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**Radio Equipment and Systems (RES);
Digital European Cordless Telecommunications (DECT)
Public Access Profile (PAP) test specification
Part 1: Overview**

ETSI

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Foreword

This European Telecommunication Standard (ETS) has been produced by the Radio Equipment and Systems (RES) Technical Committee of the European Telecommunications Standards Institute (ETSI).

Details of the DECT Common Interface may be found in ETS 300 175 Parts 1 - 9 [1] to [9].

Further details of the DECT system may be found in the ETSI Technical Report (ETR) 015, "Digital European Cordless Telecommunications Reference document", ETR 043 "Digital European Cordless Telecommunications Services and facilities requirements specification", and ETR 056 "Digital European Cordless Telecommunications system description document".

Annex B contains changes to the product standard ETS 300 175 [1] - [9]. These changes are necessary for the correct operation of the equipment and compliance to the requirements of this ETS. These changes will be incorporated within ETS 300 175 [1] - [9] under the ETSI maintenance procedures.

The PAP test specification ETS comprises seven parts:

- | | |
|----------------|--|
| Part 1: | Overview. |
| Part 2: | Portable radio Termination (PT) Abstract Test Suite (ATS); versions available in both ISO 9646 TTCN.MP format (electronic) and TTCN.GR format (paper). |
| Part 3: | Portable radio Termination (PT) Protocol Implementation Conformance Statement (PICS) proforma. |
| Part 4: | Portable radio Termination (PT) Protocol Implementation eXtra Information for Testing (PIXIT) proforma. |
| Part 5: | Fixed radio Termination (FT) Abstract Test Suite (ATS); versions available in both ISO 9646 TTCN.MP format (electronic) and TTCN.GR format (paper). |
| Part 6: | Fixed radio Termination (FT) Protocol Implementation Conformance Statement (PICS) proforma. |
| Part 7: | Fixed radio Termination (FT) Protocol Implementation eXtra Information for Testing (PIXIT) proforma. |

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1 Scope

This European Telecommunication Standard (ETS) contains the test specification for Digital European Cordless Telecommunications (DECT) Public Access Profile (PAP) applications.

The main objective of the PAP test specification is to provide approval tests giving a high probability of air interface inter-operability between different manufacturer's equipment.

The ISO standard for the methodology of conformance testing (ISO 9646 Part 1 [14], ISO 9646 Part 2 [15], ISO 9646 Part 3 [16], and ISO 9646 Part 6 [17]) is used as the basis for the test methodology, and ISO 9646 Part 3 [16], commonly referred to as Tree and Tabular Combined Notation (TTCN) is used as the basis for test case specification. This provides a mature framework for protocol testing as recommended by EWOS//ETSI Project Team No. 5 report, and ETR 021.

ETS 300 175-9 [9] has been used to produce a Protocol Implementation Conformance Statement (PICS) proforma which unambiguously expresses the static conformance requirements. Specific tests check both the static conformance requirements as declared in the PICS and the dynamic conformance requirements as described in the ETS 300 175 Parts 1 - 9 [1] to [9].

The Abstract Test Suite (ATS) describes a set of tests which can be converted using commonly available tools into an executable test suite. For the protocol tests, it consists of TTCN tables comprising an overview section, a declarations section, a constraints section and a dynamic behaviour section. For the non-protocol tests (real-effects), it describes the test method using natural language. The real effects test procedures are contained in Annex C of this ETS.

The PICS proforma shows a checklist of all mandatory, optional and conditional features, elements of procedure, parameters, options, timers, multi-layer dependencies and other capabilities identified in the protocol specification. Once completed by the manufacturer, this shows which parts of the PAP static conformance requirements the manufacturer has implemented.

The Protocol Implementation eXtra Information for Testing (PIXIT) proforma is a questionnaire for the manufacturer to complete showing all the detailed information required by the test laboratory, for example, methods of feature invocation, real timer values and identities.

2 Normative references

This ETS incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this ETS only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

- [1] ETS 300 175-1: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT) Common Interface Part 1: Overview".
- [2] ETS 300 175-2: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT) Common Interface Part 2: Physical layer".
- [3] ETS 300 175-3: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT) Common Interface Part 3: Medium access control layer".
- [4] ETS 300 175-4: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT) Common Interface Part 4: Data link control layer".
- [5] ETS 300 175-5: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT) Common Interface Part 5: Network layer".
- [6] ETS 300 175-6: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT) Common Interface Part 6: Identities and addressing".
- [7] ETS 300 175-7: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT) Common Interface Part 7: Security features".
- [8] ETS 300 175-8: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT) Common Interface Part 8: Speech coding and transmission".
- [9] ETS 300 175-9: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT) Common Interface Part 9: Public access profile".
- [10] TBR 6: "General Attachment Requirements for Terminal Equipment for Digital European Telecommunications (DECT)".
- [11] TBR 10: "Attachment Requirements for Terminal Equipment for Digital European Telecommunications (DECT): Telephony Applications".
- [12] I-ETS 300 176: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications Approval Test Specification".
- [13] Reserved for future ETS version of [12].
- [14] ISO/IEC 9646-1: "Information Technology-OSI Conformance Testing Methodology and Framework, Part 1: General Concepts".
- [15] ISO/IEC 9646-2: "Information Technology-OSI Conformance Testing Methodology and Framework, Part 2: Abstract Test Suite Specification".

- [16] ISO/IEC 9646-3: "Information Technology-OSI Conformance Testing Methodology and Framework, Part 3: The Tree and Tabular Combined Notation".
- [17] ISO/IEC 9646-6: "Information Technology-OSI Conformance Testing Methodology and Framework, Part 6: Protocol Profile Test Specification".
- [18] ISO 7498: "Information processing systems - Open Systems Interconnection - Basic Reference Model".
- [19] ISO/TR 8509: "Information processing systems - Open Systems Interconnection - Service conventions".
- [20] ETS 300 323-2: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT), Public Access Profile Test Specification Part 2: Portable Radio Termination Abstract Test Suite".
- [21] ETS 300 323-3: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT), Public Access Profile Test Specification Part 3: Portable Radio Termination Protocol Implementation Conformance Statement (PICS) proforma".
- [22] ETS 300 323-4: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT), Public Access Profile Test Specification Part 4: Portable Radio Termination Protocol Implementation eXtra Information for Testing (PIXIT) proforma".
- [23] ETS 300 323-5: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT), Public Access Profile Test Specification Part 5: Fixed Radio Termination Abstract Test Suite".
- [24] ETS 300 323-6: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT), Public Access Profile Test Specification Part 6: Fixed Radio Termination Protocol Implementation Conformance Statement (PICS) proforma".
- [25] ETS 300 323-7: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT), Public Access Profile Test Specification Part 7: Fixed Radio Termination Protocol Implementation eXtra Information for Testing (PIXIT) proforma".
- [26] I-ETS 300 131: "Radio Equipment and Systems (RES); Common air interface specification to be used for the interworking between cordless telephone apparatus in the frequency band 864,1 MHz to 868,1 MHz, including public access services".

3 Definitions, symbols and abbreviations

For the purposes of this ETS, the following definitions and abbreviations apply:

3.1 DECT definitions

Attach: the process whereby a portable part within the coverage area of a fixed part to which it has access rights, notifies this fixed part that it is operative. The reverse process is detach, which reports the portable part as inoperative.

NOTE 1: An operative portable part is assumed to be ready to receive calls.

Authentication: the process whereby a DECT subscriber is positively verified to be a legitimate user of a particular fixed part.

NOTE 2: Authentication is generally performed at call set-up, but may also be done at any other time (e.g. during a call).

Call: all of the NWK layer processes involved in one network layer peer-to-peer association.

NOTE 3: Call may sometimes be used to refer to processes of all layers, since lower layer processes are implicitly required.

External handover: the process of switching a call in progress from one fixed radio termination to another fixed radio termination.

Fixed Part (DECT Fixed Part) (FP): a physical grouping that contains all of the elements in the DECT network between the local network and the DECT air interface.

NOTE 4: A DECT fixed part contains the logical elements of at least one fixed radio termination, plus additional implementation specific elements.

Fixed radio Termination (FT): a logical group of functions that contains all of the DECT processes and procedures on the fixed side of the DECT air interface.

NOTE 5: A fixed radio termination only includes elements that are defined in ETS 300 175 Parts 1 - 9 [1] to [9]. This includes radio transmission elements together with a selection of layer 2 and layer 3 elements.

Handover: the process of switching a call in progress from one physical channel to another physical channel. These processes can be internal (see internal handover) or external (see external handover).

NOTE 6: There are two physical forms of handover, intra-cell handover and inter-cell handover. Intra-cell handover is always internal. Inter-cell handover can be internal or external.

Incoming call: a call received at a portable part.

Inter-cell handover: the switching of a call in progress from one cell to another cell.

Internal handover: handover processes that are completely internal to one fixed radio termination. Internal handover reconnects the call at the lower layers, while maintaining the call at the NWK layer.

NOTE 7: The lower layer reconnection can either be at the DLC layer (connection handover) or at the MAC layer (bearer handover).

Intra-cell handover: the switching of a call in progress from one physical channel of one cell to another physical channel of the same cell.

Location area: the domain in which a portable part may receive (and/or make) calls as a result of a single location registration.

Location registration: the process whereby the position of a DECT portable termination is determined to the level of one location area, and this position is updated in one or more databases.

NOTE 8: These databases are not included within the DECT fixed radio termination.

Lower Layer Management Entity (LLME): a management entity that spans a number of lower layers, and is used to describe all control activities which do not follow the rules of layering.

NOTE 9: The DECT LLME spans the network layer, the DLC layer, the MAC layer and the physical layer.

Outgoing call: a call originating from a portable part.

Paging: the process of broadcasting a message from a DECT fixed part to one or more DECT portable parts.

NOTE 10: Different types of paging message are possible. For example, the {Request paging} message orders the recipient to respond with a call set-up attempt.

Paging area: the domain in which the portable part will be paged as a part of incoming call establishment.

NOTE 11: In general, the paging area will be equal to the TPUI domain, since the TPUI is used for paging.

Portable Part (DECT Portable Part) (PP): a physical grouping that contains all elements between the user and the DECT air interface. Portable part is a generic term that may describe one or several physical pieces.

NOTE 12: A DECT portable part is logically divided into one portable termination plus one or more portable applications.

Portable radio Termination (PT): a logical group of functions that contains all of the DECT processes and procedures on the portable side of the DECT air interface.

NOTE 13: A portable radio termination only includes elements that are defined in the DECT CI standard. This includes radio transmission elements (layer 1) together with a selection of layer 2 and layer 3 elements.

Public Access Profile (PAP): a defined part of the DECT common interface standard (DECT CI) that ensures interoperability between fixed parts and portable parts for public access services.

Radio End Point (REP): a physical grouping that contains one radio transceiver (transmitter/receiver), fixed or portable.

NOTE 14: A REP may operate only as a receiver or only as a transmitter.

Radio Fixed Part (RFP): one physical sub-group of a fixed part that contains all the radio end points (one or more) that are connected to a single system of antennas.

Registration: an ambiguous term, that should always be qualified. See either location registration or subscription registration.

Roaming: the movement of a portable part from one fixed part coverage area to another fixed part coverage area, where the capabilities of the fixed parts enable the portable part to make or receive calls in both areas.

NOTE 15: Roaming requires the relevant fixed parts and portable part to be inter-operable.

Roaming service: a service which can be used in more than one fixed part coverage area.

Service provider (telecommunications service provider): the individual or entity who or which interfaces to the customer in providing telecommunications service.

NOTE 16: The term does not imply any legal or regulatory conditions, nor does it indicate whether public service or private service is provided.

NOTE 17: The term service provider is also used with a different meaning in the ISO/OSI layered model.

Subscriber (customer): the natural person or the juristic person who has subscribed to telecommunication services, and is therewith responsible for payment.

Subscription registration: the infrequent process whereby a subscriber obtains access rights to one or more fixed parts.

NOTE 18: Subscription registration is usually required before a user can make or receive calls.

Supplementary service: a service that modifies or supplements a basic telecommunication service.

TPUI domain: the domain over which every Temporary Portable User Identity (TPUI) is locally unique.

NOTE 19: In general, the TPUI domain will be equal to the paging area and thereby equal to the location area.

User (of a telecommunication network): a person or machine delegated by a subscriber (by a customer) to use the services and/or facilities of a telecommunication network.

3.2 DECT abbreviations

For the purposes of this ETS, the following abbreviations apply:

AC	Authentication Code
ARC	Access Rights Class
ARD	Access Rights Details
ARI	Access Rights Identity. See SARI and TARI
BCD	Binary Coded Decimal
CC	Call Control
CCITT	(The) International Telegraph and Telephone Consultative Committee
CEC	Commission of the European Communities
CI	Common Interface
CISS	Call Independent Supplementary Services
CK	Cipher Key
CLMS	ConnectionLess Message Service
COMS	Connection Oriented Message Service
CRSS	Call Related Supplementary Services
C/L	ConnectionLess mode
C/O	Connection Oriented mode
DAM	DECT Authentication Module
DCK	Derived Cipher Key
DECT	Digital European Cordless Telecommunications
DLC	Data Link Control, Layer 2b of the DECT protocol stack
DSAA	DECT Standard Authentication Algorithm
DSC	DECT Standard Cipher
DTMF	Dual Tone Multi-Frequency
FP	Fixed Part, (see definitions)
FT	Fixed radio Termination, (see definitions)
IFEI	International Fixed Equipment Identity
IPEI	International Portable Equipment Identity
IPUI	International Portable User Identity
ISDN	Integrated Services Digital Network
IWU	InterWorking Unit, (see definitions)
K	authentication Key
KS	PP authentication Session Key
KS'	FP authentication Session Key
LAN	Local Area Network
LCE	Link Control Entity
LLME	Lower Layer Management Entity
LSB	Least Significant Bit
MAC	Medium Access Control, Layer 2a of the DECT protocol stack
MM	Mobility Management, a NWK layer functional grouping
MS	Most Significant bit
NLE	Network Layer Entity

NWK	NetWoRK, Layer 3 of the DECT protocol stack
PAP	Public Access Profile
PARI	Primary Access Rights Identity
PARK	Portable Access Rights Key
PBX	Private Branch eXchange
PABX	Private Automatic Branch eXchange
PLI	Park Length Indicator
PMID	Portable part MAC IDentity (MAC layer)
PP	Portable Part
PSTN	Public Switched Telephone Network
PT	Portable radio Termination. See definition
PUN	Portable User Number
PUT	Portable User Type
RAND_F	A RANDdom challenge issued by a FT
RAND_P	A RANDom challenge issued by a PT
REP	Radio End Point, (See definitions)
RES1	A RESponse calculated by a PT
RES2	A RESponse calculated by a FT
RFP	Radio Fixed Part, (see definitions)
RFPi	Radio Fixed Part Identity
RS	A value used to establish authentication session keys
SAP	Service Access Point
SARI	Secondary Access Rights Identity
SCK	A Static Cipher Key
SS	Supplementary Services
TARI	Tertiary Access Rights Identity
TI	Transaction Identifier
TPUI	Temporary Portable User Identity
UAK	User Authentication Key
UPI	User Personal Identification
RES1	an eXpected RESponse calculated by a FT
XRES2	an eXpected RESponse calculated by a PT

3.3 ISO 9646 definitions

Abstract Test Suite: see ISO 9646-1 [14].

Executable Test Suite: see ISO 9646-1 [14].

Implementation under Test: see ISO 9646-1 [14].

Lower Tester: see ISO 9646-1 [14].

Network Layer: see OSI Reference Model ISO 7498 [18].

Network Service: see OSI Reference Model ISO 7498 [18].

Point of Control and Observation: see ISO 9646-1 [14].

Protocol Implementation Conformance Statement: see ISO 9646-1 [14].

Protocol Implementation eXtra Information for Testing: see ISO 9646-1 [14].

System under Test: see ISO 9646-1 [14].

Tree and Tabular Combined Notation: see ISO 9646-3 [16].

3.4 ISO 9646 abbreviations

ATS	Abstract Test Suite
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BI	Invalid Behaviour
BO	inOpportune Behaviour
BV	Valid Behaviour
CA	CAapability
CCITT	International Telegraph and Telephone Consultative Committee
ETS	European Telecommunication Standard
EV	Encoding Variation
NCONC	NCONClusive
ISDN	Integrated Services Digital Network
ISO	International Organisation for Standardisation
IUT	Implementation Under Test
LT	Lower Tester
MSBP	Most Significant Bit
OSI	Open Systems Interconnection
PC	Parameter Combination
PCO	Point of Control and Observation
PDU	Protocol Data Unit
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation eXtra Information for Testing
PSTN	Public Switched Telephone Network
PV	Parameter Variation
SAP	Service Access Point
SE	State Event
SUT	System Under Test
TI	TIming/TImer variation
TTCN	Tree and Tabular Combined Notation

3.5 Other abbreviations

EWOS	European Workshop on Open Systems
PAPF	Public Access Profile Fixed radio termination
PAPP	Public Access Profile Portable radio termination
PR	Protocol
RE	Real Effects

4 Test suite structure

4.1 How to use the ATS

ETS 300 323-2 [20] contains the ATS for the PT and ETS 300 323-5 [23] the ATS for the FT. The test cases to be selected depend on the feature support indicated in the PICS for PT in ETS 300 323-3 [21] and FT in ETS 300 323-6 [24]. These tests are either for TBR 11 approval testing or for PAP voluntary conformance testing, also indicated in the PICS.

For TBR 11 approval testing, TBR 11 specifies the features that are essential and that always are to be supported. The test cases regarding these features are always selected.

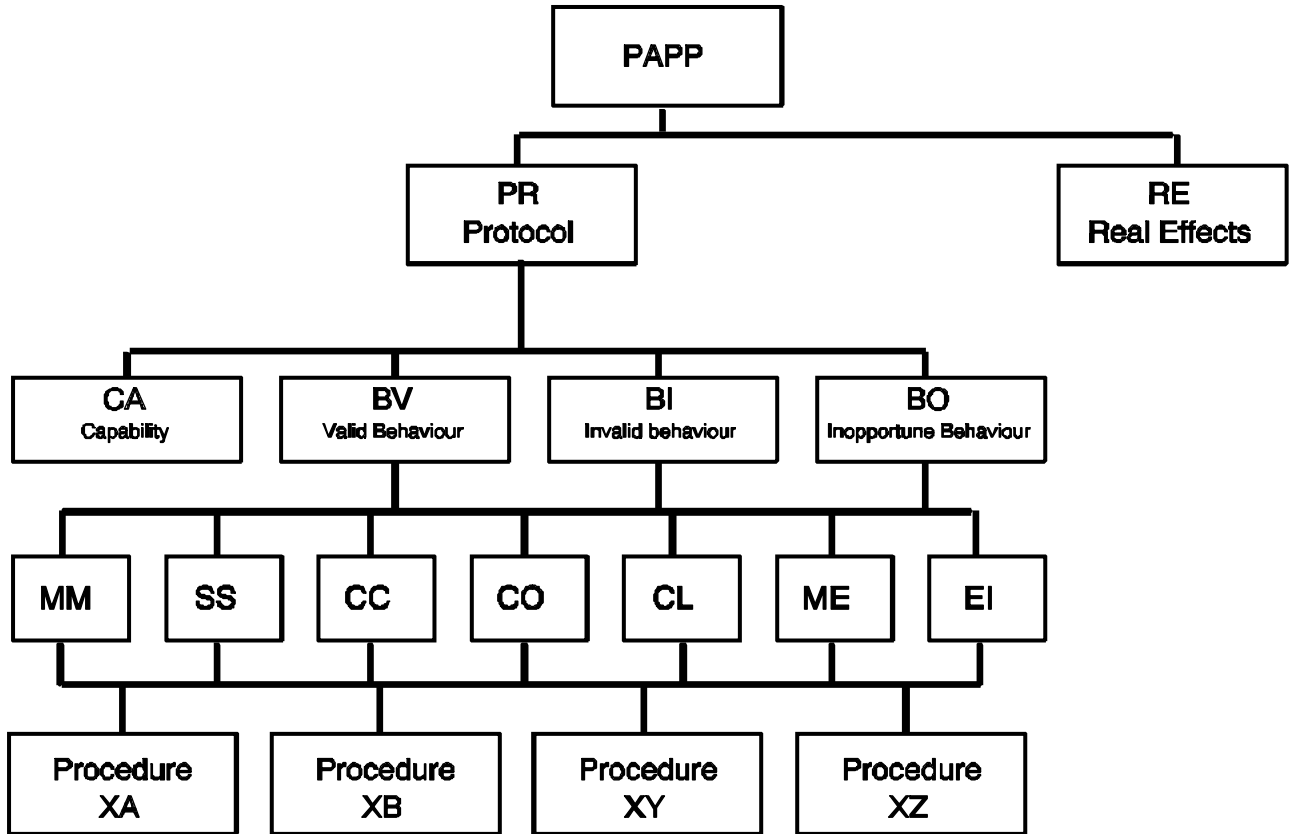
In particular applications, the SUT does not only encompass the FT, but also additional functions (e.g. switching). An example is a PABX which contains an integrated FT. In these cases, the network simulator is not directly connected to the FT, but via these additional functions. It is then possible that certain responses from the IUT cannot be observed by the upper tester and that certain dialling information never reaches the network simulator since this information is intended for the switching functions. These types of requirements/limitations of the IUT/SUT should be indicated in Clause 8, Q.5.2 in ETS 300 323-7 [25] FT (PIXIT) proforma.

For approval testing of DECT equipment connecting speech to public network, the tester should interpret the ATS and modify, where needed, the test cases accordingly.

Two ATSS are given, one for testing the PT and one for testing the FT.

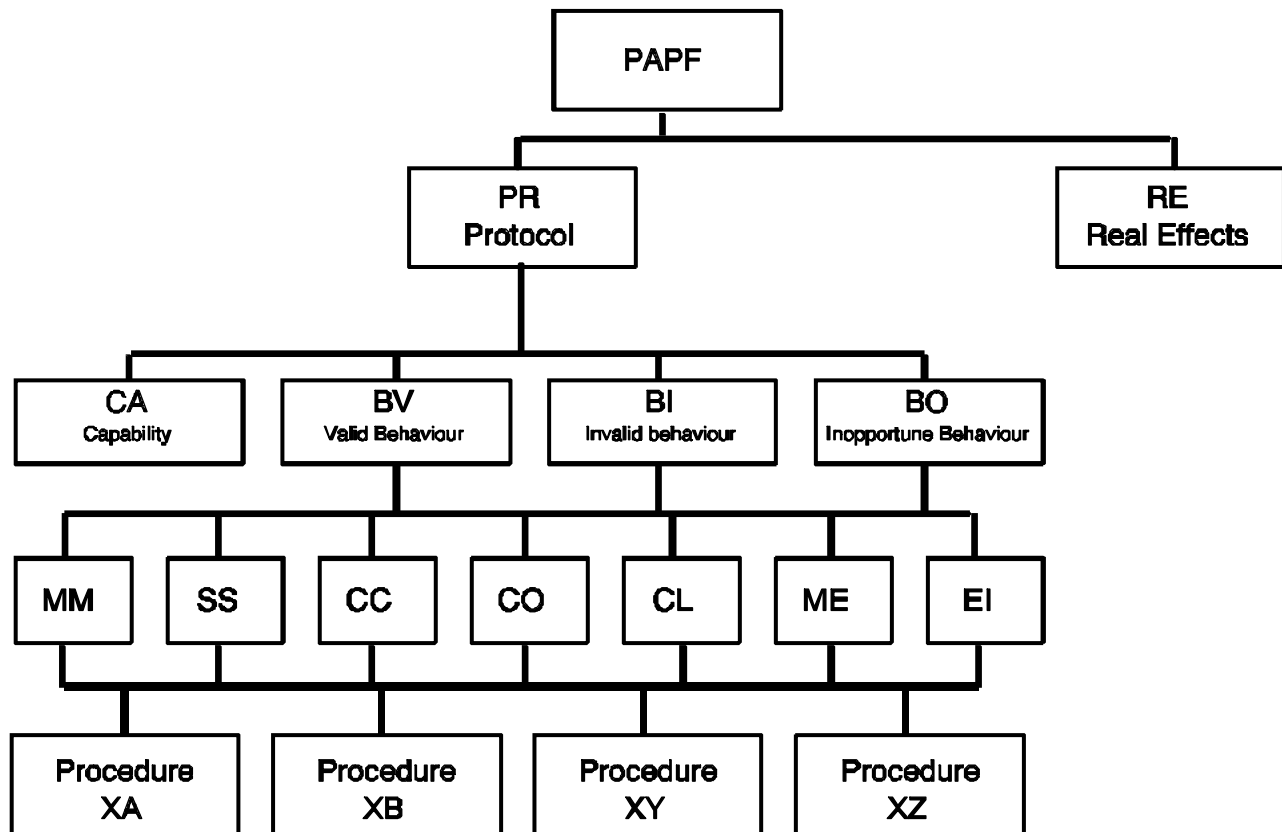
Within each ATS, the bulk of the test cases are aimed at testing the DECT network layer PRotocol (PR) using TTCN. Much of the functionality of the MAC (ETS 300 175 Part 3 [3]) and DLC (ETS 300 175 Part 4 [4]) is tested implicitly by the fact that the network layer messages are successfully transmitted and received. Additional test cases cover MAC (ETS 300 175 Part 3 [3]) and DLC (ETS 300 175 Part 4 [4]) functionality that is not implicitly tested and this test group is called Real Effects (RE).

