

**Digital Enhanced Cordless Telecommunications (DECT);
Common Interface (CI) Test Case Library (TCL);
Part 2: Abstract Test Suite (ATS) for Medium Access Control
(MAC) layer - Portable radio Termination (PT)**



Reference

REN/DECT-040131-2 (4loi0100.PDF)

Keywords

DECT, MAC, terminal, testing, ATS, TTCN

ETSI

Postal address

F-06921 Sophia Antipolis Cedex - FRANCE

Office address

650 Route des Lucioles - Sophia Antipolis
Valbonne - FRANCE
Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16
Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

Internet

secretariat@etsi.fr
<http://www.etsi.fr>
<http://www.etsi.org>

Copyright Notification

No part may be reproduced except as authorized by written permission.
The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 1998.
All rights reserved.

Contents

Intellectual Property Rights.....	5
Foreword	5
1 Scope.....	6
2 References.....	6
3 Definitions and abbreviations	7
3.1 Definitions	7
3.2 Abbreviations.....	7
4 Abstract Test Method (ATM).....	8
4.1 Description of ATM.....	8
4.2 Test strategy.....	9
5 Untestable Test Purposes (TP).....	10
6 ATS conventions (only applicable for PTC LT_TC)	10
6.1 Naming conventions	10
6.1.1 Declarations part	10
6.1.1.1 General	10
6.1.1.2 Test suite operations definition.....	10
6.1.1.3 Test suite parameter declarations.....	11
6.1.1.4 Test case selection expression definition.....	11
6.1.1.5 Test suite constant declarations	11
6.1.1.6 Test suite variable declarations.....	11
6.1.1.7 Test case variable declarations	11
6.1.1.8 Timer declarations	11
6.1.1.9 ASP type definitions	12
6.1.1.10 PDU type definitions	12
6.1.1.11 Co-ordination Message (CM) type definitions	12
6.1.1.12 Alias definitions.....	12
6.1.2 Constraints part	12
6.1.2A General.....	12
6.1.3 Dynamic part.....	12
6.1.3.1 General	12
6.1.3.2 Test Case (TC) identifier	13
6.1.3.3 Test step identifier	13
6.1.3.4 Default identifier.....	13
6.1.3.5 Label identifier	13
6.1.3.6 ATS abbreviations	13
6.2 Implementation conventions	14
6.2.1 Declaration part.....	14
6.2.2 Constraint part.....	14
6.2.3 Dynamic part.....	15

Annex A (normative):	Abstract Test Suite (ATS), PTC LT_TC	16
A.1	The TTCN Graphical form (TTCN.GR)	16
A.2	The TTCN Machine Processable form (TTCN.MP)	16
Annex B (normative):	Specification of PTC LT_MAC	17
B.1	General requirements	17
B.2	Additional requirements	17
Annex C (normative):	Partial PIXIT proforma for DECT MAC	20
C.1	Identification summary	20
C.2	ATS summary	20
C.3	Test laboratory	20
C.4	Client identification	21
C.5	SUT	21
C.6	Protocol layer information	21
C.6.1	Protocol identification	21
C.6.2	IUT information	22
Annex D (normative):	Protocol Conformance Test Report (PCTR) proforma for DECT MAC	23
D.1	Identification summary	23
D.1.1	Protocol conformance test report	23
D.1.2	IUT identification	23
D.1.3	Testing environment	24
D.1.4	Limits and reservation	24
D.1.5	Comments	24
D.2	IUT Conformance status	24
D.3	Static conformance summary	25
D.4	Dynamic conformance summary	25
D.5	Static conformance review report	25
D.6	Test campaign report	26
D.7	Observations	26
	Bibliography	27
	History	28

Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in SR 000 314: "*Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards*", which is available **free of charge** from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<http://www.etsi.fr/ipr> or <http://www.etsi.org/ipr>).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Foreword

This European Standard (Telecommunications series) has been produced by ETSI Project Digital Enhanced Cordless Telecommunications (DECT), and is now submitted for the Public Enquiry phase of the ETSI standards Two-step Approval Procedure.

