* Test Support Services in addition to a base level of support, which will be available via the request to the Service Desk

will be set out in the Charging Statement which will be published by the DCC on its website. The process for ordering Remote Test Services is set out in the Enduring Testing Approach Document and the Guide for Testing Participants document will also set out the manner in which the Remote Test Service can be established and the lead times for establishing the service and for ordering Prototype Testing Communications Hubs for testing.

The SEC sets out that a Testing Participant must first agree to pay any applicable charges before the test support will be provided.

## Commencement & Duration of the Release 2.0 UIT Phase

The R2 plan allows for the commencement of Release 2.0 UIT once R2 Single Band SIT/DIT testing is concluded. Dual Band testing may not commence in UIT ahead of the completion of R2 Dual Band testing in SIT/DIT. R2.0 UIT phase will commence in line with the date set out in the Joint Industry Plan.

The R2.0 UIT period will close in line with the provisions of the SVTAD.

## Phased implementation of DCC systems

The direction of BEIS Senior Responsible Officer regarding the R2 Plan submitted by DCC, accepted the establishment and overlapping of testing phases. In addition it was accepted that functionality may be released into UIT in two tranches as follows:

### R2.0 Single Band Capabilities

Development of the DCC Total Solution to include full support for the scope of Release 2.0 Service Requests including within Single Band Communications Hubs

### R2.0 Dual Band Capabilities

Development of the DCC Total Solution to include full support for the scope of Release 2.0 Service Requests including within Dual Band Communications Hubs

## Scope of UIT B Testing Environment

The functional scope of the UIT B test environment will be described within the Environment Guide for UIT Participants (*Reference 5*)

# Environments, Networks and Test Labs

## Introduction

The DCC UIT B test environment for R2.0 UIT comprises a set of networked environments provided and supported by each Service Provider. In this test phase, Communications Hubs and Devices may be housed in:

* DCC physical test labs - at each of the CSP’s premises, furnished with:
	+ Debug Capable Prototype Testing Communications Hubs provided by the CSP; and
	+ Devices obtained by the DCC, for use in UEPT; and
	+ Prototype Testing Communications Hubs and Devices obtained by the Testing Participants (unless agreed otherwise), for use in User System and Device Testing;
* Remote Test Labs - at the premises of Testing Participants, furnished with Communications Hubs and Devices obtained by the Testing Participants.

The DCC environment will contain DSP-delivered components of the Smart Metering System, including some features of the Self Service Interface (SSI) The CSPs will each provide a test environment. The TSP will provide a test environment containing all TSP-delivered components of the Smart Metering System. Test SMKI and DCCKI certificates will be used in this Stage, obtained in accordance with the process described in the Enduring Testing Approach Document.

The DCC will provide Debug Capable - Prototype Test Comms Hubs (DC-PTCHs)[[6]](#footnote-6) within the CSP test labs to support the triage process for E2E testing. Standard (non-Debug Capable) Test Comms Hubs will be provided for use in Remote Test Labs with such SB-TCH being available to support the start of R2 UIT testing. New Instrumented Test Communications Hubs (ITCH) will become available in the future and may then be ordered by Parties from the date indicated in section 2.2 above. Description of these Communications Hubs will be provided within the Test Communications Hub Definition document, to be issued in due course.

## Test Labs

### DCC physical test labs (CSP Test Labs)

Each CSP will continue to provide one or more test labs in which Devices may be housed and connected to the CSP’s test system. The CSP test systems will be linked to the DSP via test SM WAN networks. The locations of DCC physical test labs are: one in Winchester for CSP (N); one in Northampton (main site for CSP(C/S)) and another in Runcorn (secondary site for CSP (C/S)).

The DCC physical test labs that are established already accommodate concurrent testing against a number of Device sets (each Device set comprising a Communications Hub, a Gas Meter and an Electricity Meter or Emulators). A number of these Device sets are housed in the CSP Central/South lab and others in the CSP North lab. These DCC physical test labs and Device Sets are to be shared between testing activities in the UIT A and UIT B environments and for UEPT and End-to-End testing in both. The number of Device Sets available in UIT B will be based upon demand for testing across the two environments. The total number of Device Sets may be increased under Change and the DCC is currently assessing this possibility.

