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Digital Enhanced Cordless Telecommunications (DECT);
Ultra Low Energy (ULE);
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Part 1: Test Framework and Profile Test Specification (PTS)
for Home Automation Network (phase 1)

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Contents

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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Digital Enhanced Cordless Telecommunications (DECT).

The present document is part 1 of a multi-part deliverable covering the test specification of DECT Ultra Low Energy (ULE); as identified below:

Part 1: Test Framework and Profile Test Specification (PTS) for Home Automation Network (phase 1);

Part 2: Test Case Library (TCL) for Home Automation Network (phase 1);

Part 3: Protocol Implementation Conformance Statement (PICS) for Home Automation Network (phase 1).

The present document defines the Test Framework and the Profile Test Specification (PTS) for Home Automation Network (phase 1). Home Automation Network (phase 1) is defined as the functionality provided by TS 102 939-1 [10]. Further parts of this multi-part deliverable covering the Test Case Library or additional test specifications for ULE phase 1 or further phases will be defined in the future by other parts of this multi-part deliverable.

The present document is part of the testing specification of DECT Ultra Low Energy (ULE).

The present document is based on TS 102 939-1 [10] (DECT ULE; Home Automation Network - phase 1) and on EN 300 175, parts 1 to 8 [1] to [8] (DECT Common Interface).

The present document has been developed in accordance to the rules of documenting a profile specification as described in ISO/IEC 9646-6 [i.6].

The information in the present document is believed to be correct at the time of publication. However, DECT standardization is a rapidly changing area, and it is possible that some of the information contained in the present document may become outdated or incomplete within relatively short time-scales.

1 Scope

The present document contains the Test Framework and the Profile Test Specification (PTS) for "DECT Ultra Low Energy (ULE); Machine to Machine Communications; Part 1: Home Automation Network (phase 1) (TS 102 939-1 [10])". The present document covers both the Portable (PT) and the Fixed (FT) Radio terminations.

The objective of the present document is to provide a basis for approval tests of DECT Ultra Low Energy Part 1 equipment giving a high probability of air interface inter-operability between different manufacturer's DECT equipment.

The scope of the present document does not cover radio conformance test. The radio conformance is covered by the following documents:

- For devices operating in the DECT frequency band (1 880 MHz to 1 900 MHz): the radio test specification EN 300 176-1 [i.1] and EN 301 406 [i.2].
- For devices operating in the IMT-2000 frequency band (1 900 MHz to 1 920 MHz and other frequency bands): EN 301 908-10 [i.3].

The ISO standard for the methodology of conformance testing (ISO/IEC 9646-1 [i.4] and ISO/IEC 9646-2 [i.5]) as well as the ETSI rules for conformance testing (ETS 300 406 [i.8]) are used as a basis for the test methodology.

2 References

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at http://docbox.etsi.org/Reference.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

2.1 Normative references

The following referenced documents are necessary for the application of the present document.

[1] ETSI EN 300 175-1: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 1: Overview".

[2] ETSI EN 300 175-2: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 2: Physical layer (PHL)".

[3] ETSI EN 300 175-3: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 3: Medium Access Control (MAC) layer".

[4] ETSI EN 300 175-4: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 4: Data Link Control (DLC) layer".

[5] ETSI EN 300 175-5: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 5: Network (NWK) layer".

[6] ETSI EN 300 175-6: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 6: Identities and addressing".

[7] ETSI EN 300 175-7: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 7: Security features".

[8] ETSI EN 300 175-8: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 8: Speech and audio coding and transmission".

[9] ETSI EN 300 444: "Digital Enhanced Cordless Telecommunications (DECT); Generic Access Profile (GAP)".

[10] ETSI TS 102 939-1: "Digital Enhanced Cordless Telecommunications (DECT); Ultra Low Energy (ULE); Machine to Machine Communications; Part 1: Home Automation Network (phase 1)".

[11] ETSI TS 102 527-3: "Digital Enhanced Cordless Telecommunications (DECT); New Generation DECT; Part 3: Extended Wideband Speech Services".

2.2 Informative references

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

[i.1] ETSI EN 300 176-1: "Digital Enhanced Cordless Telecommunications (DECT); Test specification; Part 1: Radio".

[i.2] ETSI EN 301 406: "Digital Enhanced Cordless Telecommunications (DECT); Harmonized EN for Digital Enhanced Cordless Telecommunications (DECT) covering the essential requirements under article 3.2 of the R&TTE Directive; Generic radio".

[i.3] ETSI EN 301 908-10: "Electromagnetic compatibility and Radio spectrum Matters (ERM); Base Stations (BS), Repeaters and User Equipment (UE) for IMT-2000 Third-Generation cellular networks; Part 10: Harmonized EN for IMT-2000, FDMA/TDMA (DECT) covering essential requirements of article 3.2 of the R&TTE Directive".

[i.4] ISO/IEC 9646-1: "Information technology -- Open Systems Interconnection -- Conformance testing methodology and framework -- Part 1: General concepts".

[i.5] ISO/IEC 9646-2: "Information technology -- Open Systems Interconnection -- Conformance testing methodology and framework -- Part 2: Abstract Test Suite specification".

[i.6] ISO/IEC 9646-6: "Information technology -- Open Systems Interconnection -- Conformance testing methodology and framework -- Part 6: Protocol profile test specification".

[i.7] ISO/IEC 9646-7: "Information technology -- Open Systems Interconnection -- Conformance testing methodology and framework -- Part 7: Implementation Conformance Statements".

[i.8] ETSI ETS 300 406: "Methods for Testing and Specification (MTS); Protocol and profile conformance testing specifications; Standardization methodology".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in TS 102 939-1 [10], EN 300 175-1 [1], ISO/IEC 9646-7 [i.7] and the following apply:

block of data: number of octets intended for transmission without interruptions in one or several bursts

NOTE: It may contain one or several SDUs.

certification program: test certification procedure organized by the industry on a voluntary basis with the aim to validate that a submitted implementation meets the required specifications in order to ensure full interoperability between implementations

DECT application layer: top-level C-plane layer that implements the DECT application features described in TS 102 939-1 [10], clause 5.1.5 and runs over ULE C-plane

Implementation Conformance Statement (ICS): statement made by the supplier of an implementation or system claimed to conform to a given specification, stating which capabilities have been implemented

test specific application logic: application layer specific for test and implemented in the test system that provides the required functionality to run the Test Cases described in the present document

ULE application logic (or layer): application layer that implements the ULE application functionality and runs over the ULE U-plane

ULE Phase 1 equipment: Portable Part or Fixed Part compliant with TS 102 939-1 [10].

U-plane test vector: stream of octets composed of one or several SDUs that should be transmitted consecutively over the ULE U-plane during the execution of the test procedures

3.2 Symbols and abbreviations

For the purposes of the present document, the symbols and abbreviations defined in TS 102 939-1 [10], EN 300 175-1 [1], ISO/IEC 9646-1 [i.4], ISO/IEC 9646-6 [i.6], ISO/IEC 9646-7 [i.7] and the following apply:

API	Application Programming Interface
ICS	Implementation Conformance Statement
IUT	Implementation Under Test
PICS	Protocol Implementation Conformance Statement
SAP	Service Access Point
SDK	Software Development Kit
SF1	Service access interface for FP level 1
SP1	Service access interface for PP level 1
TF0	Test interface for FP level 0
TF1	Test interface for FP level 1
TP	Test Purposes
TP0	Test interface for PP level 0
TP1	Test interface for PP level 1
TS	Test System

4 Overview and structure

4.1 Structure of the present document

The present document contains the following elements of the conformance test specifications of DECT Ultra Low Energy (ULE); Part 1: Home Automation Network (phase 1) (TS 102 939-1 [10]):

- Test framework and test architecture
- Test interface specification
- Test Specification conventions
- Profile Test Specification, Test Cases and Test Purposes
- ULE Services, features and procedures to Test Cases traceability table

Additionally it includes the following annexes:

- Description format of U-plane test vectors
- Parameters for static and negotiated capabilities

The present document will be complemented with the following test specifications to be created in the future by means of separate parts of this multi-part deliverable:

- PT and FT Test Case Library
- Run time view of the Test Specification
- Protocol Implementation Conformance Statement (PICS)

The purpose of each one of the different sections is described in the following clauses.

4.2 Overview of the different sections

4.2.1 Overview and Structure

"Overview and Structure" is the present clause of the present document. It explains the structure and content of the different parts of the present document and other parts of this multi-part deliverable.

4.2.2 Test framework and test architecture

Test architecture and Test method used to test the protocol conformance of DECT ULE equipment are described in clause 5.

Clause 5 starts with an overview on the global ULE protocol architecture and the foreseen DECT ULE standards ecosystem. Then, the specific test configurations for PT and FT conformance testing are introduced. As part of this architecture, the test interfaces TF1 and TP1 are created and their position in the overall schema is defined.

4.2.3 Test interface specification

Clause 6 defines the test interfaces TF1 and TP1 created by the test architecture and used in the rest of the present document.

In order to make possible some flexibility in the initial implementation of the interface, only a top level definition, named "functional definition" is provided. This allows flexibility for multiple implementations of the interface that may include Man-Machine-Interfaces (MMI) or not.

4.2.4 Profile Test Specification, Introduction and conventions

Clause 7.1 is an introductory section to the Profile Test Specification (PTS). It provides an overview and defines the conventions that will be used in the rest of the clause.

4.2.5 Profile Test Specification, Test Cases and Test Purposes (definition view)

The "Profile Test Specification, Test Cases and Test Purposes (definition view)" is the core part of the present document from test process specification point of view and is described in clause 7.2. Clause 7.2 creates and defines the different Test Groups, Test Purposes and Test Cases that will be part of the test specification suite. The clause also defines the status (mandatory, optional or conditional) of each Test Case.

4.2.6 ULE Services, features and procedures to Test Cases traceability table

Clause 7.3 provides a set of tables that define the traceability between the Test Cases defined in the present document and the services, features and procedures defined in TS 102 939-1 [10]. In other words, the tables included in clause 7.3 provide information about which Test Cases are testing the different services, features and procedures defined in the main specification.

4.2.7 Description format of U-plane test vectors

The description format of the U-plane vectors is described in annex A. The bit content of the vectors themselves will be given in the Test Case Library. The annex may be seen as an extension of clause 6 defining the interfaces TP1 and TF1.

4.2.8 Parameters for static and negotiated capabilities

Annex B introduces the list of parameters describing capabilities that are either inherent of the IUT or that are negotiated using an application protocol and that need to be exchanged through the interfaces TP1 or TF1 during the test preparation process. The test commands "Retrieve Static capabilities" and "Store Negotiated capabilities" (see clause 6.3.1, table 1) allows to emulate the negotiation process during the Test setup stage.

The test specification will be complemented with the following parts to be created in the future by means of separate parts of this multi-part deliverable:

4.2.9 PT and FT Test Case Library

The Test Case Library defines the detailed content of the Test Cases, including sequence diagrams, states, stimulus and pass criteria. The Test Cases and Test Purpose are defined in clause 7.2 of the present document.

The Test Case Library will be implemented as a separate part (part 2) of this multi-part deliverable.

4.2.10 Run time view of the Test Specification

The Run time view of the Test Specification defines the execution view of the test certification program. In order to do that, the Test Cases are grouped in execution sequences that will be a functional execution unit in the test systems. Sequences are chosen according to technical convenience for the design and implementation of the test equipment and may include multiple Test Cases testing multiple layers.

The Run time view of the Test Specification will be included in part 2 of this multi-part deliverable

4.2.11 Protocol Implementation Conformance Statement (PICS)

The Protocol Implementation Conformance Statement (PICS) proforma is the document that shall be filled by the supplier of any implementation subject to test under the scope of the present document stating which capabilities have been implemented.

5 Test Framework and test architecture

This clause describes the Test architecture and Test method used to test the protocol conformance of DECT ULE equipment. The device under test can be either a FT part or a PT part depending on the test and on what feature is tested.

5.1 Overall ULE protocol architecture

The general ULE phase 1 architecture is depicted in figure 1.

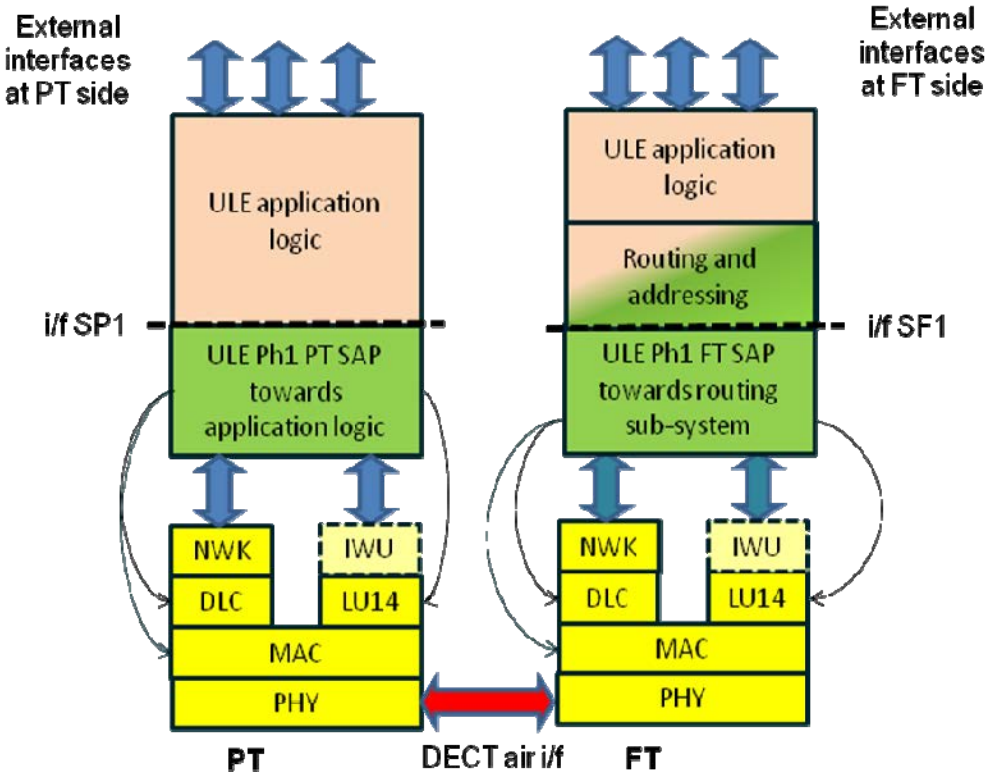

Figure 1: General ULE phase 1 architecture showing interfaces to application layers

The part of the overall architecture that is described by TS 102 939-1 [10] comprises the complete DECT stack from physical (PHY) to the Network (NWK) layer at C-plane and to the Interworking (IWU) layer at the U-plane. This part will be the named "DECT ULE sub-system" and is the test scope of the present document.

NOTE: For the sake of simplicity, in this description the C-plane part of the Interworking layer (NWK control messages related to the interworking) is considered as included in the C-plane NWK layer box. In addition, the DECT Application features (see TS 102 939-1 [10], clause 5.1.5) are considered as included in the C-plane NWK layer box. These DECT Application features should not be confused with the ULE application logic shown in the diagrams and described below.

On top of the "DECT ULE sub-system" there should be primitives (shown as blue arrows), not yet described in TS 102 939-1 [10] towards an interface logic that is in charge of implementing well-defined Software interfaces, the interfaces SP1 and SF1 towards the application logic.

In the Fixed Part, the interface SF1 defines the boundary between the DECT sub-system and an intermediate sub-system named "routing and addressing" that should be in charge of resolving addressing and providing internal and external routing based on such addressing. The "routing and addressing" sub-system is not defined at the time of writing the present document.

On top of such "routing and addressing" sub-system there is the true application logic (layer 7) with the ULE application functionality implemented at FP side.

In the Portable part, such "routing and addressing" sub-system is not needed, and the ULE application logic is placed on top of the DECT sub-system. The interface SP1 is defined as the interface between DECT sub-system and ULE application logic at PP side.

The ULE application logic may be standardized or proprietary. In the case of standardized protocols, the standard may be in the scope of ETSI TC DECT, other ETSI TBs or other organizations.

5.2 ULE standards ecosystem

The foreseen standards ecosystem for the whole ULE technology is depicted in figure 2.

The different parts of the diagram are described below.

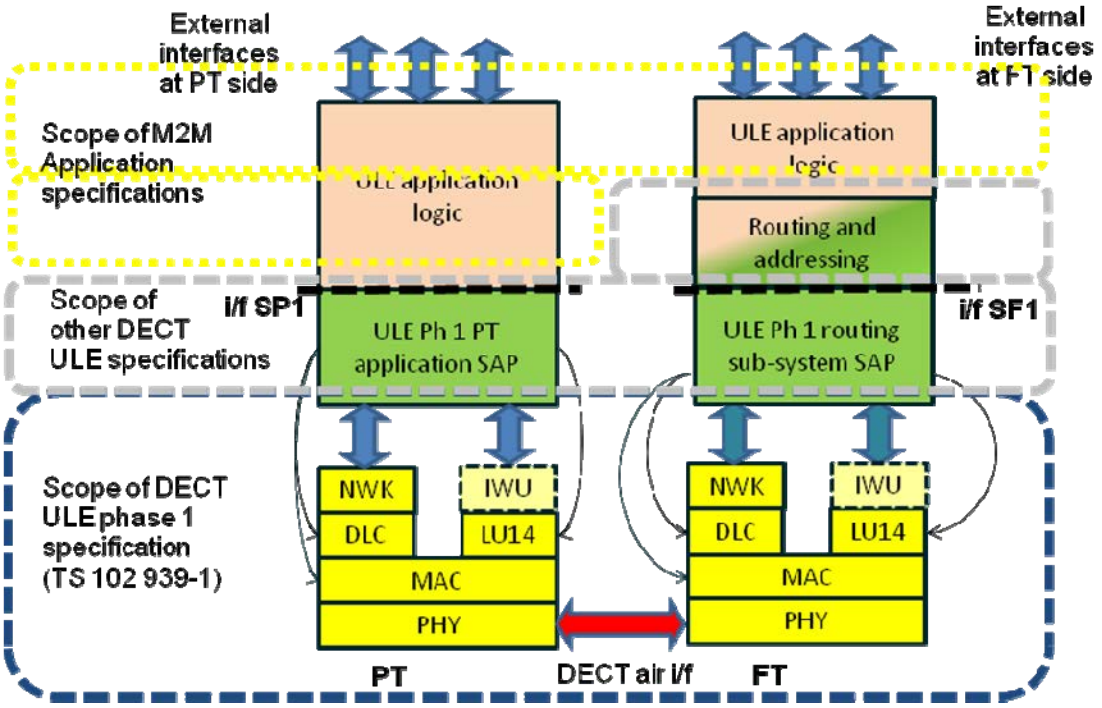

Figure 2: DECT ULE standards ecosystem.

5.2.1 ULE DECT subsystem

The ULE DECT sub-system for both parts is defined in a TS 102 939-1 [10] and further parts of the same multi-part deliverable which are application profiles based on the DECT Common Interface (DECT CI) EN 300 175 parts 1 to 8 [1] to [8].

At the time of writing the present document, only TS 102 939-1 [10] (DECT Ultra Low Energy (ULE); Machine to Machine Communications; Part 1: Home Automation Network (phase 1) is published. Further phases that may be evolutions or extensions of HAN phase 1, or separate scenarios may be defined by further parts of the TS 102 939 series.

5.2.2 Interfaces (Service Access Points) of the DECT subsystem

According to DECT standardization methodology, a series of primitives (see EN 300 175 parts 1 to 8, [1] to [8]) are used for accessing the different DECT layers. However, this primitive model is not considered suitable for practical implementation and has not been standardized beyond what is defined in EN 300 175 specifications. In any case these primitives are only aids for implementation and each particular vendor may use its own solution. Therefore, the use of a specific primitive model would not be the basis for standardization.

In order to provide a standardized interface towards application logic, or towards the "routing and addressing" subsystem described in clause 5.1, it is foreseen that a pair of standardized software interfaces (or Service Access Points, in DECT terminology) named SP1 and SF1 will be defined and fully standardized. Such interfaces would provide an encapsulated view of the DECT system and would be available to the application developers.

Due to the inherent complexity of the technology, platform issues and other practical reasons, the external functional interfaces SP1 and SF1 are not defined at the time of writing the present document. However they are identified as elements for future DECT standardization.

5.2.3 Routing and addressing sub-system

The "Routing and addressing" sub-system is located at the FP side and is in charge of resolving addressing and providing internal and external routing based on such addressing.

The "Routing and addressing" sub-system is not defined at the time of writing the present document. It is identified as a potential element for future standardization; however it is not decided yet if it should be in the scope of the DECT standards, or be in the scope of application specifications.

5.2.4 Application logic

On top of the "routing and addressing" sub-system (FP) and on top of the interface SP1 (PP), there is the true application logic (layer 7). The application logic may be standardized or proprietary.

NOTE: In the case of standardized application logic functionality, dedicated specific application standards will be developed by either ETSI TC DECT, other ETSI TBs or other organizations.

The interfaces SP1 and SF1 will provide the encapsulation of the DECT system from the point of view of the application logic. Such interfaces may be further encapsulated as a Software Development Kit (SDK) making easier the creation of application protocols and application logic.

5.3 Problem and solution to the testing of ULE phase 1

With the current state of standardization the main problem for conformance testing is the lack of clearly defined interfaces SF1 and SP1.

The radio air interface is not an issue since it is clearly defined by TS 102 939-1 [10] up to NWK and IWU layers. Application protocol is, however, not standardized, but it can be replaced at the time of testing by test vectors with proper sizes and standardized content.

An additional problem for ULE testing is the potentially wide range of PP device types, many of them of small size, with limited external interfaces and with significant cost constraints. Because of it, the standardization of a physical test interface (such as a connector, bus, or serial i/f) is seen as not a realistic approach.

The solution that has been found for approaching the test problem is depicted in figures 3 and 4.

It is based on the creation of a specific test interface, which is only defined at functional level. Such interface may be provided by a software module (driver) provided by the vendor of the IUT, or with some limitations, by a Man-Machine Interface. On the other hand, the real physical interface between the device itself and such standardized interface may be proprietary and multiple solutions may be tried by the implementers.

The new standardized test interfaces operate at the level of the planned interfaces SP1 and SF1. It means that at the FT, it is defined *under* the planned addressing and routing sub-system described in figure 1.

5.4 Test configurations: general approach

The present clause presents the general test configurations for testing PT and FT. This general approach is applicable to all Test scenarios and allows both fully automated and manual test configurations.

5.4.1 Test configuration for PT conformance testing

The test configuration for PT conformance testing is shown in figure 3. The key elements of the configuration are the following:

- The Implementation Under Test (IUT):
  - The implementation under test shall provide the DECT ULE radio interface linking it via radio with the test system.

- The test system that shall implement:
  - A complete stack - from Physical layer to a test specific application logic - of the peer part (in this case the FT).
  - A test specific application logic for the PT, that will be internally connected to the equivalent layer in the FT.
  - One interface named TP1, which is the primary intra-PP interface for the purpose of testing. It links the test specific application logic provided by the test system to the driver for the IUT.
- A TP1 standard test interface driver or module, which shall be provided by the manufacturer of the IUT. It shall provide an implementation of the standard interface TP1 and a termination of the interface TP0.
  - The implementation of TP1 may ideally be a software interface (API). In such a case the module would behave as a driver of the Test System platform linking the Test system logic with the IUT. This ideal approach would allow the maximum flexibility and optimal automation of the test process.
  - Or, alternatively, it may be based on a Man-Machine Interface (MMI), allowing a test operator to interact with the IUT according to the test process operations. The implementation with MMI and a human operator is just a particular case of the general architecture.
- An interface TP0 that may be a proprietary interface defined by the vendor of the IUT, linking such IUT with the test standard interface driver or module. Depending on the implementation, the interface may require specific physical interfaces (hardware) at the driver module or may reuse physical interfaces usually present in the test system (such as USB i/f);

NOTE: The interface TP0 may be e.g. a wired point to point electrical i/f, an optical i/f, a radio i/f using other technology, or even a radio i/f based on DECT radio technology. Such i/f is not subject to test under the scope of the present document.

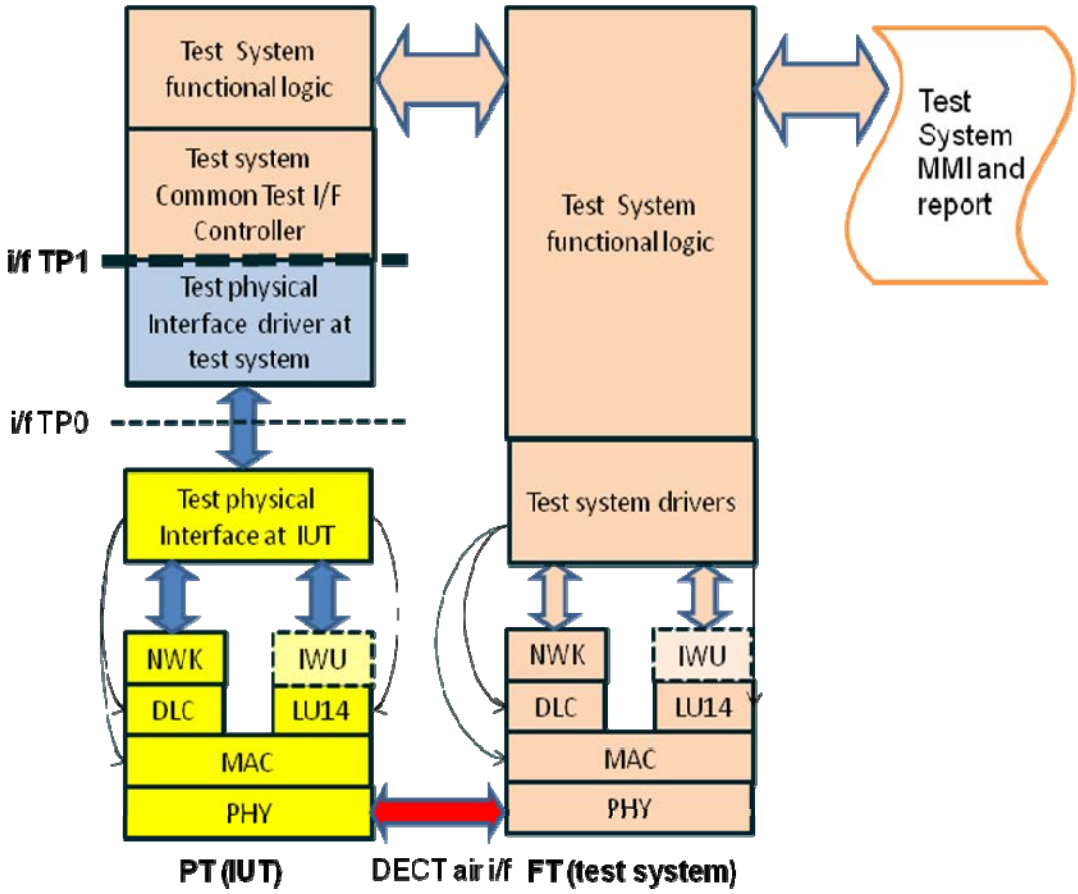

Figure 3: Test configuration for PT conformance testing

5.4.2 Test configuration for FT conformance testing

The test configuration for FT conformance testing is shown in figure 4. The key elements of the configuration are the following:

- The Implementation Under Test (IUT):
  - The implementation under test shall provide the DECT ULE radio interface linking it via radio with the test system.
  - In the case of FT testing, the radio interface shall provide at least two instances (emulating the radio i/f in a FP linked to at least two PTs)
- The test system that shall implement:
  - A complete stack - from Physical layer to a test specific application logic - of the peer part (in this case the PT).
  - A test specific application logic for the FT, that will be internally connected to the equivalent layer in the PT.
  - For FT testing purposes it is assumed that such test logic at the FT also provides an emulation of an addressing and routing layer.
  - One interface named TF1, which is the primary intra-PP interface for the Test Purposes. It links the test specific application logic provided by the test system to the driver for the IUT.
- A TF1 standard test interface driver or module, which shall be provided by the manufacturer of the IUT. It shall provide an implementation of the standard interface TF1 and a termination of the interface TF0:
  - The implementation of TF1 may ideally be a software interface (API). In such a case the module would behave as a driver of the Test System platform linking the Test system logic with the IUT. This ideal approach would allow the maximum flexibility and optimal automation of the test process.
  - Or, alternatively, it may be based on a Man-Machine Interface (MMI), allowing a test operator to interact with the IUT according to the test process operations. The implementation with MMI and a human operator is just a particular case of the general architecture.
- An interface TF0 that may be a proprietary interface defined by the vendor of the IUT, linking such IUT with the test standard interface driver or module. Depending on the implementation, the interface may require specific physical interfaces (hardware) at the driver module or may reuse physical interfaces usually present in the test system (such as USB i/f).