4.2 For the PT



Each procedure shall be identified by a two-letter abbreviation which is unique for the test group (i.e. entity).

4.3 For the FT



Each procedure shall be identified by a two-letter abbreviation which is unique for the test group (i.e. entity).

4.4 PProtocol (PR) test groups

The term Protocol Data Unit (PDU) is used extensively in the following paragraphs. In the case of DECT type approval testing, a PDU is equivalent to a network layer message.

4.4.1 Valid Behaviour tests (BV)

All tests in the Valid Behaviour (BV) group are intended to verify as thoroughly as possible the various functions of the protocol. This group consists of the following conceptual subgroups:

- 1) state event transitions;
- 2) parameter variations;
- 3) encoding variations;
- 4) parameter combinations;
- 5) timers;

where in each case the event, parameter and encoding is valid.

Depending upon the requirements of ETS 300 175 Parts 1 - 9 [1] to [9], some of these subgroups may not be applicable.

NOTE: In general, the test system only sends the mandatory information elements to the Implementation Under Test (IUT), unless required by a feature. Also the test system receives all information elements (mandatory and optional) sent by the IUT, checking their structure, but only fully processes mandatory to receive information elements, unless required by a feature.

4.4.2 Invalid Behaviour tests (BI)

This group of tests is intended to verify that the IUT is able to react properly having received an invalid Protocol Data Unit (PDU). Invalid PDU here means syntactically or semantically invalid PDU, which regardless of the current state is not allowed.

This group consists of the following conceptual subgroups:

- 1) state event transitions;
- 2) parameter variations;
- 3) encoding variations;
- 4) parameter combinations;
- 5) timers;

where in each case the event, parameter or encoding is invalid.

Depending upon the requirements of ETS 300 175 Part 1 - 9 [1] to [9], some of these subgroups may not be applicable.

4.4.3 InOpportune Behaviour tests (BO)

This group of tests is intended to verify that the IUT is able to react properly in the case of an inopportune protocol event occurring. Such an event is syntactically correct but occurs when it is not allowed.

4.4.4 CApability tests (CA)

This group is a sub-set of the BV test cases. It provides limited testing to confirm that some basic capabilities as declared in the PICS are, in fact, implemented and that proper communication between the Lower Tester (LT) and the IUT has been established. It is recommended to run these test cases before proceeding with the other test groups.

4.4.5 BV, BI and BO test groups

Within valid, invalid and inopportune behaviour test groups, the test cases are grouped by Network Layer Entity (NLE):

CC	Call Control (CC) entity;
MM	Mobility Management (MM) entity;
SS	Supplementary Services using Call Control (CC) entity for call related SS and Call Independent Supplementary Services (CISS) entity for call independent SS;
CO	Connection Oriented Message Service (COMS) entity;
CL	Connectionless Message Service (CLMS) entity;
ME	Lower Layer Management Entity (LLME);
EI	Entity Interleaving- for multi-entity testing.

4.4.6 Conceptual subgroups

4.4.6.1 State event transitions

This group of tests is intended to verify the various state transitions of the protocol.

4.4.6.2 Parameter variations

This group of tests is intended to verify the ability to use different possible parameter values for each network layer message. Each group is for a specific message, in which all the different parameters are verified, one at a time. The required preamble is specified along with each test purpose.

4.4.6.3 Encoding variations

This group of tests is intended to verify that the protocol behaves the same when different encoding variations are allowed for the same packet (i.e. extended packets, etc.). This is not intended to be a complete list of all possible encoding variations, but rather is a sampling of the more important functions of the protocol.

4.4.6.4 Parameter combinations

This group of tests is intended to verify the ability to use all possible (supported) parameters together, or specific combinations of compatible parameters, for each network layer message. Each group is for a specific message. The required preamble is specified along with each test purpose.

NOTE: When it is stated in a test purpose that a sequence of parameters shall be present, it means that all the parameters quoted and supported according to PICS shall be present. If none of the quoted parameters is supported according to PICS, then the test does not apply.

4.4.6.5 Timers

This group checks the values of the timers in the IUT.

4.5 Real Effects (RE) tests

This group goes beyond analysing only protocol exchanges (in strict ISO 7498 [18] sense). It involves testing the distributed application. The tests cover inter-operability issues within the lower layers which can not be implicitly tested during testing of the network layer. Examples would include test cases involving radio test equipment in addition to the TTCN protocol analyser.

This group is used following the recommendation given by EWOS/ETSI Project Team No. 5, Annex J.

4.6 Test group naming

This defines the location of the test case in the test suite structure.

The following agreed structure is shown by example:

PAPP/PR/BV/CC/XX/

which is expanded to:

Public Access Profile Portable Radio Termination/Protocol/Valid Behaviour/Call Control/XX/
where XX is a two letter abbreviation for the procedure under test and is unique for the test group (entity).

4.6.1 Key for the use of XX

XX set to "MP " is reserved for multi-procedure testing within each NLE.

Table 1: CC test group key

CC procedure	XX
Outgoing Call	OC
Incoming Call	IC
Normal Release	NR
Abnormal Release	AR
Partial Release	PR
Timers	TI
Call Information	CI
Emergency Call	EC

Table 2: MM test group key

MM procedure	XX
Identification of PT	ID
Temporary identity Assignment	TA
Authentication of PT	AP
Authentication of User	AU
Authentication of FT	AF
Location Registration	LR
DEtach	DE
Location Update	LU
Obtain Access rights	OA
Terminating access rights-	
PT initiated	TP
FT initiated	TF
Key Allocation	KA
Parameter retrieval-	
PT initiated	PP
FT initiated	PF
Cipher switching-	
PT initiated	CP
FT initiated	CF

Table 3: SS test group key

SS procedure	XX
CRSS Keypad Protocol	RK
CRSS Feature Key Management	RM
CRSS Hold	RH
CRSS Retrieve	RR
CRSS Facility	RF
CISS Keypad Protocol	IK
CISS Feature Key Management	IM
CISS Facility	IF

Table 4: CO test group key

CO procedure	XX
COMS Outgoing Establishment	OE
COMS Incoming Establishment	IE
COMS Data Transfer	DT
COMS Suspend and Resume	SR
COMS Normal Release	NR

Table 5: CL test group key

CL procedure	XX
CLMS Fixed	FI
CLMS Variable	VA

Table 6: ME test group key

ME procedure	XX
MM Procedure Management	MM
Call Cipherring Management	CI
External Handover	EH

4.6.2 Real Effects test groups

The following agreed structure for Real Effects is shown:

PAPP/RE/YY/

Table 7: RE test group key

Real Effects test groups	YY
Channel list Maintenance	CM
Bearer Handover	BH
Connection Handover	CH
Q1 and Q2 Bits	QB
PaGing	PG
BRoadcast	BR
Other Timers	OT
Other Counters	OC

4.7 Test case naming

This is composed of a letter, followed by a 4 digit decimal number of the following form:

Layer_abcd;

where Layer is a single character; and

abcd is a decimal number in the range 0000 - 9999.

The test case name is unique for every test case.

4.7.1 Requirements on the use of "Layer"

The following rules shall be applied when assigning a number to a new test case:

Table 8: Key for layer under test

Layer	DECT Layer under test
P	Physical
M	MAC
D	DLC
N	NWK
R	Real Effects

NOTE: The Layers P, M, D are outside the scope of this ETS.

4.7.2 Requirements on the use of abcd

The following rules shall be applied when assigning a number to a new test case.

The following ranges are reserved:

PAP: 0000 - 0999;

non-PAP: 1000 - 9999 (outside the scope of this ETS).

NOTE 1: Many PAP test cases will be applicable to non-PAP profiles in the future.

NOTE 2: PAP test cases shall not contain implicit send statements.

The type of IUT is indicated by the range of abcd.

Test cases : 0000 _ abcd _ 0499 for PT

: 0500 _ abcd _ 0999 for FT

NOTE 3: The leading zero may be omitted for simplicity.

The network layer entity under test is indicated by table 9.

Table 9: Test case numbering scheme for PR

Entity	Range for PT	Range for FT
General	N_0000 < N_abcd < N_0049	N_0500 < N_abcd < N_0549
ME	N_0050 < N_abcd < N_0074	N_0550 < N_abcd < N_0574
EI	N_0075 < N_abcd < N_0099	N_0575 < N_abcd < N_0599
CC	N_0100 < N_abcd < N_0199	N_0600 < N_abcd < N_0699
MM	N_0200 < N_abcd < N_0299	N_0700 < N_abcd < N_0799
SS	N_0300 < N_abcd < N_0349	N_0800 < N_abcd < N_0849
CLMS	N_0350 < N_abcd < N_0374	N_0850 < N_abcd < N_0874
COMS	N_0375 < N_abcd < N_0399	N_0875 < N_abcd < N_0899

The real effect tests are indicated by table 10.

Table 9: Test case numbering scheme for RE

Real Effects	Range for PT	Range for FT
RE	R_0400 < R_abcd < R_0499	R_0900 < R_abcd < R_0999

For example:

- N_0145 or N_145.

This is a name for the following:

- network layer under test;
- PT under test;
- CC entity under test.

5 PT test purposes

5.1 Introduction

This subclause details the test purposes for the PT for each test group and references the corresponding test cases (see parentheses[]).

NOTE: Test case selection is described in the test suite overview table in ETS 300 323-2 [20].

5.1.1 Main conceptual test purpose groups for the CC and MM

The following summarises the conceptual test purpose groups for CC and MM testing only. A common set of MM test steps could be used when testing groups A and B. The only difference in the test cases being the preamble i.e. whether or not to place the System Under Test (SUT) in the active state or leave it in the null state.

5.1.1.1 Group A: MM testing in the null-state

There are no difficulties in keeping the SUT in the null state, i.e. the LT and UT make no call set-up attempts.

Specific testing of the MM procedures and features takes place under the control of the LT. MM procedures that are normally initiated by the SUT are provoked using the test messages, a network simulator or UT actions.

During the execution of the MM procedure, there may be an MM invocation by the SUT which does not correspond to the test purpose. In this case, the MM procedure is processed and any appropriate response is sent.

5.1.1.2 Group B: MM testing in the active state

The LT places the SUT in the active state using a readily available test step.

Specific testing of the MM procedures and features takes place under the control of the LT. MM procedures that are normally initiated by the SUT are provoked using the test messages, a network simulator or UT actions.

During the execution of the MM procedure, there may be an MM invocation by the SUT which does not correspond to the test purpose. In this case, the MM procedure is processed and any appropriate response is sent. MM procedures occurring in the wrong CC-state will be rejected or aborted as described in Annex B. In addition, there may be a CC-INFO message transmitted by the SUT. This can be received and ignored by the LT, since it is not part of the purpose of this test. All other CC messages would not occur so long as the LT or UT make no attempt to release the call. Radio Frequency (RF) propagation conditions are assumed to be ideal.

5.1.1.3 Group C: CC testing of all states with response to the uncontrollable initiation of MM procedures by the SUT

Here the LT takes the SUT through all of the CC states. Where the SUT has the possibility to choose its path through the state machine; all valid alternatives will be accepted.

During the CC state transitions, the SUT may initiate MM procedures. The LT will process these procedures either by continuation, rejection or abort (as described in Annex B) and then return to the test purpose of checking the CC state transitions.

5.1.1.4 Group D: CC testing of all states with deliberate initiation of MM procedures by the LT

Here the LT takes the SUT through all of the CC states. Where the SUT has the possibility to choose its path through the state machine; all valid alternatives will be accepted.

At the same time, the LT will initiate MM procedures and check for valid MM responses as well as valid CC responses. In addition, the SUT may initiate MM procedures. The LT will process these procedures and then return to the test purpose of checking the CC state transitions and MM procedures that it has initiated.

NOTE: The number of these tests will be limited due to the complexity being placed on the test system i.e. very complicated TTCN test cases.

5.2 PAPP/PR/Capability Tests (CA)

This group is a selection of BV tests that check the implementation of declared capabilities (PAP features) within the PICS. The following lists the test cases selected per PAP feature (capability).

NOTE: Other test cases for the feature exist and these are selected by the test case selection expressions in the overview tables in ETS 300 323-2 [20] and ETS 300 323-5 [23].

	PAP feature (capability)	Prov.	CA test cases
0	Outgoing call	M	N_100
1	Duplex speech - 32 kbit/s ADPCM	M	N_100,N_120
2	Bell on	O	N_126
3	Bell off	O	N_126
4	Off hook	M	N_100,N_120
5	On hook (full release)	M	N_114,N_124,N_134, N_136
6	Partial release	O	N_137
7	Dialled digits basic	M	N_160,N_170
8	Dialled digits additional	O	N_161
9	Dialling delimiter	O	N_172
10	Dialling delimiter request	O	N_173
11	Register recall	O	N_306
12	Go to DTMF	O	N_162,N_165
13	Go to pulse	O	N_145,N_147
14	Pause	O	N_149
15_a	Specific trunk carrier selection- CRSS	O	N_311
15_b	Specific trunk carrier selection- CISS	O	N_317
16	Incoming call	M	N_120
17_o	Hold call (PT to FT)	O	N_300
17_i	Hold call (FT to PT)	O	N_302
18_o	Re-connection of held call (PT to FT)	O	N_303
18_i	Re-connection of held call (FT to PT)	O	N_305
19	Forced re-connection of held call	O	N_305
20	Authentication of portable part	M	N_207, N_202, N_217
21	Authentication of user	M	N_203, N218
22	Authentication of fixed part	O	N_204, N_219

23	Silent polling	MO	N_200
24	Class of service field indication	M	N_207
25	Inter-operator roaming registration	M	N_207, N_210
26	Control of supervisory tones	O	N_159
27	Regular security handshake	M	R_407
28	Signalling of display characters	O	N_168
29	Display control characters	O	N_169
30	ZAP suspend	M	N_230
31	ZAP terminate	M	N_209, N_224
31_p	pt terminate	O	N_208, N_223
32_a	Alphanumeric text messaging and radio paging service- Case A	O	N_350, N_351, N_352
32_b_i	Alphanumeric text messaging and radio paging service- Case B1	O	N_353
32_b_oi	Alphanumeric text messaging and radio paging service- Case B2	O	N_353, N_354
32_c	Alphanumeric text messaging and radio paging service- Case C	O	N_378 OR N_379
33	Voice/user data encryption activation/de-activation	O	N_213, N_214, N_270, N_271
34	Signalling encryption activation/de-activation	O	N_213, N_214, N_270, N_271
35	Debit public access service	O	N_313
36	Credit public access service	O	local implementation
37	Credit agency access service	O	local implementation
38_a	On-demand (hot-bill) public access service- CRSS	O	N_313
38_b	On-demand (hot-bill) public access service- CISS	O	N_317
39_a	Advice of tariff request- CRSS	O	N_313
39_b	Advice of tariff request- CISS	O	N_317
40_a	Advice of charge request- CRSS	O	N_313
40_b	Advice of charge request- CISS	O	N_317
41	Location registration	MO	N_205, N_211
42	Location de-registration	O	N_206
43	Queue management	O	N_307
44	Queue entry request	O	N_307
45	Queue exit request	O	N_307
46	Portable part inaccessible indication	-	
47	In-range indication	O	local implementation
48	Emergency service access request	M	N_150, N_151
49	Indication of teleservice available request	O	local implementation
50	Indication of teleservices available	O	implicit in N_100
51	Selection of service provider/network operator	M	N_100
52	Selection of required teleservice	O	N_100
53	Selection of bearer service	O	N_100
54	Validation of portable part user	-	
55	Validation of portable part	-	
56	Validation of identity module	-	
57	User identification (UPI)	M	N_203
58	Group address	O	N_240
59	Selection of additional character sets	O	-
60	Data capability	O	N_100
61_a	Keypad protocol- CRSS	M	N_170
61_b	Keypad protocol- CISS	O	N_316
62_a	Feature key management protocol- CRSS	O	N_309
62_b	Feature key management protocol- CISS	O	N_317
63_a_o	Functional protocol- CRSS	O	N_314
63_a_i	Functional protocol- CRSS	O	N_315
63_b_o	Functional protocol- CISS	O	N_318
63_b_i	Functional protocol- CISS	O	N_319
64	Dial tone detection indication	O	N_159

65_a CRSS	Request for indication of temporary subscriber number-	O	N_308
65_b CISS	Request for indication of temporary subscriber number-	O	N_317
66	Fixed part/portable part capability exchange	M	N_142,N_143,N_185, N_189
67	Subscription registration user procedure on-air plus digit entry	M	N_207
68	Subscription registration user procedures keypad (digit entry only)	O	local implementation
69	Subscription registration user procedure with DECT authentication module	O	local implementation
70	Subscription data exchange (on-air)	M	N_207, N_210
71	Multi-cell fixed part coverage	M	local implementation
72_ba	Bearer Handover (intra-cell)	M	R_400
72_ca	Connection Handover (intra-cell)	M	R_403
72_br	Bearer Handover (inter-cell)	M	R_401
72_cr	Connection Handover (inter-cell)	M	R_404
72_e	External (inter-cell)	O	N_050, N_051
73	Multiple subscription registration	M	N_273
74	All-physical-channel capability	M	TBR 06

5.3 PAPP/PR/Valid Behaviour (BV)

5.3.1 PAPP/PR/BV/CC

The purpose of this group is to test the valid behaviour of the Call Control (CC) entity in the IUT.

5.3.1.1 PAPP/PR/BV/CC/OC

The purpose of this group is to test the valid behaviour of an outgoing call.

Conceptual group C: CC testing of all states with response to the uncontrollable initiation of MM procedures by the SUT:

- C1) to test the IUT's CC-state transition from the T-00 state to T-10 state for an outgoing normal call set-up initiated at the PT keypad [N_100];
- C2) to test the IUT's CC-state transition from the T-00 state to T-10 state for an outgoing normal call set-up using en_bloc dialling [N_101];
- C3) to test the IUT's CC-state transition from the T-00 state to T-10 state via T-01 and T-04 for an outgoing normal call set-up using en_bloc dialling [N_102];
- C4) to test the IUT's CC-state transition from the T-00 state to T-10 state via T-01 and T-03 for an outgoing normal call set-up using en_bloc dialling [N_103];
- C5) to test the IUT's CC-state transition from the T-00 state to T-10 state via T-01, T-03 and T-04 for an outgoing normal call set-up using en_bloc dialling [N_104];
- C6) to test the IUT's CC-state transition from the T-00 state to T-10 state via T-01 , T-02 and T-03 for an outgoing normal call set-up using piece-wise piece-wise dialling [N_105];
- C7) to test the IUT's CC-state transition from the T-00 state to T-10 state via T-01 , T-02, T-03 and T-04 for an outgoing normal call set-up using piece-wise piece-wise dialling [N_106];
- C8) to test the IUT's CC-state transition from the T-00 state to T-10 state via T-01 , T-02 and T-04 for an outgoing normal call set-up using piece-wise piece-wise dialling [N_115];

- C9) to test the IUT's CC-state transition from the T-00 state to T-10 state via T-01 and T-04 for an outgoing normal call set-up using piece-wise piece-wise dialling [N_117];
- C10) to test the IUT's CC-state transition from the T-00 state to T-10 state via T-01 and T-02 for an outgoing normal call set-up using piece-wise piece-wise dialling [N_129];
- C11) to test the IUT's response on the PROGRESS_INDICATOR in T-03 state, when using en_bloc dialling [N_153];
- C12) to test the IUT's response on the PROGRESS_INDICATOR in T-04 state, when using en_bloc dialling [N_154];
- C13) to test the IUT's capability to handle dialling delimiter in piece-wise dialling [N_172];
- C14) to test the IUT's capability to handle delimiter request [N_173].

5.3.1.2 PAPP/PR/BV/CC/IC

The purpose of this group is to test the valid behaviour of an incoming call.

Conceptual group C: CC testing of all states with response to the uncontrollable initiation of MM procedures by the SUT:

- C1) to test the IUT's basic ability to process an incoming call [N_120].

5.3.1.3 PAPP/PR/BV/CC/NR

The purpose of this group is to test the valid behaviour of normal call release procedure.

Conceptual group C: CC testing of all states with response to the uncontrollable initiation of MM procedures by the SUT:

- C1) to test the IUT's ability to process a normal release in the T-03 state [N_112];
- C2) to test the IUT's ability to process a normal release in the T-04 state [N_113];
- C3) to test the IUT's ability to process a normal release in the T-10 state [N_114];
- C4) to test the IUT's ability to process a normal release in the T-07 state [N_123];
- C5) to test the IUT's ability to process a normal release in the T-08 state [N_124];
- C6) to test the IUT's ability to process a normal release in the T-06 state [N_128];
- C7) to test the IUT's ability to process a normal release, initiated from the IUT, in the T-01 state [N_130];
- C8) to test the IUT's ability to process a normal release, initiated from the IUT, in the T-02 state [N_131];
- C9) to test the IUT's ability to process a normal release, initiated from the IUT, in the T-03 state [N_132];
- C10) to test the IUT's ability to process a normal release, initiated from the IUT, in the T-04 state [N_133];

- C11) to test the IUT's ability to process a normal release, initiated from the IUT, in the T-10 state [N_134];
- C12) to test the IUT's ability to process a normal release, initiated from the IUT, in the T-07 state [N_135];
- C13) to test the IUT's ability to process a normal release, initiated from the IUT, in the T-08 state [N_136].

5.3.1.4 PAPP/PR/BV/CC/AR

The purpose of this group is to test the valid behaviour of abnormal call release procedure.

Conceptual group C: CC testing of all states with response to the uncontrollable initiation of MM procedures by the SUT:

- C1) to test the IUT's ability to process an abnormal release in the T-01 state [N_107];
- C2) to test the IUT's ability to process an abnormal release in the T-02 state [N_108];
- C3) to test the IUT's ability to process an abnormal release in the T-03 state [N_109];
- C4) to test the IUT's ability to process an abnormal release in the T-04 state [N_110];
- C5) to test the IUT's ability to process an abnormal release in the T-10 state [N_111];
- C6) to test the IUT's ability to process an abnormal release in the T-07 state [N_121];
- C7) to test the IUT's ability to process an abnormal release in the T-08 state [N_122];
- C8) to test the IUT's ability to process an abnormal release in the T-06 state [N_127].

5.3.1.5 PAPP/PR/BV/CC/PR

The purpose of this group is to test the valid behaviour of partial call release procedure.

Conceptual group C: CC testing of all states with response to the uncontrollable initiation of MM procedures by the SUT:

- C1) to test the IUT's ability to initiate a partial release in T-10 state [N_137];
- C2) to test the IUT's ability to initiate a partial release in T-01 state [N_138];
- C3) to test the IUT's ability to initiate a partial release in T-02 state [N_139];
- C4) to test the IUT's ability to initiate a partial release in T-03 state [N_140];
- C5) to test the IUT's ability to initiate a partial release in T-04 state [N_141];
- C6) to test the IUT's ability to initiate a partial release in T-07 state [N_196];
- C7) to test the IUT's ability to initiate a partial release in T-08 state [N_144].

5.3.1.6 PAPP/PR/BV/CC/TI

The purpose of this group is to test the valid behaviour of timers.

Conceptual group C: CC testing of all states with response to the uncontrollable initiation of MM procedures by the SUT:

- C1) to test timer P_CC_03 [N_174];
- C2) to test timer P_CC_05 [N_175];
- C3) to test timer P_CC_04 in T-02 state [N_176];
- C4) to test timer P_CC_04 in T-03 state [N_177];
- C5) to test timer P_CC_04 in T-04 state [N_178];
- C6) to test timer P_CC_02 in T-19 state [N_179];
- C7) to test the IUT's capability to restart timer P_CC_03 [N_180];
- C8) to test the IUT's capability to restart timer P_CC_05 [N_181];
- C9) to test the IUT's capability to restart timer P_CC_04 in T-02 state [N_182];
- C10) to test the IUT's capability to restart timer P_CC_04 in T-03 state [N_183];
- C11) to test the IUT's capability to restart timer P_CC_04 in T-04 state [N_184].

5.3.1.7 PAPP/PR/BV/CC/CI

The purpose of this group is to test the valid behaviour of the call information procedures.