The present document is part 2 of a multi-part EN covering the Common Interface (CI) Test Case Library (TCL), as identified below:

- Part 1: "Test Suite Structure (TSS) and Test Purposes (TP) for Medium Access Control (MAC) layer";
- Part 2: "Abstract Test Suite (ATS) for Medium Access Control (MAC) layer - Portable radio Termination (PT)";**
- Part 3: "Abstract Test Suite (ATS) for Medium Access Control (MAC) layer - Fixed radio Termination (FT)";
- Part 4: "Test Suite Structure (TSS) and Test Purposes (TP) - Data Link Control (DLC) layer";
- Part 5: "Abstract Test Suite (ATS) - Data Link Control (DLC) layer";
- Part 6: "Test Suite Structure (TSS) and Test Purposes (TP) - Network (NWK) layer - Portable radio Termination (PT)";
- Part 7: "Abstract Test Suite (ATS) for Network (NWK) layer - Portable radio Termination (PT)";
- Part 8: "Test Suite Structure (TSS) and Test Purposes (TP) - Network (NWK) layer - Fixed radio Termination (FT)";
- Part 9: "Abstract Test Suite (ATS) for Network (NWK) layer - Fixed radio Termination (FT)".

Proposed national transposition dates	
Date of latest announcement of the present document (doa):	3 months after ETSI publication
Date of latest publication of new National Standard or endorsement of the present document (dop/e):	6 months after doa
Date of withdrawal of any conflicting National Standard (dow):	6 months after doa

1 Scope

The present document contains the Abstract Test Suite (ATS) to test the DECT Portable Part (PP) Medium Access Control (MAC) layer.

The objective of this test specification is to provide a basis for approval tests for DECT equipment giving a high probability of air interface inter-operability between different manufacturer's DECT equipment. This test specification contains the ATS specification for testing of the MAC layer at the Portable radio Termination (PT).

The ISO standard for the methodology of conformance testing (ISO/IEC 9646, parts 1 to 7 [13] to [19]) as well as the ETSI rules for conformance testing in ETS 300 406 [8] are used as the basis for the test methodology.

Test specifications for the Physical Layer (PHL) are provided in other DECT ENs.

Annex A provides the Tree and Tabular Combined Notation (TTCN) part of this ATS.

Annex B provides the specification of the parallel test component LT_MAC.

Annex C provides the Partial Protocol Implementation Extra Information for Testing (PIXIT) Proforma of this ATS.

Annex D provides the Protocol Conformance Test Report (PCTR) Proforma of this ATS.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

- [1] EN 300 175-1: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 1: Overview".
- [2] EN 300 175-2: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 2: Physical Layer (PHL)".
- [3] EN 300 175-3: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 3: Medium Access Control (MAC) layer".
- [4] EN 300 175-4: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 4: Data Link Control (DLC) layer".
- [5] EN 300 175-6: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 6: Identities and addressing".
- [6] EN 300 175-7: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 7: Security features".
- [7] EN 300 175-8: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 8: Speech coding and transmission".
- [8] ETS 300 406: "Methods for Testing and Specification (MTS); Protocol and profile conformance testing specifications; Standardization methodology".

- [9] ETS 300 474 parts 1 and 2: "Digital Enhanced Cordless Telecommunications (DECT); Generic Access Profile (GAP); Profile requirement list and profile specific Implementation Conformance Statement (ICS) proforma".
- [10] EN 300 497-1: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI) Test Case Library (TCL); Part 1: Test Suite Structure (TSS) and Test Purposes (TP) for Medium Access Control (MAC) layer".
- [11] EN 300 497-5: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI) Test Case Library (TCL); Part 5: Abstract Test Suite (ATS) - Data Link Control (DLC) layer".
- [12] ETR 141: "Methods for Testing and Specification (MTS); Protocol and profile conformance testing specifications; The Tree and Tabular Combined Notation (TTCN) style guide".
- [13] ISO/IEC 9646-1: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 1: General concepts".
- [14] ISO/IEC 9646-2: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 2: Abstract Test Suite Specification".
- [15] ISO/IEC 9646-3: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 3: The Tree and Tabular Combined Notation (TTCN)".
- [16] ISO/IEC 9646-4: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 4: Test realization".
- [17] ISO/IEC 9646-5: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 5: Requirements on test laboratories and clients for the Conformance Assessment process".
- [18] ISO/IEC 9646-6: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 6: Protocol Profile Test Specification".
- [19] ISO/IEC 9646-7: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 7: Implementation Conformance statement".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the definitions given in ISO/IEC 9646-1 [13] and EN 300 175-1 [1] apply.