Each CSP provides a secure physical environment in which to house Communications Hubs and Metering Devices and will use an appropriate asset management process. The same make/model/ (minimum) firmware version of Communications Hubs and Devices (or Test Stubs) which are used during R2.0 SIT are those which will be used for UEPT.

Each Test Lab will house “sets” of Devices, with a set consisting of:

* one Communications Hub;
* one Electricity Smart Meter;
* one Gas Smart Meter; and
* other Devices or stubs as required to complete UEPT.

### DCC physical test labs for UEPT

A Testing Participant undertaking UEPT must use a DCC physical test lab (and not a Remote Test Lab). The Communications Hubs will be provided by the CSPs and the Devices by the DCC (in conjunction with the Meter Manufacturers). Devices supplied by the DCC could be either DCC Meters or DCC Emulators and this will be confirmed with the TP when allocating space in the lab.

The Communications Hubs will be installed, substituted and maintained by the CSPs. Any supplied DCC Meters will be installed and substituted by the CSPs in conjunction with the Meter Manufacturers and maintained by the Meter Manufacturers. Sufficient numbers of spare Devices will be held in reserve so that faulty Devices can be replaced immediately.

The DCC will allocate a number of spaces in the Lab, together with Device sets to the Testing Participant, as agreed at the UEPT initiation meeting, according to an allocation schedule which will be developed once demand for UEPT across the UIT A (for R1.x UEPT) and UIT B (for R2 UEPT) environments is understood.

DCC will also install and commission Devices for Parties who are not eligible to commission them themselves, i.e. the Party holds neither IS nor GS User Role.

The Device sets allocated for the conduct of User Entry Process Tests shall not be used for other testing without the agreement of DCC, such agreement not to be unreasonably withheld.

Note that these numbers refer to working Devices: where a Device is faulty, then it will be replaced from the spares held for this purpose.

CSP and Meter Manufacturer staff will be available to support the following:

* Device installation scenarios;
* Replacement of faulty Devices; and
* Testing Issue diagnosis.

Note that the functionality of the Devices will not be tested during UEPT.

### DCC physical test labs for User System and Device Testing

A Testing Participant wishing to undertake User System and/or Device Testing may use a DCC physical test lab for this purpose, but must first comply with the required terms and conditions as described in section 4.2.4. The Testing Participant may provide its own Devices or may request the DCC to provide Devices and must book a test slot. The number of spaces that can be reserved will be agreed during the Test Initiation Meeting.

The Testing Participant is responsible for ordering the Prototype Testing Communications Hubs (if they do not want to use the DC-PTCH) and Metering Devices, ensuring their transport to the DCC physical test lab and installing them in the space allocated, as well as for their removal at the end of the test slot (unless otherwise agreed). Details of the procedure for ordering Communications Hubs for testing and associated charges for use of the DCC physical test lab is set out in the Guide for Testing Participants and Charging Statement and SEC Section F10. An order for Communications Hubs for testing must be placed a number of weeks before the required delivery date. However, DCC will also provide DC-PTCHs for Testing Participant’s use, in preference to their own Test Communications Hubs. DCC will provide appropriate support for DC-PTCHs.

The Testing Participant may also provide other Devices, such as In-Home Displays, provided that:

* Prior agreement has been obtained from the DCC;
* The Devices meet the entry criteria described in section 8.2.5.

Upon request by the Testing Participant, the DCC will obtain some Metering Devices. Where the Testing Participant requests the DCC to provide metering Devices, the DCC will be responsible for placing the orders and ensuring the delivery of the equipment to the DCC physical test lab and arranging installation.

Any physical interaction with the Communications Hubs (with the exception of support provided for debug-capable Communications Hubs) or metering Devices must be carried out by the Testing Participant’s staff. The following alerts may be generated by Devices and Communications Hubs from within a DCC physical test lab:

* Smart Meter Integrity Issue (GBCS reference 0x81A0)
* Supply Armed (GBCS reference 0x8F32);
* Device Joined SM HAN (GBCS reference 0x8183);
* Average RMS Voltage above Average RMS Over Voltage Threshold (current value over threshold, previous value below threshold) (GBCS reference 0x8002);
* Future-Date HAN Interface Command Successfully Actioned (GBCS reference 0x8F66);
* Supply Outage Restored (GBCS reference 0x8F35);
* Supply Outage Restored – Outage >= 3 minutes (GBCS reference 0x8F36);
* Device Identity Confirmation (DUIS reference N16);
* Schedule removal because of CoS (DUIS reference N17);
* Device CoS (DUIS reference N27); and
* PowerOutageEvent (DUIS reference AD1);

Any additional alerts or response codes required by the CTSD can also be generated when using metering Devices and Communications Hubs within a DCC physical test lab. Further alerts may be generated, provided they do not require physical interaction with the Devices or change to the power supply in the DCC physical test lab without prior agreement and comply with Health and Safety and any other reasonable instruction.