Conceptual group C: CC testing of all states with response to the uncontrollable initiation of MM procedures by the SUT:

- C1) to test the IUT's basic ability to alert the user of an incoming call [N_125];
- C2) to test the IUT's basic ability to alert the user of an incoming call with cadence following (bell on/bell off) [N_126];
- C3) to test that the IUT sends display capability in terminal capability in CC-SET-UP for an outgoing call, if any display is implemented [N_142];
- C4) to test that the IUT sends display capability in terminal capability in the first reply message for an incoming call, if any display is implemented [N_143];
- C5) to test the IUT's capability to go to pulse in T-02 state [N_145];
- C6) to test the IUT's capability to go to pulse in T-03 state [N_146];
- C7) to test the IUT's capability to go to pulse in T-04 state [N_147];
- C8) to test the IUT's capability to go to pulse in T-10 state [N_148];
- C9) to test the IUT's capability to use dialling pause in the called party number [N_149];
- C10) to test the IUT's capability to use dialling pause in T-02 state [N_157];

- C11) to test the IUT's capability to use dialling pause in T-10 state [N_158];
- C12) to test the IUT's control of supervisory tones [N_159];
- C13) to test the IUT's capability to dial basic digits (0 - 9, star, hash mark) in called party number [N_160];
- C14) to test the IUT's capability to dial additional digits ("a", "b", "c" and "d") [N_161];
- C15) to test the IUT's capability to go to DTMF dialling with defined tone length in T-02 state [N_162];
- C16) to test the IUT's capability to go to DTMF dialling with defined tone length in T-10 state [N_163];
- C17) to test the IUT's capability to go to DTMF dialling with infinite tone length in T-02 state [N_165];
- C18) to test the IUT's capability to go to DTMF dialling with infinite tone length in T-10 state [N_166];
- C19) to test the IUT's capability to understand and react upon display characters [N_168];
- C20) to test the IUT's capability to understand and react upon display control characters [N_169];
- C21) to test the IUT's capability to dial basic digits (0 - 9, star, hash mark) in keypad [N_170];
- C22) to test that the IUT sends tone capability in terminal capability in the first reply message for an incoming call, if any tone is implemented [N_185];
- C23) to test the IUT's capability to cancel DTMF dialling with defined tone length in T-02 state [N_186];
- C24) to test the IUT's capability to cancel DTMF dialling with defined tone length in T-10 state [N_187];
- C25) to test that the IUT sends tone capability in terminal capability in CC-SET-UP for an outgoing call, if any tone is implemented [N_189].

5.3.1.8 PAPP/PR/BV/CC/EC

The purpose of this group is to test the valid behaviour of an emergency call.

Conceptual group C: CC testing of all states with response to the uncontrollable initiation of MM procedures by the SUT:

- C1) to test the IUT's CC-state transition from the T-00 state to T-10 state for an outgoing emergency call set-up initiated at the PT keypad. This test case is performed prior to subscription [N_150];
- C2) to test the IUT's CC-state transition from the T-00 state to T-10 state for an outgoing emergency call set up initiated at the PT keypad. This test case is performed after subscription [N_151].

5.3.2 PAPP/PR/BV/MM

The purpose of this group is to test the valid behaviour of the mobility management entity in the IUT.

5.3.2.1 PAPP/PR/BV/MM/ID

The purpose of this group is to test the valid behaviour of the FT initiated identity request procedure.

Conceptual group A: MM testing in the null state:

- A1) to check the basic operation of the FT initiated identity request procedure in the CC null state [N_200];
- A2) to check that upon receipt of an identity request for an unavailable identity type the IUT replies with no identity info elements (indicating reject) [N_233];
- A3) to check that upon receipt of an identity request for an identity type with more than one stored identity, the IUT replies with all available identities [N_234];
- A4) to check that the IUT can respond to identity requests with all identity types [N_235].

Conceptual group B: MM testing in the active state:

- B1) to check the basic operation of the FT initiated identity request procedure in the CC active state [N_215].

5.3.2.2 PAPP/PR/BV/MM/TA

The purpose of this group is to test the valid behaviour of the FT initiated temporary identity assignment procedure.

Conceptual group A: MM testing in the null state:

- A1) to check operation of the standard time limit for an individual assigned TPUI [N_236];
- A2) to check operation of the lock limit for an individual assigned TPUI [N_237];
- A3) to check that a new individual assigned TPUI replaces an old individual assigned TPUI [N_238];
- A4) to check deletion of an individual assigned TPUI [N_239];
- A5) to check assignment of a call group TPUI, including response to a group page [N_240];
- A6) to check assignment of a connectionless group TPUI, including response to connectionless page [N_241];
- A7) to check assignment of a connectionless group TPUI, including response to CLMS-FIXED message [N_242].

Conceptual group B: MM testing in the active state:

- B1) to check the operation of the FT initiated temporary identity assignment procedure, for a call group TPUI in the CC active state [N_243].

5.3.2.3 PAPP/PR/BV/MM/AP

The purpose of this group is to test the valid behaviour of the FT initiated authentication of PT procedure.

Conceptual group A: MM testing in the null state:

- A1) to check the basic operation of the FT initiated authentication of PT procedure in the CC null state [N_202];
- A2) to check feature 30 (ZAP suspend) operation in the CC null state by incrementing the ZAP field and checking the result [N_230];
- A3) to check feature 30 (ZAP suspend) operation in the CC null state when the FT authentication fails deliberately [N_244];
- A4) to check authentication of PT with TXC and UPC=0 for transfer of GSM derived cipher key [N_245].

Conceptual group B: MM testing in the active state:

- B1) to check the basic operation of the FT initiated authentication of PT procedure in the CC active state [N_217].

5.3.2.4 PAPP/PR/BV/MM/AU

The purpose of this group is to test the valid behaviour of the FT initiated authentication of user procedure.

Conceptual group A: MM testing in the null state:

- A1) to check the basic operation of the FT initiated authentication of user procedure in the CC null state [N_203].

Conceptual group B: MM testing in the active state:

- B1) to check the basic operation of the FT initiated authentication of user procedure in the CC active state [N_218].

5.3.2.5 PAPP/PR/BV/MM/AF

The purpose of this group is to test the valid behaviour of the PT initiated authentication of FT procedure.

Conceptual group A: MM testing in the null state:

- A1) to check the basic operation of the PT initiated authentication of FT procedure in the CC null state [N_204];
- A2) to check expiry of the IUT authentication of FT timer <MM_auth.1> [N_246].

Conceptual group B: MM testing in the active state:

- B1) to check the basic operation of the PT initiated authentication of FT procedure in the CC active state [N_219].

5.3.2.6 PAPP/PR/BV/MM/LR

The purpose of this group is to test the valid behaviour of the location registration procedure.

Conceptual group A: MM testing in the null state:

- A1) to check the basic operation of the location registration procedure in the CC null state [N_205];
- A2) to check whilst broadcast capabilities indicate "location registration not supported", that the IUT shall not initiate the location registration procedure [N_231];
- A3) to check expiry of the IUT location registration timer <MM_locate.1> [N_248];
- A4) to check that location registration lasts for "standard time limit " indicated in location accept, and then the IUT automatically performs location registration [N_249];
- A5) to check that location registration lasts for "temporary user limit " of <T_601> indicated in location accept, and then the IUT automatically performs location registration [N_250];
- A6) to check that upon location rejection with duration set to "standard time limit ", the IUT does not perform location request within time <MM_wait> [N_251];
- A7) to check that upon location rejection with duration set to "defined time limit ", the IUT does not perform location request within the indicated time [N_252];
- A8) to check the ability of the IUT to receive, store and send back the extended location information [N_253];
- A9) to check the basic operation of a nested authentication of PT during location registration procedure [N_291];

Conceptual group B: MM testing in the active state:

- B1) to check the basic operation of the location registration procedure in the CC active state [N_220].

5.3.2.7 PAPP/PR/BV/MM/DE

The purpose of this group is to test the valid behaviour of the detach procedure.

Conceptual group A: MM testing in the null state:

- A1) to check the basic operation of the PT initiated detach procedure in the CC null state [N_206];
- A2) to check PT initiated detach includes previously stored network assigned id [N_254];
- A3) to check that IUT can not invoke detach without prior location registration [N_255].

Conceptual group B: MM testing in the active state:

- B1) to check the basic operation of the PT initiated detach procedure in the CC active state [N_221].

5.3.2.8 PAPP/PR/BV/MM/LU

The purpose of this group is to test the valid behaviour of the location update procedure.

Conceptual group A: MM testing in the null state:

- A1) to check the basic operation of the location update procedure and the FT initiated parameter retrieval procedure in the CC null state [N_211- test case to be found in PF test group];
- A2) to check the basic operation of the location update procedure with TPUI assignment and the FT initiated parameter retrieval procedure in the CC null state [N_256];

Conceptual group B: MM testing in the active state:

- B1) to check the basic operation of the location update procedure and the FT initiated parameter retrieval procedure in the CC active state [N_226- test case to be found in PF test group].

5.3.2.9 PAPP/PR/BV/MM/OA

The purpose of this group is to test the valid behaviour of the obtain access rights procedure.

Conceptual group A: MM testing in the null state:

- A1) to check the basic operation of the obtain access rights procedure in the CC null state [N_207];
- A2) to check whilst broadcast capabilities indicate "access rights requests not supported", that the IUT is unable to initiate the obtain access rights procedure [N_232];
- A3) to check expiry of the IUT obtain access rights timer <MM_access.1> [N_257];
- A4) to check that upon access rights rejection with duration set to "standard time limit ", the IUT does not perform access rights request within time <MM_wait> [N_258];
- A5) to check that upon access rights rejection with duration set to "defined time limit ", the IUT does not perform access rights request within the indicated time [N_259];
- A6) to check that the PT can accept a new PARK, overwriting the existing PARK [N_264];
- A7) to check that the PT stores two separate subscriptions (feature 73) [N_273];
- A8) to check the operation of a nested key allocation procedure during the obtain access rights procedure in the CC null state [N_290];
- A9) to check the operation of a nested authentication of PT procedure during the obtain access rights procedure in the CC null state [N_296].

Conceptual group B: MM testing in the active state:

- B1) to check whilst in the CC active state, that either the IUT is unable to initiate the obtain access rights procedure or is able continue normal operation after that procedure is ignored [N_222].

5.3.2.10 PAPP/PR/BV/MM/TP

The purpose of this group is to test the valid behaviour of the PT initiated terminate access rights procedure.

Conceptual group A: MM testing in the null state:

- A1) to check the basic operation of the PT initiated terminate access rights procedure in the CC null state [N_208];
- A2) to check expiry of the IUT terminate access rights timer <MM_access.2> [N_260];
- A3) to check that upon access rights terminate rejection with duration set to "standard time limit ", the IUT does not perform access rights terminate request within time <MM_wait> [N_261];
- A4) to check that upon access rights terminate rejection with duration set to "defined time limit ", the IUT does not perform access rights terminate request within the indicated time [N_262].

Conceptual group B: MM testing in the active state:

- B1) to check whilst in the CC active state, that either the IUT is unable to initiate the PT initiated terminate access rights procedure or is able to continue normal operation after that procedure is ignored [N_223].

5.3.2.11 PAPP/PR/BV/MM/TF

The purpose of this group is to test the valid behaviour of the FT initiated terminate access rights procedure.

Conceptual group A: MM testing in the null state:

- A1) to check the basic operation of the FT initiated terminate access rights procedure in the CC null state [N_209];
- A2) to check upon FT initiated terminate access rights request, the deletion of the IPUI and all associated data at the IUT [N_263].

Conceptual group B: MM testing in the active state:

- B1) to check the basic operation of the FT initiated terminate access rights procedure in the CC active state [N_224].

5.3.2.12 PAPP/PR/BV/MM/KA

The purpose of this group is to test the valid behaviour of the key allocation procedure.

Conceptual group A: MM testing in the null state:

- A1) to check the basic operation of the key allocation procedure in the CC null state [N_210];
- A2) to check that upon expiry of the IUT authentication of FT timer <MM_auth.1>, the IUT aborts the procedure and is able to continue normal operation [N_265].

Conceptual group B: MM testing in the active state:

- B1) to check whilst in the CC active state, that the IUT either accepts or ignores the key allocation procedure [N_225].

5.3.2.13 PAPP/PR/BV/MM/PP

The purpose of this group is to test the valid behaviour of the PT initiated parameter retrieval procedure.

Conceptual group A: MM testing in the null state:

- A1) to check the basic operation of the PT initiated parameter retrieval procedure in the CC null state [212];
- A2) to check that the IUT can perform information request for the information types indicated in the PICS and accept valid responses [266].

Conceptual group B: MM testing in the active state:

- B1) to check the basic operation of the PT initiated parameter retrieval procedure in the CC active state [N_227].

5.3.2.14 PAPP/PR/BV/MM/PF

The purpose of this group is to test the valid behaviour of the FT initiated parameter retrieval procedure.

Conceptual group A: MM testing in the null state:

- A1) to check the basic operation of the location update procedure and the FT initiated parameter retrieval procedure in the CC null state [N_211];
- A2) to check that the IUT can correctly receive the optionally included info elements [N_267].

Conceptual group B: MM testing in the active state:

- B1) to check the basic operation of the location update procedure and the FT initiated parameter retrieval procedure in the CC active state [N_226].

5.3.2.15 PAPP/PR/BV/MM/CP

The purpose of this group is to test the valid behaviour of the PT initiated cipher-switching procedure.

Conceptual group A: MM testing in the null state:

- A1) to check the basic operation of the PT initiated cipher-switching procedure by switching on ciphering in the CC null state [N_214];
- A2) to check operation of the PT initiated cipher-switching procedure by switching off ciphering in the CC null state [N_268];
- A3) to check expiry of the IUT cipher-switch timer <MM_cipher.2> [N_269].

Conceptual group B: MM testing in the active state:

- B1) to check the basic operation of the PT initiated cipher-switching procedure by switching on ciphering in the CC active state [N_229];
- B2) to check operation of the PT initiated cipher-switching procedure by switching off ciphering in the CC active state [N_270].

5.3.2.16 PAPP/PR/BV/MM/CF

The purpose of this group is to test the valid behaviour of the FT initiated cipher-switching procedure.

Conceptual group A: MM testing in the null state:

- A1) to check the basic operation of the FT initiated cipher-switching procedure by switching on ciphering in the CC null state [N_213];
- A2) to check operation of the FT initiated cipher-switching procedure by switching off ciphering in the CC null state [N_271].

Conceptual group B: MM testing in the active state:

- B1) to check the basic operation of the FT initiated cipher-switching procedure by switching on ciphering in the CC active state [N_228];
- B2) to check operation of the FT initiated cipher-switching procedure by switching off ciphering in the CC active state [N_272].

5.3.3 PAPP/PR/BV/SS

5.3.3.1 PAPP/PR/BV/SS/RH

The purpose of this group is to test the valid behaviour of the IUT during CRSS HOLD procedures. The following test purposes have been defined:

- S1) to test the IUT's capability to send a HOLD message in the CC active state and receive a HOLD-ACKnowledge message [N_300];
- S2) to test the IUT's capability to send a HOLD message in the CC active state and receive a HOLD-REJECT message [N_301];
- S3) to test the IUT's capability to receive a HOLD message in the CC active state and reply with a HOLD-ACKnowledge or HOLD-REJECT message [N_302].

5.3.3.2 PAPP/PR/BV/SS/RR

The purpose of this group is to test the valid behaviour of the IUT during CRSS RETRIEVE procedures. The following purposes have been defined:

- S1) to test the IUT's capability to send HOLD and RETRIEVE messages in the CC active state and receive HOLD-ACKnowledge and RETRIEVE-ACKnowledge messages [N_303];
- S2) to test the IUT's capability to send HOLD and RETRIEVE messages in the CC active state and receive HOLD-ACKnowledge and RETRIEVE-REJECT messages [N_304];
- S3) to test the IUT's capability to receive HOLD and RETRIEVE messages in the CC active state and reply with HOLD-ACKnowledge and RETRIEVE-ACKnowledge messages [N_305].

5.3.3.3 PAPP/PR/BV/SS/RM

The purpose of this group is to test the valid behaviour of the IUT's CRSS feature key management protocol. Test purposes have been defined to test each feature in a general manner:

- S1) to test the IUT's capability to send a register recall feature activation in a CC-INFO message in the CC active state [N_306];
- S2) to test the IUT's capability to send a queue entry request feature activation in a CC-INFO message in the CC active state [N_307];
- S3) to test the IUT's capability to send an indication of subscriber number feature activation in a CC-INFO message in the CC active state [N_308];
- S4) to test the IUT's capability to send a feature key feature activation in a CC-INFO message in the CC active state [N_309];
- S5) to test the IUT's capability to send a specific line selection feature activation in a CC-INFO message in the CC active state [N_310];
- S6) to test the IUT's capability to send a specific trunk carrier selection feature activation in a CC-INFO message in the CC active state [N_311];
- S7) to test the IUT's capability to send a specific echo control functions feature activation in a CC-INFO message in the CC active state [N_312];
- S8) to test the IUT's capability to send a cost information feature activation in a CC-INFO message in the CC active state [N_313].

5.3.3.4 PAPP/PR/BV/SS/RF

The purpose of this group is to test the valid behaviour of the IUT's CRSS functional protocol procedures using the facility information element.

- S1) to test the IUT's capability to send a facility information element in the CC active state [N_314];
- S2) to test the IUT's capability to receive a facility information element in the CC active state [N_315].

5.3.3.5 PAPP/PR/BV/SS/IK

The purpose of this group is to test the valid behaviour of the IUT's CISS keypad protocol procedure.

- S1) to test the IUT's capability to send a keypad information element in the CISS message [N_316].

5.3.3.6 PAPP/PR/BV/SS/IM

The purpose of this group is to test the valid behaviour of the IUT's CISS feature management procedure.

- S1) to test the IUT's capability to set-up a CISS (outgoing) call containing Feature Activate information element [N_317].

5.3.3.7 PAPP/PR/BV/SS/IF

The purpose of this group is to test the valid behaviour of the IUT's CISS facility procedure.

- S1) to test the IUT's capability to set-up a CISS (outgoing) call containing the Facility information element [N_318];
- S2) to test the IUT's capability to set-up a CISS (incoming) call containing a Facility information element [N_319].

5.3.4 PAPP/PR/BV/CO

5.3.4.1 PAPP/PR/BV/CO/OE

The purpose of this group is to test the valid behaviour of the IUT's COMS outgoing call establishment.

- CO1) to test the IUT's capability to send a {COMS-SET-UP} message containing PAP service <<connection attributes>> and <<IWU attributes>> [N_375];
- CO2) to test the IUT's capability to send a {COMS-SET-UP} message and cope with a call rejection [N_376].

5.3.4.2 PAPP/PR/BV/CO/IE

- CO1) to test the IUT's capability to accept a call set-up with a {COMS-SET-UP} message containing PAP <<connection attributes>> and <<IWU attributes>> (outgoing call) [N_377].

5.3.4.3 PAPP/PR/BV/CO/DT

- CO1) to test the IUT's capability to perform data transfer in an outgoing COMS call set-up [N_378];
- CO2) to test the IUT's capability to perform data transfer in an incoming COMS call [N_879].

5.3.4.4 PAPP/PR/BV/CO/NR

- CO1) to test the IUT's capability to perform normal release in an outgoing COMS call set-up [N_380];
- CO2) to test the IUT's capability to perform normal call release in an outgoing call set-up using LT initiated release procedure [N_381];
- CO3) to test the IUT's capability to perform a IUT initiated normal release in an incoming COMS call set-up [N_382];
- CO4) to test the IUT's capability to perform normal call release in an incoming COMS call set-up by using LT initiated release procedure [N_383].

5.3.5 PAPP/PR/BV/CL

5.3.5.1 PAPP/PR/BV/CL/FI

The purpose of this group is to test the IUT's CLMS fixed message reception capability.

All test purposes in this group are to be tested with the IUT in the CC-null state, and with no connection established with the PT-IUT. It is assumed that the PT-IUT is in idle locked state with the LT system.

- CL1) to test the IUT's capability to receive a standard one section CLMS-FIXED message [N_350];
- CL2) to test the IUT's capability to receive an alphanumeric one section CLMS-FIXED message [N_351];
- CL3) to test the IUT's capability to receive an alphanumeric multi-section CLsex MS-FIXED message [N_352].

5.3.5.2 PAPP/PR/BV/CLVA

The purpose of this group is to test the IUT's CLMS variable message reception capability.

All test cases in this group are to be performed with the IUT in the CC-null state, and with no connection established with the PT-IUT. It is assumed that the PT-IUT is in idle locked state with the LT system:

- CL1) to test the IUT's capability to receive a CLMS-VARIABLE alphanumeric text message [N_353];
- CL2) to test the IUT's capability to send a CLMS-VARIABLE alphanumeric text message [N_354].

5.3.6 PAPP/PR/BV/ME

The purpose of this group is to test the valid behaviour of the external handover procedure in the IUT.

- 1) to test the external handover procedure of the PT, initiated by the PT [N_050];
- 2) to test the external handover procedure of the PT, initiated by the LT [N_051].

5.3.7 PAPP/PR/BV/EI

Tests for CC and MM (incoming calls):

- 1) to check that upon location registration, that the IUT is able to receive an incoming call [implicit test in N_120 due to test case execution sequence];

Tests for CC and Access Rights:

- 2) to check whilst the LT is broadcasting the PARI corresponding to the PARK in the IUT, that the IUT is able to access the LT for an outgoing call [implicit in N_100];
- 3) to check whilst the LT is broadcasting the SARI present flag as set and a SARI corresponding to the PARK in the IUT, that the IUT is able to access the LT for an outgoing call [N_075];
- 4) to check whilst the LT is broadcasting the TARI present flag as set and a TARI is present in the LT corresponding to the PARK in the IUT, that the IUT is able to access the LT for an outgoing call (optional for TARI support) [N_076];
- 5) to check whilst the LT is broadcasting the SARI present flag as set and a SARI and a black ARI corresponding to the PARK in the IUT, that the IUT is unable to access the LT for an outgoing call [N_077];
- 6) to check whilst the LT is broadcasting the TARI present flag as set and a black ARI corresponding to the PARK in the IUT, that the IUT is unable to access the LT for an outgoing call [N_078];

- 7) to check that upon TARI request rejection by the LT, the IUT is unable to make a TARI request within T602 minutes [N_079];
- 8) to check whilst the LT is broadcasting the PARI one bit different to the PARK{y} in the IUT, that the IUT is unable to access the LT for an outgoing call [N_080].

5.4 PAPP/PR/Invalid Behaviour (BI)

The purpose of this group is to test the invalid behaviour of the Call Control entity in the IUT.

- 1) to test the IUT's capability to receive an invalid message which has a mandatory information element missing [N_025];
- 2) to test the IUT's capability to receive an invalid message containing wrong transaction identifier flag [N_026];
- 3) to test the IUT's capability to receive an invalid message containing wrong protocol discriminator [N_027];
- 4) to test the IUT's capability to receive an invalid message containing wrong message type [N_028];
- 5) to test the IUT's capability to receive an invalid message containing unrelated transaction identifier [N_029].

5.5 PAPP/PR/Inopportune Behaviour (BO)

The purpose of this group is to test the inopportune behaviour of the Call Control Entity in the IUT.

- 1) to test the IUT's capability to receive an inopportune message [N_040].

5.6 PAPP/Real Effects (RE)

The purpose of this group is to test the valid behaviour of the functionality associated with the MAC and DLC layers.

5.6.1 PAPP/RE/Channel List Maintenance (CM)

Tests for this group are to be added to Clause 17 of TBR 6 [10].

5.6.2 PAPP/RE/Bearer Handover (BH)

The purpose of this group is to check the basic operation of the PT's bearer handover procedure.

- 1) to check the basic operation of the PT's intra-cell bearer handover procedure [R_400];
- 2) to check the basic operation of the PT's inter-cell bearer handover procedure [R_401];
- 3) to check that the number of bearer handover attempts in a time window of T202 is at most N201 [R_402].

5.6.3 PAPP/RE/Connection Handover (CH)

The purpose of this group is to check the basic operation of the PT's connection handover procedure.

- 1) to check the basic operation of the PT's intra-cell connection handover procedure [R_403];
- 2) to check the basic operation of the PT's inter-cell connection handover procedure [R_404];
- 3) to check the value of the connection handover timer, DL.05 [R_405];
- 4) to check the number of connection handover attempts in a time window of DL.06 does not exceed N251 [R_406].

5.6.4 PAPP/RE/Paging (PG)

Tests for short page- default TPUI and assigned individual TPUI:

- 1) to check that the IUT is able to set-up an incoming call using a short page with the default TPUI [implicit in N_120, because TPUI not assigned and test system default page is short];
- 2) to check that the IUT is able to set-up an incoming call using a short page with an individual assigned TPUI [R_410];

Tests for full page- assigned individual TPUI and IPUI:

- 3) to check that the IUT is able to set-up an incoming call using a full page with the ipui [R_411];
- 4) to check that the IUT is able to set-up an incoming call using a full page with an individual assigned TPUI [R_412];

Test for low duty cycle mode:

- 5) to check whilst the LT is broadcasting with "page repetition" set, that the IUT is able to set-up an incoming call using the default TPUI [R_409] (optional for low duty cycle mode).