NOTE: The interface TF0 may be e.g. a wired point to point electrical i/f , an optical i/f, a radio i/f using other technology, or even a radio i/f based on DECT radio technology. Such i/f is not subject to test under the scope of the present document.

In the case of FT testing, interfaces TF0 and also TF1 shall provide the capability to control at least two instances of the DECT connection at the IUT.

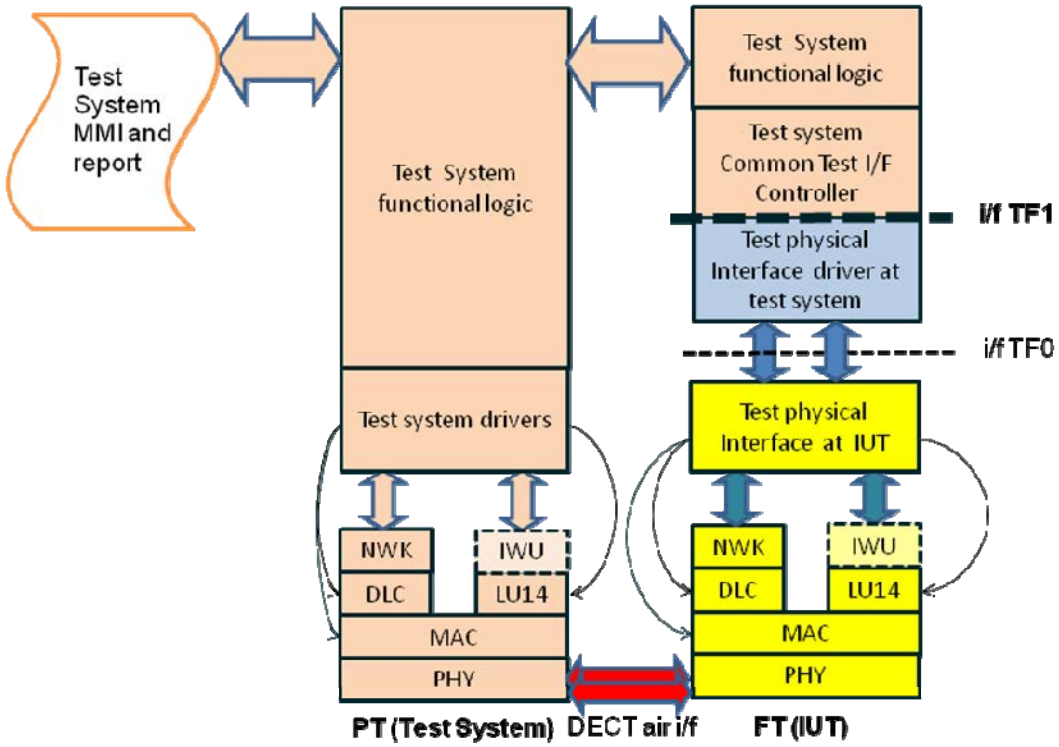

Figure 4: Test configuration for FT conformance testing

5.5 Test configurations: implementation by means of Man-Machine Interfaces

In the present document, a limited approach for the implementation of the interfaces TF1 and TP1 will be used. In this simplified approach the implementation of interfaces TF1 and TP1 will be done by means of Man-Machine Interfaces and a test operator ("human" interface) linking the Test system with the device under test. This configuration is just a particular case of the general test architecture and can be seen as a specific "lower layer" for the implementation of the interface.

The approach, however, introduces specific time constraints in the design of the test process (the human operator can be seen as a very slow "lower layer"). These constraints have been taken into account in the design of the interface functions (see clause 5) and the Test Cases themselves contained in the present document.

The interface is implemented by means of a test operator that interacts during the test process with both, the test system - by means of a MMI (test system display) - and the implementation under test - by means of a Man-Machine Interface.

NOTE: It would be possible to envision scenarios where the interaction between the operator and the Test System would happen by means of documentation (i.e. the operator is reading the present document or other parts of this multi-part deliverable and implementing the actions described in the Test Cases instead of looking at the instructions provided by a console). This is just a particular implementation of the Man-Machine Interface between the test system and the operator and does not change the overall architecture.

5.5.1 Test configuration for PT conformance testing: implementation of TP1 by means of Man-Machine Interfaces

The test configuration for PT conformance testing using Man-Machine Interfaces is shown in figure 5.

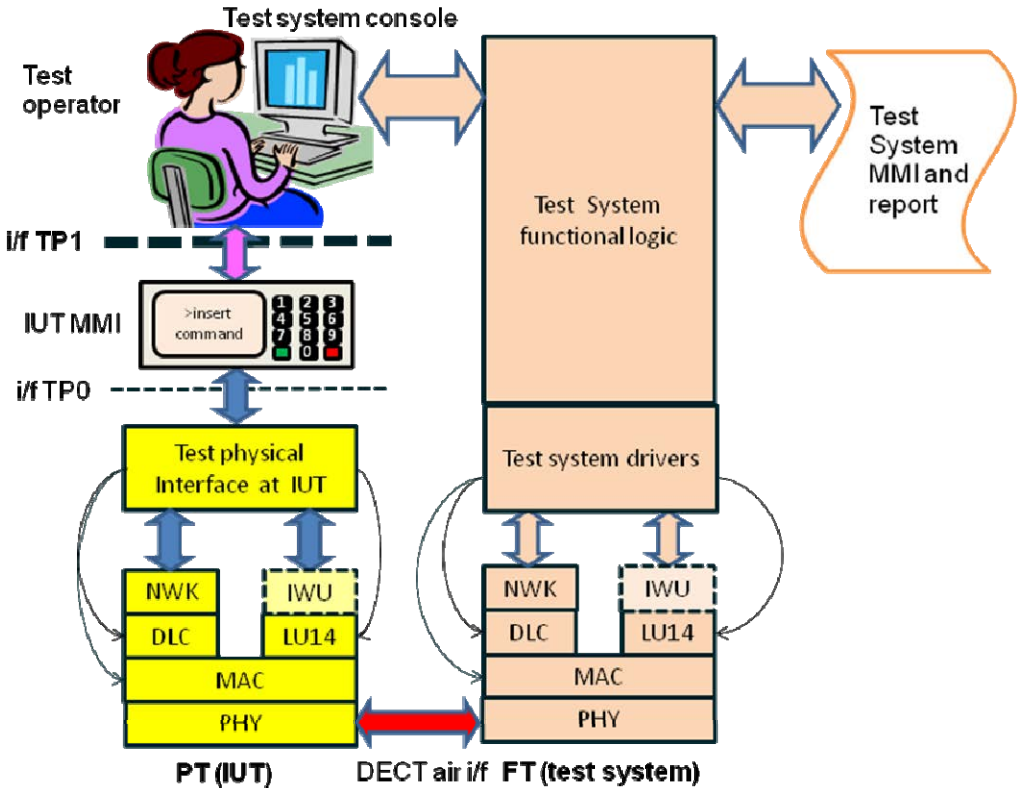

Figure 5: Test configuration for PT conformance testing - implementation of TP1 by means of Man-Machine Interfaces

The overall architecture is identical to the general configuration for PT testing shown in figure 3 with the following differences:

- A human operator (the test operator) is now part of the process and is placed in the position of the interface TP1. The test operator is in contact with the Test System by means of a MMI (the test system console) where he/she can follow the evolution and steps of the test process. At the same time, he/she is in contact with the Implementation Under Test (IUT) by means of a Man-Machine Interface (MMI) supplied by the IUT vendor. The operator executes actions and commands in each of the systems according to instructions or information supplied by the other. These three elements (test system console, operator and IUT MMI) implement the interface TP1.
- The design of the interface TP1 will take into account the time constrains consequence of the human participation in the process:
  - In general, no time critical actions should be implemented at the interface during the test process itself.
  - Bulk data such as test vectors shall not be passed over the interface during the Test process. They may be preloaded during the preparation process and may be observed after completion of the test.
- The interface TP1 at the Test system side is implemented by the test system console and the test operator, potentially supplemented by the use of test documentation (such as the present document).
- The Test physical interface driver at the Test system is implemented by means of an IUT Man-Machine Interface supplied by the IUT vendor, in the same way as the driver described in the general configuration.
- The Test physical interface element at the IUT implementing interface TP0 is the same as the one described for the general approach. However, the response time, throughput and repertory of commands through this interface will take into account the simplifications consequence of the limitations included in the interface definition (see clause 5).

5.5.2 Test configuration for FT conformance testing: implementation of TF1 by means of Man-Machine Interfaces

The test configuration for FT conformance testing using Man-Machine Interfaces is shown in figure 6.

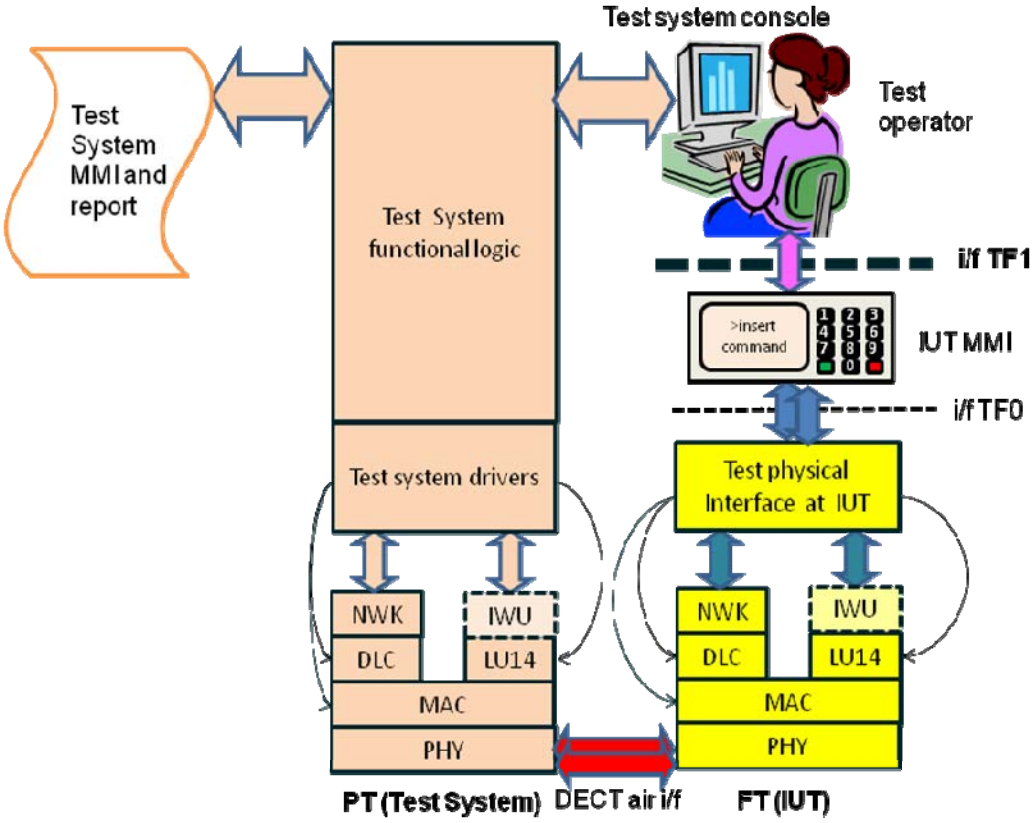

Figure 6: Test configuration for FT conformance testing - implementation of TF1 by means of Man-Machine Interfaces

The overall architecture is identical to the general configuration for FT testing shown in figure 4 with the following differences:

- A human operator (the test operator) is now part of the process and is placed in the position of the interface TF1. The test operator is in contact with the Test System by means of a MMI (the test system console) where he/she can follow the evolution and steps of the test process. At the same time, he/she is in contact with the Implementation Under Test (IUT) by means of a Man-Machine Interface (MMI) supplied by the IUT vendor. The operator executes actions and commands in each of the systems according to instructions or information supplied by the other. These three elements (test system console, operator and IUT MMI) implement the interface TF1.

- The design of the interface TF1 will take into account the time constraints consequence of the human participation in the process:

  - In general, no time critical actions should be implemented at the interface during the test process itself.

  - Bulk data such as test vectors shall not be passed over the interface during the Test process. They may be preloaded during the preparation process and may be observed after completion of the test.

- The interface TF1 at the Test system side is implemented by the test system console and the test operator, potentially supplemented by the use of test documentation (such as the present document).

- The Test physical interface driver at the Test system is implemented by means of an IUT Man-Machine Interface supplied by the IUT vendor, in the same way as the driver described in the general configuration.

- The Test physical interface element at the IUT implementing interface TF0 is the same as the one described for the general approach. However, the response time, throughput and repertory of commands through this interface will take into account the simplifications consequence of the limitations included in the interface definition (see clause 5).

6 Test interfaces

The present clause defines the interfaces TF1 and TP1 used by the present document.

6.1 Level of definition: functional definition

In order to allow some flexibility in the initial implementation of the interface, only a top level definition, named "functional definition" is provided by the present document. This top level definition is implementation agnostic and compatible with any of the approaches (general or human based) described in clause 4. The functional definition defines the functionality and the information exchange of the messages over the interface, however it does not enter in the details of the lower layers that should be needed to carry the information in case of direct software or protocol based interfaces under the general approach.

In the case of implementation by means of Man-Machine Interfaces as described in clause 5.5, the information provided by the present document is considered enough for the implementation. Low layer details such as the aspect of the IUT MMI device or the Test System console are not defined by the present document and are left to the IUT or Test System vendors. However the participation of a human operator in the interface link (see clause 5.5) allows the exchange of information, assuming that the lower layers (the MMI and the Test system console) are able to provide a format understandable by a human person. In this sense, the "operator" may be seen as an interworking lower layer terminating the low layer protocols of both sides and transporting only the high layer semantic, which is the part of the protocol defined by the present document.

6.1.1 Possible implementations

The present document allows the implementation of the interfaces by means of Man-Machine Interfaces, and this is the planned schema for the initial stages of the test certification program.

Nevertheless, a direct implementation based on a software interface is not ruled out and should be possible even with the present document. However such implementation will require an agreement on lower layer details between the implementer of the Test system and the implementer of the device under test. Such low layer part is not covered by the present document yet, however it may be added in the future.

It is expected that the test configuration will evolve to a fully automatic approach (general approach) in future versions of the present document.

The interface definition provided by the present version of the present document has been created before the availability of the first implementations of the test system. It will be enhanced in further releases taking into account feedback from real implementations.

6.2 General conventions

6.2.1 Definitions and terminology

When possible, this section has been written considering any possible implementation of the interface, either via Man-Machine Interfaces or via a direct interface between systems.

6.2.1.1 "Commands" and "signals"

The terms "commands" and "signals" are used interchangeably. Since the present document assumes that first implementations of the interface will be based on MMI, "commands" are normally used for messages sent downstream (towards the IUT) and "signals" for information from the IUT and shown in a MMI. However differentiation between both directions is less clear and probably not fully correct when the interface is a software interface or protocol. Both terms may be assumed as equivalent.

6.2.1.2 TP1 and TF1

Both interface points (TF1 and TP1) are defined in the same set of tables. This organization has been chosen as most commands are identical for both interfaces. A column in the tables indicates if the "command" is applicable to TP1, TF1 or both.

The instance indicator is used only for TF1 interface (FP test).

6.2.1.3 Instance indicator

In the Fixed Part side (interface TF1) it is assumed that there may be multiple instances. Each instance refers to a separate DECT context intended for transmission to different PTs.

The instance indicator provides the addressing when multiple instances of the DECT protocol (several PPs linked to the FP under test) are part of the test scenario. This indicator is a single digit (0-9) that is allocated during the binding process (see clause 6.3.2.4). By practical convenience (to unify numbering in documentation), the allocation starts by the number "1", being the value "0" reserved.

6.2.1.4 "Upstream" and "downstream"

"Up" and "down" column indicates the direction of the command. "Down" means a message sent *downstream* from the Test system (or from the test operator in case of "human" implementation) towards the IUT. "Up" means a message sent *upstream* from the IUT to the test system (or a message shown in a MMI to a test operator in case of "human" implementation). This definition applies to both interfaces TP1 and TF1.

6.2.2 Organization of the messages

Regarding the organization of the messages, the messages are grouped in three groups: test preparation commands, execution commands and post-processing commands:

- Test preparation commands are used before starting the test, but not during the test itself. They are used, i.e. for preloading the test vectors.
- Execution commands are exchanged during the test and are grouped in several functional groups, as described below.
- Post-processing commands are used to retrieve data after completion of the test in order to analyze the result of the test.

In order to avoid timing issues (that may be very relevant if the interface is "human" or slow), the exchange of bulk data (such as inserting the test vectors or retrieving the received data) is only done in the preparatory or in the post-processing stage.

The execution commands are additionally organized into nine groups as follows:

- U-plane transmission
- Other MAC control over ULE connection
- Mobility Management
- Binding control commands (TF1 only)
- CC Service Call

- CC VC control
- IWU-to-IWU transport
- Paging descriptors
- Paging

This classification is conventional and does not attempt to create a perfect layered approach. Other classifications might have been possible.

6.3 Semantic definition for interfaces TP1 and TF1

6.3.1 Test preparation commands

These commands (see table 1) are used during the test preparation stage and have the purpose to preload the test vectors needed by the test process into the IUT. Two variants are provided: variant 1 loads a vector from a library that is known by both sides of the interface (the test system and the IUT driver/MMI), variant 2 allows direct insertion of the vector. For the implementation of the present document, it is assumed that variant 1 will be used with the vector library included in the IUT MMI device either internally or by means of a USB flash drive. Direct load command is mostly intended for mechanical implementation of the interface. There is the option to use it in a limited way (short vectors) for manual insertion via the MMI device.

Table 1: Test preparation commands

Direction	Command/Signal	Parameters	Description	Applicable to	Notes
Down	Load vector from library_req	(Vector_id_xxx, vector_x, instance_y)	Loads vector with id xxx from the library into vector buffer x of instance y	TP1, TF1	
Down	Load vector direct_req	(Vector content, vector_x, instance_y)	Loads vector with content included in the command into vector buffer x of instance y	TP1, TF1	This command is for further study or to be implemented only in a limited form
Down	Retrieve Static capabilities_req	nothing	Request the static capabilities of the IUT	TP1, TF1	For TF1 case, instance indicator is irrelevant
Up	Retrieve Static capabilities_cfm	(list of static capabilities (as table B.1))	Delivers the content of static capabilities of the UT as listed in table B.1	TP1, TF1	Only capabilities of the IUT are delivered. For TF1, instance indicator is not used. See table B.1 in annex B for content.
Down	Store Negotiated capabilities_req	(list of negotiated dynamic capabilities for both sides (as table B.2))	Loads into the IUT the negotiated capabilities after a hypothetical negotiation using an application protocol exchange.	TP1, TF1	The command inserts the negotiated capabilities to be used by both, the IUT and the other end (implemented by the test system) Instance indicator is relevant and is used since different PTs may have different capabilities. See table B.2 in annex B for content.

Direction	Command/Signal	Parameters	Description	Applicable to	Notes
Up	Store Negotiated capabilities_cfm	(confirmation accepted/rejected)	Confirms the reception of previous command	TP1, TF1	Rejected shall only be used if the negotiated capabilities are out of the range of supported static capabilities
NOTE 1: Instance indicator only applies to interface TF1. NOTE 2: See clause B.1 for further information and content of the static and negotiated capabilities messages.					

6.3.2 Execution commands and signals

6.3.2.1 Execution commands and signals: U-plane transmission

These commands (see table 2) are related to U-plane data transmission.

Table 2: Execution commands and signals: U-plane transmission

Direction	Signal	Parameters	Description	Applicable to	Notes
Down	Send vector_req	(vector_x, instance_y)	Causes the transmission without interruptions of vector x over instance y	TP1, TF1	IUT should decide the proper access procedure based on vector size and previous state
Up	Send_vector_cfm	(vector_x, instance_y)	Confirmation of end of transmission of previous command	TP1, TF1	
Down	Send null_req	nothing	Causes a transmission attempt without sending any data	TP1	Applies to PP. For FP, see paging commands
Up	Send null_cfm	nothing	Confirmation of reception of previous command	TP1	
NOTE: Instance indicator only applies to interface TF1.					

6.3.2.2 Execution commands and signals: MAC control over ULE connection

These commands (see table 3) are related to MAC operations over the ULE connection different from normal transmission commands given in the previous table.

Table 3: Execution commands and signals: other MAC control over ULE connection

Direction	Signal	Parameters	Description	Applicable to	Notes
Down	Force RELEASE_req	(release reason content, instance)	Forces an immediate ULE connection release irrespective of transmission state, with transmission of included Release Reason	TP1, TF1	
Up	Force RELEASE_cfm	(release reason content, instance, success yes/no)	Confirms the execution of the command Success = no indicates that no ULE connection was active	TP1, TF1	

Direction	Signal	Parameters	Description	Applicable to	Notes
Down	RELEASE REASON insertion_req	(release reason content, instance)	Forces that if a ULE connection is active, or the next time that it will be active, the IUT will end it inserting a Release message with the given content. It shall not interrupt the U-plane transmission or the duration of the burst.	TP1, TF1	In some cases, it will cause a modification in the expedited operation sequence in order to insert the release (i.e. single burst setup initiated by the IUT)
Up	RELEASE REASON insertion_cfm	(release reason content, instance)	Confirms the execution of the command (the release reason has been sent)	TP1, TF1	
NOTE: Instance indicator only applies to interface TF1.					

6.3.2.3 Execution commands and signals: Mobility Management

These commands (see table 4) are related to Mobility Management operations.

Table 4: Execution commands and signals: Mobility Management

Direction	Signal	Parameters	Description	Applicable to	Notes
Down	REGIST_req	(PARI) (PIN)	Causes the initial registration procedure of the IUT	TP1	
Up	REGIST_cfm	(PARI)	Confirmation of end of execution of previous command	TP1	
Down	LOCATE_req	(PARI)	Causes location registration of the IUT	TP1	
Up	LOCATE_cfm	(PARI)	Confirmation of end of execution of previous command	TP1	
Down	REGIST_mode_req	(PIN)	Places the RFP in registration mode	TF1	In this command, instance number is irrelevant
Down	FT Authenticate_req		Causes the PT to request a FT authentication	TP1	This feature is optional in phase 1 and not covered by the Test Cases for the while. It may be added in the future.
Up	FT Authenticate_cfm	(flag success/no success)	Confirmation of end of execution of previous command	TP1	
Down	PT Authenticate_req	(flag DCK/CCM/null)	Causes the FT to request a PT authentication. It may request the update of MAC key, CCM key or nothing	TF1	
Up	PT Authenticate_cfm	(flag success/no success)	Confirmation of end of execution of previous command	TF1	
NOTE: Instance indicator only applies to interface TF1.					

6.3.2.4 Binding control commands

These commands (see table 5) are only part of the interface TF1 and they are used during FP testing. The bind command is sent upstream when the FP detects that a ULE capable PP has been registered in that FP. The FP then opens an instance in the interface TF1 and allocates the first free instance number to such PP. The IPUI of the PP is sent in the message. This ensures the proper identification of the PP. Further messages for or from such PP are only identified by the instance number.

The Unbind command allows freeing interface instances. It is transmitted upstream when a PP is no longer registered in the FP under test.

Depending on the execution sequence, these messages may happen during preparation stage or during the test sequence itself. In the last case, they may be considered as Mobility Management related. Anyway, they have been grouped into a separate table due to the special significance for the interface operation.

Table 5: Binding control commands (TF1 only)

Direction	Command/Signal	Parameters	Description	Applicable to	Notes
Up	Bind_ind	(instance_y, IPUI)	The FP opens an instance in the interface TF1 for a PP that has been registered to it	TF1	The message is used when a ULE capable PP has been registered in the FP under test. The PP IPUI is included Instance numbering will start by "1".
Up	Unbind_ind	(instance_y, IPUI)	The FP frees an instance in the interface TF1 for a PP that is no longer registered (the de-registration may be either PT initiated or forced via the force-de-register command)	TF1	The message is used when a ULE capable PP has been deregistered in the FP under test. The de-registration may be either PT initiated or forced via the force-de-register command The instance log file is anyway kept until cleared by a post-processing command.
Down	Force-de-register_req	(instance_y)	Forces the de-registration of the PP given by the instance number at the FP without any further air interface action. The command is always followed by an Unbind command sent upstream.	TF1	This command is confirmed by an Unbind command sent upstream.
NOTE: These commands only applies to interface TF1.					

6.3.2.5 Execution commands and signals: CC Service call

The Commands described in table 6 are related to Call Control Service Call.

Table 6: Execution commands and signals: CC Service Call

Direction	Signal	Parameters	Description	Applicable to	Notes
Down	Set_service_call_req		The PP establishes a PT initiated service call	TP1	The PP establishes a service call to the FP with which it is registered.
Up	Set_service_call_cfm	(flag success/fail, fail reason)	The result of the attempt to establish a service call	TP1	This signal indicates the end of the establishment process either by success or failure, and if failure gives a reason.
Up	Set_service_call_ind	(instance_y)	A service call has been started by a registered PP	TF1	An attempt to start a service call by an unregistered PP will be rejected below the TF1 interface.
Down	Release_service_call_req	(instance_y)	Causes an existing service call to be normally dropped	TP1, TF1	Can be invoked by any side
Up	Release_service_call ind	(flag normal/abnormal/fail, fail reason, instance_y)	Notifies that an existing service call has been dropped	TP1, TF1	Both sides receive the notification.
NOTE: Instance indicator only applies to interface TF1.					