The storage space requirement for spare equipment will be arranged between the DCC and the Testing Participant when making application to use the Test Lab. The CSPs will provide related facilities for visiting Testing Participant/Meter Manufacturer staff, such as desk space and internet access (for general office communication, not connectivity to the Test Labs or Environments).

### Terms and Conditions for use of DCC physical test labs

Where the Testing Participant is performing tests in a DCC physical test lab, it must comply with any reasonable supplemental terms and conditions that are required by the DCC and notified prior to testing which may include:

* identification and authorisation of the individual(s) requiring access to the DCC physical test laboratory;
* comply with requirements to maintain confidentiality of information;
* comply with policies relating to the acceptable use of the laboratory and equipment; and
* comply with requirements to follow:
	+ health and safety guidance for test laboratories;
	+ security guidance; and
	+ training on use of test laboratories and installation of Devices in spaces provided.
* Where the Testing Participant supplies its own Devices, the Testing Participant must:
	+ remove devices from the DCC physical test laboratory by 17:00 on the last day of the allocated test slot; and
	+ comply with any other reasonable restrictions notified by the DCC, which the DCC shall notify to a Testing Participant when informing them that their requested test slot is available.

Where DCC considers that the Testing Participant has breached any SEC obligations relating to the use of a Testing Service at the physical test laboratory it shall notify the Testing Participant to that effect. The DCC and Testing Participant shall use reasonable steps to rectify the situation. Where the DCC considers that the situation has not been rectified the DCC may request that the Testing Participant shall immediately remove its Devices from the Test Lab and the Testing Participant shall comply with such a request. DCC will provide the Testing Participant with:

* the reason(s) for this instruction; and
* the steps that must be taken and the evidence required, in order for the Participant to recommence testing.

### Entry criteria for Devices placed in DCC physical test labs

The Testing Participant must provide the following to the DCC prior to installing a Device in a DCC physical test lab:

* Where a Testing Participant reasonably believes that devices do not conform to SMETS2, any variations are notified to, and agreed with, the DCC (such agreement not to be unreasonably withheld). Supporting information should be provided, including evidence of testing that has been undertaken, which could include the use of GIT for Industry (GFI).
* Evidence that all the supplied Devices are safe to store, install, operate and decommission. This may be in the form of statement of compliance with the relevant parts of the CE marking or equivalent.
* Confirmation that the Devices have been produced in accordance with a recognised assurance process and a defined testing issue management/configuration management process.

### Remote Test Labs for User System and Device Testing

Testing Participants can choose to conduct User System Testing and Device Testing by using a Remote Test Service (available for both CSP N and CSP C/S), established on premises of their choice. As well as providing the necessary Communications Hubs, Metering Devices and any other Devices (such as In-Home Displays) which they choose to test, the Testing Participant will need to establish a connection to the chosen CSP’s system (or to both CSPs if required). The type of connection depends on the CSP and on the location of the proposed Lab.

A Remote Test Lab may be used as soon as the relevant entry criteria described in section 8.2.5 have been met, which could be at the start of the End-to-End Testing Stage. A Testing Participant using a Remote Test Lab is not required to book a test slot in order to conduct testing.

### Communications Hubs for testing

Communications Hubs for testing will be made available to Testing Participants in line with the milestones in the extant version of the Joint Industry Plan.

### Device Testing

A Testing Participant wishing to conduct Device Testing with Devices and which is not eligible to undertake UEPT (e.g. a Device Manufacturer) must first:

* Provide evidence to the DCC to confirm that it is able to generate Service Requests as set out in DUIS; and
* Demonstrate that it is capable of sending DUIS Service Requests and receiving Service Responses by establishing a DCC Gateway Connection and performing a DUIS Connectivity Test, as defined in the Common Test Scenarios Document.

The evidence of compliance required by the DCC will be test results showing that all DUIS Service Requests can be generated; the form of this evidence will be agreed on an individual basis with each Testing Participant at a Testing Initiation Meeting.