3.2 Abbreviations

For the purpose of the present document, the following abbreviations apply:

ASP	Abstract Service Primitive
ATM	Abstract Test Method
ATS	Abstract Test Suite
BI	Invalid Behaviour
BO	Inopportune Behaviour
BV	Valid Behaviour
CA	Capability tests
CM	Co-ordination Message
CP	Co-ordination Point
DECT	Digital Enhanced Cordless Telecommunication
DLC	Data Link Control
FT	Fixed radio Termination
IUT	Implementation Under Test

LT	Lower Tester
MAC	Medium Access Control
MTC	Main Test Component
PCO	Point of Control and Observation
PDU	Protocol Data Unit
PHL	Physical Layer
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation Extra Information for Testing
PT	Portable radio Termination
PTC	Parallel Test Component
SAP	Service Access Point
SUT	System Under Test
TP	Test Purposes
TSS	Test Suite Structure
TTCN	Tree and Tabular Combined Notation
UT	Upper Tester

4 Abstract Test Method (ATM)

This clause describes the ATM used to test the DECT MAC layer protocol at the Portable radio Termination (PT).

4.1 Description of ATM

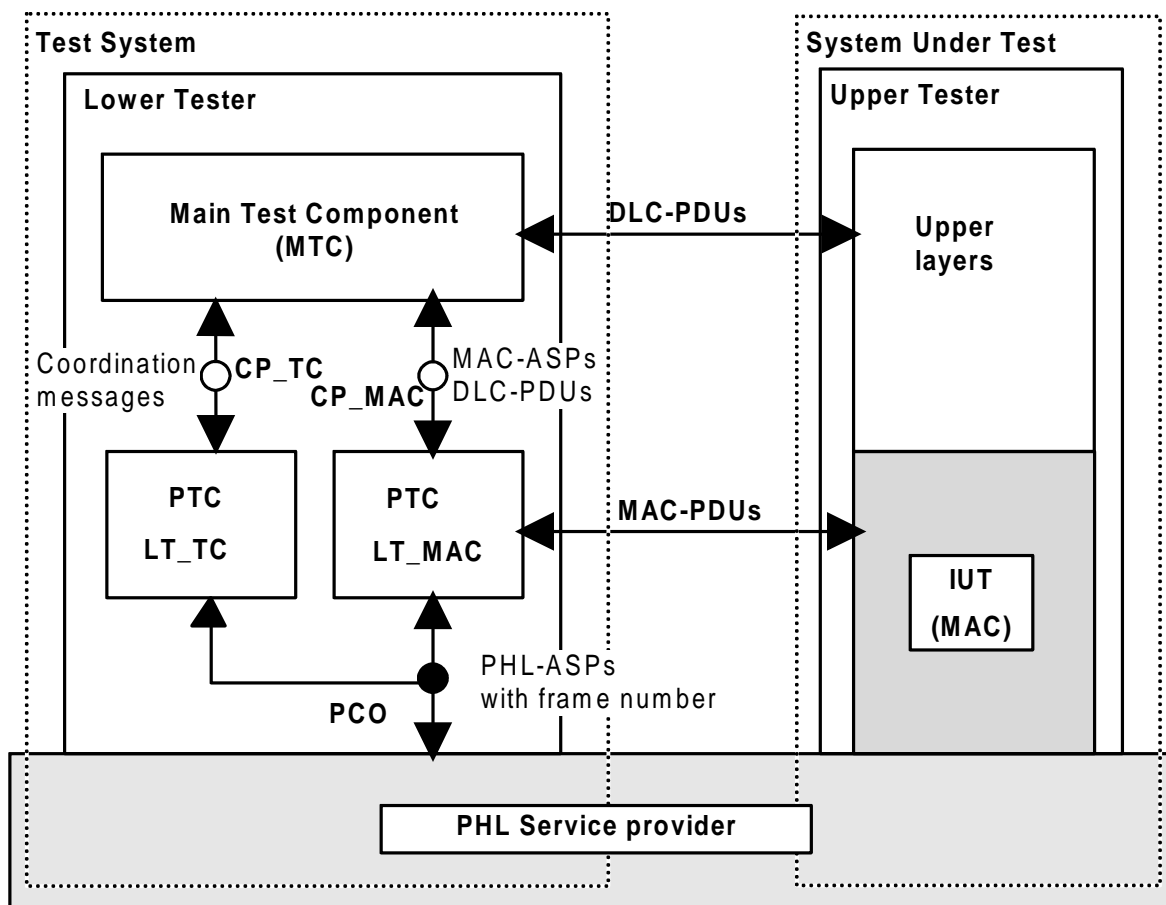


Figure 1: Remote test method, embedded variant

A single-party testing concept is used, which consists of the following abstract testing functions:

- PCO:** the Point of Control and Observation (PCO) for MAC Layer testing is located at the D-Service Access Point (D-SAP) between the MAC layer and the Physical layer. All test events at the PCO are specified in terms of Physical Layer - Abstract Service Primitives (PHL-ASPs) (frame number parameter added);
- CP_TC:** Co-ordination Point Test Case (CP_TC) is located between the Main Test Component (MTC) and Parallel Test Component (PTC) LT_TC in the test system. It is used for passing co-ordination messages between these two testing functions;
- CP_MAC:** Co-ordination Point MAC (CP_MAC) is located between the MTC and PTC LT_MAC in the test system. It is equivalent to the PCO used for Data Link Control (DLC) layer testing in part 6 of the present document. All co-ordination messages at this CP are specified in terms of MAC-ASPs and DLC Protocol Data Units (DLC-PDUs);
- PTC LT_TC:** the Lower Tester Parallel Test Component LT_TC (PTC LT_TC) is located in the test system. It makes restricted use of the PCO by only observing the test events in both directions. It assigns preliminary verdicts (the MTC assigns the final verdict);
- NOTE:** This restricted use of the PCO is a non-ISO/IEC 9646-2 [14] application of the PCO.