6.3.2.6 Execution commands and signals: CC VC control

The commands described in table 7 are related to Call Control operations related to the ULE VC.

Table 7: Execution commands and signals: CC VC control

Direction	Signal	Parameters	Description	Applicable to	Notes
Down	CONFIG_VC_req	(state, flag force state yes/no, attribute content, instance)	Causes a "normal" Service Change operation with included state and attributes. State is changed at both sides	TP1, TF1	Applies to both interfaces If Service Call is not active, it will be started. In TF1 case: 1) if Service Call is not active but VC is, it will cause VC termination with release reason "switch to circuit mode"; 2) if no connection is active, it will cause paging. The proper CC Service Change message configuration shall be used. "force state" flag forces the use of suspend or resume commands in all cases (according to included "state" attribute) If the flag is not set, "other" shall be used If state does not change.

Direction	Signal	Parameters	Description	Applicable to	Notes
Up	CONFIG_VC_cfm	(state, force state yes/no, attribute content, instance, success yes/no)	Confirms termination of the execution of the command	TP1, TF1	
Up	Received_CONFIG_VC_ind	(state, attribute content, instance, success yes/no)	Reports the execution of a VC change initiated by the other side	TP1, TF1	
Down	Force_CONFIG_VC_req	(state, attribute content, instance)	Causes an abnormal change of state and attributes at the IUT WITHOUT real "Service Change" procedure. Used to test response to error cases	TP1, TF1	This command is used to configure the state without running an air i/f procedure. Allows to configure abnormal states, if desired. It does not trigger a real Service Change procedure.
Down	Retrieve CONFIG_VC_req	(instance)	Causes the IUT to send the current VC state and variables (except paging descriptors) without any air interface action	TP1, TF1	
Up	Retrieve CONFIG_VC_cfm	(state, attribute content, instance)	The IUT sends the current VC state and variables (except paging descriptors) without any air interface action	TP1, TF1	See a similar command in table 9 for setting or retrieving descriptors.
NOTE: Instance indicator only applies to interface TF1.					

6.3.2.7 Execution commands and signals: IWU-to-IWU transport

These Commands (see table 8) apply to Call Control operations related to the transmission of IWU-to-IWU messages which, in turn, are related to the ULE VC over a Service Call.

IWU-to-IWU is assumed to operate as an ancillary channel to normal U-plane. Each IWU-to-IWU transmission is assumed to be a single SDU of this ancillary cannel.

The maximum size for the IWU-to-IWU transmission 61 octets.

Table 8: Execution commands and signals: IWU-to-IWU transport

Direction	Signal	Parameters	Description	Applicable to	Notes
Down	SEND_IWU2IWU_req	(content, instance)	Causes the transmission of an IWU-to-IWU message to the other end over the Service Call.	TP1, TF1	If Service Call is not active, it will be started In TF1 case: 1) if Service Call is not active but VC is, it will cause VC termination with release reason "switch to circuit mode"; 2) if no connection is active, it will cause paging Instance only applies to TF1
Up	SEND_IWU2IWU cfm	(instance, success yes/no)	Confirms termination of the execution of the command.	TP1, TF1	

Direction	Signal	Parameters	Description	Applicable to	Notes
Up	RECEIVED_IWU2IWU_ind	(content, instance, success yes/no)	Reports the reception of an IWU2IWU message from the other end over the Service Call.	TP1, TF1	It may be used to report incomplete or unsuccessful reception
NOTE: Instance indicator only applies to interface TF1.					

6.3.2.8 Execution commands and signals: Paging descriptors

Table 9 describes the commands related to the Paging descriptors.

Table 9: Execution commands and signals: Paging descriptors

Direction	Signal	Parameters	Description	Applicable to	Notes
Down	Retrieve Paging CONFIG_req	(instance)	Causes the IUT to send the current paging descriptor configuration without any air interface action	TP1, TF1	If no instance is included in a TF1 command, the IUT will retrieve all descriptors
Up	Retrieve Paging CONFIG_cfm	(descriptors, instance)	The IUT sends the current paging descriptor configuration without any air interface action	TP1, TF1	If no instance is included in a TF1 command, the IUT will retrieve all descriptors to all PPs
Down	Force Paging CONFIG_req	(descriptors, instance)	Causes a abnormal change in the paging descriptor configuration at the IUT without any air interface action It may be used to force both normal or abnormal paging states	TP1, TF1	
Up	Force Paging CONFIG_cfm	(instance)	Confirms the reception and execution of the command	TP1, TF1	
Down	Normal_ Paging CONFIG_req	(instance, wait yes/no, flag absolute/relative, descriptor content)	Causes the FT to execute a normal paging assignation with the descriptors content given in the command. If the flag "wait" is set, execution will happen at the next CONFIG_VC command (together with the other parameters included then). If "wait" is = no, transmission is immediate via CC Service change "other". If "relative" flag is set, the descriptor content shall only include the repetition rate and the offset and bit shall be calculated by the IUT	TF1	
Up	Normal_ Paging CONFIG_cfm	(descriptors, instance, wait yes/no. absolute/relative)	Confirms termination of the execution of the command If "relative" was used, this command shall provide the complete allocated descriptor configuration	TF1	
NOTE: Instance indicator only applies to interface TF1.					

6.3.2.9 Execution commands and signals: Paging

Table 10 describes the commands related to Paging.

Table 10: Execution commands and signals: Paging

Direction	Signal	Parameters	Description	Applicable to	Notes
Down	Normal_PAGE_req	(Instance, opt repetition time)	Causes the FP to send a page to the given PP which has paging descriptors allocated. Paging offset and repetitions shall be calculated by the IUT according to descriptors and configured PT capabilities Should be able to detect and handle the case when the PT has been previously set in high paging mode An optional "repetition time" may be included. Otherwise, the IUT will calculate repetition times according to PT capabilities	TF1	Instance shall be used. PT is identified by the instance. PT Response may be expedited setup or Service Call setup depending on VC state.
Up	Normal_PAGE_cfm	(Instance, opt repetition time)	Confirms termination of the execution of the command	TF1	Instance shall be used. PT is identified by the instance.
Up	Received_PAGE_ind	(action)	Reports the reception of a paging command and the action that the PT has to do	TP1	Action can be expedited setup of Service Call setup.
NOTE: Instance indicator only applies to interface TF1.					

6.3.3 Test post-processing commands

These commands (see table 11) are executed after completion of a test sequence. They allow the test system to retrieve the reception buffer contents for analysis.

Post-processing operations start with a "retrieve" command send downstream. Such command is included foreseeing the future evolution of the interface towards a fully automatic solution.

For solutions based on MMIs, the command may be simply implemented as a message in the test system console, or may even be considered implicitly know by the test operator. The transmission of the reception buffer content is then made by the test operator by means of some manual operations, such as moving a USB flash drive device between systems or other solution. Since the action is not executed in real time it is considered that there is no need to specify any specific mechanism.

The second command "retrieve test log" makes it possible the transmission of a log with all the test commands and signals exchanged during the test sequence for post processing.

Table 11: Test post-processing commands

Direction	Command/Signal	Parameters	Description	Applicable to	Notes
Down	Retrieve Reception buffer_req	(instance_y)	Request the retrieval of the reception buffer content	TP1, TF1	
Up	Reception buffer content_cfm	(Reception buffer content, instance_y)	The content of the reception buffer is transmitter upstream with all associated information	TP1, TF1	
Down	Retrieve test log_req	(instance_y)	Request the retrieval of the log file with all commands and signals exchanged via the interface in real time for post processing	TP1, TF1	
Up	Test log content_cfm	(test log, instance_y)	The content of log file with all commands and signals exchanged via the interface transmitted upstream for further analysis	TP1, TF1	
NOTE: Instance indicator only applies to interface TF1.					

7 Profile Test Specification

7.1 Introduction and conventions

7.1.1 Overview

The Profile Test Specification (PTS) is the core part of the test specification suite. It defines the Test Purposes (TP) and the individual Test Cases (TC) that will define the conformance test of DECT Ultra Low Energy (ULE); Machine to Machine Communications; Part 1: Home Automation Network (phase 1) (TS 102 939-1 [10]).

The present document defines the Test Purposes (TP) and the individual Test Cases (TC) and their support status. The detailed description of each Test Case, including verdict criteria and flowchart diagrams will be provided by a separate Test Case Library (TCL) that will be part 2 of this multi-part deliverable.

The specification of the Test Purposes (TP) and the individual Test Cases (TC) provided by the present document is structured in two different views:

- Profile Test Specification, Test Cases and Test Purposes (definition view).
- ULE Services, features and procedures to Test Cases traceability table.

An additional view will be provided by a separate part 2 of this multi-part deliverable:

- Run time view of the Test Specification (execution view).

7.1.1.1 Description of the different views

The meaning of each view is described in clauses 4.2.5, 4.2.6 and 4.2.10 of the present document.

7.1.2 Test Purposes and Test Cases conventions

This clause defines the Test Purposes (TP) and the Test Cases (TC) required for conformance testing.

7.1.2.1 Organization and terminology

The Test Cases are defined by two tables: one for Portable Part (PP) and other for Fixed Part (FP). The organization in each one of the tables is structured in Test Groups (TGs), Test Purposes (TPs) and Test Cases (TCs). Each Test Group contains one or several Test Purposes (TPs). Each Test Purpose (TP) contains one or more Test Cases (TCs).

The Test Groups (TGs) and Test Purposes (TPs) are designed to be identical for Fixed (FP) and portable (PP) parts. The Test Cases, on the other hand, are specific and may differ between both parts.

7.1.2.2 Format for Test Purposes (TPs)

The following terminology is used for the Test Purposes:

TP_ULE1_XXY

Where TP_ULE1 is the common part and refers to "Test Purpose for ULE series 1". The number 1 here is just a conventional identification of a series and does not necessarily mean ULE part 1. While it is true that all Test Purposes for ULE phase 1 will use "ULE1", it is up to the test specifications for further phases to reuse the series, or to switch to a new one.

XX is the group indicator. It is a conventional two character label that represents the group. The first letter does not necessarily refer to a DECT layer (since there are Test Purposes and Test Cases that test several layers), however some connection (to the most relevant layer) has been kept. The second character is conventional.

Y is a single or two digit decimal number indicating the Test Purpose number within each Test Group.

7.1.2.3 Format for Test Cases (TCs)

The following terminology is used for the Test Cases:

TC_PT_ULE1_XX_TCYZZ for Portable Part Test Cases;

TC_FT_ULE1_NA_TCYZZ for Fixed Part Test Cases.

Where TC_PT_ULE1 (or TC_FT_ULE1) is the common part and stands for "Test Case for Portable Part ULE series 1" (or "Test Case for Fixed Part ULE series 1"). XX is the group indicator already defined. YZZ is a three or four digit Test Case number. The Y part is identical to the Test Purpose number for which the Test Case belongs. ZZ is a consecutive two digit number.

7.1.2.4 Column "status"

The status column indicates the status of the Test Cases. It can have the following values:

"M" means that the Test Case is mandatory and should be tested in all cases

"O" means a Test Case needed by an optional (or conditional) feature (or service or procedure). The need to pass the Test Case or not depends on the specific declaration done in the PICS document by the manufacturer.

"(P)" below the previous symbol is an informative indication meaning the Test Case depends on (and may change depending on) parameters defined in the PICS document. Therefore the checking of such declaration is required, even if the Test Case is mandatory.

N/A means that the Test Case is Not Applicable and should be ignored. The general principle has been that non applicable Test Cases are not listed in the table, but in some specific cases (mostly when a variant of the TC is applicable to the other Termination) the TC hypothetical definition has been included by reference reasons, to facilitate further development of the standard.

7.1.3 General remarks

The following remarks should be taken into account:

- In general, a Test Purpose may require several Test Cases to be fully tested.
- The same Test Case may be testing several procedures during its execution and in some cases several services or features. This may be identified by means of the traceability tables provided in clause 7.3.

- The intention of the chosen approach is to organize the Test Cases by layers. However exceptions have been allowed when justified or convenient. Therefore, the layer isolation is not perfect on purpose. In some cases the same Test Case may be testing services, features or procedures at different layers. This may be easily identified by means of the traceability tables provided in clause 7.3.

- Regarding the execution view, the design of execution sequences prioritises the practical implementation and execution of the Test Cases. It is assumed that most execution sequences may run Test Cases at different layers and test groups. This is done on purpose and is considered an advantage that is a consequence of the flexibility of the chosen approach.

- There may be procedures not tested by any Test Case. This may be due to several reasons: the procedure is considered non critical, or the possibility of non-conformance to the procedure is considered unlikely, or it is routinely tested by other DECT test programs (such as GAP), or it is a practical limitation of the test program. The number of procedures without any applicable Test Case may be reduced in further releases of the present document.

7.2 Profile Test Specification, Test Cases and Test Purposes (definition view)

7.2.1 Portable Part Test Purposes

This clause defines the list of Test Purposes and Portable Part Test Cases required for the conformance test of Portable Radio Terminations implementing "DECT Ultra Low Energy (ULE); Machine to Machine Communications; Part 1: Home Automation Network (phase 1)" (TS 102 939-1 [10]).

Table 12: Portable Part Test Purposes

Test Groups	Test Purpose nr.	Test Purpose description	Test Cases	Test Case description	Status
Group NA : Basic registration tests					
	TP_ULE1_NA1	Check FP extended capabilities			N/A
	TP_ULE1_NA2	Check terminal capability	TC_PT_ULE1_NA_TC201	Check PP transmits terminal capability IE	M
	TP_ULE1_NA3	Check PP can register as a ULE device	TC_PT_ULE1_NA_TC301	Check PP can register as a ULE device	M
			TC_PT_ULE1_NA_TC302	Check PP can register as a ULE device using Easy pairing	O
	TP_ULE1_NA4	Check location procedure and assignment of TPUI	TC_PT_ULE1_NA_TC401	Check location procedure and assignment of TPUI	M
	TP_ULE1_NA5	Check assignment of DCK using DSAA2	TC_PT_ULE1_NA_TC501	Check assignment of DCK using DSAA2 (MAC DCK)	M
			TC_PT_ULE1_NA_TC502	Check assignment of DCK using DSAA (MAC DCK)	O
	TP_ULE1_NA6	Check that a PP can be de-registered	TC_PT_ULE1_NA_TC601	Check that a PP can be de-registered initiated by the PP	O
			TC_PT_ULE1_NA_TC602	Check that a PP can be de-registered initiated by the FP	M

Test Groups	Test Purpose nr.	Test Purpose description	Test Cases	Test Case description	Status
Group NB : ULE Service Call					
	TP_ULE1_NB1	ULE Service Call establishment	TC_PT_ULE1_NB_TC101	Check that a ULE Service Call can be established	M
			TC_PT_ULE1_NB_TC102	Check PP handling of ULE Service call rejection	M
			TC_PT_ULE1_NB_TC103	Check service call is encrypted according to the profile specification with default ciphering key (early encryption)	O
			TC_PT_ULE1_NB_TC104	Check service call is encrypted according to the profile specification after MM (DCK encryption)	M
	TP_ULE1_NB2	Check Service Change (other) for configuration of IWU attributes	TC_PT_ULE1_NB_TC201	Check reception	M
			TC_PT_ULE1_NB_TC202	Check sending	M
	TP_ULE1_NB3	Check assignment of DCK for CCM using DSAA2	TC_PT_ULE1_NB_TC301	Check assignment of DCK for CCM using DSAA2	M
			TC_PT_ULE1_NB_TC302	Check assignment failure (correct behaviour in case of authentication failure)	M
			TC_PT_ULE1_NB_TC303	Check assignment of DCK for CCM using DSAA	O
	TP_ULE1_NB4	Check transport of IWU-to-IWU	TC_PT_ULE1_NB_TC401	Check sending of IWU-to-IWU	O
			TC_PT_ULE1_NB_TC402	Check receiving of IWU-to-IWU	O
	TP_ULE1_NB5	Check midlife FP initiated (PT test) and PP initiated (FT test) reconfiguration of PVC	TC_PT_ULE1_NB_TC501	Check midlife FP initiated reconfiguration of PVC (CC Service change "other" changing parameters in suspend state)	M
			TC_PT_ULE1_NB_TC502	Check midlife FP initiated reconfiguration of PVC (CC Service change "other" changing parameters in resumed state)	M
			TC_PT_ULE1_NB_TC503	Check midlife FP initiated reconfiguration of PVC. Starting at resumed state (CC Service change suspend + CC Service change resume changing parameters both)	M
	TP_ULE1_NB6	Check Service call release	TC_PT_ULE1_NB_TC601	Check Service call release from PP	M
			TC_PT_ULE1_NB_TC602	Check Service call release from FP	M

Test Groups	Test Purpose nr.	Test Purpose description	Test Cases	Test Case description	Status
Group NC : VC control					
	TP_ULE1_NC1	Check use of Service Change "resume" procedure to enable/resume the PVC (both sides with unused CCM key - no modification of other parameters)	TC_PT_ULE1_NC_TC101	Resume from FP Both in suspend	M
			TC_PT_ULE1_NC_TC102	Resume from PP Both in suspend	M
			TC_PT_ULE1_NC_TC103	Resume from FP PP in resumed, FP in suspend	M
			TC_PT_ULE1_NC_TC104	Resume from PP PP in suspend, FP in resume	M
	TP_ULE1_NC2	Check that a clean CCM key is available before the "resume" is accepted	TC_PT_ULE1_NC_TC201	Clean key already available at PP and at FP - FP initiates resume (this TC is the same as TC_PT_ULE1_NC_TC101)	M
			TC_PT_ULE1_NC_TC202	Clean key already available at PP and at FP - PP initiates resume (this TC is the same as TC_PT_ULE1_NC_TC102)	M
			TC_PT_ULE1_NC_TC203	Clean key not initially available at PP and at FP but generated during the procedure. PP initiates resume	M
			TC_PT_ULE1_NC_TC204	Clean key not initially available at PP and at FP but generated during the procedure. PP initiates resume	M
			TC_PT_ULE1_NC_TC205	Clean key at PP, used key at FP, PP initiates resume	M
			TC_PT_ULE1_NC_TC206	Used key at PP, clean key at FP, PP initiates resume	M
			TC_PT_ULE1_NC_TC207	Used key at PP, clean key at FP, FP initiates resume	M
			TC_PT_ULE1_NC_TC208	Used key at FP, clean key at PP, FP initiates resume	M
	TP_ULE1_NC3	Check use of Service Change "suspend" procedure to disable/suspend the PVC	TC_PT_ULE1_NC_TC301	Suspend from FP Both sides in resume at start	M
			TC_PT_ULE1_NC_TC302	Suspend from PP Both sides in resume at start	M
			TC_PT_ULE1_NC_TC303	Suspend from FP PP in suspend, FP in resume	M
			TC_PT_ULE1_NC_TC304	Suspend from FP PP in resume, FP in suspend	M

Test Groups	Test Purpose nr.	Test Purpose description	Test Cases	Test Case description	Status
			TC_PT_ULE1_NC_TC305	Suspend from PP PP in suspend, FP in resume	M
			TC_PT_ULE1_NC_TC306	Suspend from PP PP in resume, FP in suspend	M
			TC_PT_ULE1_NC_TC307	Suspend from FP PP in suspend, FP in suspend	M
			TC_PT_ULE1_NC_TC308	Suspend from PP PP in suspend, FP in suspend	M
	TP_ULE1_NC4	Check service change collision	TC_PT_ULE1_NC_TC401	Check service change FP-PP collision (both sides ask for suspend)	M
			TC_PT_ULE1_NC_TC402	Check service change FP-PP collision (both sides ask for resume	M
	TP_ULE1_NC5	Check that SDUs can only be sent over the PVC when it is resumed, and not when it is suspended	TC_PT_ULE1_NC_TC101	Check that PT does not attempt to set an expedited bearer when the VC is NWK suspended	M
Group ND : DLC layer					
	TP_ULE1_ND1	Check transmission and reception of SDUs (various sizes from 1 to 500 bytes) LU14		(See note 3)	
	TP_ULE1_ND2	Check operation of CCM ciphering procedures (LU14)		(See note 4)	
			TC_PT_ULE1_ND_TC201	Check rejection of corrupt data (wrong CCM) when receiving	M
	TP_ULE1_ND3	Check receiver acknowledgement: G_{FA},	TC_PT_ULE1_ND_TC301	Check processing of received acknowledgement: G_{FA},	M
			TC_PT_ULE1_ND_TC302	Check sending of acknowledgement: G_{FA}, on reception of correct packet	M
			TC_PT_ULE1_ND_TC303	Check sending of acknowledgement: G_{FA}, on reception of out of sequence packet	M
	TP_ULE1_ND4	Check PDU sequence number wrap-around (9 bit)	TC_PT_ULE1_ND_TC401	Check PDU sequence number wrap-around (9 bit) when sending	M
			TC_PT_ULE1_ND_TC402	Check PDU sequence number wrap-around (9 bit) when receiving	M
	TP_ULE1_ND5	Check transmit window handling	TC_PT_ULE1_ND_TC501	Check that PT stops transmission when the window ends (forced by the Test system by not advancing the RNs)	M
	TP_ULE1_ND6	Duplicated PDU	TC_PT_ULE1_ND_TC601	Check handling of the reception of a duplicated PDU	M
	TP_ULE1_ND7	Missing PDU (sequence number jump)	TC_PT_ULE1_ND_TC701	Check the handling of the reception of a missing PDU (sequence number jump)	M

Test Groups	Test Purpose nr.	Test Purpose description	Test Cases	Test Case description	Status
	TP_ULE1_ND8	Check that SDUs can only be sent over the PVC when it is resumed, and not when it is suspended	TC_PT_ULE1_ND_TC801	Check that SDUs cannot be sent when the PVC is suspended - Check that PT never tries to attempt an expedited bearer setup when the VC is suspended at the PT (suspended at sending end)	M
			TC_PT_ULE1_ND_TC802	Check that SDUs cannot be sent when the PVC is suspended (suspended at receiving end) - Check that PT reacts properly to an expedited bearer setup reject done by the FT *(this TC is similar to a TC covering release reasons)*	M
	TP_ULE1_ND9	Check operation of CRC (LU13)		(See note 5)	
			TC_PT_ULE1_ND_TC901	Check rejection of corrupt data (wrong CRC) when receiving (DLC LU13)	O
Group NE : Paging (NWK and MAC layers)					
	TP_ULE1_NE1	Check allocation of paging descriptors	TC_PT_ULE1_NE_TC101	Check receiving paging descriptor allocation information (one initial descriptor) - initial suspended state, CC Service change resume message	M
			TC_PT_ULE1_NE_TC102	Check receiving paging descriptor allocation information (one descriptor replacing a previous one) - initial suspended state, CC Service change resume message	M
			TC_PT_ULE1_NE_TC103	Check receiving paging descriptor allocation information (one additional descriptor - total 2 descriptors) initial suspended state, CC Service change resume message	M
			TC_PT_ULE1_NE_TC104	Check receiving paging descriptor allocation information (two descriptors sent at once replacing previous ones) initial suspended state, CC Service change resume message - flags in subfields 1 and 3	M
			TC_PT_ULE1_NE_TC105	Check receiving paging descriptor allocation information (two descriptors sent at once replacing previous ones) initial resumed state, CC Service change other message -flags in the same subfield	M

Test Groups	Test Purpose nr.	Test Purpose description	Test Cases	Test Case description	Status
	TP_ULE1_NE2	Check paging when PVC is NWK resumed	TC_PT_ULE1_NE_TC201	Check PP will recognise page messages intended for it. In normal paging reception mode - wake up timer declared by the IUT vendor will be taken into account	M (P)
			TC_PT_ULE1_NE_TC202	Check if PP will recognise page messages intended for it. In normal paging reception mode - wake up timer declared by the IUT vendor will be taken into account. Two descriptors. TC checks response for the two descriptors	M
			TC_PT_ULE1_NE_TC203	Check if PP will recognise page messages intended for it - in high paging detection mode (activated by a previous MAC release)	M
			TC_PT_ULE1_NE_TC204	Check if PP will ignore page messages not intended for this PP	O
	TP_ULE1_NE3	Check page handling when PVC is NWK suspended	TC_PT_ULE1_NE_TC301	Check if PP will recognise page messages intended for it - (response is initiating a Service call) - In normal paging reception mode - wake up timer declared by the IUT vendor will be taken into account	M
			TC_PT_ULE1_NE_TC302	Check if PP will recognise page messages intended for it - (response is initiating a Service call) - In normal paging reception mode - in high paging detection mode (activated by a previous MAC release)	M
			TC_PT_ULE1_NE_TC303	Check if PP will ignore page messages not intended for this PP	O
Group MA : C/O transfer: Combined MAC/DLC/CCM Test Cases LU14 cases					
	TP_ULE1_MA1	Combined MAC/DLC Test Case: Check upstream transmission and reception using expedited bearer length (various sizes corresponding to SDU size from 1 to 500 bytes) with DLC service LU14 and CCM encryption	TC_PT_ULE1_MA_TC101	Check upstream transmission and reception using expedited bearer setup of a single short SDU of length 1 bytes (single burst setup) with DLC service LU14 and CCM encryption (only 1 SDU per PDU)	M

Test Groups	Test Purpose nr.	Test Purpose description	Test Cases	Test Case description	Status
			TC_PT_ULE1_MA_TC102	Check upstream transmission and reception using expedited bearer setup of a single short SDU of length 32 bytes (single burst setup) with DLC service LU14 and CCM encryption (only 1 SDU per PDU)	M
			TC_PT_ULE1_MA_TC103	Check upstream transmission and reception using expedited bearer setup of a single short SDU of length 80 bytes (multi burst setup) with DLC service LU14 and CCM encryption (only 1 SDU per PDU)	M
			TC_PT_ULE1_MA_TC104	Check upstream transmission and reception using expedited bearer setup of a single short SDU of length 250 bytes (multi burst setup) with DLC service LU14 and CCM encryption (only 1 SDU per PDU)	M
			TC_PT_ULE1_MA_TC105	Check upstream transmission and reception using expedited bearer setup of a single short SDU of length 500 bytes (multi burst setup) with DLC service LU14 and CCM encryption (only 1 SDU per PDU)	M
			TC_PT_ULE1_MA_TC106	Check upstream transmission and reception using expedited bearer setup of multiple SDUs: number of SDUs=2, total length 80 bytes (multi burst setup) with DLC service LU14 and CCM encryption (only 1 SDU per PDU)	M
			TC_PT_ULE1_MA_TC107	Check upstream transmission and reception using expedited bearer setup of multiple SDUs: number of SDUs=5, total length 500 bytes (multi burst setup) with DLC service LU14 and CCM encryption (only 1 SDU per PDU)	M
	TP_ULE1_MA2	Combined MAC/DLC Test Case: Check downstream transmission and reception using expedited bearer length (various sizes corresponding to SDU size from 1 to 500 bytes) with DLC service LU14 and CCM encryption	TC_PT_ULE1_MA_TC201	Check downstream transmission and reception using expedited bearer setup of a single short SDU of length 1 byte (single burst setup > ready for release) with DLC service LU14 and CCM encryption (only 1 SDU per PDU)	M