5.6.5 PAPP/RE/Other timers(OT)

The purpose of this group is to check the value of the timers not contained in the other PAPP/RE groups.

- 1) to check the value of the RFPI handshake timer, T201 [R_407];
- 2) to check timer T208 maximum time between reception of N_T messages in idle mode [R_413].

5.6.6 PAPP/RE/Other counters(OC)

The purpose of this group is to check the value of the counters not contained in the other PAPP/RE groups.

- 1) to check the value of the MBC set-up re-attempt counter, N200 [R_408];
- 2) to check timer T208;
 - max. time between reception of N_T messages in idle mode [R_413].

6 FT test purposes

6.1 Introduction

This subclause details the test purposes for the PT for each test group and references the corresponding test cases (see parentheses[]).

NOTE: The test case selection is described in the test suite overview table in ETS 300 323-5 [23].

6.1.1 Main conceptual test purpose groups for the CC and MM

The following summarises the conceptual test purpose groups for CC and MM testing only. A common set of MM test steps could be used when testing groups A and B. The only difference in the test cases being the preamble i.e. whether or not to place the System Under Test (SUT) in the active state or leave it in the null state.

6.1.1.1 Group A: MM testing in the null-state

Same as for PT.

6.1.1.2 Group B: MM testing in the active state

Same as for PT except there may be a CC-INFO or CC-NOTIFY transmitted by the SUT. This can be received and ignored by the LT, since it is not part of the purpose of this test.

6.1.1.3 Group C: CC testing of all states with response to the uncontrollable initiation of MM procedures by the SUT

Same as for PT.

6.1.1.4 Group D: CC testing of all states with deliberate initiation of MM procedures by the LT

Same as for PT.

6.2 PAPF/PR/Capability Tests (CA)

This group is a selection of valid behaviour (BV) tests that check the implementation of declared capabilities (PAP features) within the PICS. The following lists the test cases selected per PAP feature (capability).

NOTE: Other test cases for the feature exist and these are selected by the test case selection expressions in the test suite overview tables in ETS 300 323-2 [20] and ETS 300 323-5 [23].

	PAP feature (capability)	Prov.	CA test cases
0	Outgoing call	M	N_600
1	Duplex speech - 32 kbit/s ADPCM	M	N_600,N_603
2	Bell on	O	N_642
3	Bell off	O	N_642
4	Off hook	M	N_600,N_603
5	On hook (full release)	M	N_615,N_617,N_623,N_624
6	Partial release	M	N_630
7	Dialled digits basic	M	N_653,N_654
8	Dialled digits additional	O	N_655
9	Dialling delimiter	O	-
10	Dialling delimiter request	O	N_656
11	Register recall	O	N_806
12	Go to DTMF	M	N_653,N_646

13	Go to pulse	O	N_651,N_652
14	Pause	O	N_659
15_a	Specific trunk carrier selection- CRSS	O	N_811
15_b	Specific trunk carrier selection- CISS	O	N_816
16	Incoming call	O	N_603,N_705,N_720
17_o	Hold call (PT to FT)	O	N_802
17_i	Hold call (FT to PT)	O	N_800
18_o	Re-connection of held call (PT to FT)	O	N_805
18_i	Re-connection of held call (FT to PT)	O	N_803
19	Forced re-connection of held call	O	N_818
20	Authentication of portable part	M	N_702,N_717
21	Authentication of user	O	N_703,N_718
22	Authentication of fixed part	M	N_704,N_719
23	Silent polling	O	N_700,N_715
24	Class of service field indication	M	N_733
25	Inter-operator roaming registration	O	N_707,N_710
26	Control of supervisory tones	M	N_662
27	Regular security handshake	M	R_907
28	Signalling of display characters	O	-
29	Display control characters	O	-
30	ZAP suspend	O	N_732
31	ZAP terminate	O	N_709,N_724
31_p	pt terminate	O	N_708,N_723
32_a	Alphanumeric text messaging and radio paging service- Case A	O	N_850
32_b_i	Alphanumeric text messaging and radio paging service- Case B1	O	N_851
32_b_oi	Alphanumeric text messaging and radio paging service- Case B2	O	N_851,N_852
32_c	Alphanumeric text messaging and radio paging service- Case C	O	N_875,N_876
33	Voice/user data encryption activation/de-activation	O	N_713,N_728, N_714,N_729
34	Signalling encryption activation/de-activation	O	N_713,N_728, N_714,N_729
35	Debit public access service	O	N_813
36	Credit public access service	O	local implementation
37	Credit agency public access service	O	local implementation
38_a	On-demand (hot bill) public access service- CRSS	O	N_813
38_b	On-demand (hot bill) public access service- CISS	O	N_816
39_a	Advice of tariff request- CRSS	O	N_813
39_b	Advice of tariff request- CISS	O	N_816
40-a	Advice of charge request- CRSS	O	N_813
40-b	Advice of charge request- CISS	O	N_816
41	Location registration	O	N_705,N_720
42	Location de-registration	O	N_706,N_721
43	Queue management	O	N_807
44	Queue entry request	O	N_807
45	Queue exit request	O	N_807
46	Portable part inaccessible indication	O	-
47	In-range indication	O	-
48	Emergency service access request	M	N_633,N_634
49	Indication of teleservice available request	O	not applicable
50	Indication of teleservices available	O	R_910
51	Selection of service provider/network operator	M	local implementation
52	Selection of required teleservice	O	N_600
53	Selection of bearer service	O	N_600
54	Validation of portable part user	M	local implementation
55	Validation of portable part	M	local implementation
56	Validation of identity module	O	local implementation
57	User identification (UPI)	O	N_703,N_718
58	Group address	O	-
59	Selection of additional character sets	O	-

60	Data capability	O	N_600
61_a	Keypad protocol- CRSS	M	N_653
61_b	Keypad protocol- CISS	O	none
62_a	Feature key management protocol- CRSS	O	N_809
62_b	Feature key management protocol- CISS	O	N_816
63_a_o	Functional protocol- CRSS	O	N_815
63_a_i	Functional protocol- CRSS	O	N_814
63_b_o	Functional protocol- CISS	O	N_816
63_b_i	Functional protocol- CISS	O	N_817
64	Dial tone detection indication	O	N_662
65_a	Request for indication of temporary subscriber number- CRSS	O	N_808
65_b	Request for indication of temporary subscriber number- CISS	O	N_816
66	Fixed part/portable part capability exchange	M	N_661
67	Subscription registration user procedure on-air plus digit entry	M	N_707,N_722
68	Subscription registration user procedures keypad (digit entry only)	O	local implementation
69	Subscription registration user procedure with DECT authentication module	O	local implementation
70	Subscription data exchange (on-air)	M	N_707,N_722, N_710,N_725
71	Multi-cell fixed part coverage	O	R_901, R_904
72_ba	Bearer Handover (intra-cell)	M or 72_ca	R_900
72_ca	Connection Handover (intra-cell)	M or 72_ba	R_903
72_br	Bearer Handover (inter-cell)	O	R_901
72_cr	Connection Handover (inter-cell)	O	R_904
72_e	External (inter-cell)	O	N_550, N_551
73	Multiple subscription registration	-	
74	All-physical-channel capability	M	TBR 06

6.3 PAPF/PR/Valid Behaviour (BV)

6.3.1 PAPF/PR/BV/CC

The purpose of this group is to test the valid behaviour of the Call Control Entity (CCE) in the IUT.

6.3.1.1 PAPF/PR/BV/CC/OC

The purpose of this group is to test the valid behaviour of an outgoing call.

Conceptual group C: CC testing of all states with response to the uncontrollable initiation of MM procedures by the SUT:

- C1) to test the IUT's CC-state transition from the F-00 state to F-10 state for an outgoing normal call set-up with en-bloc dialling in CC_SETUP [N_600];
- C2) to test the IUT's CC-state transition from the F-00 state to F-10 state for an outgoing normal call set-up with en-bloc dialling in F-02 state [N_601];
- C3) to test the IUT's CC-state transition from the F-00 state to F-10 state for an outgoing normal call set-up with piece-wise dialling in F-02 state [N_602].

6.3.1.2 PAPF/PR/BV/CC/IC

The purpose of this group is to test the valid behaviour of an incoming call.

Conceptual group C: CC testing of all states with response to the uncontrollable initiation of MM procedures by the SUT:

- C1) to test the IUT's CC-state transition from the F-00 state to F-10 state via F-06 for an incoming normal call set-up [N_603];
- C2) to test the IUT's CC-state transition from the F-00 state to F-10 state via F-06 and F-07 for an incoming normal call set-up [N_604].

6.3.1.3 PAPF/PR/BV/CC/NR

The purpose of this group is to test the valid behaviour of normal call release procedure.

Conceptual group C: CC testing of all states with response to the uncontrollable initiation of MM procedures by the SUT:

- C1) to test the IUT's ability to process a normal release, initiated from the FT, in F-03 state [N_613];
- C2) to test the IUT's ability to process a normal release, initiated from the FT, in F-04 state [N_614];
- C3) to test the IUT's ability to process a normal release, initiated from the FT, in F-10 state [N_615];
- C4) to test the IUT's ability to process a normal release, initiated from the FT, in F-06 state [N_616];
- C5) to test the IUT's ability to process a normal release, initiated from the FT, in F-07 state [N_617];
- C6) to test the IUT's ability to process a normal release in F-01 state [N_619];
- C7) to test the IUT's ability to process a normal release in F-02 state [N_620];
- C8) to test the IUT's ability to process a normal release in F-03 state [N_621];
- C9) to test the IUT's ability to process a normal release in F-04 state [N_622];
- C10) to test the IUT's ability to process a normal release in F-10 state [N_623];
- C11) to test the IUT's ability to process a normal release in F-07 state [N_624].

6.3.1.4 PAPF/PR/BV/CC/AR

The purpose of this group is to test the valid behaviour of abnormal call release procedure.

Conceptual group C: CC testing of all states with response to the uncontrollable initiation of MM procedures by the SUT:

- C1) to test the IUT's ability to process an abnormal release in F-01 state [N_605];
- C2) to test the IUT's ability to process an abnormal release in F-10 state [N_606];
- C3) to test the IUT's ability to process an abnormal release in F-02 state [N_607];

- C4) to test the IUT's ability to process an abnormal release in F-03 state [N_608];
- C5) to test the IUT's ability to process an abnormal release in F-04 state [N_609];
- C6) to test the IUT's ability to process an abnormal release in F-06 state [N_610];
- C7) to test the IUT's ability to process an abnormal release in F-07 state [N_611].

6.3.1.5 PAPF/PR/BV/CC/PR

The purpose of this group is to test the valid behaviour of partial call release procedure.

Conceptual group C: CC testing of all states with response to the uncontrollable initiation of MM procedures by the SUT:

- C1) to test the IUT's ability to process a partial release in F-01 state [N_626];
- C2) to test the IUT's ability to process a partial release in F-02 state [N_627];
- C3) to test the IUT's ability to process a partial release in F-03 state [N_628];
- C4) to test the IUT's ability to process a partial release in F-04 state [N_629];
- C5) to test the IUT's ability to process a partial release in F-10 state [N_630];
- C6) to test the IUT's ability to process a partial release in F-07 state [N_631].

6.3.1.6 PAPF/PR/BV/CC/TI

The purpose of this group is to test the valid behaviour of timers.

Conceptual group C: CC testing of all states with response to the uncontrollable initiation of MM procedures by the SUT:

- C1) to test timer F_CC_01 in F-02 state [N_635];
- C2) to test the IUT's capability to restart timer F_CC_01 in F-02 state [N_636];
- C3) to test timer F_CC_04 in F-03 state [N_637];
- C4) to test timer F_CC_04 in F-04 state [N_638];
- C5) to test timer F_CC_02 in F-19 state [N_639];
- C6) to test timer F_CC_03 in F-06 state [N_640];
- C7) to test timer F_CC_04 in F-07 state [N_641];
- C8) to test the LCE timer <LCE.02> [N_663].

6.3.1.7 PAPF/PR/BV/CC/CI

The purpose of this group is to test the valid behaviour of the call information procedures.

Conceptual group C: CC testing of all states with response to the uncontrollable initiation of MM procedures by the SUT:

- C1) to test the IUT's basic ability to send cadence following (bell on/bell off) of an incoming call [N_642];
- C2) to test the IUT's capability to go to DTMF dialling with defined tone length in F-02 state [N_643];
- C3) to test the IUT's capability to go to DTMF dialling with defined tone length in F-10 state [N_644];
- C4) to test the IUT's capability to go to DTMF dialling with defined tone length in the called party number [N_645];
- C5) to test the IUT's capability to go to DTMF dialling with infinite tone length in F-02 state [N_646];
- C6) to test the IUT's capability to go to DTMF dialling with infinite tone length in F-10 state [N_647];
- C7) to test the IUT's capability to go to DTMF dialling with infinite tone length in the called party number [N_648];
- C8) to test the IUT's capability to cancel DTMF tone in F-02 state [N_649];
- C9) to test the IUT's capability to cancel DTMF tone in F-10 state [N_650];
- C10) to test the IUT's capability to go to pulse in F-02 state [N_651];
- C11) to test the IUT's capability to go to pulse in F-10 state [N_652];
- C12) to test the IUT's capability to process basic digits (0 - 9, star, hash mark) in F-10 state [N_653];
- C13) to test the IUT's capability to process basic digits (0 - 9, star, hash mark) in the called party number [N_654];
- C14) to test the IUT's capability to process additional digits (a, b, c, d) in F-10 state [N_655];
- C15) to test the IUT's capability to send delimiter request [N_656];
- C16) to test the IUT's capability to process dialling pause in F-02 state [N_657];
- C17) to test the IUT's capability to process dialling pause in F-10 state [N_658];
- C18) to test the IUT's capability to process dialling pause in the called party number [N_659];
- C19) to test the IUT's basic ability to send alerting signal to the PT of an incoming call [N_660];
- C20) to test the IUT's capability to handle terminal capability [N_661];
- C21) to test the IUT's capability to send supervisory tones in signal [N_662].

6.3.1.8 PAPF/PR/BV/CC/EC

The purpose of this group is to test the valid behaviour of an emergency call.

Conceptual group C: CC testing of all states with response to the uncontrollable initiation of MM procedures by the SUT:

- C1) to test the IUT's CC-state transition from the F-00 state to F-10 state for an outgoing emergency call set-up with enbloc dialling in CC-SET-UP. This test case is performed prior to subscription [N_633];
- C2) to test the IUT's CC-state transition from the F-00 state to F-10 state for an outgoing emergency call set-up with enbloc dialling in CC-SET-UP. This test case is performed after subscription [N_634];
- C3) to test the IUT's CC-state transition from the F-00 state to F-10 state for an outgoing emergency call set-up with enbloc dialling in CC-SET-UP including dialling information. This test case is performed prior to subscription [N_690];
- C4) to test the IUT's CC-state transition from the F-00 state to F-10 state for an outgoing emergency call set-up with enbloc dialling in CC-SET-UP. This test case is performed after subscription [N_691].

6.3.2 PAPF/PR/BV/MM

The purpose of this group is to test the valid behaviour of the Mobility Management Entity (MME) in the IUT.

6.3.2.1 PAPF/PR/BV/MM/ID

The purpose of this group is to test the valid behaviour of the FT initiated identity request procedure.

Conceptual group A: MM testing in the null state:

- A1) to check the basic operation of the FT initiated identity request procedure in the CC null state [N_700];
- A2) to check expiry of the IUT identity request timer <MM_ident.2> [N_736];
- A3) to check the IUT can request the identity types indicated in the PICS ref. [24]. [N_700].

Conceptual group B: MM testing in the active state:

- B1) to check the basic operation of the FT initiated identity request procedure in the CC active state [N_715].

6.3.2.2 PAPF/PR/BV/MM/TA

The purpose of this group is to test the valid behaviour of the FT initiated temporary identity assignment procedure.

Conceptual group A: MM testing in the null state:

- A1) to check the basic operation of the FT initiated temporary identity assignment procedure, for TPUI in the CC null state [N_701];
- A2) to check expiry of the temporary identity assignment timer <MM_ident.1> [N_737].

Conceptual group B: MM testing in the active state:

- B1) to check the basic operation of the FT initiated temporary identity assignment procedure, for TPUI in the CC active state [N_716].

6.3.2.3 PAPF/PR/BV/MM/AP

The purpose of this group is to test the valid behaviour of the FT initiated authentication of PT procedure.

Conceptual group A: MM testing in the null state:

- A1) to check the basic operation of the FT initiated authentication of PT procedure in the CC null state [N_702];
- A2) to check the basic operation of the FT initiated ZAP function during authentication of PT procedure in the CC null state [N_732];
- A3) to check the basic operation of the FT initiated authentication of PT negotiation procedure in the CC null state [N_731];
- A4) to check expiry of the authentication of PT timer <MM_auth.1> [N_738].

Conceptual group B: MM testing in the active state:

- B1) to check the basic operation of the FT initiated authentication of PT procedure in the CC active state [N_717].

6.3.2.4 PAPF/PR/BV/MM/AU

The purpose of this group is to test the valid behaviour of the FT initiated authentication of user procedure.

Conceptual group A: MM testing in the null state:

- A1) to check the basic operation of the FT initiated authentication of user procedure in the CC null state [N703].

Conceptual group B: MM testing in the active state:

- B1) to check the basic operation of the FT initiated authentication of user procedure in the CC active state [N_718].

6.3.2.5 PAPF/PR/BV/MM/AF

The purpose of this group is to test the valid behaviour of the PT initiated authentication of FT procedure.

Conceptual group A: MM testing in the null state:

- A1) to check the basic operation of the PT initiated authentication of FT procedure in the CC null state [N_704].

Conceptual group B: MM testing in the active state:

- B1) to check the basic operation of the PT initiated authentication of FT procedure in the CC active state [N_719].

6.3.2.6 PAPF/PR/BV/MM/LR

The purpose of this group is to test the valid behaviour of the location registration procedure.

Conceptual group A: MM testing in the null state:

- A1) to check the basic operation of the location registration procedure with the IPUI in the CC null state [N_705];
- A2) to check the basic operation of the location registration procedure with the TPUI in the CC null state [N_734];
- A3) to check operation of the location registration procedure for attach [N_705].

Conceptual group B: MM testing in the active state:

- B1) to check the basic operation of the location registration procedure with the IPUI in the CC active state [N_720].

6.3.2.7 PAPF/PR/BV/MM/DE

The purpose of this group is to test the valid behaviour of the detach procedure.

Conceptual group A: MM testing in the null state:

- A1) to check the basic operation of the PT initiated detach procedure in the CC null state [N_706];
- A2) to check after detach that the IUT does not perform paging for incoming call [N_706].

Conceptual group B: MM testing in the active state:

- B1) to check the basic operation of the PT initiated detach procedure in the CC null active [N_721].

6.3.2.8 PAPF/PR/BV/MM/LU

The purpose of this group is to test the valid behaviour of the location update procedure.

Conceptual group A: MM testing in the null state:

- A1) to check the basic operation of the FT initiated parameter retrieval procedure and the location update procedure in the CC null state [N_711].

Conceptual group B: MM testing in the active state:

- B1) to check the basic operation of the FT initiated parameter retrieval procedure and the location update procedure in the CC active state [N_726].

6.3.2.9 PAPF/PR/BV/MM/OA

The purpose of this group is to test the valid behaviour of the obtain access rights procedure.

Conceptual group A: MM testing in the null state:

- A1) to check the basic operation of the obtain access rights procedure in the CC null state [N_707];
- A2) to check the basic operation of the PT initiated access rights procedure including service class info in the CC null state [N_733].

6.3.2.10 PAPF/PR/BV/MM/TP

The purpose of this group is to test the valid behaviour of the PT initiated terminate access rights procedure.

Conceptual group A: MM testing in the null state:

- A1) to check the basic operation of the PT initiated terminate access rights procedure in the CC null state [N_708].

6.3.2.11 PAPF/PR/BV/MM/TF

The purpose of this group is to test the valid behaviour of the FT initiated terminate access rights procedure.

Conceptual group A: MM testing in the null state:

- A1) to check the basic operation of the FT initiated terminate access rights procedure in the CC null state [N_709];
- A2) to check expiry of the IUT terminate access rights timer <MM_access.2> [N_739].

Conceptual group B: MM testing in the active state:

- B1) to check the basic operation of the FT initiated terminate access rights procedure in the CC active state [N_724].

6.3.2.12 PAPF/PR/BV/MM/KA

The purpose of this group is to test the valid behaviour of the key allocation procedure.

Conceptual group A: MM testing in the null state:

- A1) to check the basic operation of the key allocation procedure in the CC null state [N_710];
- A2) to check expiry of the IUT key allocate timer <MM_key.1> [N_740].

6.3.2.13 PAPF/PR/BV/MM/PP

The purpose of this group is to test the valid behaviour of the PT initiated parameter retrieval procedure.

Conceptual group A: MM testing in the null state:

- A1) to check the basic operation of the PT initiated parameter retrieval procedure in the CC null state [N_712].

Conceptual group B: MM testing in the active state:

- B1) to check the basic operation of the PT initiated parameter retrieval procedure in the CC active state [N_727].

6.3.2.14 PAPF/PR/BV/MM/PF

The purpose of this group is to test the valid behaviour of the FT initiated parameter retrieval procedure.

Conceptual group A: MM testing in the null state:

- A1) to check the basic operation of the FT initiated parameter retrieval procedure and the location update procedure in the CC null state [N_711- test case to be found in LU test group].

Conceptual group B: MM testing in the active state:

- B1) to check the basic operation of the FT initiated parameter retrieval procedure and the location update procedure in the CC active state [N_726- test case to be found in LU test group].

6.3.2.15 PAPF/PR/BV/MM/CP

The purpose of this group is to test the valid behaviour of the PT initiated cipher-switching procedure.

Conceptual group A: MM testing in the null state:

- A1) to check the basic operation of the PT initiated cipher-switching procedure by switching on ciphering in the CC null state [N_714];
- A2) to check operation of the PT initiated cipher-switching procedure by switching off ciphering in the CC null state [N_714].

Conceptual group B: MM testing in the active state:

- B1) to check the basic operation of the PT initiated cipher-switching procedure by switching on ciphering in the CC active state [N_729];
- B2) to check operation of the PT initiated cipher-switching procedure by switching off ciphering in the CC active state [N_729].

6.3.2.16 PAPF/PR/BV/MM/CF

The purpose of this group is to test the valid behaviour of the FT initiated cipher-switching procedure.

Conceptual group A: MM testing in the null state:

- A1) to check the basic operation of the FT initiated cipher-switching procedure by switching on ciphering in the CC null state [N_713];

- A2) to check operation of the FT initiated cipher-switching procedure by switching off ciphering in the CC null state [N_713];
- A3) to check the basic operation of the FT initiated ciphering negotiation procedure by switching on ciphering in the CC null state [N_730];
- A4) to check expiry of the IUT cipher-switch timer <MM_cipher.1> [N_741].

Conceptual group B: MM testing in the active state:

- B1) to check the basic operation of the FT initiated cipher-switching procedure by switching on ciphering in the CC active state [N_728];
- B2) to check operation of the FT initiated cipher-switching procedure by switching off ciphering in the CC active state [N_728].

6.3.3 PAPP/PR/BV/SS

6.3.3.1 PAPP/PR/BV/SS/RH

The purpose of this group is to test the valid behaviour of the IUT during CRSS HOLD procedures.

- S1) to test the IUT's capability to send a HOLD message in the CC active state and receive a HOLD-ACKnowledge message [N_800];
- S2) to test the IUT's capability to send a HOLD message in the CC active state and receive a HOLD-REJECT message [N_801];
- S3) to test the IUT's capability to receive a HOLD message in the CC active state and reply with a HOLD-ACKnowledge or HOLD-REJECT message [N_802].

6.3.3.2 PAPP/PR/BV/SS/RR

The purpose of this group is to test the valid behaviour of the IUT during CRSS RETRIEVE procedures.

- S1) to test the IUT's capability to send HOLD and RETRIEVE messages in the CC active state and receive HOLD-ACKnowledge and RETRIEVE-ACKnowledge messages [N_803];
- S2) to test the IUT's capability to send HOLD and RETRIEVE messages in the CC active state and receive HOLD-ACKnowledge and RETRIEVE-REJECT messages [N_804];
- S3) to test the IUT's capability to receive HOLD and RETRIEVE messages in the CC active state and reply with HOLD-ACKnowledge and RETRIEVE-ACKnowledge messages [N_805];
- S4) to test the IUT's capability to perform forced re-connection in the CC active state [N_818].