## Testing Participants’ Environments and Equipment

Testing Participants conducting UEPT must use the Communications Hubs and Devices provided by the DCC for the purpose in the DCC physical test labs. UEPT cannot be conducted using the Remote Test Service.

Testing Participants are responsible for establishing connectivity with the DSP network via the DCC Gateway Connection. The DCC will provide support to the Testing Participant as requested and as appropriate. The DCC will also provide Parse & Correlate software to Testing Participants for installation on their test environments.

Testing Participants that are conducting Device Testing are responsible for providing a User System or a simulator which will “drive” the testing by generating DUIS Service Requests.

## Support Hours

The DCC will make the test environments available from 08:00 to 18:00 and provide a test support service from 09:00 to 17:00 on each Working Day. The test environment (including Remote Test Labs) may be used for testing outside these hours, but will be unsupported. Should an issue occur during the night or weekend, then work to resolve it will not commence before 08:00 on the following Working Day.

Access to the DCC physical test labs will be possible 08:00-18:00 on each Working Day.

## Environment Change Management

DCC will ensure a controlled approach to manging the risk associated to releasing new functionality, Devices and defect fixes into the UIT B environment. This will be managed via existing, mature Change Management processes. DCC will outline a suggested release frequency in due course.

1. UIT Plan on a Page



1. Detailed Entry Criteria for UIT Entry Gate 1 (Single Band)

| **Ref** | **Entry Criteria** | **Evidence** |
| --- | --- | --- |
| En1 | Completion of R1.x regression testing on a Region by Region basis (within overall defect mask for SIT Solution Testing) | i) Scope of R1.x Regression Testing and R1.x Regression Test Pack provided to TAG for information |
| ii) Scope and results of R1.x Regression Testing set out in N Region SIT Completion Report and accepted by TAB prior to issuance of SIT Solution Test Completion Certificate for N Region |
| iii) Scope and results of R1.x Regression Testing set out in C&S Region SIT Completion Report and accepted by TAB prior to issuance of SIT Solution Test Completion Certificate for C&S Region |
| iv) Scope of R1.x Regression Testing and R1.x Regression Testing pack provided to SIT Auditor for review |
| En2 | Completion of R2.0 SIT Solution Test and R2.0 SIT UAT within defect mask for Single Band | i) SIT Solution Test Completion Certificate issued by TAB for N Region |
| ii) SIT UAT Test Completion Certificate issued by TAB for N Region |
| iii) SIT Auditor Report issued for N Region |
| iv) ST Solution Test Completion Certificate issued by TAB for C&S Region |
| v) SIT UAT Test Completion Certificate issued by TAB for C&S Region |
| vi) SIT Auditor Report issued for C&S Region |
| vii) Meter Emulator (both Si-Labs and NXP versions) independently assured and confirmed to provide a suitable basis for exit of SIT Solution Testing and SIT UAT. Assurance Report provided to TAG. |
| viii) Release notes provided to TAG for information |
| En3 | Completion of R2.0 DIT Phase 1 SMETS2v2 regression within defect mask for Single Band | i) DIT Test Completion Certificate issued by TAB for N Region for Phase 1 of DIT (i.e. DIT regression with SMETS2v2 devices). |
| ii) DIT Test Completion Certificate issued by TAB for C&S Region for Phase 1 of DIT (i.e. DIT regression with SMETS2v2 devices). |
| En4 | R2.0 code base (Single Band) approved for release into the UIT environment by TAB | i) Approval to Proceed Certificate issued by TAB in respect of N Region |
| ii) Approval to Proceed Certificate issued by TAB in respect of C&S Region |
| En5 | CH Firmware for R2.0 (Single Band) available | i) Firmware release notes produced in respect of each CH (EDMI, Toshiba and WNC), accepted by DCC and provided to Testing Participant in advance of start of E2E testing |
| ii) Confirmation provided by DCC that firmware has completed testing and test results approved by TAB |
| iii) Confirmation provided by CSPs that firmware available for deployment |