Test Groups	Test Purpose nr.	Test Purpose description	Test Cases	Test Case description	Status
			TC_PT_ULE1_MA_TC202	Check downstream transmission and reception using expedited bearer setup of a single short SDU of length 32 bytes (single burst setup > ready for release) with DLC service LU14 and CCM encryption (only 1 SDU per PDU)	M
			TC_PT_ULE1_MA_TC203	Check downstream transmission and reception using expedited bearer setup of a single SDU of length 80 bytes (single burst setup > bearer confirm >other>ready for release) with DLC service LU14 and CCM encryption (only 1 SDU per PDU)	M
			TC_PT_ULE1_MA_TC204	Check downstream transmission and reception using expedited bearer setup of a single SDU of length 250 bytes (single burst setup > bearer confirm >other>...>other>ready for release) with DLC service LU14 and CCM encryption (only 1 SDU per PDU)	M
			TC_PT_ULE1_MA_TC205	Check downstream transmission and reception using expedited bearer setup of a single SDU of length 500 bytes (single burst setup > bearer confirm >other>...>other>ready for release) with DLC service LU14 and CCM encryption (only 1 SDU per PDU)	M
			TC_PT_ULE1_MA_TC206	Check downstream transmission and reception using expedited bearer setup of multiple SDUs: number of SDUs=2, total length 80 bytes (single burst setup > bearer confirm >ready for release) with DLC service LU14 and CCM encryption (only 1 SDU per PDU)	M
			TC_PT_ULE1_MA_TC207	Check downstream transmission and reception using expedited bearer setup of multiple SDUs: number of SDUs=5, total length 500 bytes (single burst setup > bearer confirm >other>...>other>ready for release) with DLC service LU14 and CCM encryption (only 1 SDU per PDU)	M

Test Groups	Test Purpose nr.	Test Purpose description	Test Cases	Test Case description	Status
	TP_ULE1_MA3	Combined MAC/DLC Test Case: Check two-way transmission and reception using expedited bearer length (various combinations and SDU sizes from 1 to 500 bytes) with DLC service LU14 and CCM encryption	TC_PT_ULE1_MA_TC301	Check two-way transmission and reception using expedited bearer setup: PT initiated operation (single burst initial setup attempt); upstream = short SDU of length 32 bytes: downstream = single SDU of 32 bytes with DLC service LU14 and CCM encryption (only 1 SDU per PDU)	M
			TC_PT_ULE1_MA_TC302	Check two-way transmission and reception using expedited bearer setup: PT initiated operation (single burst initial setup attempt); upstream = short SDU of length 32 bytes: downstream = single SDU of 80 bytes with DLC service LU14 and CCM encryption (only 1 SDU per PDU)	M
			TC_PT_ULE1_MA_TC303	Check two-way transmission and reception using expedited bearer setup: PT initiated operation (multi burst initial setup attempt); upstream = single SDU of length 80 bytes: downstream = single SDU of 1 bytes with DLC service LU14 and CCM encryption (only 1 SDU per PDU)	M
			TC_PT_ULE1_MA_TC304	Check two-way transmission and reception using expedited bearer setup: PT initiated operation (multi burst initial setup attempt); upstream = single SDU of length 32 bytes: downstream = 5 SDUs of total length 500 bytes with DLC service LU14 and CCM encryption (only 1 SDU per PDU)	M
			TC_PT_ULE1_MA_TC305	Check two-way transmission and reception using expedited bearer setup: PT initiated operation (single burst initial setup attempt); upstream = single SDU of length 32 bytes: downstream = single SDU of 1 bytes with DLC service LU14 and CCM encryption (only 1 SDU per PDU)	M
			TC_PT_ULE1_MA_TC306	Check two-way transmission and reception using expedited bearer setup: PT initiated operation (multi burst initial setup attempt); upstream a single block of data of the maximum size declared by the IUT vendor (with a single SDU), Downstream a single block of data of the maximum size declared by the IUT vendor (with a single SDU). DLC service LU14 and CCM encryption	M (P)

Test Groups	Test Purpose nr.	Test Purpose description	Test Cases	Test Case description	Status
Group MB : C/O transfer: Combined MAC/DLC Test Cases LU13 cases					
	TP_ULE1_MB1	Combined MAC/DLC Test Case: Check upstream transmission and reception using expedited bearer length (various sizes corresponding to SDU size from 1 to 500 bytes) with DLC service LU13 (no CCM encryption)	TC_PT_ULE1_MB_TC101	Check upstream transmission and reception using expedited bearer setup of a single short SDU of length 1 bytes (single burst setup) with DLC service LU13 (no CCM encryption) (only 1 SDU per PDU)	O
			TC_PT_ULE1_MB_TC102	Check upstream transmission and reception using expedited bearer setup of a single short SDU of length 32 bytes (single burst setup) with DLC service LU13 (no CCM encryption) (only 1 SDU per PDU)	O
			TC_PT_ULE1_MB_TC103	Check upstream transmission and reception using expedited bearer setup of a single short SDU of length 80 bytes (multi burst setup) with DLC service LU13 (no CCM encryption) (only 1 SDU per PDU)	O
			TC_PT_ULE1_MB_TC104	Check upstream transmission and reception using expedited bearer setup of a single short SDU of length 250 bytes (multi burst setup) with DLC service LU13 (no CCM encryption) (only 1 SDU per PDU)	O
			TC_PT_ULE1_MB_TC105	Check upstream transmission and reception using expedited bearer setup of a single short SDU of length 500 bytes (multi burst setup) with DLC service LU13 (no CCM encryption) (only 1 SDU per PDU)	O
			TC_PT_ULE1_MB_TC106	Check upstream transmission and reception using expedited bearer setup of multiple SDUs: number of SDUs=2, total length 80 bytes (multi burst setup) with DLC service LU13 (no CCM encryption) (only 1 SDU per PDU)	O

Test Groups	Test Purpose nr.	Test Purpose description	Test Cases	Test Case description	Status
			TC_PT_ULE1_MB_TC107	Check upstream transmission and reception using expedited bearer setup of multiple SDUs: number of SDUs=5, total length 500 bytes (multi burst setup) with DLC service LU13 (no CCM encryption) (only 1 SDU per PDU)	O
	TP_ULE1_MB2	Combined MAC/DLC Test Case: Check downstream transmission and reception using expedited bearer length (various sizes corresponding to SDU size from 1 to 500 bytes) with DLC service LU13 (no CCM encryption)	TC_PT_ULE1_MB_TC201	Check downstream transmission and reception using expedited bearer setup of a single short SDU of length 1 bytes (single burst setup > ready for release) with DLC service LU13 (no CCM encryption) (only 1 SDU per PDU)	O
			TC_PT_ULE1_MB_TC202	Check downstream transmission and reception using expedited bearer setup of a single short SDU of length 32 bytes (single burst setup > ready for release) with DLC service LU13 (no CCM encryption) (only 1 SDU per PDU)	O
			TC_PT_ULE1_MB_TC203	Check downstream transmission and reception using expedited bearer setup of a single SDU of length 80 bytes (single burst setup > bearer confirm >other>ready for release) with DLC service LU13 (no CCM encryption) (only 1 SDU per PDU)	O
			TC_PT_ULE1_MB_TC204	Check downstream transmission and reception using expedited bearer setup of a single SDU of length 250 bytes (single burst setup > bearer confirm >other>...>other>ready for release) with DLC service LU13 (no CCM encryption) (only 1 SDU per PDU)	O
			TC_PT_ULE1_MB_TC205	Check downstream transmission and reception using expedited bearer setup of a single SDU of length 500 bytes (single burst setup > bearer confirm >other>...>other>ready for release) with DLC service LU13 (no CCM encryption) (only 1 SDU per PDU)	O
			TC_PT_ULE1_MB_TC206	Check downstream transmission and reception using expedited bearer setup of multiple SDUs: number of SDUs=2, total length 80 bytes (single burst setup > bearer confirm >ready for release) with DLC service LU13 (no CCM encryption) (only 1 SDU per PDU)	O

Test Groups	Test Purpose nr.	Test Purpose description	Test Cases	Test Case description	Status
			TC_PT_ULE1_MB_TC207	Check downstream transmission and reception using expedited bearer setup of multiple SDUs: number of SDUs=5, total length 500 bytes (single burst setup > bearer confirm >other>...>other>ready for release) with DLC service LU13 (no CCM encryption) (only 1 SDU per PDU)	O
	TP_ULE1_MB3	Combined MAC/DLC Test Case: Check two-way transmission and reception using expedited bearer length (various combinations and SDU sizes from 1 to 500 bytes) with DLC service LU13 (no CCM encryption)	TC_PT_ULE1_MB_TC301	Check two-way transmission and reception using expedited bearer setup: PT initiated operation (single burst initial setup attempt); upstream = short SDU of length 32 bytes: downstream = single SDU of 32 bytes with DLC service LU13 (no CCM encryption) (only 1 SDU per PDU)	O
			TC_PT_ULE1_MB_TC302	Check two-way transmission and reception using expedited bearer setup: PT initiated operation (single burst initial setup attempt); upstream = short SDU of length 32 bytes: downstream = single SDU of 80 bytes with DLC service LU13 (no CCM encryption) (only 1 SDU per PDU)	O
			TC_PT_ULE1_MB_TC303	Check two-way transmission and reception using expedited bearer setup: PT initiated operation (multi burst initial setup attempt); upstream = single SDU of length 80 bytes: downstream = single SDU of 1 bytes with DLC service LU13 (no CCM encryption) (only 1 SDU per PDU)	O
			TC_PT_ULE1_MB_TC304	Check two-way transmission and reception using expedited bearer setup: PT initiated operation (multi burst initial setup attempt); upstream = single SDU of length 32 bytes: downstream = 5 SDUs of total length 500 bytes with DLC service LU13 (no CCM encryption) (only 1 SDU per PDU)	O
			TC_PT_ULE1_MB_TC305	Check two-way transmission and reception using expedited bearer setup: PT initiated operation (single burst initial setup attempt); upstream = single SDU of length 32 bytes: downstream = single SDU of 1 bytes with DLC service LU13 (no CCM encryption) (only 1 SDU per PDU)	O

Test Groups	Test Purpose nr.	Test Purpose description	Test Cases	Test Case description	Status
			TC_PT_ULE1_MB_TC306	Check two-way transmission and reception using expedited bearer setup: PT initiated operation (single burst initial setup attempt); upstream = 2 SDU of total length 32 bytes: downstream = 5 SDU of total length 200 bytes with DLC service LU13 (no CCM encryption) (there will be up to 2 SDU per PDU in both directions)	O
			TC_PT_ULE1_MB_TC307	Check two-way transmission and reception using expedited bearer setup: PT initiated operation (multi burst initial setup attempt); upstream a single block of data of the maximum size declared by the IUT vendor (with a single SDU), Downstream a single block of data of the maximum size declared by the IUT vendor (with a single SDU). DLC service LU13 (no CCM encryption)	O (P)
Group MC : C/O transfer: MAC only Test Cases					
	TP_ULE1_MC1	Check transmission and reception with no U-plane data (stay alive like procedure)	TC_PT_ULE1_MC_TC101	Check transmission and reception with no PDU. No-B-field code (but B-field transmission)	M
			TC_PT_ULE1_MC_TC102	Check transmission and reception with no PDU, checking response to allowed cases of no transmission of the B-field	M
	TP_ULE1_MC2	Check acceptance of no B-field in expedited bearers	TC_PT_ULE1_MC_TC201	Check acceptance of no B-field in expedited bearers. No-B-field code (but B-field transmission)	M
			TC_PT_ULE1_MC_TC202	Check acceptance of no B-field in expedited bearers - checking response to allowed cases of no transmission of the B-field	M
	TP_ULE1_MC3	Check various "release reason" codes for the release:	TC_PT_ULE1_MC_TC301	Check PT response to Base station busy	M
			TC_PT_ULE1_MC_TC302	Check PT response to Unacceptable PMID	M
			TC_PT_ULE1_MC_TC303	Check PT response to No such connection/virtual circuit	M
			TC_PT_ULE1_MC_TC304	Check PT response to Setup again after n frames (use case as defined in clause 10.10.5.7 of [10])	M

Test Groups	Test Purpose nr.	Test Purpose description	Test Cases	Test Case description	Status
	TP_ULE1_MC4	Check release reason: switch to circuit mode	TC_PT_ULE1_MC_TC401	Check PT response to Check switch to circuit mode (Start ULE service call) triggered by release reason (use case as defined in clause 10.10.5.4 of [10])	M
	TP_ULE1_MC5	Check Release reason: Stay in LCE paging detection mode	TC_PT_ULE1_MC_TC501	Check PT response to Check Stay in LCE paging detection mode (use case as defined in clause 10.10.5.5 of [10])	M
	TP_ULE1_MC6	Check Release reason: Stay in higher paging detection mode	TC_PT_ULE1_MC_TC601	Check PT response to Check Stay in higher paging detection mode (use case as defined in clause 10.10.5.6 of [10])	M
			TC_PT_ULE1_MC_TC602	Check PT response to Check Stay in higher paging detection mode - timer expiration (use case as defined in clause 10.10.5.6 of [10])	M
Group MD : C/O transfer: MAC only or MAC/DLC Test Cases					
	TP_ULE1_MD1	Check Single Packet Data Transfer - Success (see note 1)	TC_PT_ULE1_MD_TC101	Check Single Packet Data Transfer - Success (use case as defined in clause 10.10.4.1.1 of [10], see also note 2)	M
	TP_ULE1_MD2	Check Single Packet Data Transfer: error/abnormal cases	TC_PT_ULE1_MD_TC201	Check Single Packet Data Transfer - Error in B-field CRC (use case as defined in clause 10.10.4.1.2.1 of [10])	M
			TC_PT_ULE1_MD_TC202	No advance of BCK (use case as defined in clause 10.10.4.1.2.2 of [10])	M
			TC_PT_ULE1_MD_TC203	Error in the procedure - Retries (use case as defined in clause 10.10.4.1.2.3 of [10])	M
	TP_ULE1_MD3	Check Multi Packet Data Transfer (see note 1)	TC_PT_ULE1_MD_TC301	Multi Packet Data Transfer: Two-way single packet (use case as defined in clause 10.10.4.1.3.2 of [10], see also note 2)	M
			TC_PT_ULE1_MD_TC302	Multi Packet Data Transfer: PP sends 4, FP sends 1, showing the "connected" state point (use case as defined in clause 10.10.4.1.3.3 of [10], see also note 2)	M
			TC_PT_ULE1_MD_TC303	Multi Packet Data Transfer: PP sends 1, FP sends 4 (use case as defined in clause 10.10.4.1.3.4 of [10], see also note 2)	M
			TC_PT_ULE1_MD_TC304	Multi Packet Data Transfer: PP sends 2, FP sends 2 (use case as defined in clause 10.10.4.1.3.5 of [10], see also note 2)	M

Test Groups	Test Purpose nr.	Test Purpose description	Test Cases	Test Case description	Status
			TC_PT_ULE1_MD_TC305	Multi Packet Data Transfer: PP sends 2, FP sends 2 - Error in one release message (use case as defined in clause 10.10.4.1.3.6 of [10])	M
			TC_PT_ULE1_MD_TC306	Multi Packet Data Transfer: FP traffic only (3 U-plane packets) - Success (use case as defined in clause 10.10.4.1.3.7 of [10], see also note 2)	M
			TC_PT_ULE1_MD_TC307	Multi Packet Data Transfer: FP traffic only (3 U-plane packets) - Retransmit (use case as defined in clause 10.10.4.1.3.8 of [10])	M
			TC_PT_ULE1_MD_TC308	Multi Packet Data Transfer: FP traffic only (3 U-plane packets) - running empty in the middle (use case as defined in clause 10.10.4.1.3.9 of [10])	M
			TC_PT_ULE1_MD_TC309	Multi Packet Data Transfer: FP traffic only (3 U-plane packets) - Retransmit due to congestion (use case as defined in clause 10.10.4.1.3.10 of [10])	M
	TP_ULE1_MD4	Check C-plane related use cases			N/A
	TP_ULE1_MD5	Check Stay alive related use cases	TC_PT_ULE1_MD_TC501	PT initiated stay alive with transmission of G_{FA} from FT (use case as defined in clause 10.10.4.3.1 of [10])	M
			TC_PT_ULE1_MD_TC502	PT initiated stay alive - the FT sends release reason "switch to circuit mode"	M
			TC_PT_ULE1_MD_TC503	PT initiated stay alive - the FT changes the procedure to send U-plane data (use case as defined in clause 10.10.4.3.3 of [10])	M
	TP_ULE1_MD6	Check Setup Failure and Retransmission Use cases	TC_PT_ULE1_MD_TC601	Error in access message (use case as defined in clause 10.10.4.4.1.1 of [10])	M
			TC_PT_ULE1_MD_TC602	Error in confirmation message (use case as defined in clause 10.10.4.4.1.2 of [10])	M
			TC_PT_ULE1_MD_TC603	Error in "other" message (use case as defined in clause 10.10.4.4.1.3 of [10])	M
			TC_PT_ULE1_MD_TC604	Error in the second "other" message (use case as defined in clause 10.10.4.4.1.4 of [10])	M
	TP_ULE1_MD7	Check Multi Packet Data Transfer - Release Failure and Retransmission Examples	TC_PT_ULE1_MD_TC701	Error in the "release" message (use case as defined in clause 10.10.4.4.2.1 of [10])	M
			TC_PT_ULE1_MD_TC702	Error in the second "release" message (use case as defined in clause 10.10.4.4.2.2 of [10])	M

Test Groups	Test Purpose nr.	Test Purpose description	Test Cases	Test Case description	Status
			TC_PT_ULE1_MD_TC703	Error in the "release" message causing a retransmission of the "ready for release" (use case as defined in clause 10.10.4.4.2.3 of [10])	M
			TC_PT_ULE1_MD_TC704	Error in a "ready for release" message causing its retransmission (use case as defined in clause 10.10.4.4.2.4 of [10])	M
	TP_ULE1_MD8	Check Errors when in TBC "connected" state	TC_PT_ULE1_MD_TC801	Retransmission abandoned and abnormal release of the TBC due to multiple errors (use case as defined in clause 10.10.4.4.3.1 of [10])	M
	TP_ULE1_MD9	Check Intrusion and interference use cases	TC_PT_ULE1_MD_TC901	Intrusion of a Ready for release with wrong identity intrusion, continuing transmission (use case as defined in clause 10.10.4.4.4.1 of [10])	M
			TC_PT_ULE1_MD_TC902	Intrusion of a Ready for release with wrong identity intrusion, causing its retransmission (use case as defined in clause 10.10.4.4.4.2 of [10])	M
	TP_ULE1_MD10	Check Errors in release procedures	TC_PT_ULE1_MD_TC1001	Errors in release procedures (use case as defined in clause 10.10.4.4.4.5 of [10])	M
			TC_PT_ULE1_MD_TC1002	Multiple errors in release: abandoned release retransmission (use case as defined in clause 10.10.4.4.5.1 of [10])	M
	TP_ULE1_MD11	Check Data transfer use cases showing the response to the BCK bit and to transitions between BA codes	TC_PT_ULE1_MD_TC1101	Multi Packet Data Transfer: FP traffic only (3 U-plane packets) - Success (use case as defined in clause 10.10.4.5.1 of [10], see also note 2)	M
			TC_PT_ULE1_MD_TC1102	Multi Packet Data Transfer: FP traffic only (3 U-plane packets) - Retransmission (use case as defined in clause 10.10.4.5.2 of [10])	M
			TC_PT_ULE1_MD_TC1103	Multi Packet Data Transfer: FP traffic only (2 U-plane packets) - running empty (use case as defined in clause 10.10.4.5.3 of [10])	M
			TC_PT_ULE1_MD_TC1104	Multi Packet Data Transfer: FP traffic only (3 U-plane packets) - Retransmit after 'no advance' due to congestion (use case as defined in clause 10.10.4.5.4 of [10])	M
			TC_PT_ULE1_MD_TC1105	Multi Packet Data Transfer: FP and PP send 2 packets each - Congestion in 'Ready for Release' transfer (I) (use case as defined in clause 10.10.4.5.5 of [10])	M

Test Groups	Test Purpose nr.	Test Purpose description	Test Cases	Test Case description	Status
			TC_PT_ULE1_MD_TC1106	Multi Packet Data Transfer: FP and PP send 2 packets each - Congestion in 'Ready for Release' transfer (II) (use case as defined in clause 10.10.4.5.6 of [10])	M
			TC_PT_ULE1_MD_TC1107	Multi Packet Data Transfer: FP sends 2 packets and PP sends 3 packets - Congestion in 'Ready For Release' transfer (I) (use case as defined in clause 10.10.4.5.7 of [10])	M
			TC_PT_ULE1_MD_TC1108	Multi Packet Data Transfer: FP sends 2 packets and PP sends 3 packets - Congestion in 'Ready For Release' transfer (II) (use case as defined in clause 10.10.4.5.8 of [10])	M
Group ME : Channel selection					
	TP_ULE1_ME1	Check channel selection process M0			N/A
	TP_ULE1_ME2	Check channel selection process M1	TC_PT_ULE1_ME_TC201	Check that PP follows the channel selection info sent by RFP	M
			TC_PT_ULE1_ME_TC202	Check that PP performs a random selection and sorting	M
			TC_PT_ULE1_ME_TC203	Check that PP performs last minute scan avoiding a channel interfered	M
			TC_PT_ULE1_ME_TC204	Check that PP performs last minute scan and repeats the process M1 if all channels are interfered	M
	TP_ULE1_ME3	Check channel selection process M2 (including collision and backoff)	TC_PT_ULE1_ME_TC301	Check that PPs executes process M2 after error	M
			TC_PT_ULE1_ME_TC302	Check that PPs executes process M2 after several successive errors increasing the backoff and that it includes the random component	M
			TC_PT_ULE1_ME_TC303	Check that PPs executes process M2 after several successive errors increasing the backoff, and that the increase depends on the slot offering	M
Group MF : Dummy bearer					
	TP_ULE1_MF1	Check FP broadcasts and PP understands Dummy bearer content (SF0, SF1, SF2, SF3)	TC_PT_ULE1_MF_TC101	Check PP locks onto a dummy bearer containing the correct 28 bits of the RFPI in SF0 and does not lock to a dummy bearer that contains an incorrect RFPI.	M

Test Groups	Test Purpose nr.	Test Purpose description	Test Cases	Test Case description	Status
			TC_PT_ULE1_MF_TC102	Check that the PP does not respond to ULE paging with the correct bit number set if the "use of subfield" bits in channel P_U, SF1 indicate no content (test for bit number in SF1 and in SF3)	M
			TC_PT_ULE1_MF_TC103	Check that the PP does something with the RSSI threshold value in the M_U Channel Info 1 field of SF2	M
			TC_PT_ULE1_MF_TC104	Check that the PP does not attempt to setup a bearer on a slot marked as blind by the broadcast in the M_U Channel Info 2 field of SF2	M
	TP_ULE1_MF2	Check Dummy bearer setting/replacement management (RSSI scanning/channel selection)			
			TC_PT_ULE1_MF_TC203	Check PT follows a Dummy bearer replacement	M

NOTE 1: This Test Purpose is also covered by Test Groups MA and MB.
NOTE 2: This Test Case is similar to a Test Case in Group MA and to its equivalent in Group MB.
NOTE 3: This Test Purpose is covered by the group MA.
NOTE 4: This Test Purpose is, in part, covered by the group MA.
NOTE 5: This Test Purpose is, in part, covered by the group MB.

7.2.2 Fixed Part Test Purposes

This clause defines the list of Test Purposes and Fixed Part Test Cases required for the conformance test of Fixed Radio Terminations implementing "DECT Ultra Low Energy (ULE); Machine to Machine Communications; Part 1: Home Automation Network (phase 1)" (TS 102 939-1 [10]).