6.3.3.3 PAPP/PR/BV/SS/RM

The purpose of this group is to test the valid behaviour of the IUT's CRSS feature key management protocol. Only the generic checks of the possible features are intended.

- S1) to test the IUT's capability to receive a register recall feature activation in a CC-INFO message in the CC active state [N_806];
- S2) to test the IUT's capability to receive a queue entry request feature activation in a CC-INFO message in the CC active state [N_807];

- S3) to test the IUT's capability to receive a indication of subscriber number feature activation in a CC-INFO message in the CC active state [N_808];
- S4) to test the IUT's capability to receive a feature key feature activation in a CC-INFO message in the CC active state [N_809];
- S5) to test the IUT's capability to receive a specific line selection feature activation in a CC-INFO message in the CC active state [N_810];
- S6) to test the IUT's capability to receive a specific trunk carrier selection feature activation in a CC-INFO message in the CC active state [N_811];
- S7) to test the IUT's capability to receive a specific control of echo control functions feature activation in a CC-INFO message in the CC active state [N_812];
- S8) to test the IUT's capability to receive a cost information feature activation in a CC-INFO message while in the CC active state [N_813].

6.3.3.4 PAPF/PR/BV/SS/RF

The purpose of this group is to test the valid behaviour of the IUT's functional protocol procedures using the facility information element:

- S1) to test the IUT's capability to send a facility information element in the CC active state[N_814];
- S2) to test the IUT's capability to receive a facility information element in the CC active state[N_815].

6.3.3.5 PAPF/PR/BV/SS/IK

The purpose of this group is to test the valid behaviour of the IUT's CISS keypad protocol procedure.

None.

6.3.3.6 PAPF/PR/BV/SS/IM

The purpose of this group is to test the valid behaviour of the IUT's CISS procedure.

- S1) to test the IUT's capability to set-up a CISS (outgoing) call containing either a Feature Activate or Facility information element [N_816].

6.3.3.7 PAPF/PR/BV/SS/IF

The purpose of this group is to test the valid behaviour of the IUT's CISS procedure:

- S1) to test the IUT's capability to set-up a CISS (incoming) call containing facility information element [N_817].

6.3.4 PAPF/PR/BV/CO

6.3.4.1 PAPF/PR/BV/CO/OE

The purpose of this group is to test the valid behaviour of the IUT's COMS outgoing call establishment:

- CO1) to test the IUT's capability to accept a call set-up with a {COMS-SET-UP} message containing PAP <<connection attributes>> and <<IWU attributes>> (outgoing call) [N_875].

6.3.4.2 PAPF/PR/BV/CO/IE

- CO1) to test the IUT's capability to send a {COMS-SET-UP} message containing PAP service <<connection attributes>> and <<IWU attributes>> (incoming call) [N_876];
- CO2) to test the IUT's capability to send a {COMS-SET-UP} message and cope with a call rejection [N_877].

6.3.4.3 PAPF/PR/BV/CO/DT

- CO1) to test the IUT's capability to perform data transfer in an incoming COMS call set-up[N_878];
- CO2) to test the IUT's capability to perform data transfer in an outgoing COMS call [N_879].

6.3.4.4 PAPF/PR/BV/CO/NR

- CO1) to test the IUT's capability to perform normal release in an incoming COMS call set-up by sending a {COMS-RELEASE} message [N_880];
- CO2) to test the IUT's capability to perform normal call release in an incoming call set-up by accepting a {COMS-RELEASE} message [N_881];
- CO3) to test the IUT's capability to perform normal release in an outgoing COMS call by sending a {COMS-RELEASE} message [N_882];
- CO4) to test the IUT's capability to perform normal call release in an outgoing COMS call by receiving a {COMS-RELEASE} message [N_883].

6.3.5 PAPF/PR/BV/CL

6.3.5.1 PAPF/PR/BV/CL/FI

The purpose of this group is to test the IUT's CLMS fixed message sending capability.

All test cases in this group are to be performed with the IUT in the CC-null state, and with no connection established with the LT. It is assumed that the LT is in idle locked state with the SUT.

- CL1) to test the IUT's capability to send a CLMS-FIXED message [N_850].

6.3.5.2 PAPF/PR/BV/CL/VA

The purpose of this group is to test the IUT's CLMS variable message sending capability.

All test cases in this group are to be performed with the IUT in the CC-null state, and with no connection established with the PT. It is assumed that the PT-IUT is in idle locked state with the LT system:

- CL1) to test the IUT's capability to send a CLMS-VARIABLE alphanumeric message [N_851];
- CL2) to test the IUT's capability to receive a CLMS-VARIABLE message [N_852].

6.3.6 PAPF/PR/BV/ME

The purpose of this group is to test the valid behaviour of the external handover procedure in the IUT:

- 1) to test the external handover procedure of the FT, initiated by the LT [N_550];

- 2) to test the external handover procedure of the FT, initiated by the FT [N_551].

6.3.7 PAPF/PR/BV/EI

Tests for CC and MM (incoming calls):

- 1) to check that upon PT(LT) location registration, that the IUT is able to send an incoming call [implicit test in N_604 due to test case execution sequence];
- 2) to check that upon PT(LT) detach, that the IUT is unable to page for an incoming call [N_706 - test case achieves same purpose].

6.4 PAPF/PR/Invalid Behaviour (BI)

The purpose of this group is to test the invalid behaviour of the Call Control Entity in the IUT:

- 1) to test the IUT's capability to receive an invalid message which has a mandatory information element missing [N_525];
- 2) to test the IUT's capability to receive an invalid message containing wrong transaction identifier flag [N_526];
- 3) to test the IUT's capability to receive an invalid message containing wrong protocol discriminator [N_527];
- 4) to test the IUT's capability to receive an invalid message containing wrong message type [N_528];
- 5) to test the IUT's capability to receive an invalid message containing unrelated transaction identifier [N_529].

6.5 PAPF/PR/Inopportune Behaviour (BO)

The purpose of this group is to test the inopportune behaviour of the Call Control Entity in the IUT.

- 1) to test the IUT's capability to receive an inopportune message [N_540].

6.6 PAPF/Real Effects (RE)

The purpose of this group is to test the valid behaviour of the functionality associated with the MAC and DLC layers e.g. the FORCE-TRANSMIT message is used to setup a bearer only. All requests from the higher layers shall be ignored.

6.6.1 PAPF/RE/Bearer Handover (BH)

The purpose of this group is to check the basic operation of the FT's bearer handover procedure.

- 1) to check the basic operation of the FT's intra-cell bearer handover procedure [R_900];
- 2) to check the basic operation of the FT's inter-cell bearer handover procedure [R_901];
- 3) to check that the time that the FT maintains two bearers during handover is at maximum T203 [R_902].

6.6.2 PAPF/RE/Connection Handover (CH)

The purpose of this group is to check the basic operation of the FT's connection handover procedure.

- 1) to check the basic operation of the FT's intra-cell connection handover procedure [R_903];
- 2) to check the basic operation of the FT's inter-cell connection handover procedure [R_904].

6.6.3 PAPF/RE/Other timers(OT)

The purpose of this group is to check the value of the counters not contained in the other PAPF/RE groups:

- 1) to check the value of the connection set-up timer, T200 [R_905];
- 2) to check the value of the RFPI handshake timer, T201 [R_915].

6.6.4 PAPF/RE/Q1 and Q2 Bits (QB)

- 1) to check that both bits are set to 0 whilst not for duplex bearer with connection oriented services (feature 32_b) [R_916];
- 2) to check that the RFP shall, on reception of Q1 = 1, change antenna for next associated RFP transmission [R_917];
- 3) to check that Q2 is set to 0 and Q1 is set to 0 when A field CRC corrupted [R_918];
- 4) to check that Q2 is set to 0 when X-CRC field corrupted [R_919];
- 5) to check that the IUT sets Q1 = 1 if it receives a Z-field failure and if Q2 is set to 1 [R_920];

NOTE: The Z-field is defined to have failed if the received X- and Z-fields are not identical.

- 6) to check that the IUT sets Q1 = 1 if it receives a S-field failure and if Q2 is set to 1 [R_921].

NOTE: The S-field is defined to have failed if 3 bit errors occur in bits s16 to s31.

6.6.5 PAPF/RE/Broadcast (BR)

The minimum frequency of FT transmission of broadcast information shall be tested, while there is no PT activity:

- 1) to check that Q_T information is transmitted in every frame 8 (1 per multi-frame) [R_906];
- 2) to check that N_T information is transmitted in at least every frame 14 (min. 1 per multi-frame) [R_907];
- 3) to check that N_T information is transmitted in frame 0, at least once every T205 (10) sec. [R_908];

Within Q_T logical channel the minimum frequency of FT transmission shall be tested, while there is no PT activity:

- 4) to check that Q_T static system information is transmitted at least once every 8 multi-frames [R_909];
- 5) to check that Q_T fixed part capabilities is transmitted at least once every 8 multi-frames [R_910];

- 6) to check that once a SARI is introduced into the FT, that within the Q_T information, the SARI list contents is transmitted at least once every 4 multi-frames [R_911];
- 7) to check that one or more SARIs are introduced into the FT, that within the N_T information, the E bit is indicating "SARI list available" [R_912];

If TARI's are supported, the following tests are required:

- 8) to check that once a TARI is introduced into the FT, that upon receipt of the TARI request message with the same TARI, the FT responds with a valid TARI message within T206 (10 frames) [R_913];

If Encryption is supported, or duration element is transmitted with defined time, the following tests are required:

- 9) to check that within the QT information, the Multi-frame number is transmitted at least once every 8 multi-frames [R_914].

7 Test method

The abstract test method used for both ATSS is the Remote Single-layer Embedded test method (RSE); see ISO/IEC 9646 part 2 [15]. This means:

- a) the implementation under test is remote from the test system i.e. it is not possible to observe and directly control the upper service boundary. The only method of IUT control is by manual intervention or by test message;
- b) the primary single layer being tested is the DECT Network Layer, but note that the services provided by the lower layers are implicitly tested. Where explicit testing of the lower layers is required, then the Real Effects test group is used i.e. tests requiring more than protocol exchanges e.g. radio test equipment. Note that TBR 6 [10] tests the physical layer in detail;
- c) the primary layer being tested and the secondary layers under test are embedded within the SUT.

See Annex A for a detailed description of the test system assumptions.

8 Test case execution sequence

The IUT (PT and FT) shall be brought for testing with no previous subscription registrations.

NOTE: It is preferable that TBRS 6 [10] (see Clause 10) and TBR 10 [11] are passed by the IUT prior to execution of each ATS.

8.1 PT ATS

Due to the requirement to initialise the IUT with the test system identities and authentication keys (subscription registration), there is a recommended sequence of test case execution. This places the IUT in a stable state which is maintained for most test cases by post-ambls:

- 1) perform test case N_010 which provides a cross-check on the PICS as completed by the manufacturer and the feature/procedure conditional dependencies;
- 2) perform test cases which explicitly require the IUT not to be subscribed e.g. emergency call request shall be allowed at an FT even when the FT does not know the PT [N_150];

- 3) perform on-air subscription registration- to store identities in IUT [N_207];
- 4) perform test cases which require the IUT not to be in "receive incoming calls" mode e.g. detach [N_255];
- 5) perform location registration to put the IUT in "receive incoming calls" mode, with no assigned TPUI [N_211];
- 6) perform key allocation- to store the authentication key (UAK) within the PT [N_210];
- 7) perform test cases which exercise mandatory elementary procedures- i.e. are used regularly inside other test cases e.g. identity request and authentication;
- 8) perform all other test cases in any order as long as the verdict is pass or inconclusive;
- 9) if get test case fail perform special test case to re-initialise the IUT [N_000], then perform 5) and then 8).

The stable state of the IUT maintains a storage state as below:

IPUI = portable_id_ipuip, PARK = fixed_id_c_park, ZAP = c_zap, Service class = service_class_01, cipher key nr = c_cipher_key_nr (if it supports encryption), authentication key nr = c_uak_nr, IUT in "receive incoming calls" mode and location area level = c_lal (if it supports incoming calls).

8.2 FT ATS (for IUT supporting incoming calls)

Due to the requirement to initialise the test system with the IUT identities and authentication keys (subscription registration), there is a recommended sequence of test case execution. This puts the IUT in a stable state which is maintained in some cases by post-ambles:

- 1) perform test case N_510 which provides a cross-check on the PICS as completed by the manufacturer and the feature/procedure conditional dependencies;
- 2) perform test cases which explicitly require the IUT not to be initialised e.g. emergency call request shall be allowed at an FT even when the FT does not know the PT [N_633];
- 3) perform on-air subscription registration- to store identities in test system and IUT [N_707];
- 4) perform test cases which require the test system not to be in "receive incoming calls" mode;
- 5) perform location registration to put the test system and IUT in "receive incoming calls" mode [N_705];
- 6) perform key allocation- to store the authentication key (UAK) within the test system [N_710];
- 7) perform test cases which exercise mandatory elementary procedures- i.e. are used regularly inside other test cases e.g. authentication;
- 8) perform all other test cases in any order as long as the verdict is pass or inconclusive;
- 9) if get test case fail perform special test case to re-initialise the IUT and test system [N_500] then perform 5) and then 8).

The stable state of the IUT does not include maintaining the storage state of the test system and IUT. This means that the test system stores all that is given to it. If a particular test case requires a stable storage state then terminate access rights can be used as a preamble.

8.3 FT ATS (for IUT NOT supporting incoming calls)

Due to the requirement to initialise the test system with the IUT identities and authentication keys (subscription registration), there is a recommended sequence of test case execution. This puts the IUT in a stable state which is maintained in some cases by post-ambles:

- 1) perform test case N_510 which provides a cross-check on the PICS as completed by the manufacturer and the feature/procedure conditional dependencies;
- 2) perform test cases which explicitly require the IUT not to be initialised e.g. emergency call request shall be allowed at an FT even when the FT does not know the PT [N_633];
- 3) perform on-air subscription registration- to store identities in test system and IUT [N_707];
- 4) perform key allocation- to store the authentication key (UAK) within the test system [N_710];
- 5) perform test cases which exercise mandatory elementary procedures- i.e. are used regularly inside other test cases e.g. authentication;
- 6) perform all other test cases in any order as long as the verdict is pass or inconclusive;
- 7) if get test case fail perform special test case to re-initialise the IUT and test system [N_500] and then 6).

The stable state of the IUT does not include maintaining the storage state of the test system and IUT. This means that the test system stores all that is given to it. If a particular test case requires a stable storage state then terminate access rights can be used as a preamble.

9 PAP security requirements

DECT equipment contains some security codes and algorithms which need full access protection (type A) and others where authorised access to the user or the system is needed (type B). This clause gives details of the access protection requirements and methods to verify that proper access control measures have been taken by the manufacturers.

The following table summarises the access control requirements:

Table 10: Access control protection type classification

Item Number	Code/Algorithm	ETS 300 175-7 [7] reference	Access control protection type required
1.	IPEI	-	According to TBR 6
2.1	UAK	6.2.1.1	1. Over the air key allocation- according to ETS 300 175-7 [7], subclause 6.5.6.2
2.2			2. User authorised manual entry - type B
3.	UPI	6.2.1.3	User authorised manual entry - type B
4.	AC	6.2.1.2	User authorised manual entry - type B
5.	DSAA	4.5.3	Full protection - type A
6.	DSC	4.5.4	Full protection - type A

9.1 Manufacturers declarations for full access protection (type A)

- 1) The manufacturer declares that he has used all reasonable endeavours to ensure that the security code/algorithm cannot be electrically changed once initially programmed.
- 2) The manufacturer declares that he takes the necessary measures to ensure that the technical knowledge for changing the security code/algorithm will remain securely under his control.

9.2 Manufacturers declarations for authorised access protection (type B)

- 1) The manufacturer declares that he has used all reasonable endeavours to ensure that either the security code cannot be electrically changed once initially programmed, or if it can be changed, suitable encryption or secure password techniques have been adopted to prevent unauthorised re-programming of the security code.
- 2) The manufacturer declares that he takes the necessary measures to ensure that the technical knowledge for changing the security code will remain securely under his control.

10 PAP physical layer requirements

10.1 Normal Transmitted Power (NTP)

The following subclauses are additional requirements to TBR 6 [10], Clause 10, for PAP testing of transmitted power:

10.1.1 Verdict criteria for EUTs with an integral antenna

The NTP, as measured, shall be greater than 80 mW per simultaneously active transceiver at both nominal and extreme temperatures. The test method is described in TBR 6 [10] subclause 10.2.

10.1.2 Verdict criteria for EUTs with external antenna connection(s)

The NTP, as measured, shall be greater than 80 mW per simultaneously active transceiver at both nominal and extreme temperatures. The test method is described in TBR 6 [10] subclause 10.3.

10.2 RFP radio receiver sensitivity

The following text is an additional requirement to TBR 6 [10], subclause 13.1.3 item b), for PAP testing of receiver sensitivity:

"For RFP equipment being tested for PAP requirements (ETS 300 175-9 [9]), the LT shall be programmed to set its RF transmission to a power level such that - 86 dBm shall be present at the input of the EUT RFP receiver".

11 DAM testing

In order to perform testing of a PT with a DAM card (optional), the PT test suite shall be run after insertion, removal and then insertion of the DAM card at the IUT.

Annex A (informative): Test system assumptions

This annex describes the test system assumptions taken during development of the test suites.

A.1 General assumptions

A.1.1 Related to the SUT

- a) There shall be no difference between the System Under Test (SUT) model and the production model, i.e. no special direct access to network layer or other layers, for testing purposes, and no special test software will be required in the SUT other than test procedures mandated in ETS 300 175-3 [3], ETS 300 175-5 [5], and ETS 300 175-9 [9].
- b) Only external control of the SUT is allowed except by test messages in ETS 300 175-5 [5] whilst in test standby mode (for mode see ETS 300 175-3 [3]):
 - 1) PP SUT- test call back;
 - 2) PP SUT- auto answer and auto clear (off/on hook);
 - 3) FP SUT- optional: MM procedure invoke.
- c) The allowed external control types:
 - 1) when testing the PT, we have keypad sequences that are resident in application software and application timers for the mobility management entity. For the call control entity, we have:
 - on/off hook (call set-up, answer and clear);
 - dialling digits- en-bloc or piece-wise;
 - emergency call request;
 - detect two-way speech connection (at analogue speech path).
 - 2) when testing the FT, we have the network simulator and/or local network man-machine interface (e.g. operators console) and/or application timers for the Mobility Management (MM) entity. For the call control entity, we have:
 - on/off hook (call set-up, answer and clear);
 - ringing detect;
 - detect two-way speech connection (at analogue speech path).
 - 3) indirect via another procedure.

A.1.2 Related to the abstract test suite

- a) Non-deterministic approach: therefore test cases have to be capable of dealing with a number of different responses from the SUT due to lack of control of conditions within the SUT;
- b) Test cases applicable to a number of speech/network applications (e.g. PSTN and ISDN);
- c) Test coverage to ensure functional inter-operability;
- d) Test cases emulating PT or FT PAP network layer, i.e. taking into account all permissible state transitions from a network layer state;
- e) Optional parameters included in messages requested from SUT using above external control types and test messages to be left open i.e. shall not mandate inclusion or omission. Therefore the use of IMPLICIT_SEND is prohibited.

A.2 Lower tester assumptions

A.2.1 Physical layer

Two transceivers are required fulfilling the requirements defined in ETS 300 175-2 [2] except the requirement for:

- 1) transmit power. Any value sufficient to provide the required field strength at the SUT may be used.

NOTE: However, control of the transmit power in the LT will be required.

- 2) frequency stability of the DECT RF carriers shall be ± 10 kHz as measured according to the procedure described in I-ETS 300 176 [12].

A.2.2 MAC layer

All the MAC services required to support a PAP service as described in ETS 300 175-9 [9] and ETS 300 175-3 [3] are required. Two MAC instances are required.

A.2.3 DLC layer

All the DLC services required to support a PAP service as described in ETS 300 175-9 [9] and ETS 300 175-4 [4] are required.

A.2.4 Network layer

The only requirement on this layer is an implementation of the LCE. The TTCN emulates all the other functions (see figures A.2 and A.3).

A.2.5 LLME

Some control of the LLME is required in relation to the real effects tests i.e. testing of handover, RSSI and channel lists.

A.2.6 Executable software platform

A computing platform is required to run the executable test suite and interface with the DLC and MAC layers (see figure A.1). Logging of test cases and production of test reports are also required.

A.2.7 Executable software

Using the machine processable form of TTCN which is an ISO standard, translators exist to produce executable test suites. However, some additional software development will be required related to the DECT network layer encoding/decoding rules and the test system interfaces.

A.2.8 Control of paging channel

Control of MAC page broadcasts is required.

A.2.9 Ability to send MAC messages

In particular, the messages are required to initiate bearer handover and certain mobility management procedures resident in the FT. They are defined in ETS 300 175-3 [3] and ETS 300 175-5 [5].

A.2.10 Tone generator and detector

This is required to verify connection of the U-plane. A tone is injected into the mouthpiece at the LT and detected in the ear piece by the UT. Also a tone is injected into the mouthpiece at the UT and detected in the ear piece by the LT.

NOTE: Speech quality is tested in TBR 10 [11].

A.2.11 RF generator

This is used to jam slots during testing of handover and channel selection procedures. It requires slot synchronisation with the LT.

A.2.12 Coding/decoding machine

This is used to code/decode messages, information elements and fields to the LT TTCN entity. It also performs correct setting of the transaction identifier field during a transaction i.e. it overrides the corresponding field in the TTCN test suite when required according to the rules defined in Annex B, subclause B.2.1, item 5).

A.3 Upper tester assumptions when testing the PT

A.3.1 Tone generator and detector

This is required to verify connection of the U-plane. A tone is injected into the mouthpiece at the LT and detected in the ear piece by the UT. Also a tone is injected into the mouthpiece at the UT and detected in the ear piece by the LT.

NOTE: Speech quality is tested in TBR 10 [11].

A.3.2 Ringing detector

This could be electrical or could be handled by the human interface.

A.3.3 Human interface

A human is occasionally required to activate the keypad to make calls, initiate supplementary services or verify the display capability (if any).

A.4 Upper tester assumptions when testing the FT

A.4.1 Network simulator

This could be provided either by the manufacturer or the test house. It is connected to the IWU of the FT and used to simulate the attached network. It may, for example, emulate a national PSTN, ISDN or PABX. Equipment provided by the manufacturer may be used to invoke certain MM procedures as described in ETS 300 175-5 [5], e.g. terminate access rights and FT initiated.

NOTE: If the FT is integrated in a (switching) system, the network simulator is connected to that system rather than the FT. The manufacturer then has to indicate how signals sent or received by the network simulator are related to signals received or sent by the FT.