| iv) Confirmation provided by each Testing Participant that firmware release notes have been received. |
| En6 | R2 UIT Approach Document (UITAD) approved | i) R2 UITAD approved by Secretary of State |
| ii) R2 UITAD published to DCC Website |
| En7 | R2 UIT supporting documents approved | i) "Common Test Scenarios Document" updated for R2 and approved by Secretary of State |
| ii) "Environment Guide for UIT Participants" approved by TAG |
| iii) "Communications Hub Definition Document" approved by TAG |
| ii) R2 UIT Supporting Documents published to DCC Website |
| En8 | Resources & Processes in place to support testing and defect resolution | i) Statement of resources available to support UEPT, User Testing/E2E Testing and triage activities (including capabilities) provided to DCC by each Service Provider |
| ii) Testing Issues Management Process updated, triage guide and defect management tool provided to each Testing Participant |
| iii) Confirmation from CSPs, DSP and SI that Testing Service availability is: 08:00 – 18:00 Monday to Friday |
| iv) User Guides updated by DCC to reflect R2.0 testing requirements.  |
| v) Test slots allocated to Testing Participants to cover first month of E2E Testing |
| En9 | DCC Device Management Process | i) Device management process approved by DCC |
| ii) Confirmation provided by DCC that process implemented, including across Service Providers. |
| En10 | UIT Environment uplifted to R2.0 (Single Band) | i) Release note provided to TAG, for information, setting out all components of UIT environment and confirming compliance with SIT exit baseline |
| ii) Written confirmation from SI to DCC that environment uplift successful, including manner in which uplift assured.  |
| En11 | Completion of Pre-UIT | i) Scope of Pre-UIT Testing defined in Test Plan, accepted by DCC and provided to TAG for information |
| ii) Evidence of successful completion provided to DCC by Systems Integrator and testing witnessed by DCC and test results accepted by DCC.  |
| En12 | Provision of Device/Business Test Data | i) Device Data, Firmware version and CPL data reviewed by DCC |
| ii) Business Test Data provided by SI and reviewed by DCC |
| iii) Written notification from SI and CSPs that data loaded into DCC systems. |
| iv) Spot check of data load conducted by DCC and confirmation provided that data loaded correctly. |
| v) Data provided to Testing Participants and confirmation of receipt provided to DCC |
| vi) Written confirmation provided to Testing Participants that data loaded into DCC systems.  |
| En13 | Remote Test Lab (RTL) Services available for use | i) RTL services available to order and any ordered services provided according to published lead times (at time of UIT Entry Gate 1) |
| i) Manner in which each CSP will ensure service continuity (including risk and mitigating actions) accepted by DCC.  |
| ii) Confirmation that resources in place to resolve any risks that may materialise |
| En14 | DCC Test Labs | ii) Test Lab set up by CSP N and approved by DCC (including via Test Lab site visit) |
| iii) Test Lab set up by CSP C&S and approved by DCC (including via Test Lab site visit). |
| En15 | Devices provided for R2.0 (Single Band) UEPT/User Testing in CSP Test Labs | i) Notification received from each Testing Participant of number/type of existing devices in CSP test labs that must be upgraded prior to start of E2E Testing |
| ii) Confirmation from CSPs that CH have been upgraded in accordance with i) above |
| iii) Confirmation by DCC that meter sets /emulators have been upgraded in accordance with i) above |
| iv) Notification provided by DCC to CSPs of number of new R2.0 Single Band device sets that are required by each Testing Participant at the start of E2E Testing |
| v) Confirmation provided by CSP to DCC that the device sets in iii) above have been set up |
| vi) Notification from DCC to each Testing Participant confirming that device sets have been upgraded, providing firmware release notes as appropriate |
| vii) Confirmation from DCC that the number of emulators provided supports the UEPT/User Testing/E2E Testing activities planned by Testing Participants  |