Table 13: Fixed Part Test Purposes

Test Groups	Test Purpose nr.	Test Purpose description	Test Cases	Test Case description	Status
Group NA : Basic registration tests					
	TP_ULE1_NA1	Check FP extended capabilities	TC_FT_ULE1_NA_TC101	Check FP transmits extended capabilities	M
	TP_ULE1_NA2	Check terminal capability			N/A
	TP_ULE1_NA3	Check PP can register as a ULE device	TC_FT_ULE1_NA_TC301	Check PP can register as a ULE device	M
			TC_FT_ULE1_NA_TC302	Check PP can register as a ULE device using Easy Pairing	O
	TP_ULE1_NA4	Check location procedure and assignment of TPUI	TC_FT_ULE1_NA_TC401	Check location procedure and assignment of TPUI	M
	TP_ULE1_NA5	Check assignment of DCK using DSAA2	TC_FT_ULE1_NA_TC501	Check assignment of DCK using DSAA2 (MAC DCK)	M
			TC_FT_ULE1_NA_TC502	Check assignment of DCK using DSAA (MAC DCK)	O
	TP_ULE1_NA6	Check that a PP can be de-registered	TC_FT_ULE1_NA_TC601	Check that a PP can be de-registered initiated by the PP	O
			TC_FT_ULE1_NA_TC602	Check that a PP can be de-registered initiated by the FP	O
Group NB : ULE Service Call					
	TP_ULE1_NB1	ULE Service Call establishment	TC_FT_ULE1_NB_TC101	Check that a ULE Service Call can be established	M
			TC_FT_ULE1_NB_TC102	Check FP ability to generate a ULE Service call rejection	M
			TC_FT_ULE1_NB_TC103	Check service call is encrypted according to the profile specification with default ciphering key (early encryption)	O
			TC_FT_ULE1_NB_TC104	Check service call is encrypted according to the profile specification after MM (DCK encryption)	M
	TP_ULE1_NB2	Check Service Change (other) for configuration of IWU attributes	TC_FT_ULE1_NB_TC201	Check reception	M
			TC_FT_ULE1_NB_TC202	Check sending	M
	TP_ULE1_NB3	Check assignment of DCK for CCM using DSAA2	TC_FT_ULE1_NB_TC301	Check assignment of DCK for CCM using DSAA2	M

Test Groups	Test Purpose nr.	Test Purpose description	Test Cases	Test Case description	Status
			TC_FT_ULE1_NB_TC302	Check assignment failure (correct behaviour in case of authentication failure)	M
			TC_FT_ULE1_NB_TC303	Check assignment of DCK for CCM using DSAA	O
	TP_ULE1_NB4	Check transport of IWU-to-IWU	TC_FT_ULE1_NB_TC401	Check sending of IWU-to-IWU	O
			TC_FT_ULE1_NB_TC402	Check receiving of IWU-to-IWU	O
	TP_ULE1_NB5	Check midlife FP initiated (PT test) and PP initiated (FT test) reconfiguration of PVC	TC_FT_ULE1_NB_TC501	Check midlife PP initiated reconfiguration of PVC (CC Service change "other" changing parameters in suspend state)	M
			TC_FT_ULE1_NB_TC502	Check midlife PP initiated reconfiguration of PVC (CC Service change "other" changing parameters in resumed state)	M
			TC_FT_ULE1_NB_TC503	Check midlife PP initiated reconfiguration of PVC. Starting at resumed state (CC Service change suspend + CC Service change resume changing parameters both)	M
	TP_ULE1_NB6	Check Service call release	TC_FT_ULE1_NB_TC601	Check Service call release from PP	M
Group NC : VC control					
	TP_ULE1_NC1	Check use of Service Change "resume" procedure to enable/resume the PVC (both sides with unused CCM key -no modification of other parameters)	TC_FT_ULE1_NC_TC101	Resume from FP Both in suspend	M
			TC_FT_ULE1_NC_TC102	Resume from PP Both in suspend	M
			TC_FT_ULE1_NC_TC103	Resume from FP PP in resumed, FP in suspend	M
			TC_FT_ULE1_NC_TC104	Resume from PP PP in suspend, FP in resume	M
	TP_ULE1_NC2	Check that a clean CCM key is available before the "resume" is accepted	TC_FT_ULE1_NC_TC201	Clean key already available at PP and at FP - FP initiates resume (this TC is the same as TC_FT_ULE1_NC_TC101)	M
			TC_FT_ULE1_NC_TC202	Clean key already available at PP and at FP - PP initiates resume (this TC is the same as TC_FT_ULE1_NC_TC102)	M
			TC_FT_ULE1_NC_TC203	Clean key not initially available at PP and at FP but generated during the procedure. PP initiates resume	M
			TC_FT_ULE1_NC_TC204	Clean key not initially available at PP and at FP but generated during the procedure. PP initiates resume	M

Test Groups	Test Purpose nr.	Test Purpose description	Test Cases	Test Case description	Status
			TC_FT_ULE1_NC_TC205	Clean key at PP, used key at FP, PP initiates resume	M
			TC_FT_ULE1_NC_TC206	Used key at PP, clean key at FP, PP initiates resume	M
			TC_FT_ULE1_NC_TC207	Used key at PP, clean key at FP, FP initiates resume	M
			TC_FT_ULE1_NC_TC208	Used key at FP, clean key at PP, FP initiates resume	M
	TP_ULE1_NC3	Check use of Service Change "suspend" procedure to disable/suspend the PVC	TC_FT_ULE1_NC_TC301	Suspend from FP Both sides in resume at start	M
			TC_FT_ULE1_NC_TC302	Suspend from PP Both sides in resume at start	M
			TC_FT_ULE1_NC_TC303	Suspend from FP PP in suspend, FP in resume	M
			TC_FT_ULE1_NC_TC304	Suspend from FP PP in resume, FP in suspend	M
			TC_FT_ULE1_NC_TC305	Suspend from PP PP in suspend, FP in resume	M
			TC_FT_ULE1_NC_TC306	Suspend from PP PP in resume, FP in suspend	M
			TC_FT_ULE1_NC_TC307	Suspend from FP PP in suspend, FP in suspend	M
			TC_FT_ULE1_NC_TC308	Suspend from PP PP in suspend, FP in suspend	M
	TP_ULE1_NC4	Check service change collision	TC_FT_ULE1_NC_TC401	Check service change FP-PP collision (both sides ask for suspend)	M
			TC_FT_ULE1_NC_TC402	Check service change FP-PP collision (both sides asks for resume	M
	TP_ULE1_NC5	Check that SDUs can only be sent over the PVC when it is resumed, and not when it is suspended	TC_FT_ULE1_NC_TC101	Check that FT does not accept an attempt to set an expedited bearer by the PT when the VC is NWK suspended	M
Group ND : DLC layer					
	TP_ULE1_ND1	Check transmission and reception of SDUs (various sizes from 1 to 500 bytes) LU14		(See note 3)	
	TP_ULE1_ND2	Check operation of CCM ciphering procedures (LU14)		(See note 4)	
			TC_FT_ULE1_ND_TC201	Check rejection of corrupt data (wrong CCM) when receiving	M
	TP_ULE1_ND3	Check receiver acknowledgement: G_{FA},	TC_FT_ULE1_ND_TC301	Check processing of received acknowledgement: G_{FA},	M
			TC_FT_ULE1_ND_TC302	Check sending of acknowledgement: G_{FA}, on reception of correct packet	M

Test Groups	Test Purpose nr.	Test Purpose description	Test Cases	Test Case description	Status
			TC_FT_ULE1_ND_TC303	Check sending of acknowledgement: G_{FA}, on reception of out of sequence packet	M
	TP_ULE1_ND4	Check PDU sequence number wrap-around (9 bit)	TC_FT_ULE1_ND_TC401	Check PDU sequence number wrap-around (9 bit) when sending	M
			TC_FT_ULE1_ND_TC402	Check PDU sequence number wrap-around (9 bit) when receiving	M
	TP_ULE1_ND5	Check transmit window handling	TC_FT_ULE1_ND_TC501	Check that FT stops transmission when the window ends (forced by the Test system by not advancing the RNs)	M
	TP_ULE1_ND6	Duplicated PDU	TC_FT_ULE1_ND_TC601	Check handling of the reception of a duplicated PDU	M
	TP_ULE1_ND7	Missing PDU (sequence number jump)	TC_FT_ULE1_ND_TC701	Check the handling of the reception of a missing PDU (sequence number jump)	M
	TP_ULE1_ND8	Check that SDUs can only be sent over the PVC when it is resumed, and not when it is suspended			
			TC_FT_ULE1_ND_TC802	Check that SDUs cannot be sent when the PVC when it is suspended: check that FT rejects an expedited bearer setup attempt by the PT when the VC is suspended at the FT (suspended at receiving end) *(this TC is similar to a TC covering release reasons)*	M
	TP_ULE1_ND9	Check operation of CRC (LU13)		(See note 5)	
			TC_FT_ULE1_ND_TC901	Check rejection of corrupt data (wrong CRC) when receiving (DLC LU13)	O
Group NE : Paging (NWK and MAC layers)					
	TP_ULE1_NE1	Check allocation of paging descriptors	TC_FT_ULE1_NE_TC101	Check sending paging descriptor allocation information (one initial descriptor) - initial suspended state, CC Service change resume message	M
			TC_FT_ULE1_NE_TC102	Check sending paging descriptor allocation information (one descriptor replacing a previous one) - initial suspended state, CC Service change resume message	M
			TC_FT_ULE1_NE_TC103	Check sending paging descriptor allocation information (one additional descriptor - total 2 descriptors) initial suspended state, CC Service change resume message	M

Test Groups	Test Purpose nr.	Test Purpose description	Test Cases	Test Case description	Status
			TC_FT_ULE1_NE_TC104	Check sending paging descriptor allocation information (two descriptors sent at once replacing previous ones) initial suspended state, CC Service change resume message - flags in subfields 1 and 3	M
			TC_FT_ULE1_NE_TC105	Check sending paging descriptor allocation information (two descriptors sent at once replacing previous ones) initial resumed state, CC Service change other message -flags in the same subfield	M
	TP_ULE1_NE2	Check paging when PVC is NWK resumed	TC_FT_ULE1_NE_TC201	Check if FP is able to send paging messages according to commands at the test i/f TF1 (when in NWK resumed state)	M
	TP_ULE1_NE3	Check page handling when PVC is NWK suspended	TC_FT_ULE1_NC_TC301	Check if FP is able to send paging messages according to commands at the test i/f TF1 (when in NWK suspended state)	M
Group MA : C/O transfer: Combined MAC/DLC/CCM Test Cases LU14 cases					
	TP_ULE1_MA1	Combined MAC/DLC Test Case: Check upstream transmission and reception using expedited bearer length (various sizes corresponding to SDU size from 1 to 500 bytes) with DLC service LU14 and CCM encryption	TC_FT_ULE1_MA_TC101	Check upstream transmission and reception using expedited bearer setup of a single short SDU of length 1 bytes (single burst setup) with DLC service LU14 and CCM encryption (only 1 SDU per PDU)	M
			TC_FT_ULE1_MA_TC102	Check upstream transmission and reception using expedited bearer setup of a single short SDU of length 32 bytes (single burst setup) with DLC service LU14 and CCM encryption (only 1 SDU per PDU)	M
			TC_FT_ULE1_MA_TC103	Check upstream transmission and reception using expedited bearer setup of a single short SDU of length 80 bytes (multi burst setup) with DLC service LU14 and CCM encryption (only 1 SDU per PDU)	M

Test Groups	Test Purpose nr.	Test Purpose description	Test Cases	Test Case description	Status
			TC_FT_ULE1_MA_TC104	Check upstream transmission and reception using expedited bearer setup of a single short SDU of length 250 bytes (multi burst setup) with DLC service LU14 and CCM encryption (only 1 SDU per PDU)	M
			TC_FT_ULE1_MA_TC105	Check upstream transmission and reception using expedited bearer setup of a single short SDU of length 500 bytes (multi burst setup) with DLC service LU14 and CCM encryption (only 1 SDU per PDU)	M
			TC_FT_ULE1_MA_TC106	Check upstream transmission and reception using expedited bearer setup of multiple SDUs: number of SDUs=2, total length 80 bytes (multi burst setup) with DLC service LU14 and CCM encryption (only 1 SDU per PDU)	M
			TC_FT_ULE1_MA_TC107	Check upstream transmission and reception using expedited bearer setup of multiple SDUs: number of SDUs=5, total length 500 bytes (multi burst setup) with DLC service LU14 and CCM encryption (only 1 SDU per PDU)	M
	TP_ULE1_MA2	Combined MAC/DLC Test Case: Check downstream transmission and reception using expedited bearer length (various sizes corresponding to SDU size from 1 to 500 bytes) with DLC service LU14 and CCM encryption	TC_FT_ULE1_MA_TC201	Check downstream transmission and reception using expedited bearer setup of a single short SDU of length 1 bytes (single burst setup > ready for release) with DLC service LU14 and CCM encryption (only 1 SDU per PDU)	M
			TC_FT_ULE1_MA_TC202	Check downstream transmission and reception using expedited bearer setup of a single short SDU of length 32 bytes (single burst setup > ready for release) with DLC service LU14 and CCM encryption (only 1 SDU per PDU)	M
			TC_FT_ULE1_MA_TC203	Check downstream transmission and reception using expedited bearer setup of a single SDU of length 80 bytes (single burst setup > bearer confirm >other>ready for release) with DLC service LU14 and CCM encryption (only 1 SDU per PDU)	M

Test Groups	Test Purpose nr.	Test Purpose description	Test Cases	Test Case description	Status
			TC_FT_ULE1_MA_TC204	Check downstream transmission and reception using expedited bearer setup of a single SDU of length 250 bytes (single burst setup > bearer confirm >other>...>other>ready for release) with DLC service LU14 and CCM encryption (only 1 SDU per PDU)	M
			TC_FT_ULE1_MA_TC205	Check downstream transmission and reception using expedited bearer setup of a single SDU of length 500 bytes (single burst setup > bearer confirm >other>...>other>ready for release) with DLC service LU14 and CCM encryption (only 1 SDU per PDU)	M
			TC_FT_ULE1_MA_TC206	Check downstream transmission and reception using expedited bearer setup of multiple SDUs: number of SDUs=2, total length 80 bytes (single burst setup > bearer confirm >ready for release) with DLC service LU14 and CCM encryption (only 1 SDU per PDU)	M
			TC_FT_ULE1_MA_TC207	Check downstream transmission and reception using expedited bearer setup of multiple SDUs: number of SDUs=5, total length 500 bytes (single burst setup > bearer confirm >other>...>other>ready for release) with DLC service LU14 and CCM encryption (only 1 SDU per PDU)	M
	TP_ULE1_MA3	Combined MAC/DLC Test Case: Check two-way transmission and reception using expedited bearer length (various combinations and SDU sizes from 1 to 500 bytes) with DLC service LU14 and CCM encryption	TC_FT_ULE1_MA_TC301	Check two-way transmission and reception using expedited bearer setup: PT initiated operation (single burst initial setup attempt); upstream = short SDU of length 32 bytes: downstream = single SDU of 32 bytes with DLC service LU14 and CCM encryption (only 1 SDU per PDU)	M
			TC_FT_ULE1_MA_TC302	Check two-way transmission and reception using expedited bearer setup: PT initiated operation (single burst initial setup attempt); upstream = short SDU of length 32 bytes: downstream = single SDU of 80 bytes with DLC service LU14 and CCM encryption (only 1 SDU per PDU)	M

Test Groups	Test Purpose nr.	Test Purpose description	Test Cases	Test Case description	Status
			TC_FT_ULE1_MA_TC303	Check two-way transmission and reception using expedited bearer setup: PT initiated operation (multi burst initial setup attempt); upstream = single SDU of length 80 bytes: downstream = single SDU of 1 bytes with DLC service LU14 and CCM encryption (only 1 SDU per PDU)	M
			TC_FT_ULE1_MA_TC304	Check two-way transmission and reception using expedited bearer setup: PT initiated operation (multi burst initial setup attempt); upstream = single SDU of length 32 bytes: downstream = 5 SDUs of total length 500 bytes with DLC service LU14 and CCM encryption (only 1 SDU per PDU)	M
			TC_FT_ULE1_MA_TC305	Check two-way transmission and reception using expedited bearer setup: PT initiated operation (single burst initial setup attempt); upstream = single SDU of length 32 bytes: downstream = single SDU of 1 bytes with DLC service LU14 and CCM encryption (only 1 SDU per PDU)	M
			TC_FT_ULE1_MA_TC306	Check two-way transmission and reception using expedited bearer setup: PT initiated operation (multi burst initial setup attempt); upstream a single block of data of the maximum size declared by the IUT vendor (with a single SDU), Downstream a single block of data of the maximum size declared by the IUT vendor (with a single SDU). DLC service LU14 and CCM encryption	M (P)
Group MB : C/O transfer: Combined MAC/DLC Test Cases LU13 cases					
	TP_ULE1_MB1	Combined MAC/DLC Test Case: Check upstream transmission and reception using expedited bearer length (various sizes corresponding to SDU size from 1 to 500 bytes) with DLC service LU13 (no CCM encryption)	TC_FT_ULE1_MB_TC101	Check upstream transmission and reception using expedited bearer setup of a single short SDU of length 1 bytes (single burst setup) with DLC service LU13 (no CCM encryption) (only 1 SDU per PDU)	O

Test Groups	Test Purpose nr.	Test Purpose description	Test Cases	Test Case description	Status
			TC_FT_ULE1_MB_TC102	Check upstream transmission and reception using expedited bearer setup of a single short SDU of length 32 bytes (single burst setup) with DLC service LU13 (no CCM encryption) (only 1 SDU per PDU)	O
			TC_FT_ULE1_MB_TC103	Check upstream transmission and reception using expedited bearer setup of a single short SDU of length 80 bytes (multi burst setup) with DLC service LU13 (no CCM encryption) (only 1 SDU per PDU)	O
			TC_FT_ULE1_MB_TC104	Check upstream transmission and reception using expedited bearer setup of a single short SDU of length 250 bytes (multi burst setup) with DLC service LU13 (no CCM encryption) (only 1 SDU per PDU)	O
			TC_FT_ULE1_MB_TC105	Check upstream transmission and reception using expedited bearer setup of a single short SDU of length 500 bytes (multi burst setup) with DLC service LU13 (no CCM encryption) (only 1 SDU per PDU)	O
			TC_FT_ULE1_MB_TC106	Check upstream transmission and reception using expedited bearer setup of multiple SDUs: number of SDUs=2, total length 80 bytes (multi burst setup) with DLC service LU13 (no CCM encryption) (only 1 SDU per PDU)	O
			TC_FT_ULE1_MB_TC107	Check upstream transmission and reception using expedited bearer setup of multiple SDUs: number of SDUs=5, total length 500 bytes (multi burst setup) with DLC service LU13 (no CCM encryption) (only 1 SDU per PDU)	O
	TP_ULE1_MB2	Combined MAC/DLC Test Case: Check downstream transmission and reception using expedited bearer length (various sizes corresponding to SDU size from 1 to 500 bytes) with DLC service LU13 (no CCM encryption)	TC_FT_ULE1_MB_TC201	Check downstream transmission and reception using expedited bearer setup of a single short SDU of length 1 bytes (single burst setup > ready for release) with DLC service LU13 (no CCM encryption) (only 1 SDU per PDU)	O

Test Groups	Test Purpose nr.	Test Purpose description	Test Cases	Test Case description	Status
			TC_FT_ULE1_MB_TC202	Check downstream transmission and reception using expedited bearer setup of a single short SDU of length 32 bytes (single burst setup > ready for release) with DLC service LU13 (no CCM encryption) (only 1 SDU per PDU)	O
			TC_FT_ULE1_MB_TC203	Check downstream transmission and reception using expedited bearer setup of a single SDU of length 80 bytes (single burst setup > bearer confirm >other>ready for release) with DLC service LU13 (no CCM encryption) (only 1 SDU per PDU)	O
			TC_FT_ULE1_MB_TC204	Check downstream transmission and reception using expedited bearer setup of a single SDU of length 250 bytes (single burst setup > bearer confirm >other>...>other>ready for release) with DLC service LU13 (no CCM encryption) (only 1 SDU per PDU)	O
			TC_FT_ULE1_MB_TC205	Check downstream transmission and reception using expedited bearer setup of a single SDU of length 500 bytes (single burst setup > bearer confirm >other>...>other>ready for release) with DLC service LU13 (no CCM encryption) (only 1 SDU per PDU)	O
			TC_FT_ULE1_MB_TC206	Check downstream transmission and reception using expedited bearer setup of multiple SDUs: number of SDUs=2, total length 80 bytes (single burst setup > bearer confirm >ready for release) with DLC service LU13 (no CCM encryption) (only 1 SDU per PDU)	O
			TC_FT_ULE1_MB_TC207	Check downstream transmission and reception using expedited bearer setup of multiple SDUs: number of SDUs=5, total length 500 bytes (single burst setup > bearer confirm >other>...>other>ready for release) with DLC service LU13 (no CCM encryption) (only 1 SDU per PDU)	O

Test Groups	Test Purpose nr.	Test Purpose description	Test Cases	Test Case description	Status
	TP_ULE1_MB3	Combined MAC/DLC Test Case: Check two-way transmission and reception using expedited bearer length (various combinations and SDU sizes from 1 to 500 bytes) with DLC service LU13 (no CCM encryption)	TC_FT_ULE1_MB_TC301	Check two-way transmission and reception using expedited bearer setup: PT initiated operation (single burst initial setup attempt); upstream = short SDU of length 32 bytes: downstream = single SDU of 32 bytes with DLC service LU13 (no CCM encryption) (only 1 SDU per PDU)	O
			TC_FT_ULE1_MB_TC302	Check two-way transmission and reception using expedited bearer setup: PT initiated operation (single burst initial setup attempt); upstream = short SDU of length 32 bytes: downstream = single SDU of 80 bytes with DLC service LU13 (no CCM encryption) (only 1 SDU per PDU)	O
			TC_FT_ULE1_MB_TC303	Check two-way transmission and reception using expedited bearer setup: PT initiated operation (multi burst initial setup attempt); upstream = single SDU of length 80 bytes: downstream = single SDU of 1 bytes with DLC service LU13 (no CCM encryption) (only 1 SDU per PDU)	O
			TC_FT_ULE1_MB_TC304	Check two-way transmission and reception using expedited bearer setup: PT initiated operation (multi burst initial setup attempt); upstream = single SDU of length 32 bytes: downstream = 5 SDUs of total length 500 bytes with DLC service LU13 (no CCM encryption) (only 1 SDU per PDU)	O
			TC_FT_ULE1_MB_TC305	Check two-way transmission and reception using expedited bearer setup: PT initiated operation (single burst initial setup attempt); upstream = single SDU of length 32 bytes: downstream = single SDU of 1 bytes with DLC service LU13 (no CCM encryption) (only 1 SDU per PDU)	O
			TC_FT_ULE1_MB_TC306	Check two-way transmission and reception using expedited bearer setup: PT initiated operation (single burst initial setup attempt); upstream = 2 SDU of total length 32 bytes: downstream = 5 SDU of total length 200 bytes with DLC service LU13 (no CCM encryption) (there will be up to 2 SDU per PDU in both directions)	O

Test Groups	Test Purpose nr.	Test Purpose description	Test Cases	Test Case description	Status
			TC_FT_ULE1_MB_TC307	Check two-way transmission and reception using expedited bearer setup: PT initiated operation (multi burst initial setup attempt); upstream a single block of data of the maximum size declared by the IUT vendor (with a single SDU), Downstream a single block of data of the maximum size declared by the IUT vendor (with a single SDU). DLC service LU13 (no CCM encryption)	O (P)
Group MC : C/O transfer: MAC only Test Cases					
	TP_ULE1_MC1	Check transmission and reception with no U-plane data (stay alive like procedure)	TC_FT_ULE1_MC_TC101	Check transmission and reception with no PDU. No-B-field code (but B-field transmission)	M
			TC_FT_ULE1_MC_TC102	Check transmission and reception with no PDU, checking response to allowed cases of no transmission of the B-field	M
	TP_ULE1_MC2	Check acceptance of no B-field in expedited bearers	TC_FT_ULE1_MC_TC201	Check acceptance of no B-field in expedited bearers. No-B-field code (but B-field transmission)	M
			TC_FT_ULE1_MC_TC202	Check acceptance of no B-field in expedited bearers - checking response to allowed cases of no transmission of the B-field	M
	TP_ULE1_MC3	Check various "release reason" codes for the release:	TC_FT_ULE1_MC_TC301	Check FT capability to send the release reason "Base station busy"	M
			TC_FT_ULE1_MC_TC302	Check FT capability to send the release reason "Unacceptable PMID"	M
			TC_FT_ULE1_MC_TC303	Check FT capability to send the release reason "No such connection / virtual circuit"	M
			TC_FT_ULE1_MC_TC304	Check FT capability to send the release reason "Setup again after n frames" (use case as defined in clause 10.10.5.7 of [10])	M
	TP_ULE1_MC4	Check release reason: switch to circuit mode	TC_FT_ULE1_MC_TC401	Check FT capability to send the release reason "switch to circuit mode" (Start ULE service call) triggered by release reason (use case as defined in clause 10.10.5.4 of [10])	M

Test Groups	Test Purpose nr.	Test Purpose description	Test Cases	Test Case description	Status
	TP_ULE1_MC5	Check Release reason: Stay in LCE paging detection mode	TC_FT_ULE1_MC_TC501	Check FT capability to send the release reason "Stay in LCE paging detection mode" (use case as defined in clause 10.10.5.5 of [10])	M
	TP_ULE1_MC6	Check Release reason: Stay in higher paging detection mode	TC_FT_ULE1_MC_TC601	Check FT capability to send the release reason "Stay in higher paging detection mode" (use case as defined in clause 10.10.5.6 of [10])	M
			TC_FT_ULE1_MC_TC602	Check FT capability to send the release reason "Check Stay in higher paging detection mode" - timer expiration (use case as defined in clause 10.10.5.6 of [10])	M
Group MD : C/O transfer: MAC only or MAC/DLC Test Cases					
	TP_ULE1_MD1	Check Single Packet Data Transfer - Success (see note 1)	TC_FT_ULE1_MD_TC101	Check Single Packet Data Transfer - Success (use case as defined in clause 10.10.4.1.1 of [10], see also note 2)	M
	TP_ULE1_MD2	Check Single Packet Data Transfer: error/abnormal cases	TC_FT_ULE1_MD_TC201	Check Single Packet Data Transfer - Error in B-field CRC (use case as defined in clause 10.10.4.1.2.1 of [10])	M
			TC_FT_ULE1_MD_TC202	No advance of BCK (use case as defined in clause 10.10.4.1.2.2 of [10])	M
			TC_FT_ULE1_MD_TC203	Error in the procedure - Retries (use case as defined in clause 10.10.4.1.2.3 of [10])	M
	TP_ULE1_MD3	Check Multi Packet Data Transfer (see note 1)	TC_FT_ULE1_MD_TC301	Multi Packet Data Transfer: Two-way single packet (use case as defined in clause 10.10.4.1.3.2 of [10], see also note 2)	M
			TC_FT_ULE1_MD_TC302	Multi Packet Data Transfer: PP sends 4, FP sends 1, showing the "connected" state point (use case as defined in clause 10.10.4.1.3.3 of [10], see also note 2)	M
			TC_FT_ULE1_MD_TC303	Multi Packet Data Transfer: PP sends 1, FP sends 4 (use case as defined in clause 10.10.4.1.3.4 of [10], see also note 2)	M
			TC_FT_ULE1_MD_TC304	Multi Packet Data Transfer: PP sends 2, FP sends 2 (use case as defined in clause 10.10.4.1.3.5 of [10], see also note 2)	M

Test Groups	Test Purpose nr.	Test Purpose description	Test Cases	Test Case description	Status
			TC_FT_ULE1_MD_TC305	Multi Packet Data Transfer: PP sends 2, FP sends 2 - Error in one release message (use case as defined in clause 10.10.4.1.3.6 of [10])	M
			TC_FT_ULE1_MD_TC306	Multi Packet Data Transfer: FP traffic only (3 U-plane packets) - Success (use case as defined in clause 10.10.4.1.3.7 of [10], see also note 2)	M
			TC_FT_ULE1_MD_TC307	Multi Packet Data Transfer: FP traffic only (3 U-plane packets) - Retransmit (use case as defined in clause 10.10.4.1.3.8 of [10])	M
			TC_FT_ULE1_MD_TC308	Multi Packet Data Transfer: FP traffic only (3 U-plane packets) - running empty in the middle (use case as defined in clause 10.10.4.1.3.9 of [10])	M
			TC_FT_ULE1_MD_TC309	Multi Packet Data Transfer: FP traffic only (3 U-plane packets) - Retransmit due to congestion (use case as defined in clause 10.10.4.1.3.10 of [10])	M
	TP_ULE1_MD4	Check C-plane related use cases			N/A
	TP_ULE1_MD5	Check Stay alive related use cases	TC_FT_ULE1_MD_TC501	PT initiated stay alive with transmission of G_{FA} from FT (use case as defined in clause 10.10.4.3.1 of [10])	M
			TC_FT_ULE1_MD_TC502	PT initiated stay alive - the FT sends release reason "switch to circuit mode"	M
			TC_FT_ULE1_MD_TC503	PT initiated stay alive - the FT changes the procedure to send U-plane data (use case as defined in clause 10.10.4.3.3 of [10])	M
	TP_ULE1_MD6	Check Setup Failure and Retransmission Use cases	TC_FT_ULE1_MD_TC601	Error in access message (use case as defined in clause 10.10.4.4.1.1 of [10])	M
			TC_FT_ULE1_MD_TC602	Error in confirmation message (use case as defined in clause 10.10.4.4.1.2 of [10])	M
			TC_FT_ULE1_MD_TC603	Error in "other" message (use case as defined in clause 10.10.4.4.1.3 of [10])	M
			TC_FT_ULE1_MD_TC604	Error in the second "other" message (use case as defined in clause 10.10.4.4.1.4 of [10])	M
	TP_ULE1_MD7	Check Multi Packet Data Transfer - Release Failure and Retransmission Examples	TC_FT_ULE1_MD_TC701	Error in the "release" message (use case as defined in clause 10.10.4.4.2.1 of [10])	M
			TC_FT_ULE1_MD_TC702	Error in the second "release" message (use case as defined in clause 10.10.4.4.2.2 of [10])	M