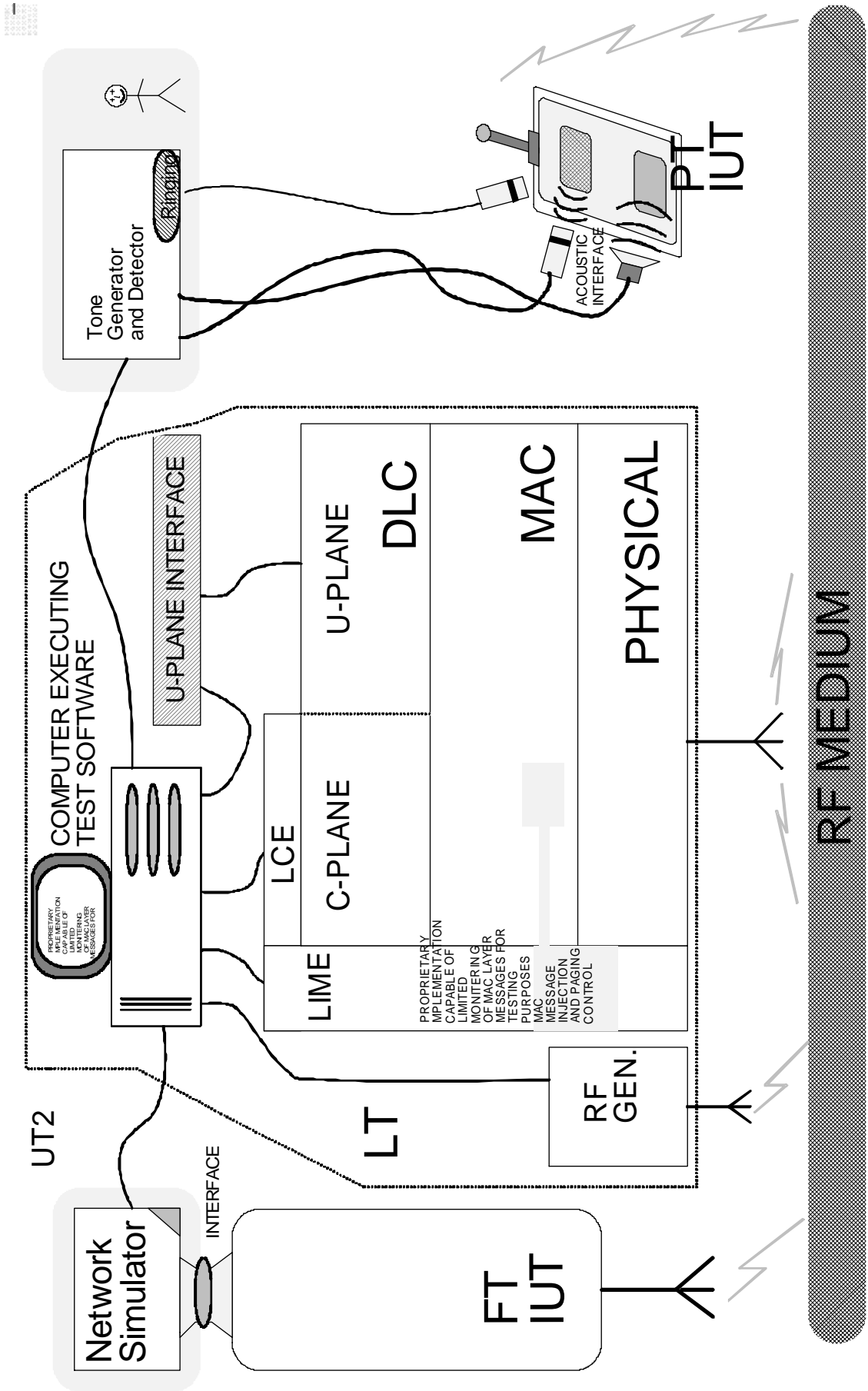


Figure A.1

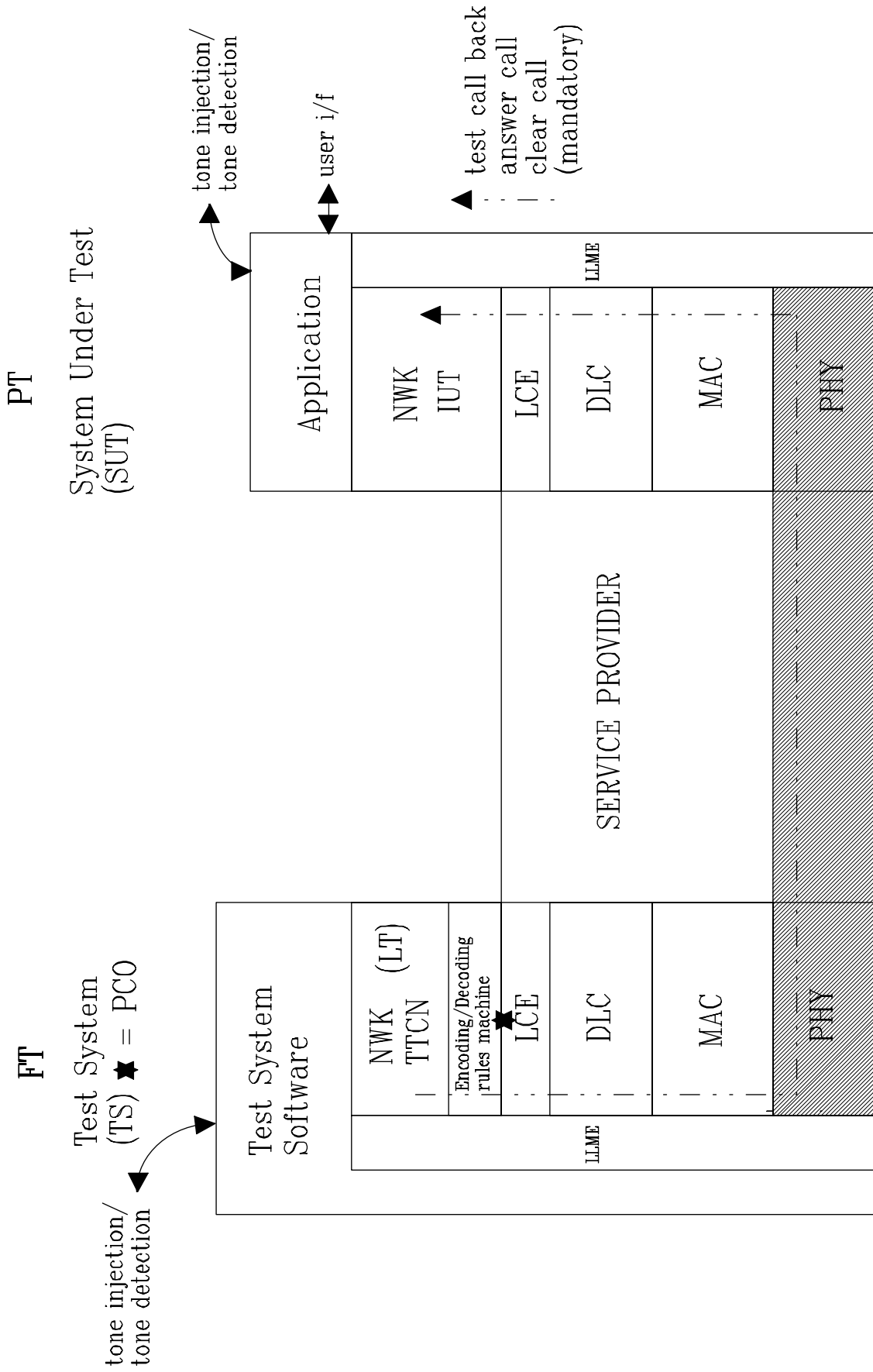


Figure A.2

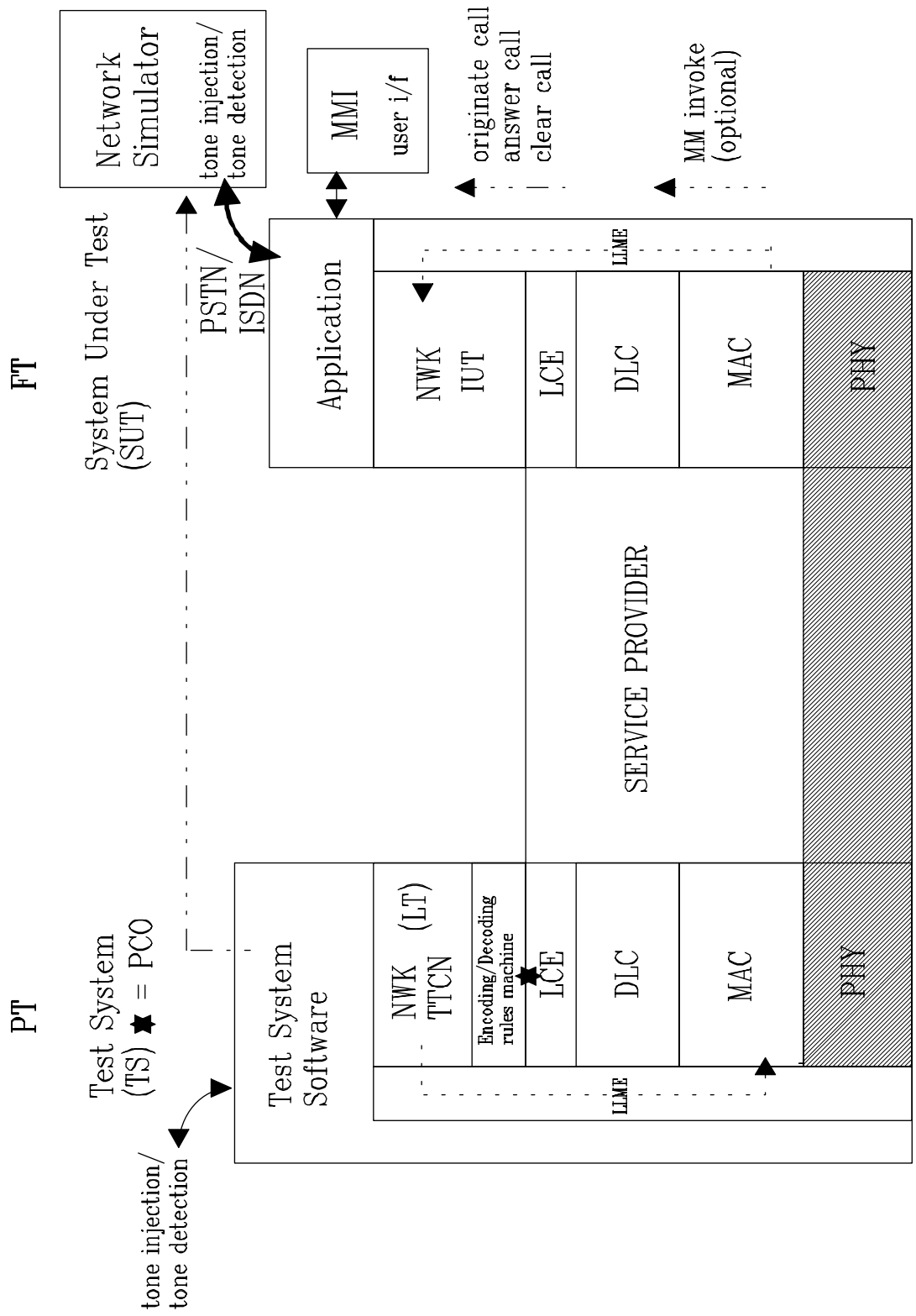


Figure A.3

A.5 Network layer assumptions

A.5.1 General

Codeset shift information elements as described in subclause 7.5 of ETS 300 175-5 [5] shall be ignored by the LT.

A.5.2 When the IUT is a PT

The PT (IUT) shall only request a proprietary authentication/ciphering algorithm if it has prior knowledge of the FT (LT). The test system (FT) shall be allocated a unique identity to ensure that the PT has no prior knowledge of it.

A.5.3 When the IUT is a FT

- 1) The IUT shall be assumed to be a static system i.e. no key element (cipher key) is ever sent to the IUT.
- 2) The IUT shall only send <<DURATION>> element indicating "infinite time " during testing. This is because the LT is unable to maintain a duration timer.
- 3) The FT(IUT) shall only request a proprietary authentication/ciphering algorithm if it has prior knowledge of the PT(LT). The test system (PT) shall be allocated a unique identity to ensure that the FT has no prior knowledge of it.
- 4) The FT shall not initiate the access rights terminate procedure independently during a PT initiated MM procedure.

A.5.4 Broadcast attributes coding

The broadcast attributes are a small set of network layer and DLC layer capabilities (jointly known as "higher layer capabilities" refer to ETS 300 175-5 [5] Annex F) that shall be broadcast regularly by the LT as part of the MAC layer broadcast service. Existing calls are unaffected. Operating mode of the terminal changes only when all DLC links are released. This matches the assumption of PMID derivation.

NOTE 1: These "higher layer" attributes comprise a total of 20 bits of information. These bits are combined with lower layer attributes in the MAC layer to form a single MAC layer broadcast message. Refer to ETS 300 175-3 [3].

Table A.1: Broadcast attributes coding for the LT

Bit number (NOTE 2)	Attribute ("1" means that service is available)	PAP attribute
a32	ADPCM/G.721 voice service	set to 1
a33	Public Access Profile supported	set to 1
a34	Non-voice circuit switched service	set to 0
a35	Non-voice packet switched service	set to 0
a36	Reserved for future use	set to 0
a37	Reserved for future use	set to 0
a38	Location registration supported	set to 1*
a39	SIM services available	set to 0
a40	Non-static Fixed Part	set to 0
a41	Reserved for future use	set to 1
a42	Reserved for future use	set to 1
a43	Reserved for future use	set to 1
a44	Access Rights requests supported	set to 1*
a45	External handover supported	set to 1
a46	Connection handover supported	set to 1
a47	Reserved for future use	set to 0

NOTE 2: The bit numbers refer to the bit positions in the MAC message.

NOTE 3: The value of any bit might change during normal operation.

NOTE 4: "*" indicates an attribute that may change during the course of testing.

A.6 MAC layer assumptions

When the LT is emulating a PAP FT for PP testing, the following capabilities need to be broadcast. See subclause 7.2.3.4.2 of ETS 300 175-3 [3].

If a capability is available then bit a_x shall be set to 1
 else (capability is not available) the bit a_x shall be set to 0.

Reserved bits shall be set to 0.

Table A.2: MAC layer capability coding for the LT

bit number	capability	PAP capability
a ₁₂	extended FP Info ($Q_H = 4$)	set to 0
a ₁₃	reserved	set to 0
a ₁₄	reserved	set to 0
a ₁₅	double slot	set to 0
a ₁₆	half slot	set to 0
a ₁₇	full slot	set to 1*
a ₁₈	frequency control	set to 0
a ₁₉	page repetition	set to 1*
a ₂₀	C/O set-up on dummy allowed	set to 1*
a ₂₁	C/L uplink	set to 0*
a ₂₂	C/L downlink	set to 0*
a ₂₃	basic A-field set up	set to 1
a ₂₄	advanced A-field set up	set to 0
a ₂₅	B-field set up	set to 0
a ₂₆	C _F messages	set to 0
a ₂₇	I _N _minimum_delay	set to 1
a ₂₈	I _N _normal_delay	set to 0
a ₂₉	I _P _error_detection	set to 0
a ₃₀	I _P _error_correction	set to 0
a ₃₁	multibearer connections	set to 0

NOTE 1: Bit a₁₉ indicates whether or not Idle_Locked PPs may enter the low duty cycle Idle_Locked mode.

NOTE 2: The bits a₂₁ and a₂₂ indicate only the capabilities of the FT to provide connectionless services in the uplink or downlink direction. They do not indicate if these services are active when the message is transmitted.

NOTE 3: "*" indicates a capability that may change during the course of testing.

Annex B (normative): Additional PAP requirements for inter-operability

B.1 IWU requirements

B.1.1 Overview

The following tables describe whether an MM procedure is allowed to be initiated in any CC state or whether a restriction applies. The restriction has been made in order to limit the complexity of the receiving side so that it is not mandated to understand MM messages in all CC states for the purpose of achieving inter-operability. Each procedure is indicated by its initiating message.

The restriction has two major implications also for the receiving side:

- 1) some MM messages will never be received in non-null CC states and if they are received they shall be ignored as if they were an unexpected message (see subclause 17.4.4 of ETS 300 175-5 [5]);
- 2) messages that could be received in all CC states shall be supported.

B.1.2 PT initiated procedures

B.1.2.1 All CC states

The PT is allowed to transmit and the FT is allowed to receive the following messages in all CC states.

All CC states
AUTH-REQ
LOCATE-REQ
DETACH
INFO-REQ
CIPHER-SUGGEST

B.1.2.2 ACCESS-RIGHTS-TERM-REQ and ACCESS-RIGHTS-REQ

The following applies to each message:

The PT shall be able to send and the FT shall be able to receive this message in the null CC state.

Optionally PT may be able to send and the FT may be able to receive this message in the active CC state.

If the PT supports this message in the active CC state and the FT does not, then this message shall be ignored by the FT.

In all other CC states, the PT shall not send and the FT need not receive this message.

B.1.3 FT initiated procedures

B.1.3.1 All CC states

The FT is allowed to transmit and the PT is allowed to receive the following messages in all CC states.

All CC states
ACCESS-RIGHTS-TERM-REQ
IDENTITY-REQ
TEMP-ID-ASSIGN
AUTH-REQ(PT)
AUTH-REQ(USER)
INFO-SUGGEST
CIPHER-REQ

B.1.3.2 KEY-ALLOCATION

The FT shall be able to send and the PT shall be able to receive this message in the null CC state.

Optionally FT may be able to send and the PT may be able to receive this message in the active CC state.

If the FT supports this message in the active CC state and the PT does not, then this message shall be ignored by the PT.

In all other CC states, the FT shall not send and the PT need not receive this message.

B.1.4 Display Inter-operability

For PAP, the <<TERMINAL CAPABILITY>> information element is allowed to have the following meanings:

- 1) Not applicable;
- 2) No display;
- 3) 0-9, *, # , space, a, b, c, d, and clear called numeric-plus;
- 4) As (2) with a-z and A-Z called alphanumeric;
- 5) Full DECT character set including display codes called full display;
- 6) Extended character sets called extended.
i.e. numeric is not allowed

No echoing of characters is allowed in the FT and therefore the PT would be responsible for displaying dialled digits (see figure B.1). All display information from the FT would be assumed to be additional information that the PT shall display in addition. The PT shall logically separate display information originating at the FT and PT. This could be achieved, for example, by one physical display and two logical displays or two physical displays and two logical displays. The key point is that display characters from the PT and FT shall not be simultaneously interleaved/mixed on the same physical display.

The {TERMINAL-CAPABILITY} message shall be extended as defined in table B.1.

Table B.1: New {TERMINAL-CAPABILITY} message structure

0	<<TERMINAL-CAPABILITY>>		Octet 1
	Length of contents (L)		Octet 2
0/1	Tone capability	Display capability	Octet 3
0/1	Extended character sets		Octet 3a
0/1	Echo parameters	N-REJ A-VOL	Octet 3b
0/1	Slot type capability		Octet 3c
0/1	Number of stored display chars (MS)		Octet 3d
0/1	Number of stored display chars (LS)		Octet 3e
0/1	Number of lines in (physical) display		Octet 3f
0/1	Number of characters per line		Octet 3g
0/1	Display behaviour field		Octet 3h
1	0000000, Spare		Octet 4

Octets 3d, 3e, 3f, 3g, 3h shall only be included if "Numeric", "Numeric-plus", "Alphanumeric", "Full display" or "Extended display capability" is indicated in Octet 3.

Existing rules and octet definitions shall not be affected. Refer to I-ETS 300 131 [26] subclause 7.4.4 for definitions of the contents of the octets 3d, 3e, 3f, 3g, 3h with the exception of using 8 bit fields as defined. 7 bit fields shall be used with corresponding decimal values. This is due to the use of the "extended bit" as declared in the DECT {TERMINAL-CAPABILITY} message. Values ranging from "0 - 255" in subclause 7.4.4 of I-ETS 300 131 shall in the DECT {TERMINAL-CAPABILITY} message range "0 - 127" and values ranging from "0 - 65535" range "0 - 16383". The FT may use the display information (octets 3d, 3e, 3f, 3g, 3h) in order to give better quality of service.

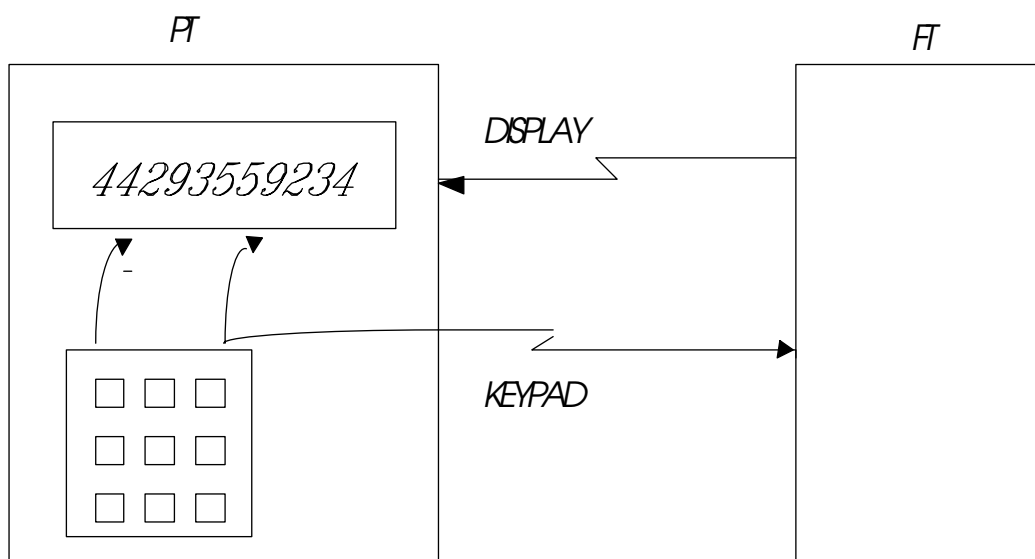


Figure B.1

B.2 Network layer requirements

B.2.1 General

- 1) Escape to proprietary and escape for extension information elements shall not be allowed.
- 2) An "unexpected message " error i.e. a syntactically correct message received in the wrong CC state, is checked prior to the check of the message details e.g. "mandatory information elements missing" error.
- 3) The term "restart" as used in ETS 300 175-5 [5] means that the associated timer shall be started from zero even if the timer has already stopped.
- 4) All reserved single bits shall be set to 0.
- 5) All transactions (PT or FT initiated) shall use the same transaction identifier (TI) flag value through a single transaction at both peers. A single transaction in this context is defined to be: a stand alone Mobility Management procedure or two simultaneous (nested) Mobility Management procedures e.g. authentication of PT in the middle of location registration procedure. In both cases the TI flag value shall remain constant at both peers until the whole MM transaction is terminated i.e. the peer which initiates a (nested) stand alone MM procedure in the middle of another MM procedure shall not be considered as the originator of that procedure in terms of the TI flag value.

For example: if a PT has initiated a location registration procedure and the FT authenticates the PT before terminating the location registration procedure, the TI flag value are set as follows:

START OF TRANSACTION

- a) the PT sends a {LOCATE-REQUEST} message to the FT with TI flag value set to "0";
- b) the FT sends {AUTHENTICATE-REQUEST} message to the PT with TI flag value set to "1";
- c) the PT sends a {AUTHENTICATE-RESPONSE} message to the FT with TI flag value set to "0";
- d) the FT sends a {LOCATE-ACCEPT} message to the FT with TI flag value set to "1";

END OF TRANSACTION

NOTE 1: This rule does not affect the management of MM procedures as defined in subclause 15.5 in ETS 300-175-5[5] i.e. only the setting of the TI flag value in terms of individual procedures is affected by redefinition of the word "transaction".

- 6) The maximum length of a NWK layer message shall be 252 octets. This equates to a maximum of 4 DLC segments.

NOTE 2: Maximum in this context means that the receiver shall be capable of receiving information up to, and including, this length. Implementation may support longer lengths but if used, interoperability is not guaranteed.

- 7) Subclause 17.6.3 of ETS 300 175-5 [5] shall also apply to mandatory information elements in COMS and CLMS messages with a length exceeding the allowed maximum value.

Subclause 17.6.4 of ETS 300 175-5 [5] shall also apply to mandatory information elements in MM messages with a length exceeding the allowed maximum value.

- 8) The following table defines the maximum length that shall be allowed for the listed information elements (see definition of "maximum " in 6)). The maximum length of all other information element relevant for the PAP are assumed to be defined implicitly.

Table B.2: Maximum length of information elements

Item no. in PICS	Name	Max. size (octets)	
13	Alphanumeric	35	
17	Called party number	35	
18	Called party subaddress	35	
19	Calling party number	36	
27	Feature indicate	36	
36	Multi-display	34	
37	Multi-keypad	34	

- 9) At the termination of all higher entities, except for the CC entity, the LLME shall always request link release to the LCE using release reason "maintain link release ". If the LCE receives a "maintain link release " and all higher entities (including the CC) have released their calls, the LCE shall maintain the link and shall start timer <LCE.05>. The LCE shall stop the timer <LCE.05> if a higher layer message is received from its own entities or the peer entities. If timer <LCE.05> expires, the link shall immediately be released using the "abnormal " release procedure.

<LCE.05> = maintain link release timer.

PT value = 3 seconds.

FT value = 3 seconds.

Start: All associated higher entities, except CC entity, have been released.

Stop: A new higher entity message is received.

B.2.2 Call control

- 1) The CC entity in the IUT shall allocate transaction identifier values starting from 0.
- 2) The FT shall support both piece-wise and en-bloc dialling. The PT shall support either piece-wise or en-bloc or both.
- 3) New: The <<called party number>> information element shall contain the complete called party number if implemented. The <<CALLED-PARTY-NUMBER>> information element can only be used once in one call. It can be sent in {CC-SETUP} or in {CC-INFO} in OVERLAP SENDING state (not both). The PT shall never send any more dialling information after it has sent the <<CALLED-PARTY-NUMBER>> information element (neither in <<CALLED-PARTY-NUMBER>> or <<KEYPAD>>).

The FT shall never send back {CC-SETUP-ACK} when it has received a <<CALLED-PARTY-NUMBER>> information element.

The <<KEYPAD>> with dialling info. can only be sent in {CC-INFO} in OVERLAP SENDING state and CALL PROCEEDING state as explicitly allowed in ETS 300175-5 [5]. The <<KEYPAD>> can be used also for other information than dialling information (Supplementary service etc.). The PT is not allowed to send <<CALLED-PARTY-NUMBER>> when the FT has detected dialling information in the <<KEYPAD>>

- 4) The PT shall support alerting on (patterns 0-7 and continuous) and alerting off as described in subclause 7.6.8 in ETS 300 175-5 [5].
- 5) The PT shall not initiate alerting prior of receiving the <<Signal>> information element during incoming call establishment. However, the PT may enter the "call received " state without receiving the << Signal>> information element i.e. alerting the user.