- PTC LT_MAC:** the Lower Tester Parallel Test Component LT_MAC (PTC LT_MAC) is located in the test system. It provides indirect control and observation of the Implementation Under Test (IUT) during test execution, via the underlying service-provider. It does not assign any verdicts;
- MTC:** the Main Test Component (MTC) is located in the test system. It is responsible for creating and terminating the PTCs, managing the co-ordination points CP_TC and CP_MAC, and computation of the final test case verdict;
- Upper layers:** no explicit Upper Tester (UT) exists in the test system. However, the System Under Test (SUT) (upper layers) needs to carry out some functions to achieve some effects of test co-ordination procedures.

The primitives used at the PCO (physical SAP) are defined according to EN 300 175-2 [2] clause 7 and associated subclauses.

The co-ordination messages used at CP_MAC co-ordination point are abstract primitives including protocol data units and frames. The abstract primitives (MAC ASPs) are defined according to EN 300 175-3 [3] clause 8 and associated subclauses. Two abstract primitives for starting and stopping the synchronization between the main test component and the parallel test component LT_MAC are added for the needs of the tester. The protocol data units (DLC C-plane PDUs) are defined according to EN 300 175-4 [4] clause 7 and associated subclauses. The frames (DLC U-plane frames) are defined according to EN 300 175-4 [4] clause 12 and associated subclauses.

4.2 Test strategy

The ATM defined in subclause 4.1 requires the use of concurrent TTCN, which is specified in Amendment 1 of ISO/IEC 9646-3 [15]. The parallel test components PTC_TC and PTC_MAC are, however, seen as two independent entities. This means that there is no communication or synchronization between the two PTCs during the test.

PTC_TC is specified in TTCN (see annex A). Since PTC_TC is only observing at the PCO, this ATS does not contain any send statements. Once the Test Purposes (TP) are fulfilled, the PTC_TC terminates, i.e. there are no post ambles, unless required by the TP. No explicit co-ordination messages is exchanged at CP_TC. To simplify the TTCN test cases, the underlying service provider has been assigned the task of frame numbering. Consequently, a frame parameter has been added to some of the PHL-ASPs.

The requirements for PTC_MAC (see annex B) are specified using ETS 300 474 [9].