Test Groups	Test Purpose nr.	Test Purpose description	Test Cases	Test Case description	Status
			TC_FT_ULE1_MD_TC703	Error in the "release" message causing a retransmission of the "ready for release" (use case as defined in clause 10.10.4.4.2.3 of [10])	M
			TC_FT_ULE1_MD_TC704	Error in a "ready for release" message causing its retransmission (use case as defined in clause 10.10.4.4.2.4 of [10])	M
	TP_ULE1_MD8	Check Errors when in TBC "connected" state	TC_FT_ULE1_MD_TC801	Retransmission abandoned and abnormal release of the TBC due to multiple errors (use case as defined in clause 10.10.4.4.3.1 of [10])	M
	TP_ULE1_MD9	Check Intrusion and interference use cases	TC_FT_ULE1_MD_TC901	Intrusion of a Ready for release with wrong identity intrusion, continuing transmission (use case as defined in clause 10.10.4.4.4.1 of [10])	M
			TC_FT_ULE1_MD_TC902	Intrusion of a Ready for release with wrong identity intrusion, causing its retransmission (use case as defined in clause 10.10.4.4.4.2 of [10])	M
	TP_ULE1_MD10	Check Errors in release procedures	TC_FT_ULE1_MD_TC1001	Errors in release procedures (use case as defined in clause 10.10.4.4.4.5 of [10])	M
			TC_FT_ULE1_MD_TC1002	Multiple errors in release: abandoned release retransmission (use case as defined in clause 10.10.4.4.5.1 of [10])	M
	TP_ULE1_MD11	Check Data transfer use cases showing the response to the BCK bit and to transitions between BA codes	TC_FT_ULE1_MD_TC1101	Multi Packet Data Transfer: FP traffic only (3 U-plane packets) - Success (use case as defined in clause 10.10.4.5.1 of [10], see also note 2)	M
			TC_FT_ULE1_MD_TC1102	Multi Packet Data Transfer: FP traffic only (3 U-plane packets) - Retransmission (use case as defined in clause 10.10.4.5.2 of [10])	M
			TC_FT_ULE1_MD_TC1103	Multi Packet Data Transfer: FP traffic only (2 U-plane packets) - running empty (use case as defined in clause 10.10.4.5.3 of [10])	M
			TC_FT_ULE1_MD_TC1104	Multi Packet Data Transfer: FP traffic only (3 U-plane packets) - Retransmit after 'no advance' due to congestion (use case as defined in clause 10.10.4.5.4 of [10])	M
			TC_FT_ULE1_MD_TC1105	Multi Packet Data Transfer: FP and PP send 2 packets each - Congestion in 'Ready for Release' transfer (I) (use case as defined in clause 10.10.4.5.5 of [10])	M

Test Groups	Test Purpose nr.	Test Purpose description	Test Cases	Test Case description	Status
			TC_FT_ULE1_MD_TC1106	Multi Packet Data Transfer: FP and PP send 2 packets each - Congestion in 'Ready for Release' transfer (II) (use case as defined in clause 10.10.4.5.6 of [10])	M
			TC_FT_ULE1_MD_TC1107	Multi Packet Data Transfer: FP sends 2 packets and PP sends 3 packets - Congestion in 'Ready For Release' transfer (I) (use case as defined in clause 10.10.4.5.7 of [10])	M
			TC_FT_ULE1_MD_TC1108	Multi Packet Data Transfer: FP sends 2 packets and PP sends 3 packets - Congestion in 'Ready For Release' transfer (II) (use case as defined in clause 10.10.4.5.8 of [10])	M
Group ME : Channel selection					
	TP_ULE1_ME1	Check channel selection process M0	TC_FT_ULE1_ME_TC101	Check channel selection, process M0, Check that the RFP broadcasts correct information over M_U channel	M
	TP_ULE1_ME2	Check channel selection process M1			N/A
	TP_ULE1_ME3	Check channel selection process M2 (including collision and backoff)			N/A
Group MF : Dummy bearer					
	TP_ULE1_MF1	Check FP broadcasts and PP understands Dummy bearer content (SF0, SF1,SF2,SF3)	TC_FT_ULE1_MF_TC101	Check FP broadcasts the ULE sync word in SF0	M
			TC_FT_ULE1_MF_TC102	Check FP correctly broadcasts the channel N_C (28 LSBs of the RFPI in SF0 and 12 MSBs in SF1)	M
			TC_FT_ULE1_MF_TC103	Check FP correctly broadcasts the channel Q_C in SF0 and SF2	M
			TC_FT_ULE1_MF_TC104	Check that the FP correctly controls the broadcast of the 4 "use of subfield" bits in channel P_U, SF1 to indicate no content, and paging format. (The content of the selectable part of SF1 will be tested by the paging tests along with SF3)	M
			TC_FT_ULE1_MF_TC105	Check that the FP broadcasts valid information on the M_U Channel Info 1 bits (threshold values) in SF2	M
			TC_FT_ULE1_MF_TC106	Check that the FP broadcasts valid information on the M_U Channel Info 2 bits (blind slot values) in SF2	M

Test Groups	Test Purpose nr.	Test Purpose description	Test Cases	Test Case description	Status
	TP_ULE1_MF2	Check Dummy bearer setting/replacement management (RSSI scanning / channel selection)	TC_FT_ULE1_MF_TC201	Check Dummy bearer setting management (RSSI scanning)	M
			TC_FT_ULE1_MF_TC202	Check Dummy bearer replacement management (RSSI scanning) - Test system forces a dummy bearer replacement	M
NOTE 1: This Test Purpose is also covered by Test Groups MA and MB. NOTE 2: This Test Case is similar to a Test Case in Group MA and to its equivalent in Group MB. NOTE 3: This Test Purpose is covered by the group MA. NOTE 4: This Test Purpose is, in part, covered by the groups MA, and MB. NOTE 5: This Test Purpose is, in part, covered by the group MB.					

7.3 ULE Services, features and procedures to Test Cases traceability tables

7.3.1 Purpose of this clause

The purpose of this clause is to establish the back traceability between the Test Cases defined in the present document and the services, features and procedures defined in TS 102 939-1 [10]). In other words, the tables included in this clause provide information about which Test Cases are testing the different services, features and procedures defined in the main specification [10].

This clause is organized by layers and a single table lists the Test Cases for both Portable Radio Termination and Fixed Radio Termination.

The following remarks should be taken into account:

- In general, a single procedure may require several Test Cases to be fully tested.
- The same Test Case may be listed under several procedures (several rows) in the table. When this happens, it means that the Test Case is able to test several procedures during its execution.
- There may be procedures not tested by any Test Case. This may be due to several reasons: the procedure is considered non critical, or the possibility of non-conformance to the procedure is considered unlikely, or it is routinely tested by other DECT test programs (such as GAP), or is a practical limitation of the test program. The number of procedures without any applicable Test Case may be reduced in further releases of the present document.

7.3.2 Physical layer (PHL)

The Physical layer (PHL) is out of the scope of the present document. Physical layer is tested by the test specifications EN 300 176-1 [i.1], EN 301 406 [i.2], and (for IMT-2000 bands) EN 301 908-10 [i.3].

7.3.3 MAC layer

Table 14 gives the list of Portable Part and Fixed Part Test Cases related to the MAC layer services and procedures specified by "DECT Ultra Low Energy (part 1) Home Automation network phase 1" (TS 102 939-1 [10]).

Table 14: MAC layer Test Case to procedure mapping for PT and FT

MAC layer Service	Procedure	Reference (see note)	Test Cases	
			Portable Part	Fixed Part
ULE1-M.1 General		5.1.2		
	Frame and Multiframe structure	10.1.1	Implicitly tested by all Test groups	Implicitly tested by all Test groups
	Bit mappings	10.1.2	Implicitly tested by all Test groups	Implicitly tested by all Test groups
	E/U mux modes and B-field identification (BA) bits	10.1.3	Implicitly tested by Test groups MA, MB, MC and MD	Implicitly tested by Test groups MA, MB, MC and MD
	Scrambling	10.1.4	Implicitly tested by all Test groups	Implicitly tested by all Test groups
	Error control	10.1.5	Implicitly tested by all Test groups	Implicitly tested by all Test groups
	RFP idle receiver scan sequence	10.1.6	Implicitly tested by all Test groups	Implicitly tested by all Test groups
	Identities	10.1.7		
	A-field Multiplexer (T-MUX)	10.2.1	Implicitly tested by all Test groups	Implicitly tested by all Test groups
	B-field control Multiplexer (E/U-MUX), basic modes	10.2.2.1	Implicitly tested by Test groups MA, MB, MC and MD	Implicitly tested by Test groups MA, MB, MC and MD
	B-field control Multiplexer (E/U-MUX), C_F modes	10.2.2.2	Not tested	Not tested
ULE1-M.2 A-field Continuous broadcast		5.1.2		
	Downlink broadcast (A-field)	10.3	Implicitly tested by groups NA, and NB	Implicitly tested by groups NA, and NB
	Q_T - static system information	10.3.2.1	Implicitly tested by groups NA, and NB	Implicitly tested by groups NA, and NB
	Q_T - FP capabilities	10.3.2.2	N/A	TC_FT_ULE1_NA_TC101
	Reception of downlink broadcast (A-field)	10.3.3	Partially tested by groups NA, and NB	N/A
	Higher layer information FP broadcast	12.3.2	N/A	TC_FT_ULE1_NA_TC101
ULE1-M.3 A-field Paging broadcast		5.1.2		
	Paging messages on A-field	10.4.1	TC_PT_ULE1_MC_TC501	TC_FT_ULE1_MC_TC501
	MAC layer information messages procedures	10.4.2	TC_PT_ULE1_MC_TC501	TC_FT_ULE1_MC_TC501

MAC layer Service	Procedure	Reference (see note)	Test Cases	
			Portable Part	Fixed Part
	LCE paging procedure	10.4.3.1	TC_PT_ULE1_MC_TC501	TC_FT_ULE1_MC_TC501
	MAC layer information in zero and short length paging messages	10.4.1.4	TC_PT_ULE1_MC_TC501	TC_FT_ULE1_MC_TC501
ULE1-M.4 B-field Continuous ULE broadcast		5.1.2		
	N_S channel	10.5.1	TC_PT_ULE1_MF_TC101	TC_FT_ULE1_MF_TC102
	Q_C channel	10.5.2	Implicitly tested by test groups MA, MB, MC and MD	TC_FT_ULE1_MF_TC103
	M_U channel	10.5.3	Test group ME, TC_PT_ULE1_MF_TC103, TC_PT_ULE1_MF_TC104	Test group ME, TC_FT_ULE1_MF_TC105, TC_FT_ULE1_MF_TC106
	Reception of Messages	10.5.4	TC_PT_ULE1_MF_TC101, Test group ME, TC_PT_ULE1_MF_TC103, TC_PT_ULE1_MF_TC104	N/A
	Operation in unlocked mode	10.5.5	Not tested	TC_FT_ULE1_MF_TC101
ULE1-M.5 B-field Paging broadcast		5.1.2		
	P_U Paging Message Formats	10.6.1	TC_PT_ULE1_MF_TC102, TP_ULE1_NE2, TP_ULE1_NE3	TC_FT_ULE1_MF_TC104, TP_ULE1_NE2, TP_ULE1_NE3
	Paging Descriptors for ULE Paging	10.6.2	TP_ULE1_NE1	TP_ULE1_NE1
ULE1-M.6 Basic connection control		5.1.2		
	Logical connection setup - procedure for ancillary connections	10.7.1.2	TC_PT_ULE1_NB_TC101	TC_FT_ULE1_NB_TC101
	Logical connection release - procedure for ancillary connections	10.7.2.2	TC_PT_ULE1_NB_TC601, TC_PT_ULE1_NB_TC602	TC_FT_ULE1_NB_TC601, TC_FT_ULE1_NB_TC602
	Setup of basic connection, basic bearer setup (A-field)	10.4 [9]	TC_PT_ULE1_NB_TC101	TC_FT_ULE1_NB_TC101
	Connection/bearer release (M_T)	10.5 [9]	TC_PT_ULE1_NB_TC102, TC_PT_ULE1_NB_TC601, TC_PT_ULE1_NB_TC602	TC_FT_ULE1_NB_TC102, TC_FT_ULE1_NB_TC601, TC_FT_ULE1_NB_TC602
	Bearer handover request (basic)	10.6 [9]	Not tested	Not tested
	Connection handover request (basic)	10.7 [9]	Not tested	Not tested
ULE1-M.7 A-field Advanced connection control		5.1.2		

MAC layer Service	Procedure	Reference (see note)	Test Cases	
			Portable Part	Fixed Part
	Logical connection setup - explicit procedure	10.7.1.1	Not tested	Not tested
	Logical connection setup - implicit procedure	10.7.1.3	Implicitly tested in TP_ULE1_NC1, TP_ULE1_NC3, TP_ULE1_NC4 and groups MA, MB, MC, MD	Implicitly tested in TP_ULE1_NC1, TP_ULE1_NC3, TP_ULE1_NC4 and groups MA, MB, MC, MD
	Logical connection release - explicit procedure	10.7.2.1	Not tested	Not tested
	Logical connection release - implicit procedure	10.7.2.3	Not tested	Not tested
	Logical connection release - abnormal procedure	10.7.2.4	Not tested	Not tested
	Connection Suspend and Resume	10.7.3	Implicitly tested in groups MA, MB, MC, MD	Implicitly tested in groups MA, MB, MC, MD
	Connection modification to change MAC service type	10.7.4.2.1	Not tested	Not tested
	Connection modification to change slot type	10.7.4.2.2	Not tested	Not tested
	Connection modification to change maximum MAC packet lifetime	10.7.4.2.3	Not tested	Not tested
	Connection modification to change the modulation scheme and adaptive code rate	10.7.4.2.4	Not tested	Not tested
	Use of ATTRIBUTES_T.req/cfm in connection modification	10.7.4.2.5	Not tested	Not tested
	PT initiated A-field advanced bearer setup (M_T)	10.9.2	Not tested	Not tested
	Connection/bearer release (M_T)	10.9.3	Not tested	Not tested
	A-field bearer handover request (advanced)	10.9.4	Not tested	Not tested
	A-field connection handover request (advanced)	10.9.5	Not tested	Not tested

MAC layer Service	Procedure	Reference (see note)	Test Cases	
			Portable Part	Fixed Part
ULE1-M.8 Expedited operations (advanced connection control)		5.1.2		
	General	10.10.1	Test groups MA, MB, MC and MD	Test groups MA, MB, MC and MD
	M_T advanced control messages for expedited operations - Supported M_T messages	10.10.2.1	Test groups MA, MB, MC and MD	Test groups MA, MB, MC and MD
	M_T advanced control messages for expedited operations - G_{FA} transmission	10.10.2.2	Test groups MA, MB, MC and MD, TC_PT_ULE1_ND_TC301, TC_PT_ULE1_ND_TC302, TC_PT_ULE1_ND_TC303,	Test groups MA, MB, MC and MD, TC_FT_ULE1_ND_TC301, TC_FT_ULE1_ND_TC302, TC_FT_ULE1_ND_TC303,
	M_T advanced control messages for expedited operations - Reason codes in "expedited release" and "ready for release" messages	10.10.2.3	TC_PT_ULE1_MC_TC301, TC_PT_ULE1_MC_TC302, TC_PT_ULE1_MC_TC303, TC_PT_ULE1_MC_TC304, TC_PT_ULE1_MC_TC401, TC_PT_ULE1_MC_TC501, TC_PT_ULE1_MC_TC601, TC_PT_ULE1_MC_TC602	TC_FT_ULE1_MC_TC301, TC_FT_ULE1_MC_TC302, TC_FT_ULE1_MC_TC303, TC_FT_ULE1_MC_TC304, TC_FT_ULE1_MC_TC401, TC_FT_ULE1_MC_TC501, TC_FT_ULE1_MC_TC601, TC_FT_ULE1_MC_TC602
	M_T advanced control messages for expedited operations - Operation codes in "Null or G_{FA}channel transmission" message	10.10.2.4	Not tested	Not tested
	Expedited procedures - Procedure for Single-burst setup and release	10.10.3.1	Test groups MA, MB, MC and MD, TC_PT_ULE1_MA_TC101, TC_PT_ULE1_MA_TC102	Test groups MA, MB, MC and MD, TC_FT_ULE1_MA_TC101, TC_FT_ULE1_MA_TC102
	Expedited procedures - Procedure for Multi burst setup	10.10.3.2	Test groups MA, MB, MC and MD, TC_PT_ULE1_MA_TC103, TC_PT_ULE1_MA_TC104, TC_PT_ULE1_MA_TC105, TC_PT_ULE1_MA_TC106, TC_PT_ULE1_MA_TC107, TC_PT_ULE1_MA_TC108	Test groups MA, MB, MC and MD, TC_FT_ULE1_MA_TC103, TC_FT_ULE1_MA_TC104, TC_FT_ULE1_MA_TC105, TC_FT_ULE1_MA_TC106, TC_FT_ULE1_MA_TC107, TC_FT_ULE1_MA_TC108
	Expedited procedures - Announcement "Ready for Release"	10.10.3.3	Test groups MA, MB, MC and MD	Test groups MA, MB, MC and MD
	Expedited procedures - General Expedited Release procedure	10.10.3.4	Test groups MA, MB, MC and MD	Test groups MA, MB, MC and MD

MAC layer Service	Procedure	Reference (see note)	Test Cases	
			Portable Part	Fixed Part
	Expedited procedures - Single-message expedited release procedure	10.10.3.5	Test groups MA, MB, MC and MD	Test groups MA, MB, MC and MD
	Expedited procedures - Abnormal expedited release procedure	10.10.3.6	Test groups MC and MD	Test groups MC and MD
	Use cases - General Use cases	10.10.4.1	TC_PT_ULE1_MD_TC101, TC_PT_ULE1_MD_TC102, TC_PT_ULE1_MD_TC202, TC_PT_ULE1_MD_TC301, TC_PT_ULE1_MD_TC302, TC_PT_ULE1_MD_TC303, TC_PT_ULE1_MD_TC304, TC_PT_ULE1_MD_TC305, TC_PT_ULE1_MD_TC306, TC_PT_ULE1_MD_TC307, TC_PT_ULE1_MD_TC308, TC_PT_ULE1_MD_TC309	TC_FT_ULE1_MD_TC101, TC_FT_ULE1_MD_TC102, TC_FT_ULE1_MD_TC202, TC_FT_ULE1_MD_TC301, TC_FT_ULE1_MD_TC302, TC_FT_ULE1_MD_TC303, TC_FT_ULE1_MD_TC304, TC_FT_ULE1_MD_TC305, TC_FT_ULE1_MD_TC306, TC_FT_ULE1_MD_TC307, TC_FT_ULE1_MD_TC308, TC_FT_ULE1_MD_TC309
	Use cases - C-plane related use cases	10.10.4.2	Not tested	Not tested
	Use cases - Stay alive related use cases	10.10.4.3	TC_PT_ULE1_MD_TC501, TC_PT_ULE1_MD_TC502 TC_PT_ULE1_MD_TC503	TC_FT_ULE1_MD_TC501, TC_FT_ULE1_MD_TC502 TC_FT_ULE1_MD_TC503
	Use cases - Failure and Retransmission Use cases	10.10.4.4	TC_PT_ULE1_MD_TC601, TC_PT_ULE1_MD_TC602, TC_PT_ULE1_MD_TC603, TC_PT_ULE1_MD_TC604, TC_PT_ULE1_MD_TC701, TC_PT_ULE1_MD_TC702, TC_PT_ULE1_MD_TC703, TC_PT_ULE1_MD_TC704, TC_PT_ULE1_MD_TC801, TC_PT_ULE1_MD_TC901, TC_PT_ULE1_MD_TC902, TC_PT_ULE1_MD_TC1001, TC_PT_ULE1_MD_TC1002	TC_FT_ULE1_MD_TC601, TC_FT_ULE1_MD_TC602, TC_FT_ULE1_MD_TC603, TC_FT_ULE1_MD_TC604, TC_FT_ULE1_MD_TC701, TC_FT_ULE1_MD_TC702, TC_FT_ULE1_MD_TC703, TC_FT_ULE1_MD_TC704, TC_FT_ULE1_MD_TC801, TC_FT_ULE1_MD_TC901, TC_FT_ULE1_MD_TC902, TC_FT_ULE1_MD_TC1001, TC_FT_ULE1_MD_TC1002
	Use cases - Data transfer use cases showing the response to the BCK bit and to transitions between BA codes	10.10.4.5	TC_PT_ULE1_MD_TC1101, TC_PT_ULE1_MD_TC1102, TC_PT_ULE1_MD_TC1103, TC_PT_ULE1_MD_TC1104, TC_PT_ULE1_MD_TC1105, TC_PT_ULE1_MD_TC1106, TC_PT_ULE1_MD_TC1107, TC_PT_ULE1_MD_TC1108	TC_FT_ULE1_MD_TC1101, TC_FT_ULE1_MD_TC1102, TC_FT_ULE1_MD_TC1103, TC_FT_ULE1_MD_TC1104, TC_FT_ULE1_MD_TC1105, TC_FT_ULE1_MD_TC1106, TC_FT_ULE1_MD_TC1107, TC_FT_ULE1_MD_TC1108
	Use of reason code "normal bearer release"	10.10.5.1	Tested by groups MA, MB, MC, MD and others	Tested by groups MA, MB, MC, MD and others

MAC layer Service	Procedure	Reference (see note)	Test Cases	
			Portable Part	Fixed Part
	Use of reason code "base station busy"	10.10.5.2	TC_PT_ULE1_MC_TC301	TC_FT_ULE1_MC_TC301
	Use of reason code "unacceptable PMID / Unregistered PMID"	10.10.5.3	TC_PT_ULE1_MC_TC302	TC_FT_ULE1_MC_TC302
	Use of reason code "switch to circuit mode"	10.10.5.4	TC_PT_ULE1_MC_TC401	TC_FT_ULE1_MC_TC401
	Use of reason code "Stay in LCE paging detection mode"	10.10.5.5	TC_PT_ULE1_MC_TC501	TC_FT_ULE1_MC_TC501
	Use of reason code "Stay in higher paging detection mode"	10.10.5.6	TC_PT_ULE1_MC_TC601, TC_PT_ULE1_MC_TC602	TC_FT_ULE1_MC_TC601, TC_FT_ULE1_MC_TC602
	Use of reason code "Setup again after *n* frames"	10.10.5.7	TC_PT_ULE1_MC_TC304	TC_FT_ULE1_MC_TC304
	Use of reason code "No such connection / virtual circuit"	10.10.5.8	TC_PT_ULE1_MC_TC303	TC_FT_ULE1_MC_TC303
ULE-M.9 Full slot		5.1.2		
	D-field mapping for the full slot structure (physical packet P32)	6.2.1.1.2 [3]	Tested by groups MA, MB, MC, MD and others	Tested by groups MA, MB, MC, MD and others
	B-field mapping for the full slot structure (physical packet P32)	6.2.1.3.1.2 [3]	Tested by groups MA, MB, MC, MD and others	Tested by groups MA, MB, MC, MD and others
	Use of full slot in C/O bearers	10.11.1.1	Tested by groups MA, MB, MC, MD and others	Tested by groups MA, MB, MC, MD and others
	Use of full slot in C/L dummy bearers	10.11.1.2	TP_ULE1_MF1, TP_ULE1_MF2	TP_ULE1_MF1, TP_ULE1_MF2
ULE-M.10 Short slot		5.1.2		
	D-field mapping for the short slot structure (physical packet P00)	6.2.1.1.3 [3]	Only reception tested (TC_PT_ULE1_MC_TC202)	Only reception tested (TC_FT_ULE1_MC_TC202)
	B-field mapping for the short slot structure (physical packet P00)	6.2.1.3.1.3 [3]	Only reception tested (TC_PT_ULE1_MC_TC202)	Only reception tested (TC_FT_ULE1_MC_TC202)
	Use (transmission) of short slot in C/O bearers	10.11.2	Not tested (use in Tx is a PT choice)	Not tested (use in Tx is a FT choice)
	Reception of short slot in C/O bearers	10.11.2	TC_PT_ULE1_MC_TC202	TC_FT_ULE1_MC_TC202
ULE-M.11 I_{PQR}_error_correction MAC service type		5.1.2		
	Type 4: I_P_ error_correction symmetric MAC service	5.6.2.1 [3]	Tested by groups MA, MB, MC and MD	Tested by groups MA, MB, MC and MD
	Single-subfield protected B-field	6.2.1.3.4 [3]	Tested by groups MA, MB, MC and MD	Tested by groups MA, MB, MC and MD
	MOD-2 protected channel operation	10.8.2 [3]	Tested by groups MA, MB, MC and MD	Tested by groups MA, MB, MC and MD
	Protected I channel error_correct mode	10.12.1	Tested by groups MA, MB, MC and MD	Tested by groups MA, MB, MC and MD

MAC layer Service	Procedure	Reference (see note)	Test Cases	
			Portable Part	Fixed Part
	Lifetime management with TWO separate maximum MAC packet lifetimes	10.12.2	Not tested	Not tested
ULE1-M.12 G_{FA} channel				
	G_{FA} channel transmission	10.13.1	Implicitly tested by MA, MB, MC and MD test groups, TC_PT_ULE1_ND_TC301, TC_PT_ULE1_ND_TC302, TC_PT_ULE1_ND_TC303	Implicitly tested by MA, MB, MC and MD test groups, TC_FT_ULE1_ND_TC301, TC_FT_ULE1_ND_TC302, TC_FT_ULE1_ND_TC303
	G_{FA} channel data reception	10.13.2	Implicitly tested by MA, MB, MC and MD test groups, TC_PT_ULE1_ND_TC301, TC_PT_ULE1_ND_TC302, TC_PT_ULE1_ND_TC303	Implicitly tested by MA, MB, MC and MD test groups, TC_FT_ULE1_ND_TC301, TC_FT_ULE1_ND_TC302, TC_FT_ULE1_ND_TC303
ULE1-M.13 C_S higher layer signalling		5.1.2		
	C_S channel data	10.14.1	TP_ULE1_NB1, TP_ULE1_NB2, TP_ULE1_NB3, TP_ULE1_NB4, TP_ULE1_NB5, TP_ULE1_NB6,	TP_ULE1_NB1, TP_ULE1_NB2, TP_ULE1_NB3, TP_ULE1_NB4, TP_ULE1_NB5, TP_ULE1_NB6,
ULE1-M.14 C_F higher layer signalling		5.1.2		
	C_F channel data	10.14.2	Not tested	Not tested
	Priority schema of the C_F channel	10.14.2.1	Not tested	Not tested
	B-field control Multiplexer (E/U-MUX), C_F modes	10.2.2.2	Not tested	Not tested
ULE1-M.15 Quality control		5.1.2		
	RFPI handshake	10.8.1.1	Implicitly tested by MA, MB, MC, MD and other test groups	Implicitly tested by MA, MB, MC, MD and other test groups
	PT frequency correction procedure	10.8.1.2	Not tested	Not tested
	Bearer quality report	10.8.1.3	Implicitly tested by MA, MB, MC and MD test groups	Implicitly tested by MA, MB, MC and MD test groups
	A-CRC handshake	10.8.1.4	Implicitly tested by MA, MB, MC, MD and other test groups	Implicitly tested by MA, MB, MC, MD and other test groups
ULE1-M.16 ULE Physical channel selection		5.1.2		