NOTE: To ensure alerting in the PT, the FT should send the <<Signal>> information element.

- 6) In the direction of FT to PT the values #8 (In-band information or appropriate pattern now available) and #9 (In-band information not available) in the <Progress description coding> of the << Progress indicator>> information element if included in the {CC-CONNECT} message are regarded as redundant in the PT i.e. the U-Plane shall be connected regardless of the value of the progress indicator.
- 7) The <<Single-keypad>> and <<Single-display>> information elements are not allowed to be used in any message.

B.2.3 Mobility management

B.2.3.1 General PT and FT

- 1) If supported, the authentication of the initiating side is mandatory for PT and FT initiated terminate access rights procedures and during ZAP increment at the PT.
- 2) If a previously ciphered connection fails during external handover, and the user is not notified, then the call shall be cleared.
- 3) A minimum of 1 cipher key (DCK), if ciphering is supported, and 1 authentication key (UAK) and authentication code (AC), shall be capable of being stored in the PT per subscription registration (IPUI/PARK pair). The key number field (corresponding to the 1st record in the associated EFs in the DAM) in these information elements shall always have the value 8 (in binary "1000 " with first bit indicating "IPUI/PARK ").
- 4) The default TPUI shall be derived from the allocated IPUI. If no IPUI has been allocated, the TPUI shall be derived from IPUI N.
- 5) The PT shall be capable of accepting a new subscription for the existing IPUI and PARK pair, in order to change the access rights (i.e. overwriting the existing PARK).
- 6) If an identity request is made for a TPUI, this implies a request for all the assigned TPUIs, but not the default TPUI.
- 7) Only derived cipher keys are allowed.
- 8) Access rights termination is only allowed for IPUI/PARK pairs i.e. the <<Fixed-id>> information element shall always be sent in the {ACCESS-RIGHTS-TERMINATE-REQUEST} message.
- 9) The <<Auth-type>> information element shall always be included in the {ACCESS-RIGHTS-REQUEST} message. The PT indicates the existence of an AC or a UAK to the FT by setting the respective authentication key type in the <<Auth-type>> IE. The authentication algorithms and key are interpreted to be accepted by the FT implicitly upon reception of the {ACCESS-RIGHTS-ACCEPT} message i.e. the received <<Auth-type>> IE is redundant information for the PT (an intermediate key allocation procedure may occur, in which case the PT a new UAK shall be allocated in the PT even it had indicated "UAK " in the {ACCESS-RIGHTS-REQUEST} message). The FT shall also always include the <<Location area>> information element in the {ACCESS-RIGHTS-ACCEPT} message (even with default location area).
- 10) The length of AC and UPI shall always be 32 bits when DSAA is used.
- 11) For both authentication directions (authentication of PT, authentication of FT), the keys stored in the PT shall always be used.

- 12) For the "defined time limit" coding of the <<DURATION>> information element, the time duration unit shall be:

1 unit = 2E12 MAC layer multi-frames.

NOTE: This is a change to ETS 300 175-5 [5] where the unit was defined as 2E16 multi-frames. The current assumption gives a minimum resolution of 655,36 seconds.

- 13) The mapping of AC and UPI shall be done as follows:

- a) the AC and UPI shall always have a length of 32 bits;
- b) each decimal digit (maximally 8), entered by the user, is translated into one semi-octet (BCD coded);
- c) the resulting string of semi-octets is padded with a number of leading "all ones " semi octets to achieve a total of 8 semi octets;
- d) the result is a bitstring of 32 bits.

Example:

A value of "091 " (3 decimal digits entered via keypad) is translated into a bitstring AC (or UPI) of the following value: "1111 1111 1111 1111 1111 0000 1001 0001 ".

B.2.3.2 General PT

- 1) The PT shall be capable of storing at least two subscriptions i.e. 2 pairs of IPUI and PARK and associated subscription data.
- 2) The standard time limit in <<DURATION>> shall be equal to MM_wait (see Annex A, Clause A.5 in ETS 300 175-5 [5]) unless otherwise specified.
- 3) The ARI or ARI + RPN sent in the {IDENTITY-REPLY} message shall be taken from the RFP to which the PT is currently locked.
- 4) The PT shall only understand and respond to the "inc", "txc" and "upc" bits of the <<auth-type>> information element when it is received in a {AUTHENTICATION-REQUEST} message.
- 5) The PT shall be mandated to support all codings of the <<Duration>> information element (applies only in procedures in which the <<Duration>> information element is mandated to be understood) and it shall be mandated to support the reception of the multi-frame number at the MAC layer.
- 6) The PT shall support the following window mechanism for dealing with the repeated nature of the multi-frame number (applied only when the duration time limit = "Defined time limit " received):

Upon the receipt of <<Duration>> information element with time limit = "Defined time limit " the PT allocates initially the following variables:

v_start = 8 bits (bits 12-19) of the latest received multi frame number from the FT.
v_length = "time duration " value from the received <<Duration>> information element.

The PT performs the following algorithm:

- a) receive multi-frame number from the FT (each 160 ms);
 - b) v_value = 8 bits (bits 12-19) of the latest received multi frame number from the FT;
 - c) v_check (Boolean) = ((v_value - v_start)MOD256) > v_length;
 - d) IF v_check = TRUE, THEN GOTO f) (duration timer has expired);
 - e) IF v_check = FALSE, THEN GOTO a) (duration timer has not expired);
 - f) Perform required action.
- 7) The PT shall only understand and respond to the "Y/N " bit of the <<Cipher-info>> information element when it is received in a {CIPHER-REQUEST} message.

- 8) If a received <<Duration>> information element has a value of "time limits coding " = "standard time limit " the PT shall start a timer <MM-wait>. Upon power off/on (if still running) this timer is regarded to be expired and the appropriate expiry procedure shall be invoked.

B.2.3.3 General FT

- 1) All ARI equipment classes other than Class A equipment, shall never send IPUI type N in the {ACCESS-RIGHTS-ACCEPT} message.
- 2) <<Cipher key number>> in the {CIPHER-SUGGEST} message shall only be assigned in the {AUTHENTICATION-REQUEST} (of PT) message (only allowed value: "1000 " B.
- 3) The FT shall be mandated to support the transmission of the multi-frame number at the MAC layer if the "defined time limit " coding of <<DURATION>> is implemented.
- 4) The FT shall ignore the received "inc", "txc" and "upc" bits of the <<AUTH-TYPE>> information element in all messages.

B.2.3.4 Location registration (refer to ETS 300 175-5, subclause 13.4.1)

B.2.3.4.1 Rule 1

- 1) This is the only mechanism to enable the PT to receive incoming calls. Detach is the only PT initiated method to disable the ability to receive incoming calls.

NOTE: The FT may initiate and the PT may receive incoming calls without a location registration procedure being performed. The initiation of the location registration procedure (PT initiated) is dependent of the value of call attribute a_{38} broadcast by the FT i.e. if set to "1" the PT initiates the location registration procedure e.g. upon change of location area. If set to "0", the PT does not initiate the location registration procedure except upon receipt of "Locate suggest " in the parameter retrieval procedure initiated by the FT.

- 2) The PMID shall not be recalculated during connection handover, irrespective of whether it is to a new LA or not.
- 3) During location registration, the <<fixed identity>> information element shall always include the ARI+RPN.

The location registration procedure shall always use (new) PARIs (RFPIs) with regard to the initiation of the procedure (in association to stored LALs in the PT). The old <<Fixed-id>> information element sent from the PT to the FT shall always be the (old) PARI (derived from the RFPI).

- 4) The "standard time limit " for this procedure is timer MM-wait.
- 5) Location registration shall be performed regardless if the system has been accessed via a PARI, SARI or a TARI. In the case TARI is being used, the location registration shall be initiated immediately after a TARI supported confirmation at the MAC layer has been received by the PT.

B.2.3.4.2 Rule 2

When a PT moves to a new location area it shall always delete the old assigned TPUI and perform location registration.

NOTE 1: The FT may or may not assign an individual TPUI as a result of this procedure.

NOTE 2: If the PT moves out of a LA but not into a new LA, the current individual assigned TPUI remains valid, as long as the indicated <<Duration>> element timer has not expired with the exceptions indicated in subclause B.2.3.4.5.

B.2.3.4.3 Rule 3

If a TPUI is not assigned as part of the location registration procedure including a <<Duration>> and the duration expires the PT shall:

- 1) do location registration;
- 2) if no new TPUI is assigned (during the location registration) the PT shall use the default TPUI to receive incoming calls/pages.

B.2.3.4.4 Rule 4

If a TPUI is assigned with a <<Duration>> during location registration procedure the PT shall not do location registration until this timer has expired unless the LA has changed or If the lock limit codings in the <<Duration>> information element is set to "Temporary user limit " according to the rules indicated in subclause B.2.3.4.5. When the duration timer expires the PT shall:

- 1) delete the old assigned TPUI;
- 2) do location registration;
- 3) if no new TPUI is assigned (during the location registration) the PT shall use the default TPUI to receive incoming calls/pages.

NOTE 1: The expiry of <<DURATION>> in this case is used to regulate the number of location registration initiations by the PT and to simplify TPUI administration in the fixed network.

NOTE 2: See Annex B, subclause B.2.3.4.2 concerning change of LA.

B.2.3.4.5 Rule 5

If the PT enters an unlocked state to the current PARI and the lock limit codings in the <<Duration>> information element is set to "Temporary user limit " and the timer T601 has expired during an unlocked state to the (current) PARI the <<Duration>> timer value for "defined time limit " or "standard time limit " given during the previous location registration procedure shall be interpreted as expired i.e. the PT shall perform location registration when locking again to any system.

If the PT locks to the (current) PARI before the expiry of T601, the T601 shall be stopped and the normal rules for "defined time limit " or "standard time limit" shall be applied.

B.2.3.5 Detach interpretation

This means that FT shall not send any further paging messages for incoming calls to the PT that has detached.

The PT may stop listening for pages.

B.2.3.6 TPUI assignment

B.2.3.6.1 Rules

All the rules below associated to timers <<Duration>> are only applied if the PT has the capability to understand the <<Duration>> information element in the temporary identity assignment procedure.

- 1) A TPUI assigned in any CC state shall be stored by the PT. Only one individual assigned TPUI shall be stored per subscription i.e. any new assignments of an individual assigned TPUI overwrites an existing individual assigned TPUI.
- 2) The PT shall not update its PMID until the current DLC link is released. It may continue with the current call using the existing PMID, including for example any further MM and CC activity. When the DLC link is released the PT shall update its PMID.
- 3) When powered off, an assigned TPUI shall be deleted if the time limit in <<Duration>> information element: is set to "Standard time limit ". Upon power up the default TPUI shall be used.
- 4) An assigned TPUI shall be stored indefinitely (even if when powered-off) except if:
 - a) time limit = "defined time limit " used in <<Duration>> expires or has expired upon power up in which cases the TPUI shall be deleted and the default TPUI shall be used;
 - b) time limit = "standard time limit " used in <<Duration>> expires (or upon power down) in which case the TPUI shall be deleted and the default TPUI shall be used;
 - c) time limit = erase in <<DURATION>> in which case the assigned TPUI shall be deleted and the default TPUI shall be used;
 - d) if the received <<location area>> information element is different from the stored one (associated to the TPUI) during temporary identity assignment or during location registration procedure in which case the assigned TPUI shall be deleted and the default TPUI shall be used until a new assigned TPUI is received;
 - d) see Annex B, subclause B.2.3.4.2.
- 5) The LCE-PAGE-REJECT message shall not be used to delete an assigned TPUI.
- 6) If the PT enters an unlocked state to the current PARI, and the lock limit codings in the <<Duration>> information element is set to "Temporary user limit " and the timer T601 has expired during an unlocked state to the (current) PARI the <<Duration>> timer value for "defined time limit " or "standard time limit " given during the previous TPUI assignment or location registration procedure (if TPUI assigned) shall be interpreted as expired and the PT shall delete the assigned TPUI and use the default TPUI;

If the PT locks to the (current) PARI before T601 expires, T601 shall be stopped and the normal rules for "defined time limit " or "standard time limit" shall be applied. "

B.2.3.7 Negotiation of authentication and ciphering algorithms

- 1) For PAP, if a non-DECT algorithm (i.e. GSM or proprietary) is proposed in the first request, a second attempt with the DECT standard (DSAA and/or DSC) shall be mandated immediately if rejected by the receiving side, even if the rejection does not include the <<reject reason>> element. This ensures inter-operability for mixed algorithm PAP equipment.
- 2) The PT shall only request the GSM authentication algorithm if the FT broadcasts "SIM services available".

B.2.3.8 External handover (if implemented)

The PT shall be capable to send the INFO-REQUEST message and to receive the INFO-ACCEPT and the INFO-SUGGEST message from the FP. Depending of the received information it shall be capable to perform either a forced or a voluntary external handover procedure. The PT is not mandated to keep up two simultaneous links to two systems, nor is it mandated to try a connection re-attempt to the originated system to access external H/O specific information, if so requested by the new (target system).

The FP_1 (originated system) shall be capable of receiving the INFO_REQUEST message and to send the relevant external specific parameters to the PT in the INFO_ACCEPT or in the INFO-SUGGEST message.

FP_2 (target system) shall be capable to receive the CC-SET-UP message with the relevant external hand over specific parameters and, if connected to the originating system, it shall be capable of accepting the call from the PP and switching the call in the fixed network accordingly from FP_1 to FP_2.

B.2.4 SS

B.2.4.1 General

For queue management the component coding in <<feature indicate>> information element "queue entry request" shall be understood as follows:

Value 0 is not allowed. Value 1 indicates "next in queue".

The {FACILITY} message shall only be used for call independent supplementary services. All call related supplementary services shall be invoked and responded to using {CC_INFO} messages. This further clarifies Clause 10 of ETS 175-5 [5].

B.2.4.2 Allowed protocols in CISS

The keypad protocol is allowed in CISS.

B.2.4.3 Forced re-connection

This subclause defines what is meant by forced re-connection. The forced re-connection is an optional feature that when implemented at the FT, it monitors a held call (i.e. the call for which a {HOLD} message was received and to which a {HOLD_ACKnowledge} reply was sent) for an unspecified length of time, and within which if the sending entity of the {HOLD} message (PT) has not initiated a call retrieve procedure then the FT automatically retrieves the held call and issues a {RETRIEVE} message to the PT. The PT shall reply with a {RETRIEVE-ACK} or a {RETRIEVE-REJECT}. In both cases the FT does nothing to the already retrieved call.

Since the hold and retrieve procedures are bi-directional, the PT may support the above defined forced re-connection procedure as well using an appropriate context switch (replace FT references with PT and PT references with FT) for the above definition.

B.2.5 COMS

During the course of the PAP test specification development some clarification was sought on the COMS specifications. The following itemises the same and shall override portions of the existing text on COMS in ETS 300 175-5 [5].

B.2.5.1 Identities to be used in a COMS set-up message

The {COMS-SET-UP} message shall contain the IPUI information in the <portable-identity> information element and ARI in the <<Fixed-identity>> information element.

B.2.5.2 IWU attributes to be used in a COMS set-up message

The <<IWU-attributes>> information element allowed in a {COMS-SET-UP} message for PAP application is as follows:

Bit:	8	7	6	5	4	3	2	1	Octet:
	0	<< IWU ATTRIBUTES >>							1
	Length of Contents (L)								2
	1	Coding Std.		Info. Transfer Capability					3
	1	Negotiation indicator		External Connection type					4
	0/1 ext	Trans mode		Information Transfer rate					5
	0/1 ext	Unit rate		Rate Multiplier					5a
	0/1 ext	Structure		Config		Estab.			5b
	0/1 ext	Symm		Info. Trans. Rate. (Dest=>Originator)					5c
	1	Unit rate		Rate Multiplier (Dest=>Originator)					5d
	0/1 ext	0	0	NOTE 5 User protocol ID					6
	0/1 ext	1	1	NOTE 5 L3 protocol ID					7
	0/1 ext	1	0	NOTE 5 L2 protocol ID					8

Figure B.2: Inter-working attributes information element

Coding standard (octet 3)

7 6	Meaning
0 0	DECT standard coding

Information transfer capability (octet 3)

5 4 3 2 1	Meaning
0 1 0 0 0	Unrestricted digital information

Negotiation indicator (octet 4)

7 6 5	Meaning
0 0 0	Negotiation not possible

External connection type (octet 4)

4 3 2 1	Meaning
0 0 0 0	Not applicable

Transfer mode (octet 5)

7 6	Meaning
1 0	Packet mode

Information transfer rate (octet 5)

5 4 3 2 1	Meaning
0 0 0 0 0	Packet mode calls

To summarise the above definition:

- coding std = DECT std coding;
- information transfer capability = Unrestricted digital information;

- negotiation indicator = negotiation not possible;
- external connection type = all values;
- transfer mode = packet mode;
- information transfer rate = unspecified (Cs rates);
- omit octets 5b, 5c, and 5d (= symmetric, with SDU integrity and low data rate), omit octets 6, 7 and 8 as well.

B.2.5.3 Connection attributes to be used in a COMS set-up message

The use of <<Connection-attributes>> is no longer optional, and shall be sent in a {COMS-SET-UP} message. The allowed values for this information element is as follows:

Bit:	8	7	6	5	4	3	2	1	Octet:
	0 << CONNECTION ATTRIBUTES >>								1
	Length of Content (L)								2
	1	Symmetry			Connection identity				3
	0/1 ext	0	0	Target bearers P=>F direction				4	
	0/1 ext	0	1	Minimum bearers P=>F direction				4a	
	0/1 ext	1	0	Target bearers F=>P direction				4b	
	1	1	1	Minimum bearers F=>P direction				4c	
	0/1 ext	Slot size		MAC service				5	
	1	0	0	0	MAC service F=>P			5a	
	0/1 ext	CF chan. attributes		MAC packet lifetime				6	
	1	CF chan. atts F=>P		MAC packet lifetime F=>P				6a	

Figure B.3: Connection attributes information element

Symmetry

7 6 5	Meaning
0 0 1	Symmetric connection

Connection identity Coding (octet 3)

4 3 2 1	Meaning
0 0 0 0	Unknown (not yet numbered)
1 N N N	Advanced connection number NNN

Bearer definition coding (octet 4)

7 6	Meaning
0 0	Target number of bearers; P=>F direction

Number of bearers coding (octet 4)

5 4 3 2 1	Meaning
0 0 0 0 0	No U-plane

MAC slot size (octet 5)

7 6 5	Meaning
1 0 0	full slot

MAC service (octets 5)

4 3 2 1	Meaning
0 0 0 0	IN; minimum delay

CF channel attributes (octets 6)

7 6 5	Meaning	
0 0 0	CF never (CS only)	For minimum PAP.

MAC packet lifetime (octets 6)

4 3 2 1	Meaning	
0 0 0 0	Not applicable	

B.2.5.4 Data transfer method in COMS

All COMS messages are sent using numbered frames at the DLC.

The COMS data transfer method has been changed slightly. The sending entity on receiving an MNCO-INFO.req shall build and send the {COMS-INFO} as a numbered message, i.e. use DLC-DATA.req primitive. Further, NO TIMER WILL BE STARTED (the use of <COMS.01> timer has been discontinued). If the message is too large, it may be segmented using the <<segmented_info>> information element. A message shall only be segmented with respect to a single information element. This restriction is needed to keep message sizes to be reasonably small. If the message was segmented then each of the {COMS-INFO} message segment shall also be sent using the DLC-DATA.req primitive and in the correct segmented order.

At the receiving side, on receiving a {COMS-INFO} message, it should be examined for a <<segmented_info>> information element. If one exists then the COMS entity shall wait for additional segments and assemble the entire COMS message using the number of segments remaining field in <<the segmented_info>> information element. It is optional for the receiving entity to manage the COMS storage timer <COMS.00> as defined in Clause 11 of ETS 300 175-5 [5]. Having received the complete message the receiving entity shall reply with a {COMS-ACK} message also using the DLC-DATA.req primitive.

On receiving the {COMS-ACK} at the originating side of the COMS procedure, the acknowledgement shall be indicated to the IWU by the use of the MNCO-ACK.ind. This may be used at the IWU for flow control purposes.

B.2.6 CLMS

B.2.6.1 CLMS-FIXED

CLMS-FIXED messages shall only use extended format pages (long page at MAC).

B.2.6.2 CLMS-VARIABLE

- 1) Four (4) complete CLMS message segments, equating to 176 characters shall be supported (this corrects the number of CLMS segments from three to four in ETS 300 175-9 [9] subclause 6.1.4 to allow for correct operation).
- 2) ETS 300 175-9 [9] subclause 9.2.3, second paragraph should read:

"The FT shall support the CL_F channel."
- 3) The only mechanism for announcing the commencement of the connectionless downlink service (CLMS-VARIABLE), shall be the Broadcast Announce procedure, ETS 300 175-5 [5] subclause 14.3.2 and shall use a short format page message with a connectionless TPUI (as described in ETS 300 175-6 [6] subclause 6.3.3).

NOTE 1: This uses a 3 second delay after LCE-REQUEST-PAGE prior to transmission of the CLMS-VARIABLE message segments.

NOTE 2: If the FP broadcasts support of low duty cycle mode (i.e. page repetition bit), the MAC (BMC) page of the commencement of a connectionless downlink service shall be repeated for three multi-frames as given in ETS 300 175-3 [3] subclause 9.1.3.1.

- 4) The FP supporting this feature shall provide at least one dummy or connectionless bearer and shall broadcast the fixed part capabilities message with "c/o set-up on the dummy is forbidden" (a20=0) and "c/l downlink capabilities supported" (a22=1).
- 5) The FP before clearing down a dummy or connectionless bearer shall indicate the new dummy or connectionless bearer by using the MAC layer information "dummy or connectionless bearer position".

NOTE: Zero length page messages may be introduced if no short page messages from the higher layers are available.

- 6) The PP, supporting this feature, shall be locked to a dummy or c/l bearer when in idle locked mode, unless the dummy or c/l bearer is interfered with by other users.
- 7) The maximum DLC frame length FLEN for CL_F shall be 64 octets (not 72 as in ETS 300 175-4 [4] subclause 6.1.1) to ensure optimised fragmentation using maximum CLMS-VARIABLE message segments of 58 octets (see ETS 300 175-5 [5] subclause 12.3.2.1).
- 8) The portable identity information element shall be included in all CLMS-VARIABLE messages.
- 9) If the <<segmented_info>> information element is used, then it shall only permit message segmentation with respect to a single information element only.
- 10) The DLC connectionless procedures in ETS 300 175-3 subclause shall read:

9.5.2 MB-SAP

9.5.2.1 C-plane overview

All C-plane connectionless services shall interface with the MAC via the MB-SAP. The MB-SAP shall not be used to manage the underlying MAC connectionless services.

Every connectionless instance of LAPC+Lc (irrespective of the Portable part addressed) is associated to one or more MB SAPs. Each Lc fragment is then transmitted to the MAC layer using the procedure (and associated primitives) described in subclause 9.5.2.2.

9.5.2.2 C-plane service data procedures

The procedure for service data transfer via the MB-SAP shall be independent of the possible state of the underlying service.

Procedure A1: downlink data transfer: C-plane service data shall be duplicated (if necessary) and shall be submitted to the CL_S and/or CL_F logical channel of all indicated MB-SAPs, using a series of MAC-DOWN_CON-req primitives (one per TDMA frame).

NOTE 1: This mechanism provides no flow control. The number of DLC frame fragments shall be indicated in each MAC-DOWN_CON primitive using the "number of segments" parameter.

NOTE 2: The method of providing TDMA frame synchronisation between MAC and DLC is not specified.

Procedure A2: uplink data transfer: C-plane service data shall be submitted to the CL_S and/or CL_F logical channel of the MB-SAP, using the MAC-UP_CON-req primitive.

NOTE 3: This mechanism provides no flow control. The number of DLC frame fragments shall be indicated in MAC-UP_CON primitive using the "SDU length".

B.2.7 LCE

The only valid U-plane services within LCE-REQUEST-PAGE shall be: none, unknown and I_n _min_delay.

B.3 DLC layer requirements

- 1) The PT and FT shall support paging.
- 2) See subclause B.2.6.1.

B.4 MAC layer requirements

The FT shall be able to transmit and the PT shall be able to receive and understand Pt tail messages.

See subclause B.2.6.1.

B.5 Physical layer requirements

See Clause 10 of this ETS.

B.6 Broadcast attributes interpretation

The following table defines the characteristics of the LT (FP) and the associated rules for the IUT (PP) in "test stand by " and in "normal " operation.