1. Detailed Entry Criteria for UIT Entry Gate 2 (Dual Band)

| **Ref** | **Entry Criteria** | **Evidence** |
| --- | --- | --- |
| En1 | Completion of R2 (Single Band) regression testing on a Region by Region basis (within overall defect mask for SIT Solution Testing) | i) Scope of R2 (Single Band) Regression Testing and R2 (Single Band) Regression Test Pack provided to TAG for information |
| ii) Scope and results of R2 (Single Band) Regression Testing set out in N Region SIT Completion Report and accepted by TAB prior to issuance of SIT Solution Test Completion Certificate for N Region |
| iii) Scope and results of R2 (Single Band) Regression Testing set out in C&S Region SIT Completion Report and accepted by TAB prior to issuance of SIT Solution Test Completion Certificate for C&S Region |
| iv) Scope of R1.x Regression Testing and R1.x Regression Testing pack provided to SIT Auditor for review |
| En2 | Completion of R2.0 SIT Solution Test and R2.0 SIT UAT within defect mask for Dual Band | i) SIT Solution Test Completion Certificate issued by TAB for N Region |
| ii) SIT UAT Test Completion Certificate issued by TAB for N Region |
| iii) SIT Auditor Report issued for N Region |
| iv) ST Solution Test Completion Certificate issued by TAB for C&S Region |
| v) SIT UAT Test Completion Certificate issued by TAB for C&S Region |
| vi) SIT Auditor Report issued for C&S Region |
| vii) Meter Emulator independently assured and confirmed to provide a suitable basis for exit of SIT Solution Testing and SIT UAT. Assurance Report provided to TAG. |
| viii) Release notes provided to TAG for information |
| En3 |  Removed |  |
|  |
| En4 | R2.0 code base (Dual Band) approved for release into the UIT environment by TAB | i) Approval to Proceed Certificate issued by TAB in respect of N Region |
| ii) Approval to Proceed Certificate issued by TAB in respect of C&S Region |
| En5 | CH Firmware for R2.0 (Dual Band) available | i) Firmware release notes produced in respect of each CH (EDMI, Toshiba and WNC), accepted by DCC and provided to Testing Participant in advance of start of E2E testing |
| ii) Confirmation provided by DCC that firmware has completed testing and test results approved by TAB |
| iii) Confirmation provided by CSPs that firmware available for deployment |
| iv) Confirmation provided by each Testing Participant that firmware release notes have been received. |
| En6 | Provision of Device/Business Test Data (Dual Band) | i) Device Data, Firmware version and CPL data reviewed by DCC |
| ii) Business Test Data provided by SI and reviewed by DCC |
| iii) Written notification from SI and CSPs that data loaded into DCC systems. |
| iv) Spot check of data load conducted by DCC and confirmation provided that data loaded correctly. |
| v) Data provided to Testing Participants and confirmation of receipt provided to DCC |
| vi) Written confirmation provided to Testing Participants that data loaded into DCC systems.  |
| En7 | Devices provided for R2.0 (Dual Band) UEPT/User Testing in CSP Test Labs | i) Notification received from each Testing Participant of number/type of existing devices in CSP test labs that must be upgraded prior to start of E2E Testing |
| ii) Confirmation from CSPs that CH have been upgraded in accordance with i) above |
| iii) Confirmation by DCC that meter sets /emulators have been upgraded in accordance with i) above |
| iv) Notification provided by DCC to CSPs of number of new R2.0 Dual Band device sets that are required by each Testing Participant at the start of E2E Testing |
| v) Confirmation provided by CSP to DCC that the device sets in iii) above have been set up |
| vi) Notification from DCC to each Testing Participant confirming that device sets have been upgraded, providing firmware release notes as appropriate |
| vii) Confirmation from DCC that the number of emulators provided supports the UEPT/User Testing/E2E Testing activities planned by Testing Participants  |

1. [https://www.smartenergycodecompany.co.uk/sec/sec-and-guidance-documents](https://www.smartenergycodecompany.co.uk/docs/default-source/sec-documents/smart-energy-code-5.4/sec-5-4-section-a---definitions-and-interpretation.pdf?sfvrsn=3) [↑](#footnote-ref-1)
2. 2 R2 will introduce a Dual Band Instrumented Communications Hub for use in DCC and remote test labs. A single band Instrumented Communications Hub is subject to a separate DCC Change Request and is not part of Release 2.0. The earlier of the provision of DB ITCH or SB ITCH will see DCC update working practices and testing participant guidance documentation to support the use of ITCH in RTLs as part of overall issue management activities [↑](#footnote-ref-2)
3. 3 Only in CSP C/S DCC Test Lab [↑](#footnote-ref-3)
4. For clarity, such meters will be installed and commissioned in DCC labs by DCC [↑](#footnote-ref-4)
5. Subject to meeting the requirements for testing set out in this R2 UIT Approach Document and the SEC. [↑](#footnote-ref-5)
6. DC-PTCHs are Communications Hubs that are capable of providing information to support triage, analysis and resolution of issues that may occur between Devices on the HAN. [↑](#footnote-ref-6)