MAC layer Service	Procedure	Reference (see note)	Test Cases	
			Portable Part	Fixed Part
	Channel selection for the ULE packet data connection	10.8.2.1	TP_ULE1_ME1, TP_ULE1_ME2, TP_ULE1_ME3	TP_ULE1_ME1, TP_ULE1_ME2, TP_ULE1_ME3
	Overall architecture	9.2.1	TC_PT_ULE1_ME_TC301	TC_FT_ULE1_ME_TC101
	Process M0 (RFP side pre-selection process)	9.2.2	N/A	TC_FT_ULE1_ME_TC101
	Broadcast mechanism	9.2.3	Test group ME, TC_PT_ULE1_MF_TC103, TC_PT_ULE1_MF_TC104	TC_FT_ULE1_ME_TC101
	Process M1 (PP side channel selection process)	9.2.4	TC_PT_ULE1_ME_TC201, TC_PT_ULE1_ME_TC202, TC_PT_ULE1_ME_TC203, TC_PT_ULE1_ME_TC204,	N/A
	Setup attempt and evaluation of responses	9.2.5	TC_PT_ULE1_ME_TC301	N/A
	Process M2 (collision handling/collision avoidance process)	9.2.6	TC_PT_ULE1_ME_TC301, TC_PT_ULE1_ME_TC302, TC_PT_ULE1_ME_TC303	N/A
	Exceptional cases	10.8.2.2	Not tested	Not tested
	Channel selection for the Service Call and other circuit mode connections	10.8.2.3	TC_PT_ULE1_NB_TC101, TC_PT_ULE1_NB_TC102	TC_FT_ULE1_NB_TC101, TC_FT_ULE1_NB_TC102
ULE1-M.17 SARI support		5.1.2		
	Downlink broadcast	10.3.2.3		TC_FT_ULE1_NA_TC101
ULE1-M.18 ULE Bearer replacement (intra-cell)		5.1.2		
	A-field MAC Bearer replacement procedure (M_T)	10.8.3	Not tested	Not tested
	A-field bearer handover request (M_T advanced)	10.9.4	Not tested	Not tested

MAC layer Service	Procedure	Reference (see note)	Test Cases	
			Portable Part	Fixed Part
ULE1-M.19 ULE Dummy Bearer replacement		5.1.2		
	Dummy bearer replacement procedure	10.8.4	TC_PT_ULE1_MF_TC203	TC_FT_ULE1_MF_TC201, TC_FT_ULE1_MF_TC202
ULE1-M.20 Bearer handover inter-cell		5.1.2		
	A-field bearer handover request	10.9.4	Not tested	Not tested
ULE1-M.21 Connection handover		5.1.2		
	A-field connection handover request	10.9.5	Not tested	Not tested
ULE1-M.22 Encryption activation		5.1.2		
	Encryption process - initialization and synchronization	10.15.1	TC_PT_ULE1_NB_TC103, TC_PT_ULE1_NB_TC104	TC_FT_ULE1_NB_TC103, TC_FT_ULE1_NB_TC104
	Encryption mode control; General	10.15.2.1	TC_PT_ULE1_NB_TC103, TC_PT_ULE1_NB_TC104	TC_FT_ULE1_NB_TC103, TC_FT_ULE1_NB_TC104
	Encryption mode control; M_T message	10.15.2.2	TC_PT_ULE1_NB_TC103, TC_PT_ULE1_NB_TC104	TC_FT_ULE1_NB_TC103, TC_FT_ULE1_NB_TC104
	Procedure for enabling encryption	10.15.2.3	TC_PT_ULE1_NB_TC103, TC_PT_ULE1_NB_TC104	TC_FT_ULE1_NB_TC103, TC_FT_ULE1_NB_TC104
	Encryption activation in resume operations	10.15.2.5	Not tested	Not tested
	Encryption handover control	10.15.3	Not tested	Not tested
ULE1-M.23 Encryption deactivation		5.1.2		
	Encryption mode control; General	10.15.2.1	Not tested	Not tested
	Encryption mode control; M_T message	10.15.2.2	Not tested	Not tested
	Procedure for disabling encryption	10.15.2.4	Not tested	Not tested
ULE1-M.24 Re-keying		5.1.2		
	Re-keying	10.16.1	Not tested	Not tested
ULE1-M.25 Early encryption		5.1.2		
	Early encryption	10.16.2	TC_PT_ULE1_NB_TC103	TC_FT_ULE1_NB_TC103
ULE1-M.26 DSC encryption		5.1.2		
	DSC encryption	10.16.3	TC_PT_ULE1_NB_TC104	TC_FT_ULE1_NB_TC104

MAC layer Service	Procedure	Reference (see note)	Test Cases	
			Portable Part	Fixed Part
ULE1-M.27 AES/DSC2 encryption		5.1.2		
	AES/DSC2 encryption	10.16.4	Not tested	Not tested
NOTE: Unless otherwise indicated, all the referenced clauses are related to TS 102 939-1 [10].				

7.3.4 DLC layer

Table 15 gives the list of Portable Part and Fixed Part Test Cases related to the DLC layer services and procedures specified by "DECT Ultra Low Energy (part 1) Home Automation Network phase 1" (TS 102 939-1 [10]).

Table 15: DLC layer Test Case to procedure mapping for PT and FT

DLC layer Service	Procedure	Reference (see note)	Test Cases	
			Portable Part	Fixed Part
ULE1-D.1 LU14 Enhanced Frame RELay service with CCM (EFREL-CCM)		5.1.3		
	LU14 Enhanced Frame RELay service with CCM (EFREL-CCM)	11.1	TC_PT_ULE1_MA_TC101, TC_PT_ULE1_MA_TC102, TC_PT_ULE1_MA_TC103, TC_PT_ULE1_MA_TC104, TC_PT_ULE1_MA_TC105, TC_PT_ULE1_MA_TC106, TC_PT_ULE1_MA_TC107, TC_PT_ULE1_MA_TC201, TC_PT_ULE1_MA_TC202, TC_PT_ULE1_MA_TC203, TC_PT_ULE1_MA_TC204, TC_PT_ULE1_MA_TC205, TC_PT_ULE1_MA_TC206, TC_PT_ULE1_MA_TC207, TC_PT_ULE1_MA_TC301, TC_PT_ULE1_MA_TC302, TC_PT_ULE1_MA_TC303, TC_PT_ULE1_MA_TC304, TC_PT_ULE1_MA_TC305, TC_PT_ULE1_MA_TC306, TC_PT_ULE1_ND_TC201,	TC_FT_ULE1_MA_TC101, TC_FT_ULE1_MA_TC102, TC_FT_ULE1_MA_TC103, TC_FT_ULE1_MA_TC104, TC_FT_ULE1_MA_TC105, TC_FT_ULE1_MA_TC106, TC_FT_ULE1_MA_TC107, TC_FT_ULE1_MA_TC201, TC_FT_ULE1_MA_TC202, TC_FT_ULE1_MA_TC203, TC_FT_ULE1_MA_TC204, TC_FT_ULE1_MA_TC205, TC_FT_ULE1_MA_TC206, TC_FT_ULE1_MA_TC207, TC_FT_ULE1_MA_TC301, TC_FT_ULE1_MA_TC302, TC_FT_ULE1_MA_TC303, TC_FT_ULE1_MA_TC304, TC_FT_ULE1_MA_TC305, TC_FT_ULE1_MA_TC306, TC_FT_ULE1_ND_TC201,

DLC layer Service	Procedure	Reference (see note)	Test Cases	
			Portable Part	Fixed Part
ULE1-D.2 LU13 Enhanced Frame RELay service with CRC (EFREL-CRC)		5.1.3		
	LU13 Enhanced Frame RELay service with CRC (EFREL-CRC)	11.8	TC_PT_ULE1_MB_TC101, TC_PT_ULE1_MB_TC102, TC_PT_ULE1_MB_TC103, TC_PT_ULE1_MB_TC104, TC_PT_ULE1_MB_TC105, TC_PT_ULE1_MB_TC106, TC_PT_ULE1_MB_TC107, TC_PT_ULE1_MB_TC201, TC_PT_ULE1_MB_TC202, TC_PT_ULE1_MB_TC203, TC_PT_ULE1_MB_TC204, TC_PT_ULE1_MB_TC205, TC_PT_ULE1_MB_TC206, TC_PT_ULE1_MB_TC207, TC_PT_ULE1_MB_TC301, TC_PT_ULE1_MB_TC302, TC_PT_ULE1_MB_TC303, TC_PT_ULE1_MB_TC304, TC_PT_ULE1_MB_TC305, TC_PT_ULE1_MB_TC306, TC_PT_ULE1_ND_TC901	TC_FT_ULE1_MB_TC101, TC_FT_ULE1_MB_TC102, TC_FT_ULE1_MB_TC103, TC_FT_ULE1_MB_TC104, TC_FT_ULE1_MB_TC105, TC_FT_ULE1_MB_TC106, TC_FT_ULE1_MB_TC107, TC_FT_ULE1_MB_TC201, TC_FT_ULE1_MB_TC202, TC_FT_ULE1_MB_TC203, TC_FT_ULE1_MB_TC204, TC_FT_ULE1_MB_TC205, TC_FT_ULE1_MB_TC206, TC_FT_ULE1_MB_TC207, TC_FT_ULE1_MB_TC301, TC_FT_ULE1_MB_TC302, TC_FT_ULE1_MB_TC303, TC_FT_ULE1_MB_TC304, TC_FT_ULE1_MB_TC305, TC_FT_ULE1_MB_TC306, TC_FT_ULE1_ND_TC901
ULE1-D.3 LU10 Enhanced Frame RELay service (EFREL)		5.1.3		
	LU10 Enhanced Frame RELay service (EFREL)	11.2	TC_PT_ULE1_MA_TC101, TC_PT_ULE1_MA_TC102, TC_PT_ULE1_MA_TC103, TC_PT_ULE1_MA_TC104, TC_PT_ULE1_MA_TC105, TC_PT_ULE1_MA_TC106, TC_PT_ULE1_MA_TC107, TC_PT_ULE1_MA_TC201, TC_PT_ULE1_MA_TC202, TC_PT_ULE1_MA_TC203, TC_PT_ULE1_MA_TC204, TC_PT_ULE1_MA_TC205, TC_PT_ULE1_MA_TC206, TC_PT_ULE1_MA_TC207, TC_PT_ULE1_MA_TC301, TC_PT_ULE1_MA_TC302,	TC_FT_ULE1_MA_TC101, TC_FT_ULE1_MA_TC102, TC_FT_ULE1_MA_TC103, TC_FT_ULE1_MA_TC104, TC_FT_ULE1_MA_TC105, TC_FT_ULE1_MA_TC106, TC_FT_ULE1_MA_TC107, TC_FT_ULE1_MA_TC201, TC_FT_ULE1_MA_TC202, TC_FT_ULE1_MA_TC203, TC_FT_ULE1_MA_TC204, TC_FT_ULE1_MA_TC205, TC_FT_ULE1_MA_TC206, TC_FT_ULE1_MA_TC207, TC_FT_ULE1_MA_TC301, TC_FT_ULE1_MA_TC302,

DLC layer Service	Procedure	Reference (see note)	Test Cases	
			Portable Part	Fixed Part
			TC_PT_ULE1_MA_TC303, TC_PT_ULE1_MA_TC304, TC_PT_ULE1_MA_TC305, TC_PT_ULE1_MA_TC306, TC_PT_ULE1_MB_TC101, TC_PT_ULE1_MB_TC102, TC_PT_ULE1_MB_TC103, TC_PT_ULE1_MB_TC104, TC_PT_ULE1_MB_TC105, TC_PT_ULE1_MB_TC106, TC_PT_ULE1_MB_TC107, TC_PT_ULE1_MB_TC201, TC_PT_ULE1_MB_TC202, TC_PT_ULE1_MB_TC203, TC_PT_ULE1_MB_TC204, TC_PT_ULE1_MB_TC205, TC_PT_ULE1_MB_TC206, TC_PT_ULE1_MB_TC207, TC_PT_ULE1_MB_TC301, TC_PT_ULE1_MB_TC302, TC_PT_ULE1_MB_TC303, TC_PT_ULE1_MB_TC304, TC_PT_ULE1_MB_TC305, TC_PT_ULE1_MB_TC306, TC_PT_ULE1_ND_TC301, TC_PT_ULE1_ND_TC302, TC_PT_ULE1_ND_TC303, TC_PT_ULE1_ND_TC401, TC_PT_ULE1_ND_TC402, TC_PT_ULE1_ND_TC501, TC_PT_ULE1_ND_TC601, TC_PT_ULE1_ND_TC701	TC_FT_ULE1_MA_TC303, TC_FT_ULE1_MA_TC304, TC_FT_ULE1_MA_TC305, TC_FT_ULE1_MA_TC306, TC_FT_ULE1_MB_TC101, TC_FT_ULE1_MB_TC102, TC_FT_ULE1_MB_TC103, TC_FT_ULE1_MB_TC104, TC_FT_ULE1_MB_TC105, TC_FT_ULE1_MB_TC106, TC_FT_ULE1_MB_TC107, TC_FT_ULE1_MB_TC201, TC_FT_ULE1_MB_TC202, TC_FT_ULE1_MB_TC203, TC_FT_ULE1_MB_TC204, TC_FT_ULE1_MB_TC205, TC_FT_ULE1_MB_TC206, TC_FT_ULE1_MB_TC207, TC_FT_ULE1_MB_TC301, TC_FT_ULE1_MB_TC302, TC_FT_ULE1_MB_TC303, TC_FT_ULE1_MB_TC304, TC_FT_ULE1_MB_TC305, TC_FT_ULE1_MB_TC306, TC_FT_ULE1_ND_TC301, TC_FT_ULE1_ND_TC302, TC_FT_ULE1_ND_TC303, TC_FT_ULE1_ND_TC401, TC_FT_ULE1_ND_TC402, TC_FT_ULE1_ND_TC501, TC_FT_ULE1_ND_TC601, TC_FT_ULE1_ND_TC701,
ULE1-D.4 FU10a		5.1.3		
	FU10a frame operation	11.3.1	TC_PT_ULE1_MA_TC101, TC_PT_ULE1_MA_TC102, TC_PT_ULE1_MA_TC103, TC_PT_ULE1_MA_TC104, TC_PT_ULE1_MA_TC105, TC_PT_ULE1_MA_TC106, TC_PT_ULE1_MA_TC107, TC_PT_ULE1_MA_TC201, TC_PT_ULE1_MA_TC202, TC_PT_ULE1_MA_TC203,	TC_FT_ULE1_MA_TC101, TC_FT_ULE1_MA_TC102, TC_FT_ULE1_MA_TC103, TC_FT_ULE1_MA_TC104, TC_FT_ULE1_MA_TC105, TC_FT_ULE1_MA_TC106, TC_FT_ULE1_MA_TC107, TC_FT_ULE1_MA_TC201, TC_FT_ULE1_MA_TC202, TC_FT_ULE1_MA_TC203,

DLC layer Service	Procedure	Reference (see note)	Test Cases	
			Portable Part	Fixed Part
			TC_PT_ULE1_MA_TC204, TC_PT_ULE1_MA_TC205, TC_PT_ULE1_MA_TC206, TC_PT_ULE1_MA_TC207, TC_PT_ULE1_MA_TC301, TC_PT_ULE1_MA_TC302, TC_PT_ULE1_MA_TC303, TC_PT_ULE1_MA_TC304, TC_PT_ULE1_MA_TC305, TC_PT_ULE1_MA_TC306, TC_PT_ULE1_MB_TC101, TC_PT_ULE1_MB_TC102, TC_PT_ULE1_MB_TC103, TC_PT_ULE1_MB_TC104, TC_PT_ULE1_MB_TC105, TC_PT_ULE1_MB_TC106, TC_PT_ULE1_MB_TC107, TC_PT_ULE1_MB_TC201, TC_PT_ULE1_MB_TC202, TC_PT_ULE1_MB_TC203, TC_PT_ULE1_MB_TC204, TC_PT_ULE1_MB_TC205, TC_PT_ULE1_MB_TC206, TC_PT_ULE1_MB_TC207, TC_PT_ULE1_MB_TC301, TC_PT_ULE1_MB_TC302, TC_PT_ULE1_MB_TC303, TC_PT_ULE1_MB_TC304, TC_PT_ULE1_MB_TC305, TC_PT_ULE1_MB_TC306, TC_PT_ULE1_ND_TC301, TC_PT_ULE1_ND_TC302, TC_PT_ULE1_ND_TC303, TC_PT_ULE1_ND_TC401, TC_PT_ULE1_ND_TC402, TC_PT_ULE1_ND_TC501, TC_PT_ULE1_ND_TC601, TC_PT_ULE1_ND_TC701	TC_FT_ULE1_MA_TC204, TC_FT_ULE1_MA_TC205, TC_FT_ULE1_MA_TC206, TC_FT_ULE1_MA_TC207, TC_FT_ULE1_MA_TC301, TC_FT_ULE1_MA_TC302, TC_FT_ULE1_MA_TC303, TC_FT_ULE1_MA_TC304, TC_FT_ULE1_MA_TC305, TC_FT_ULE1_MA_TC306, TC_FT_ULE1_MB_TC101, TC_FT_ULE1_MB_TC102, TC_FT_ULE1_MB_TC103, TC_FT_ULE1_MB_TC104, TC_FT_ULE1_MB_TC105, TC_FT_ULE1_MB_TC106, TC_FT_ULE1_MB_TC107, TC_FT_ULE1_MB_TC201, TC_FT_ULE1_MB_TC202, TC_FT_ULE1_MB_TC203, TC_FT_ULE1_MB_TC204, TC_FT_ULE1_MB_TC205, TC_FT_ULE1_MB_TC206, TC_FT_ULE1_MB_TC207, TC_FT_ULE1_MB_TC301, TC_FT_ULE1_MB_TC302, TC_FT_ULE1_MB_TC303, TC_FT_ULE1_MB_TC304, TC_FT_ULE1_MB_TC305, TC_FT_ULE1_MB_TC306, TC_FT_ULE1_ND_TC301, TC_FT_ULE1_ND_TC302, TC_FT_ULE1_ND_TC303, TC_FT_ULE1_ND_TC401, TC_FT_ULE1_ND_TC402, TC_FT_ULE1_ND_TC501, TC_FT_ULE1_ND_TC601, TC_FT_ULE1_ND_TC701
ULE1-D.5 FU10d		5.1.3		
	FU10d frame operation: general	11.3.2.1	TC_PT_ULE1_ND_TC301, TC_PT_ULE1_ND_TC302, TC_PT_ULE1_ND_TC303	TC_FT_ULE1_ND_TC301, TC_FT_ULE1_ND_TC302, TC_FT_ULE1_ND_TC303

DLC layer Service	Procedure	Reference (see note)	Test Cases	
			Portable Part	Fixed Part
	Transport of FU10d frames over G_{FA} channel	11.3.2.2	TC_PT_ULE1_ND_TC301, TC_PT_ULE1_ND_TC302, TC_PT_ULE1_ND_TC303	TC_FT_ULE1_ND_TC301, TC_FT_ULE1_ND_TC302, TC_FT_ULE1_ND_TC303
	Insertion in FU10a frames of the opposite link	11.3.2.3	N/A	N/A
ULE1-D.6 Data Link Service (LAPC + Lc) class A service		5.1.3		
	Class A link establishment	11.4.1	TC_PT_ULE1_NB_TC101	TC_FT_ULE1_NB_TC101
	Class A acknowledged information transfer	11.4.2	TC_PT_ULE1_NB_TC101	TC_FT_ULE1_NB_TC101
	Class A link release	11.4.3	TC_PT_ULE1_NB_TC601, TC_PT_ULE1_NB_TC602	TC_FT_ULE1_NB_TC601, TC_FT_ULE1_NB_TC602
	Class A link re-establishment	11.4.4		
	Handling of NWK layer messages longer than 63 octets	11.4.5	Not tested	Not tested
ULE1-D.7 DLC Transmission Class 1		5.1.3		
	General	11.5.1.1	Tested by groups MA, MB, MC, MD and ND	Tested by groups MA, MB, MC, MD and ND
	Sending side procedure	11.5.1.2	Tested by groups MA, MB, MC, MD and ND	Tested by groups MA, MB, MC, MD and ND
	Receiving side procedure	11.5.1.3	Tested by groups MA, MB, MC, MD and ND	Tested by groups MA, MB, MC, MD and ND
ULE1-D.8 Lc Frame delimiting and sequencing service		5.1.3		
	C_S channel fragmentation and recombination	11.6.1	TP_ULE1_NB1, TP_ULE1_NB2, TP_ULE1_NB3, TP_ULE1_NB4, TP_ULE1_NB5, TP_ULE1_NB6,	TP_ULE1_NB1, TP_ULE1_NB2, TP_ULE1_NB3, TP_ULE1_NB4, TP_ULE1_NB5, TP_ULE1_NB6,
	C_F channel fragmentation and recombination	11.6.2	Not tested	Not tested
	Selection of logical channels (C_S and C_F)	11.6.3	Not tested	Not tested
ULE1-D.9 Broadcast Lb service		5.1.3		
	Normal operation	11.7.1	TP_ULE1_NE2, TP_ULE1_NE3	TP_ULE1_NE2, TP_ULE1_NE3
ULE1-D.10 Encryption activation		5.1.3		

DLC layer Service	Procedure	Reference (see note)	Test Cases	
			Portable Part	Fixed Part
	MAC encryption switching	11.9.1	TC_PT_ULE1_NB_TC103, TC_PT_ULE1_NB_TC104	TC_FT_ULE1_NB_TC103, TC_FT_ULE1_NB_TC104
	CCM encryption switching	11.9.2	TP_ULE1_NC1, TP_ULE1_NC2	TP_ULE1_NC1, TP_ULE1_NC2
ULE1-D.11 Encryption deactivation		5.1.3		
	Encryption switching	11.9	Not tested	Not tested
ULE1-D.12 CCM/AES encryption		5.1.3		
	CCM Authenticated Encryption	11.10.1	TC_PT_ULE1_MA_TC101, TC_PT_ULE1_MA_TC102, TC_PT_ULE1_MA_TC103, TC_PT_ULE1_MA_TC104, TC_PT_ULE1_MA_TC105, TC_PT_ULE1_MA_TC106, TC_PT_ULE1_MA_TC107, TC_PT_ULE1_MA_TC201, TC_PT_ULE1_MA_TC202, TC_PT_ULE1_MA_TC203, TC_PT_ULE1_MA_TC204, TC_PT_ULE1_MA_TC205, TC_PT_ULE1_MA_TC206, TC_PT_ULE1_MA_TC207, TC_PT_ULE1_MA_TC301, TC_PT_ULE1_MA_TC302, TC_PT_ULE1_MA_TC303, TC_PT_ULE1_MA_TC304, TC_PT_ULE1_MA_TC305, TC_PT_ULE1_MA_TC306, TC_PT_ULE1_ND_TC201,	TC_FT_ULE1_MA_TC101, TC_FT_ULE1_MA_TC102, TC_FT_ULE1_MA_TC103, TC_FT_ULE1_MA_TC104, TC_FT_ULE1_MA_TC105, TC_FT_ULE1_MA_TC106, TC_FT_ULE1_MA_TC107, TC_FT_ULE1_MA_TC201, TC_FT_ULE1_MA_TC202, TC_FT_ULE1_MA_TC203, TC_FT_ULE1_MA_TC204, TC_FT_ULE1_MA_TC205, TC_FT_ULE1_MA_TC206, TC_FT_ULE1_MA_TC207, TC_FT_ULE1_MA_TC301, TC_FT_ULE1_MA_TC302, TC_FT_ULE1_MA_TC303, TC_FT_ULE1_MA_TC304, TC_FT_ULE1_MA_TC305, TC_FT_ULE1_MA_TC306, TC_FT_ULE1_ND_TC201,
	CCM activation at Virtual Call setup	11.10.2	TP_ULE1_NC1, TP_ULE1_NC2, TP_ULE1_MA1, TP_ULE1_MA2, TP_ULE1_MA3	TP_ULE1_NC1, TP_ULE1_NC2, TP_ULE1_MA1, TP_ULE1_MA2, TP_ULE1_MA3
	Cipher keys for CCM	11.10.3	TP_ULE1_NC1, TP_ULE1_NC2, TC_PT_ULE1_NB_TC301, TC_PT_ULE1_NB_TC302, TC_PT_ULE1_NB_TC303	TP_ULE1_NC1, TP_ULE1_NC2, TC_FT_ULE1_NB_TC301, TC_FT_ULE1_NB_TC302, TC_FT_ULE1_NB_TC303
NOTE: Unless otherwise indicated, all the referenced clauses are related to TS 102 939-1 [10].				

7.3.5 Network (NWK) layer

Table 16 gives the list of Portable Part and Fixed Part Test Cases related to the Network (NWK) layer features and procedures specified by "DECT Ultra Low Energy (part 1) Home Automation Network phase 1" (TS 102 939-1 [10]).