Table B.3: Broadcast attributes interpretation by the IUT (PP)

BIT NUMBER	Interpretation	Comment
a32	If set to 1, PAP PT may make/receive calls. If set to 0, PAP-only PT shall not make/receive calls.	
a33	If set to 1, PAP protocol may be used. If set to 0, PAP protocol not supported.	
a34	May be ignored by the PT.	
a35	May be ignored by the PT.	
a36	May be ignored by the PT.	Reserved
a37	May be ignored by the PT.	Reserved
a38	If set to 1, location registration procedures shall be invoked by the PT If set to 0, location registration procedures shall not be invoked by the PT. Incoming calls shall be allowed.	
a39	May be ignored by the PT.	
a40	May be ignored by the PT.	
a41	May be ignored by the PT.	Reserved
a42	May be ignored by the PT.	Reserved
a43	May be ignored by the PT.	Reserved
a44	If set to 1, access rights procedure may be invoked by the PT. If set to 0, access rights procedure shall not be invoked by the PT.	
a45	If set to 1, external handover procedures may be initiated by the PT. If set to 0, external handover procedures shall not be initiated by the PT.	
a46	If set to 1, connection handover procedure may be performed by PT. If set to 0, connection handover procedure shall not be performed by PT.	
a47	May be ignored by the PT.	Reserved

Annex C (normative): Real effects test procedures

C.1 Introduction

This annex contains the procedural description of the tests in the Real Effects subgroups PAPP/RE and PAPF/RE. Since some of these tests cannot be described purely in TTCN due to the integrated nature of the tests i.e. radio test equipment is required as part of the LT, they have been described separately here. They have, however, been given test case names and test group names which can be found in the PT ATS and FT ATS, so that the appropriate test case selection expressions can be written. The contents of these "empty" TTCN test cases refer to this annex.

Every effort has been made to keep these Real Effects tests as practical and as simple as possible while verifying all of the key functional aspects of the MAC and DLC layers that have not been implicitly tested by the TTCN NWK layer tests.

When checking the values of the timers a total error of 5 % of the timer value is allowed. This includes an allowed implementation error plus the measurement uncertainty of the LT.

C.2 Test conditions

C.2.1 General

Unless otherwise stated, these tests shall take place in a radio environment where there are no other DECT equipment operating.

C.2.2 Test condition definitions

C.2.2.1 Turn on

A test system's RFP is said to be "turned on" if its RF transmit power is adjusted such that the signal strength at the IUT's receiver is at a nominal 40 dB above its radio frequency sensitivity limit as defined in ETS 300 175-2 [2].

C.2.2.2 Turn off

A test system's RFP is said to be "turned off" if its RF transmit power is adjusted such that the signal strength at the IUT's receiver is at least a nominal 20 dB below its radio frequency sensitivity limit as defined in ETS 300 175-2 [2].

C.2.2.3 Jam

A frequency channel is said to be "jammed" if an RF interferer is transmitting continuously on the same channel as the wanted signal. The RF interferer shall be a DECT-like interferer as described in I-ETS 300 176 [12] and an RF transmit power such that at the receiver of the IUT, the signal strength is approximately equal to that of the wanted signal.

C.3 PAPP/RE

C.3.1 PAPP/RE/Bearer Handover (BH)

C.3.1.1 Test case name: R_400

Test purpose: to check the basic operation of the PT's intra-cell bearer handover procedure using basic set-up.

Test set-up: One RFP is turned on in the LT.

Procedure:

- a) the LT commands the IUT to set-up a bearer using the "Force_transmit" test message with the following parameters:

HD = 0;
KP = 0;
- b) the LT commands the IUT to initiate bearer handover using the "Force_bearer_handover" test message;
- c) the LT releases the original bearer;
- d) the LT verifies the change of bearer position.

NOTE: The bearer handover procedure as defined in ETS 300 175-3 [3] is verified by the ability of the IUT to inter-operate with the LT during this test.

C.3.1.2 Test case name: R_401

Test purpose: to check the basic operation of the PT's inter-cell bearer handover procedure using basic set-up.

Manufacturer's declaration:

the manufacturer shall declare that the PT's inter-cell bearer handover procedure using basic set-up as described in ETS 300 175-3 [3] has been implemented.

C.3.1.3 Test case name: R_402

Test purpose to check that the number of bearer handover attempts in a time window of T202 is at most N201.

Test set-up: One RFP is turned on in the LT.

Procedure:

- a) the LT commands the IUT to set-up a bearer using the "Force_transmit" test message;
- b) the LT jams the currently occupied frequency channel;
- c) the LT shall start a timer (T202 - 5%) when the first bearer handover request is received;
- d) the LT rejects all bearer handover attempts;
- e) the LT checks that no more than N201 bearer handover set-up attempts arrive before (T202 - 5 %) expires.

C.3.2 PAPP/RE/Connection Handover (CH)

C.3.2.1 Test case name: R_403

Test purpose: to check the basic operation of the PT's intra-cell connection handover procedure.

Test set-up: One RFP is turned on in the LT.

Procedure:

- a) the IUT sets up a bearer via a normal call setup as described in test procedure N_100;

- b) the LT jams the currently used frequency channel (all slots for simplicity) in order to initiate bearer handover in the IUT;
- c) the LT rejects all bearer handover attempts;
- d) the LT waits for the IUT to initiate connection handover;
- e) the LT checks the U-plane by sending a tone in each direction along the acoustic path and verifies reception. See test step "connect_and_check_U_plane" in the PT ATS.

NOTE: The connection handover procedure as specified in ETS 300 175-4 [4] is verified by the ability of the IUT to inter-operate with the LT during this test.

C.3.2.2 Test case name: R_404

Test purpose: to check the basic operation of the PT's inter-cell connection handover procedure.

Test set-up: Two RFP's, RFP1 and RFP2, are generated by the lower tester and used. RFP1 and RFP2. RFP2 shall be slot synchronised to RFP1. Up to one dummy transmission per RFP shall be supported. RFP2's dummy bearer transmission shall be more than two time slots away from the active bearer on RFP1 (when present). RFP1 and RFP2 shall transmit Nt messages containing RFPIs where the only differences are within the RPN. At the beginning of the test RFP1 is turned on and RFP2 is turned off.

Procedure:

- a) the LT commands the IUT to set-up a bearer using the "Force_transmit" test message on RFP1;
- b) the LT turns on RFP2;
- c) the LT waits 30s;
- d) the LT turns off RFP1;
- e) the LT rejects all bearer handover attempts to RFP2 (if any);
- f) the LT waits for the IUT to initiate connection handover;
- g) the LT checks the U-plane by sending a tone in each direction along the acoustic path and verifies reception. See test step "connect_and_check_U_plane" in the PT ATS.

NOTE: The connection handover procedure as described in ETS 300 175-5 [5] is verified by the ability of the IUT to inter-operate with the LT during this test.

C.3.2.3 Test case name: R_405

Test purpose: to check the number of connection handover attempts in a time window of DL.05 does not exceed N_251.

Procedure:

- a) the IUT sets up a bearer via a normal call setup as described in test procedure N_100;
- b) the LT jams the currently used frequency channel (all slots for simplicity) in order to initiate bearer handover in the IUT;
- c) LT rejects all bearer handover attempts;
- d) LT waits for the IUT to initiate connection handover;
- e) LT starts timer (DL.05 + 5 %) and rejects all connection handover attempts;

- f) the LT checks that the IUT makes no more than N₂₅₁ connection handover attempts before the expiry of (DL.05 + 5 %).

C.3.2.4 Test case name: R_406

Test purpose: to check that during a time window of DL.06 following a successful handover attempt, no further handover attempts are made.

Procedure:

- a) the IUT sets up a bearer via a normal call setup as described in test procedure N₁₀₀;
- b) the LT jams the currently used frequency channel (all slots for simplicity) in order to initiate bearer handover in the IUT;
- c) LT rejects all bearer handover attempts;
- d) LT waits for IUT to initiate connection handover (involuntary);
- e) the LT accepts the connection handover attempt, then jams the new frequency channel being used (all slots for simplicity). Timer (DL.06 + 5 %) is started;
- f) the LT rejects all further connection handover attempts;
- g) if the IUT does not re-attempt any connection handover before the expiry of (DL.06 - 5 %) then the IUT meets this requirement.

C.3.3 PAPP/RE/Paging (PG)

The test procedures for the PG group are described in the TTCN test cases.

C.3.3.1 Test case name: R_410

Test purpose: to check that the IUT is able to set-up an incoming call using a short page with an individual assigned TPUI.

C.3.3.2 Test case name: R_411

Test purpose: to check that the IUT is able to set-up an incoming call using a full page with the IPUI.

C.3.3.3 Test case name: R_412

Test purpose: to check that the IUT is able to set-up an incoming call using a full page with an individual assigned TPUI.

C.3.3.4 Test case name: R_409

Test purpose: to check whilst the LT is broadcasting with "page repetition" set, that the IUT is able to set-up an incoming call using the default TPUI (optional for low duty cycle mode).

C.3.4 PAPP/RE/Other timers(OT)

C.3.4.1 Test case name: R_407

Test purpose: to check the value of the RFPI handshake timer, T201.

Test set-up: One RFP is turned on in the LT.

Procedure:

- a) the LT commands the IUT to set-up a bearer using the "Force_transmit" test message;
- b) LT transmits an incorrect RFPI with a correct CRC;
- c) LT starts timer (T201 + 5 %);
- d) LT checks for a "bearer release" from PT before timer expires;
- e) the LT checks that the PT stops transmitting two frames after having received the first "bearer release" message from the PT.

C.3.4.2 Test case name: R_413

Test purpose: to check timer T208 maximum time between reception of N_T messages in idle mode.

Test set-up: One RFP is turned on in the LT.

Procedure:

- a) the LT changes its RFPI to another value;
- b) the LT starts timer (T208 + 5 %);
- c) at time-out, the LT commands the IUT to set-up a bearer using the "Force_transmit" test message;
- d) if a bearer is not established then the IUT meets this requirement. This implies that the IUT is now in either idle_unlocked or active_unlocked state.

C.3.5 PAPP/RE/Other Counters(OC)

C.3.5.1 Test case name: R_408

Test purpose: to check the value of the MBC set-up re-attempt counter, N200.

Test set-up: One RFP is turned on in the LT.

Procedure:

- a) LT commands the IUT to set-up a bearer using the "Force_transmit" test message;
- b) when the LT receives the first "bearer request" message the LT starts timer (T200 - 5 %);
- c) LT does not confirm any received "bearer request" messages;
- d) LT checks that no more than N200 "bearer requests" are received before time-out;

C.4 PAPP/RE

C.4.1 PAPP/RE/Bearer Handover (BH)

C.4.1.1 Test case name: R_900

Test purpose: to check the basic operation of the FT's intra-cell bearer handover procedure.

Procedure:

- a) the IUT sets up a bearer via a normal call setup as described in test procedure N_600;

- b) the LT initiates bearer handover to the same RFP in the IUT where slot $\geq N+2$;
- c) the LT verifies the change of bearer position;
- d) the LT checks the U-plane by sending a tone in each direction along the acoustic path and verifies reception. See test step "connect_and_check_U_plane" in the FT ATS.

NOTE: The bearer handover procedure as described in ETS 300 175-3 [3] is verified by the ability of the IUT to inter-operate with the LT during this test.

C.4.1.2 Test case name: R_901

Test purpose: to check the basic operation of the FT's inter-cell bearer handover procedure.

Procedure:

- a) the IUT sets up a bearer via a normal call setup as described in test procedure N_600;
- b) the LT initiates bearer handover to a different RFP;
- c) the LT verifies the change of bearer position;
- d) the LT checks the U-plane by sending a tone in each direction along the acoustic path and verifies reception. See test step "connect_and_check_U_plane" in the FT ATS.

NOTE: The bearer handover procedure as described in ETS 300 175-3 [3] is verified by the ability of the IUT to inter-operate with the LT during this test.

C.4.1.3 Test case name: R_902

Test purpose: to check that the time that the FT maintains two bearers during handover is at maximum T203.

Procedure:

- a) the LT initiates bearer set-up on slot N to an RFP;
- b) LT initiates bearer handover to slot $\geq N+2$ on the same RFP;
- c) when the "other" message is received as part of the new bearer set-up procedure the LT starts timer (T203 + 5 %);
- d) check that FT releases the one of the bearers before the timer expires.

C.4.2 PAPF/RE/Connection Handover (CH)

C.4.2.1 Test case name: R_903

Test purpose: to check the basic operation of the FT's intra-cell connection handover procedure.

Procedure:

- a) the LT sets up a connection with a single RFP of the IUT;
- b) the LT initiates connection handover to the same RFP of the IUT;
- c) the LT checks the U-plane by sending a tone in each direction along the acoustic path and verifies reception. See test step "connect_and_check_U_plane" in the FT ATS, ETS 300 323-5 [23].

NOTE 1: The connection handover procedure is verified by the ability of the IUT to inter-operate with the LT.

NOTE 2: The LT ignores any "bearer handover information" coming from the IUT.

C.4.2.2 Test case name: R_904

Test purpose: to check the basic operation of the FT's inter-cell connection handover procedure.

Procedure:

- a) the LT sets up a connection with a single RFP of the IUT;
- b) the LT initiates connection handover to a different RFP of the IUT;
- c) the LT checks the U-plane by sending a tone in each direction along the acoustic path and verifies reception. See test step "connect_and_check_U_plane" in the FT ATS.

NOTE 1: The connection handover procedure is verified by the ability of the IUT to inter-operate with the LT.

NOTE 2: The LT ignores any "bearer handover information" coming from the IUT.

C.4.3 PAPF/RE/Other timers(OT)

C.4.3.1 Test case name: R_905

Test purpose: to check the value of the connection set-up timer, T200.

Test set-up: One PT is turned on in the LT.

Procedure:

- a) LT sends a "bearer request" message;
- b) LT checks that it receives the "other" message within (T200 + 5 %).

C.4.3.2 Test case name: R_915

Test purpose: to check the value of the RFPI handshake timer, T201.

Test set-up: One PT is turned on in the LT.

Procedure:

- a) the LT sets up a connection with the IUT;
- b) LT transmits an incorrect RFPI with a correct CRC;
- c) LT starts timer (T201 + 5 %);
- d) LT checks for a "bearer release" from IUT before timer expires;
- e) the LT checks that the IUT stops transmitting two frames after having received the "bearer release" message from the IUT.

C.4.4 PAFP/RE/Q1 and Q2 Bits (QB)

C.4.4.1 Test case name: R_916

Test purpose: to check that both bits are set to 0 whilst not for duplex bearer with connection oriented services (feature 32_b).

Test set-up: The LT turns on one PT.

Procedure:

- a) the IUT initiates bearer set-up to the LT for a connectionless downlink service (feature 32_b);
- b) the LT checks that the corresponding Q1 and Q2 bits are set to 0 by the IUT.

C.4.4.2 Test case name: R_917

Test purpose: to check that the RFP shall, on reception of Q1 = 1, change antenna for next associated RFP transmission.

This test is selected if antenna diversity is provided in the IUT and the IUT's RFP does not have knowledge of the optimum downlink transmission antenna obtained from simultaneous measurements of the last PT transmission including measurement as per subclause 8.3 of ETS 300 175-2 [2] on all provided antennas.

Test set-up: The LT turns on one PT.

Procedure:

- a) the LT initiates bearer set-up to an RFP;
- b) the LT sets Q1 = 1 in one transmitted A-field;
- c) the LT checks that an antenna change has taken place.

C.4.4.3 Test case name: R_918

Test purpose: to check that Q2 bit is set to 0 and Q1 is set to 0 when A field CRC corrupted.

Test set-up: the LT turns on one PT.

Procedure:

- a) the LT initiates bearer set-up to an RFP;
- b) the LT corrupts its A-field CRC in one transmitted A-field;
- c) the LT checks that the corresponding Q2 is set to 0 and Q1 is set to 0 by the IUT.

C.4.4.4 Test case name: R_919

Test purpose: to check that Q2 bit is set to 0 and Q1 is set to 1 when X-CRC field corrupted.

Test set-up: The LT turns on one PT.

Procedure:

- a) the LT initiates bearer set-up to an RFP;
- b) the LT corrupts its X-CRC field in one transmitted A-field;

- c) the LT checks that the corresponding Q2 is set to 0 by the IUT.

C.4.4.5 Test case name: R_920

Test purpose: to check that the IUT sets Q1 = 1 if it receives a Z-field failure and if Q2 is set to 1.

Procedure:

- a) the LT initiates bearer set-up to an RFP;
b) the LT corrupts its Z-field and sets Q2 =1 in one transmitted A-field;
c) the LT checks that the corresponding Q1 is set to 1 by the IUT.

C.4.4.6 Test case name: R_921

Test purpose: to check that the IUT provides an indication using Q1 and Q2 bits if it receives an S-field failure with 3 or more bit errors in bits s16 to s31.

Procedure:

- a) the LT initiates bearer set-up to an RFP;
b) the LT corrupts its S-field with 3 or more bit errors in bits s16 to s31;
c) the LT checks that either Q1 and Q2 are both set to 0 or Q1 and Q2 are both set to 1.

C.4.5 PAPF/RE/Broadcast (BR)

Test set-up for test cases R_906 to R_914: One PT in the LT shall be turned on. The LT's PT shall be in the idle-locked mode.

C.4.5.1 Test case name: R_906

Test purpose: to check that Q_T information is transmitted in every frame 8 (1 per multi-frame).

C.4.5.2 Test case name: R_907

Test purpose: to check that N_T information is transmitted in at least every frame 14 (minimum 1 per multi-frame).

C.4.5.3 Test case name: R_908

Test purpose: to check that N_T information is transmitted in frame 0, at least once every T205 (10) sec.

C.4.5.4 Test case name: R_909

Test purpose: to check that Q_T static system information is transmitted at least once every 8 multi-frames.

C.4.5.5 Test case name: R_910

Test purpose: to check that Q_T fixed part capabilities is transmitted at least once every 8 multi-frames.

C.4.5.6 Test case name: R_911

Test purpose: to check that once one or more SARIs are introduced into the FT, that within the Q_T information, the SARI list contents is transmitted at least once every 4 multi-frames.

C.4.5.7 Test case name: R_912

Test purpose: to check that once a SARI is introduced into the FT, that within the N_T information, the E bit is indicating "SARI list available".

C.4.5.8 Test case name: R_913

Test purpose: to check that once a TARI is introduced into the FT, that upon receipt of the TARI request message with the same TARI, the FT responds with a valid TARI message within T206 (10 frames).

C.4.5.9 Test case name: R_914

Test purpose: to check that within the Q_T information, the Multi-frame number is transmitted at least once every 8 multi-frames.

Annex D (informative): Test case example

D.1 CC example

Table D.1

Test case dynamic behaviour					
Test Case Name: N_101 Group: PAPP/PR/BV/CC/OC Purpose: to test the IUT's CC-state transition from the T-00 state to T-10 state for an outgoing normal call setup using en_bloc dialling. Default: else_fail. Comments: The default behaviour will catch both inopportune CC events as well as general invalid behaviour.					
No	L	Behaviour description	Constraints reference	V	C
1		+preamble			
2		+call_me_back_normal_en_bloc			
3	A1	C?CC_SETUP(v_cpn:=IS_PRESENT(CC_SETUP.called_party_number), v_ccstate:=1, v_FT_orig:=FALSE)	cc_setup_03		1
4		[v_cpn=FALSE]			
5		C!CC_SETUP_ACK (v_ccstate:=2) START F_CC_01	cc_setup_ack_04cc_in		2
6	A2	C?CC_INFO START F_CC_01	fo_06		
7		C!CC_CONNECT (v_ccstate:=10) CANCEL F_CC_01	cc_connect_01	(P)	3
8		+connect_and_check_U_plane			
9		+postamble			
1011		?TIMEOUT F_CC_01			
1213		C!CC_RELEASE_COM (v_ccstate:=0)	cc_release_com_07	F	
1415		+other_valid_pt_in_cc			
1617		GOTO A2			
1819		[v_cpn=TRUE]			
		C!CC_CONNECT (v_ccstate:=10)	cc_connect_01		
		+connect_and_check_U_plane		(P)	3
		+postamble			
		+other_valid_pt_in_cc			
		GOTO A1			
Detailed comments: This test case requires <<called party number>> in CC_SETUP or in a CC_INFO in state T-02. A check is also made on the time to receive the CC-INFO message with a called party number.					
1) Call initiated; 2) Overlap sending; 3) Active.					

Table D.2

TTCN PDU type definition		
PDU name: CC_SETUP		
PCO type: LCE_SAP		
Comments:		
Field name	Field type	Comments
transaction_id_flag	BITSTRING[1]	
transaction_id_val	BITSTRING[3]	
protocol_discriminator	BITSTRING[4]	
message_type	BITSTRING[8]	
portable_id_ipuip	PORTABLE_ID_IPUIP	
portable_id_ipei	PORTABLE_ID_IPEI	
fixed_id_c	FIXED_ID_C	
basic_service	BASIC_SERVICE	
IWU_attributes	IWU_ATTRIBUTES	
call_attributes	CALL_ATTRIBUTES	
connection_attributes	CONNECTION_ATTRIBUTES	
cipher_info	CIPHER_INFO	
connection_id	CONNECTION_ID	
facility	FACILITY	
progress_indicator	PROGRESS_INDICATOR	
display	DISPLAY	
keypad	KEYPAD	
signal	SIGNAL	
feature_activate	FEATURE_ACTIVATE	
feature_indicate	FEATURE_INDICATE	
network_parameter	NETWORK_PARAMETER	
terminal_capability	TERMINAL_CAPABILITY	
end_to_end_compatab	END_TO_END_COMPATIBILITY	
rate_parameters	RATE_PARAMETERS	
transit_delay	TRANSIT_DELAY	
window_size	WINDOW_SIZE	
calling_party_number	CALLING_PARTY_NUMBER	
called_party_number	CALLED_PARTY_NUMBER	
called_party_subaddr	CALLED_PARTY_SUBADDR	
sending_complete	BITSTRING[8]	
iwu_to_iwu	IWU_TO_IWU	
iwu_packet	IWU_PACKET	
Detailed comments:		

Table D.3

TTCN PDU constraint declaration		
Constraint name:	cc_setup_03	
PDU type:	CC_SETUP	
Derivation path:		
Comments:	sent by the transaction originator. LT Rx. optional called party number. used in the test case	
Field name	Field value	Comments
transaction_id_flag	"0 "B	1
transaction_id_val	"000 "B	
protocol_discriminator	"0011 "B	
message_type	"0000101 "B	
portable_id_ipuip	portable_id_ipuip	2
portable_id_ipei	OMIT	
fixed_id_c	fixed_id_c_ari	3
basic_service	basic_service_01	4
IWU_attributes	OMIT	
call_attributes	OMIT	
connection_attributes	OMIT	
cipher_info	cipher_info_00 IF_PRESENT	
connection_id	OMIT	
facility	facility_00 IF_PRESENT	
progress_indicator	OMIT	
display	OMIT	
keypad	(single_keypad_00,multi_keypad_00) IF_PRESENT	
signal	OMIT	
feature_activate	feature_activate_00 IF_PRESENT	
feature_indicate	OMIT	
network_parameter	OMIT	
terminal_capability	terminal_capability_00 IF_PRESENT	
end_to_end_comptab	OMIT	
rate_parameters	OMIT	
transit_delay	OMIT	
window_size	OMIT	
calling_party_number	calling_party_number_00 IF_PRESENT	
called_party_number	called_party_number_00 IF_PRESENT	
called_party_subaddr	called_party_subaddr_00 IF_PRESENT	
sending_complete	"10100001 "B IF_PRESENT	
iwu_to_iwu	iwu_to_iwu_00 IF_PRESENT	
iwu_packet	iwu_packet_00 IF_PRESENT	
Detailed comments:	1) from transaction originator; 2) IPUI type P; 3) ARI class C; 4) normal call setup and default setup attributes.	

Table D.4

Structured type definition		
Type name: PORTABLE_ID_IPUIP		
Comments:		
Element Name	Type Definition	Comments
var_ie	BITSTRING[1]	
id	BITSTRING[7]	
length	BITSTRING[8]	
f1	BITSTRING[1]	
type	BITSTRING[7]	
f2	BITSTRING[1]	
length_id_val	BITSTRING[7]	
put	BITSTRING[4]	
poc	BITSTRING[16]	
acc	BITSTRING[80]	
Detailed comments: Fill bits are dealt with by DECT encoding/decoding rules machine.		

Table D.5

Structured type constraint declaration		
Constraint name: portable_id_ipuip		
Structured type: PORTABLE_ID_IPUIP		
Derivation path:		
Comments: LT tx and rx		
Element name	Element value	Comments
var_ie	"0 "B	
id	"0000101 "B	
length	INT_TO_BIT(15,8)	
f1	"1 "B	
type	"0000000 "B	
f2	"1 "B	
length_id_val	INT_TO_BIT(100,7)	
put	"0010 "B	
poc	INT_TO_BIT(c_ipuip_poc,16)	
acc	INT_TO_BIT(c_ipuip_acc,80)	
Detailed comments:		

Annex E (informative): Bibliography

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