Table 16: NWK layer Test Case to procedure mapping for PT and FT

NWK layer Feature	Procedure	Reference (see note)	Test Cases	
			Portable Part	Fixed Part
ULE1-N.1 ULE phase 1 NWK control		5.1.4		
	General pre-requisites	12.1.1	Test groups NB and NC	Test groups NB and NC
	Creation of the ULE PVC and states	12.1.2	Test groups NB and NC	Test groups NB and NC
	Allowed CC Operations over the ULE transaction	12.1.3	Test group NC	Test group NC
	Service Change "NWK resume"	12.1.3.1	TC_PT_ULE1_NC_TC101, TC_PT_ULE1_NC_TC102, TC_PT_ULE1_NC_TC103, TC_PT_ULE1_NC_TC104, TC_PT_ULE1_NC_TC201, TC_PT_ULE1_NC_TC202, TC_PT_ULE1_NC_TC203, TC_PT_ULE1_NC_TC204, TC_PT_ULE1_NC_TC205, TC_PT_ULE1_NC_TC206, TC_PT_ULE1_NC_TC207, TC_PT_ULE1_NC_TC208	TC_FT_ULE1_NC_TC101, TC_FT_ULE1_NC_TC102, TC_FT_ULE1_NC_TC103, TC_FT_ULE1_NC_TC104, TC_FT_ULE1_NC_TC201, TC_FT_ULE1_NC_TC202, TC_FT_ULE1_NC_TC203, TC_FT_ULE1_NC_TC204, TC_FT_ULE1_NC_TC205, TC_FT_ULE1_NC_TC206, TC_FT_ULE1_NC_TC207, TC_FT_ULE1_NC_TC208
	Service Change "suspend"	12.1.3.2	TC_PT_ULE1_NC_TC301, TC_PT_ULE1_NC_TC302, TC_PT_ULE1_NC_TC303, TC_PT_ULE1_NC_TC304, TC_PT_ULE1_NC_TC305, TC_PT_ULE1_NC_TC306, TC_PT_ULE1_NC_TC307, TC_PT_ULE1_NC_TC308	TC_FT_ULE1_NC_TC301, TC_FT_ULE1_NC_TC302, TC_FT_ULE1_NC_TC303, TC_FT_ULE1_NC_TC304, TC_FT_ULE1_NC_TC305, TC_FT_ULE1_NC_TC306, TC_FT_ULE1_NC_TC307, TC_FT_ULE1_NC_TC308
	Service Change "other"	12.1.3.3	TC_PT_ULE1_NB_TC201, TC_PT_ULE1_NB_TC202, TC_PT_ULE1_NB_TC501, TC_PT_ULE1_NB_TC502, TC_PT_ULE1_NB_TC503	TC_FT_ULE1_NB_TC201, TC_FT_ULE1_NB_TC202, TC_FT_ULE1_NB_TC501, TC_FT_ULE1_NB_TC502, TC_FT_ULE1_NB_TC503
	Allowed parameters in any service change operation	12.1.3.4	Test group NC	Test group NC
	Default parameters	12.1.3.5	Test groups NB and NC	Test groups NB and NC

NWK layer Feature	Procedure	Reference (see note)	Test Cases	
			Portable Part	Fixed Part
	Initiating part of the Service Change operations	12.1.3.6	Test groups NB and NC, TC_PT_ULE1_NC_TC401, TC_PT_ULE1_NC_TC402	Test groups NB and NC, TC_FT_ULE1_NC_TC401, TC_FT_ULE1_NC_TC402
	Independence of other CC transactions.	12.1.3.7	Test groups NB and NC	Test groups NB and NC
	Default MAC parameters for implicitly created MBC	12.1.3.8	Implicitly tested by running test groups MA, MC; MC, MD before modifying parameters by test groups NB and NC	Implicitly tested by running test groups MA, MC; MC, MD before modifying parameters by test groups NB and NC
	Paging descriptors in suspend and resume states	12.1.3.9	TC_PT_ULE1_NE_TC101, TC_PT_ULE1_NE_TC102, TC_PT_ULE1_NE_TC103, TC_PT_ULE1_NE_TC104, TC_PT_ULE1_NE_TC105, TC_PT_ULE1_NE_TC201, TC_PT_ULE1_NE_TC202, TC_PT_ULE1_NE_TC203, TC_PT_ULE1_NE_TC204, TC_PT_ULE1_NE_TC301, TC_PT_ULE1_NE_TC302, TC_PT_ULE1_NE_TC303	TC_FT_ULE1_NE_TC101, TC_FT_ULE1_NE_TC102, TC_FT_ULE1_NE_TC103, TC_FT_ULE1_NE_TC104, TC_FT_ULE1_NE_TC105, TC_FT_ULE1_NE_TC201, TC_FT_ULE1_NE_TC202, TC_FT_ULE1_NE_TC203, TC_FT_ULE1_NE_TC204, TC_FT_ULE1_NE_TC301, TC_FT_ULE1_NE_TC302, TC_FT_ULE1_NE_TC303
ULE1-N.2 ULE Service call		5.1.4		
	Service call setup	12.2.1	TC_PT_ULE1_NB_TC101, TC_PT_ULE1_NB_TC102	TC_FT_ULE1_NB_TC101, TC_FT_ULE1_NB_TC102
	Normal call release	8.7 [9]	TC_PT_ULE1_NB_TC601, TC_PT_ULE1_NB_TC602	TC_FT_ULE1_NB_TC601, TC_FT_ULE1_NB_TC602
	Abnormal call release	8.8 [9]	TC_PT_ULE1_NB_TC102	TC_FT_ULE1_NB_TC102
	Transport of IWU-to-IWU data	13.2.1	TC_PT_ULE1_NB_TC401	TC_FT_ULE1_NB_TC401
ULE1-N.3 Authentication of the PP		5.1.4		
	Authentication of PP using DSAA	8.24 [9]	TC_PT_ULE1_NA_TC502, TC_PT_ULE1_NB_TC303	TC_FT_ULE1_NA_TC502, TC_FT_ULE1_NB_TC303
	Authentication of PP using DSAA2	8.45.7 [9]	TC_PT_ULE1_NA_TC501, TC_PT_ULE1_NB_TC301	TC_FT_ULE1_NA_TC501, TC_FT_ULE1_NB_TC301
	Storing the Derived Cipher Key (DCK)	8.27 [9]	TC_PT_ULE1_NA_TC501, TC_PT_ULE1_NA_TC502	TC_FT_ULE1_NA_TC501, TC_FT_ULE1_NA_TC502
	Storing the Derived Cipher Key for CCM (DCK-CCM)	12.2.2	TC_PT_ULE1_NB_TC301, TC_PT_ULE1_NB_TC302, TC_PT_ULE1_NB_TC303	TC_FT_ULE1_NB_TC301, TC_FT_ULE1_NB_TC302, TC_FT_ULE1_NB_TC303
ULE1-N.4 Authentication of the user		5.1.4		

NWK layer Feature	Procedure	Reference (see note)	Test Cases	
			Portable Part	Fixed Part
	Authentication of user using DSAA	8.25 [9]	Not tested	Not tested
	Authentication of user using DSAA2	8.45.8 [9]	Not tested	Not tested
ULE1-N.5 Location registration		5.1.4		
	Location registration	8.28 [9]	TC_PT_ULE1_NA_TC401	TC_FT_ULE1_NA_TC401
	Location update	8.29 [9]	TC_PT_ULE1_NA_TC401	TC_FT_ULE1_NA_TC401
	Terminal Capability indication	12.3.1	TC_PT_ULE1_NA_TC201	N/A
ULE-N.6 On air key allocation		5.1.4		
	Key allocation using DSAA	8.32 [9]	TC_PT_ULE1_NA_TC301, TC_PT_ULE1_NA_TC302, TC_PT_ULE1_NA_TC502	TC_FT_ULE1_NA_TC301, TC_FT_ULE1_NA_TC302, TC_FT_ULE1_NA_TC502
	Key allocation using DSAA2	8.45.9 [9]	TC_PT_ULE1_NA_TC301, TC_PT_ULE1_NA_TC302, TC_PT_ULE1_NA_TC501	TC_FT_ULE1_NA_TC301, TC_FT_ULE1_NA_TC302, TC_FT_ULE1_NA_TC501
ULE1-N.7 Identification of PP		5.1.4		
	Identification of PT	8.22 [9]	Not tested	Not tested
ULE1-N.8 Service class indication/assignment		5.1.4		
	Obtaining access rights	8.30 [9]		
	Terminal Capability indication	12.3.1	TC_PT_ULE1_NA_TC201	N/A
	Authentication of PP using DSAA	8.24 [9]	TC_PT_ULE1_NA_TC502, TC_PT_ULE1_NB_TC303	TC_FT_ULE1_NA_TC502, TC_FT_ULE1_NB_TC303
	Authentication of PP using DSAA2	8.45.7 [9]	TC_PT_ULE1_NA_TC501, TC_PT_ULE1_NB_TC301	TC_FT_ULE1_NA_TC501, TC_FT_ULE1_NB_TC301
ULE1-N.9 Encryption activation FT initiated		5.1.4		
	Cipher-switching initiated by FT using DSC	8.33 [9]	TC_PT_ULE1_NB_TC104	TC_FT_ULE1_NB_TC104
	Cipher-switching initiated by FT using DSC2	8.45.10 [9]	Not tested	Not tested
	Storing the Derived Cipher Key (DCK)	8.27 [9]	TC_PT_ULE1_NA_TC502	TC_FT_ULE1_NA_TC502
ULE1-N.10 Subscription registration user procedure on-air		5.1.4		
	Obtaining access rights	8.30 [9]	TC_PT_ULE1_NA_TC301, TC_PT_ULE1_NA_TC302	TC_FT_ULE1_NA_TC301, TC_FT_ULE1_NA_TC302
	Terminal Capability indication	12.3.1	TC_PT_ULE1_NA_TC201	N/A

NWK layer Feature	Procedure	Reference (see note)	Test Cases	
			Portable Part	Fixed Part
ULE1-N.11 Link control		5.1.4		
	Indirect FT initiated link establishment	8.35 [9]	TC_PT_ULE1_MC_TC501	TC_FT_ULE1_MC_TC501
	Direct PT initiated link establishment	8.36 [9]	TC_PT_ULE1_NB_TC101	TC_FT_ULE1_NB_TC101
	Link release "normal"	8.37 [9]	TC_PT_ULE1_NB_TC601, TC_PT_ULE1_NB_TC602	TC_FT_ULE1_NB_TC601, TC_FT_ULE1_NB_TC602
	Link release "abnormal"	8.38 [9]	Not tested	Not tested
	Link release "maintain"	8.39 [9]	Not tested	Not tested
ULE1-N.12 Terminate access rights FT initiated		5.1.4		
	FT terminating access rights	8.31 [9]	TC_PT_ULE1_NA_TC602	TC_FT_ULE1_NA_TC602
	Authentication of FT using DSAA	8.23 [9]	TC_PT_ULE1_NA_TC602	TC_FT_ULE1_NA_TC602
	Authentication of FT using DSAA2	8.45.6 [9]	Not tested	Not tested
ULE1-N.13 Authentication of FT		5.1.4		
	Authentication of FT using DSAA	8.23 [9]	TC_PT_ULE1_NA_TC602	TC_FT_ULE1_NA_TC602
	Authentication of FT using DSAA2	8.45.6 [9]	Not tested	Not tested
ULE1-N.14 Encryption activation PT initiated		5.1.4		
	Cipher-switching initiated by PT using DSC	8.34 [9]	TC_PT_ULE1_NB_TC104	TC_FT_ULE1_NB_TC104
	Cipher-switching initiated by PT using DSC2	8.45.11 [9]	Not tested	Not tested
	Storing the DCK	8.27 [9]	TC_PT_ULE1_NA_TC501, TC_PT_ULE1_NA_TC502	TC_FT_ULE1_NA_TC501 TC_FT_ULE1_NA_TC502
ULE1-N.15 Encryption deactivation FT initiated		5.1.4		
	Cipher-switching initiated by FT using DSC	8.33 [9]	Not tested	Not tested
	Cipher-switching initiated by FT using DSC2	8.45.10 [9]	Not tested	Not tested
ULE1.N.16 Encryption deactivation PT initiated		5.1.4		
	Cipher-switching initiated by PT using DSC	8.34 [9]	TC_PT_ULE1_NB_TC104	TC_FT_ULE1_NB_TC104
	Cipher-switching initiated by PT using DSC2	8.45.11 [9]	Not tested	Not tested
ULE1-N.17 Enhanced security		5.1.4		
	Encryption of all calls	8.45.1 [9]	TC_PT_ULE1_NB_TC104	TC_FT_ULE1_NB_TC104
	Re-keying during a call	8.45.2 [9]	Not tested	Not tested

NWK layer Feature	Procedure	Reference (see note)	Test Cases	
			Portable Part	Fixed Part
	Early encryption	8.45.3 [9]	TC_PT_ULE1_NB_TC103	TC_FT_ULE1_NB_TC103
	Subscription requirements	8.45.4 [9]	Not tested	Not tested
	Behaviour against legacy devices	8.45.5 [9]	N/A	N/A
ULE1-N.18 AES/DSAA2 authentication		5.1.4		
	Authentication of FT using DSAA2 (see note)	8.45.6 [9]	Not tested	Not tested
	Authentication of PP using DSAA2	8.45.7 [9]	TC_PT_ULE1_NA_TC501, TC_PT_ULE1_NB_TC301	TC_FT_ULE1_NA_TC501, TC_FT_ULE1_NB_TC301
	Authentication of user using DSAA2	8.45.8 [9]	Not tested	Not tested
	Key allocation using DSAA2	8.45.9 [9]	TC_PT_ULE1_NA_TC302, TC_PT_ULE1_NA_TC501	TC_FT_ULE1_NA_TC302, TC_FT_ULE1_NA_TC501
	Cipher-switching initiated by FT using DSC2	8.45.10 [9]	Not tested	Not tested
	Cipher-switching initiated by PT using DSC2	8.45.11 [9]	Not tested	Not tested
	Storing the Derived Cipher Key (DCK)	8.27 [9]	TC_PT_ULE1_NA_TC501, TC_PT_ULE1_NA_TC502	TC_FT_ULE1_NA_TC501, TC_FT_ULE1_NA_TC502
	Storing the Derived Cipher Key for CCM (DCK-CCM)	12.2.2	TC_PT_ULE1_NB_TC301, TC_PT_ULE1_NB_TC302	TC_FT_ULE1_NB_TC301, TC_FT_ULE1_NB_TC302
NOTE: Unless otherwise indicated, all the referenced clauses are related to TS 102 939-1 [10].				

7.3.6 Application layer

Table 17 gives the list of Portable Part and Fixed Part Test Cases related to the DECT Application layer features and procedures specified by "DECT Ultra Low Energy (part 1) Home Automation Network phase 1" (TS 102 939-1 [10]).

NOTE: This clause refers to the DECT C-plane features named "Application layer" in TS 102 939-1 [10] following the convention usual in DECT standards. They should not be confused with the true ULE Application layer that is out of the scope of the present document (see overall description in clause 4).

Table 17: Application layer (see note) Test Case to procedure mapping for PT and FT

Application layer Feature	Procedure	Reference (see note)	Test Cases	
			Portable Part	Fixed Part
AC to bit string mapping [ULE1.A.1]		5.1.5		
	AC to bit string mapping	14.2 [9]	Not tested	Not tested
Multiple subscription registration [ULE1.A.2]		5.1.5		
	Subscription control	14.1 [9]	Not tested	Not tested
Easy pairing registration [ULE1.A.3]		5.1.5		
	Registration mode automatic access	7.10.1.3.1 [11]	TC_PT_ULE1_NA_TC302	N/A
	Base station limited registration mode	7.10.1.2.2 [11]	N/A	TC_FT_ULE1_NA_TC302
	Searching mode requests	14.1.1	TC_PT_ULE1_NA_TC302	N/A
	Base station name selection	7.10.1.3.2 [11]	TC_PT_ULE1_NA_TC302	TC_FT_ULE1_NA_TC302
	Registration user feedback	7.10.1.3.3 [11]	TC_PT_ULE1_NA_TC302	TC_FT_ULE1_NA_TC302
NOTE: Unless otherwise indicated, all the referenced clauses are related to TS 102 939-1 [10].				

7.3.7 Management Entity

Table 18 gives the list of Portable Part and Fixed Part Test Cases related to the Management Entity Services and procedures specified by "DECT Ultra Low Energy (part 1) Home Automation Network phase 1" (TS 102 939-1 [10]).

Table 18: Management Entity Test Case to procedure mapping for PT and FT

Management Entity Service	Procedure	Reference (see note)	Test Cases	
			Portable Part	Fixed Part
ULE phase 1 Management [ULE1-ME.1]		5.1.6		
	ULE phase 1 connection and resources management	9.1.1	Implicitly tested, in part, by groups MA, MB, MC and MD	Implicitly tested, in part, by groups MA, MB, MC and MD
	Stay alive procedure	9.1.2	TC_PT_ULE1_MD_TC501, TC_PT_ULE1_MD_TC502, TC_PT_ULE1_MD_TC503	TC_FT_ULE1_MD_TC501, TC_FT_ULE1_MD_TC502, TC_FT_ULE1_MD_TC503
ULE Physical Channel Selection [ULE1-ME.2]		5.1.6		
	Overall architecture of ULE channel selection processes	9.2.1	TC_PT_ULE1_ME_TC301	TC_FT_ULE1_ME_TC101
	Process M0 (RFP side pre-selection process)	9.2.2	N/A	TC_FT_ULE1_ME_TC101
	Broadcast mechanism	9.2.3	Test group ME, TC_PT_ULE1_MF_TC103, TC_PT_ULE1_MF_TC104	TC_FT_ULE1_ME_TC101
	Process M1 (PP side channel selection process)	9.2.4	TC_PT_ULE1_ME_TC201, TC_PT_ULE1_ME_TC202, TC_PT_ULE1_ME_TC203, TC_PT_ULE1_ME_TC204,	N/A
	Setup attempt and evaluation of responses	9.2.5	TC_PT_ULE1_ME_TC301	N/A
	Process M2 (collision handling/collision avoidance process)	9.2.6	TC_PT_ULE1_ME_TC301, TC_PT_ULE1_ME_TC302, TC_PT_ULE1_ME_TC303	N/A
NOTE: Unless otherwise indicated, all the referenced clauses are related to TS 102 939-1 [10].				

7.3.8 U-plane and interworking services

Table 19 gives the list of Portable Part and Fixed Part Test Cases related to the U-plane and interworking services specified by "DECT Ultra Low Energy (part 1) Home Automation Network phase 1" (TS 102 939-1 [10]).

Table 19: U-plane and interworking service Test Case to procedure mapping for PT and FT

U-plane and interworking service	Procedure	Reference (see note)	Test Cases	
			Portable Part	Fixed Part
ULE1-I.1 Transparent U-plane Interworking		5.1.2		
	U-plane procedures	B.2.1	Already covered by DLC Test Cases	Already covered by DLC Test Cases
	C-plane procedures	B.2.2	Already covered by NWK Test Cases	Already covered by NWK Test Cases
	Transport of IWU-to-IWU data	13.2.1	TC_PT_ULE1_NB_TC401, TC_PT_ULE1_NB_TC402	TC_FT_ULE1_NB_TC401, TC_FT_ULE1_NB_TC402
NOTE: Unless otherwise indicated, all the referenced clauses are related to TS 102 939-1 [10].				

Annex A (normative): Format conventions and content of U-plane test vectors

A.1 General conventions

This annex introduces the description format of the U-plane vectors. The bit content of the vectors themselves is given in the Test Case Library.

This annex may be seen as an extension of clause 6 defining the interfaces TP1 and TF1.

A.1.1 Definition of U-plane test vector

A U-plane test vector consists on a sequence of bytes of known total length. In addition to this, there may be intermediate SDU boundaries in the vector.

A.1.2 Vector identification

The Test Case Library will include the vectors required by the Test Cases of the library. Each vector is numbered with a "vector id number" of three digits. For example "Vector_id_100". These numbers are used in the present document.

A.1.3 Transmission input vector buffers

It is assumed that the test system has the capability to upload into the IUT (by means of the driver) a finite number of input test vectors with a finite maximum size, by means of the test interfaces TP1 and TF1 (see clause 4). This operation is assumed to be done during the preparation (before the starting) of the test.

During the execution of the Test Cases a commit command "transmit vector x" will force the transmission of the selected vector. However the vector itself does not need to be passed over the interfaces TP1 or TF1 in real time.

In the Fixed Part side (interface TF1) it is assumed that there may be multiple instances. Each instance refers to a separate DECT context intended for transmission to different PTs. Each one of the instances will have several input buffers as described for the PT.

A.1.3.1 Maximum limits for input vector buffers

For implementation practical purposes, the maximum size and maximum number of test vectors in buffers that should be implemented is given by the Test Cases and the text execution sequences. Some Test Cases may be conditional or dependent on the declared capabilities or parameters, such as the maximum SDU size supported.

In any case, table A.1 below defines the absolute limit for the Test Cases to allow the implementation of the test system. This limit will not be exceeded by any combination of Test Cases in any execution sequence, considering the worst case of conditional or parameter depending Test Cases.

Table A.1: Absolute limits to vector numbers and sizes

Parameter	limit
Minimum size of a vector:	0 bytes
Maximum size of a vector:	1000 bytes
Maximum number of intermediate SDU boundaries (total number of SDUs will be this number +1):	10
Number of input test vectors stored in the input buffer :	10
Number of instances at i/f TF1 (for FT only):	2

A.1.3.2 Identification and storage of the test vectors in the transmission input buffers

Vectors stored in the input buffer are identified as:

"Vector_x"

being *x* a single digit number in the range 0-9. During the preparation of the Test Cases a command with following format:

"Load vector_id_xxx as vector_1_instance_1"

indicates that the vector_id_xxx from the vector library should be physically stored in the IUT by means of the interfaces TP1/TF1, and should be ready for immediate transmission during Test Case execution. The indication about instance id is only needed in the case of the FT.

A.1.4 Transmission of a vector during the execution of the Test Cases

The transmission of the vector stored in the buffer during the Test Case execution itself is indicated by a command

Transmit_vector_x

When the transmit command is invoked, all bytes in the vector shall be transmitted in sequence. SDU boundaries shall be properly coded at the DLC protocol as defined by EN 300 175-4 [4].

If the intention of the Test Case is creating an interruption in the transmission between SDUs, then two or more vectors shall be used and the proper timing indications shall be included in the Test Case sequence itself.

A.1.5 Reception buffers

Regarding reception, it is assumed that, at both sides, there exists a reception buffer with a given maximum capacity sufficient for the execution of all Test Case sequences. In the case of the FT, there shall be one reception buffer per instance (that corresponds to data sent by a particular PT).

The reception buffer shall be able to record, in addition to the data, the position of the SDU boundaries. Corrupted and/or incomplete SDUs do not need to be recorded.

A.1.5.1 Maximum limits for the reception buffers

For implementation practical purposes, the maximum size of the reception buffer that should be implemented is given by the Test Cases and the text execution sequences. Some Test Cases may be conditional or dependent on the declared capabilities or parameters, such as the maximum SDU size supported.

In any case, table A.2 defines the absolute limit for the Test Cases to allow the implementation of the test system. This limit will not be exceeded by any combination of Test Cases in any execution sequence, considering the worst case of conditional or parameter depending Test Cases.

Table A.2: Absolute limits for reception buffers

Parameter	limit
Minimum size of the buffer:	10 000 bytes
Maximum number of SDUs in the buffer:	100 bytes
Size of each SDU:	0-1 000 bytes
Number of instances of the reception buffer (for FT only):	2

A.2 Description Format of the Test vectors

In the Test Case library, test vectors shall be described with the following format (bit content is an example):

```
Vector id 101
Total Length: 82
SDU boundaries: 32  64
01  45  67  89  23  45  98  76  A3  BF  CD  EF  7A  DC  EF  6A
01  45  67  89  23  45  98  76  A3  BF  CD  EF  7A  DC  EF  6A
01  45  67  89  23  45  98  76  A3  BF  CD  EF  7A  DC  EF  6A
01  45  67  89  23  45  98  76  A3  BF  CD  EF  7A  DC  EF  6A
01  45  67  89  23  45  98  76  A3  BF  CD  EF  7A  DC  EF  6A
01  45
```

Vector id refers to the number of the vector in the present document

Total Length refers to the total length of the vector in bytes

SDU boundaries indicate the intermediate SDU boundaries (if any). The number indicates the bytes that are the first octet of an SDU. The first byte is byte 00 and does not need to be noted

Bytes are coded in Hexadecimal format.

Annex B (normative): Parameters

B.1 Parameters for static and negotiated capabilities

B.1.1 Static and negotiated capabilities

The parameters described below (see tables B.1 and B.2) refer to the capabilities that are either inherent to the IUT or that are supposed to be negotiated using an application protocol. The interfaces TP1 and TF1 shall apply these parameters as described in the present annex.

The test commands "Retrieve Static capabilities" and "Store Negotiated capabilities" (see clause 6.3.1, table 1) allows to emulate the negotiation process during the Test setup stage.

B.1.1.1 Parameters for static capabilities

The command "Retrieve Static capabilities" over interfaces TP1/TF1 (see clause 6.3.1) is used to retrieve the inherent capabilities of the IUT, and the supported range of negotiable capabilities. Only parameters that would be negotiated by an application layer protocol or that should be know by the application layer are passed over the interface. Pure DECT parameters that are handled entirely at the DECT subsystem via standard mechanisms such as FP capabilities broadcast and IE <TERMINAL-CAPABILITIES> are not listed. Table B.1 shows the current allowed parameters. For PP devices, device type, paging type supported, paging wake up timer range and maximum supported burst size are listed. For FP, only maximum supported burst size is listed for the time being. Additional parameters may be added later on and they will be described in a future releases of the present document.

A similar command is supposed to exist in the interfaces SP1/SF1 since the application needs to retrieve these parameters to perform any negotiation using higher layer protocols.

Table B.1: Parameters for static capabilities

Applicable to	Termination	Parameter	Values	Description	Notes
TP1	PT	PP device type	Flag for TYPES 2, 3, 4 and 5	Supported PP types (several types may be supported)	
TP1	PT	Paging operation supported	Flag asynchronous/synchronous	Type of paging operation supported	No support of paging is coded in PP TYPE Synchronous means that FT may expect the PT to listen to paging at the allocated descriptor windows
TP1	PT	Minimum Paging wake-up timer	Value in frames	The minimum value of the paging wake up timer that may be negotiated	
TP1	PT	Maximum paging wake-up timer	Value in frames	The maximum value of the paging wake up timer that may be negotiated	
TP1	PT	Precision of the value of the paging wake-up timer	Value in p.p.m	The tolerance in the value of the paging wake up timer that the PP implementation has	
TP1, TF1	PT, FT	Maximum supported block of data size	Value in octets	Maximum supported block of data size (in both directions)	

B.1.1.2 Parameters for dynamic or negotiated capabilities

The command "Store Negotiated capabilities" over interfaces TP1/TF1 (see clause 6.3.1) is used to store into the IUT the resulting parameters to be used, that are consequence of a hypothetical negotiation using higher layer (application) protocols. A similar command is supposed to exist in the interfaces SP1/SF1.

It should be noted that the command "Store Negotiated capabilities" stores in each devices the capabilities to be used by both sides, since the knowledge of the parameter is normally needed by the other peer.

EXAMPLE: The clearest case is the paging wake-up timer. This is a parameter of the PP, however the FP needs to know what has been the negotiated parameter in order to operate properly the paging.

Due to the need of inserting parameters for both sides, the instance indicator should be used in interface TF1.

Table B.2: Parameters for negotiated/communicated capabilities

Applicable to	Termination	Parameter	Values	Description	Notes
TP1, TF1	PT	PP device type in use	TYPE 2, 3, 4 or 5	Indicates the type of device that the PP shall operate as	Only one
TP1, TF1	PT	Paging operation supported	asynchronous/synchronous	Type of paging operation that shall be used	No support of paging is coded in PP TYPE Synchronous means that the FT may expect the PT to listen to paging at the allocated descriptor windows.
TP1, TF1	PT	Paging wake-up timer	Value in frames	The paging wake up timer that shall be used	Value decided by the negotiation. It should be within the static range.
TP1, TF1	PT	Precision of the value of the paging wake-up timer	Value in p.p.m	The tolerance in the value of the paging wake up timer that the PP implementation has	Non negotiable parameter. It should be as the static capability. It is here just to allow communication to the FP by means of TF1.

NOTE: Only the negotiated values that the IUT needs to know are transmitted downstream at the interface. Some negotiated values, such as the maximum burst size supported by both sides are assumed to be negotiated, but are not sent to the IUT since they can be handled by the application layer.

Annex C (informative): Bibliography

- ETSI TR 101 178: "Digital Enhanced Cordless Telecommunications (DECT); A high Level Guide to the DECT Standardization".
- ETSI EN 301 649: "Digital Enhanced Cordless Telecommunications (DECT); DECT Packet Radio Service (DPRS)".

History

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