The Main Test Component (MTC) creates the two PTCs (using CREATE operation), stimulates the PTC_MAC (using MAC ASPs at CP_MAC) and then waits for the two PTCs to terminate (using the DONE event). The final verdict is computed as follows:

- a PASS is assigned if PTC_TC returns a PASS verdict and the expected event is received from PTC_MAC at CP_MAC;

- a FAIL verdict is assigned if PTC_TC returns a FAIL verdict independently of what is received from PTC_MAC at CP_MAC;
- an INCONC verdict is assigned if: PTC_TC returns an INCONC verdict and the expected event is received from PTC_MAC at CP_MAC, or returns a PASS verdict and an unexpected event is received from PTC_MAC at CP_MAC.

5 Untestable Test Purposes (TP)

This clause gives a list of TP which are not implemented in the ATS for PTC LT_TC (see annex A) due to the chosen ATM or other restrictions.

Table 1: Untestable TP

Test purpose	Reason
TP/DB/BV-00	It is not possible to distinguish, without confusion, if the PT is unlocked or crashed.
TP/PG/BV-00	No procedure can be defined to verify that the Fixed radio Termination (FT) manages correctly the paging Extended Flag when it transmit pages.

6 ATS conventions (only applicable for PTC LT_TC)

The ATS conventions are intended to give a better understanding of the ATS but they also describe the conventions made for the development of the ATS. These conventions shall be considered during any later maintenance or further development of the ATS.

The ATS conventions contain two clauses, the naming conventions and the implementation conventions. The naming conventions describe the structure of the naming of all ATS elements. The implementation conventions describe the functional structure of the ATS.

To define the ATS, the guidelines of the documents ETS 300 406 [8] and ETR 141 [12]] were considered.

6.1 Naming conventions

6.1.1 Declarations part

This subclause describes the naming conventions chosen for the elements of the ATS declarations part.

6.1.1.1 General

The following general rules apply for the name giving in the declarations part. All type definitions (simple type definitions, structured type definitions, ASP type definitions and PDU type definitions) shall be written in uppercase.

All element names (structured type definition), parameter names (ASP type definition) and field names (PDU type definition) shall be written in lowercase.

Predefined types (e.g. BITSTRING [8]) are never used in structured type definitions, ASP type definitions or PDU type definitions. Simple types are used instead.

All declarations in the test suite are listed in alphabetical order. A different order of listing should be used for only maintenance reasons.

6.1.1.2 Test suite operations definition

The test suite operation identifiers are composed of substrings in lowercase letters, except for standard prefix "TSO_". Each substring is separated by an underscore character ("_").

EXAMPLE: TSO_substring.

6.1.1.3 Test suite parameter declarations

The test suite parameter identifiers are composed of substrings in lowercase letters, except for the standard prefix "TSP_". Each substring is separated by an underscore character ("_").

EXAMPLE 1: TSP_t_wait.

If the test suite parameter references a Protocol Implementation Conformance Statement (PICS) item, the letter "C" is added to the standard prefix.

EXAMPLE 2: TSPC_extended_rf_carriers.

If the test suite parameter references a PIXIT item, the letter "X" is added to the standard prefix.

EXAMPLE 3: TSPX_pmid.

6.1.1.4 Test case selection expression definition

The test case selection expression identifiers are composed of substrings in lowercase letters, beginning with the prefix "TCS_". Each substring is separated by an underscore character ("_").

6.1.1.5 Test suite constant declarations

The test suite constant identifiers are composed of substrings in lowercase letters, except for the prefix "TSC_". Each substring is separated by an underscore character ("_").

If the test suite constant represents a system parameter, the complete name defined in the protocol EN is used.

EXAMPLE: TSC_n200.

6.1.1.6 Test suite variable declarations

The test suite variable identifiers are composed of substrings in lowercase letters, except for the prefix "TSV_". Each substring is separated by an underscore character ("_").

Complete names as defined in the protocol EN are used.

6.1.1.7 Test case variable declarations

The test case variable identifiers are composed of substrings in lowercase letters, except for the prefix "TCV_". Each substring is separated by an underscore character ("_").

Complete names as defined in the protocol EN are used.

6.1.1.8 Timer declarations

Two types of timers can be identified:

1) standardized:

- those defined in the protocol EN, e.g. T201. They use exactly the same name as in the EN.

As there is a tolerance margin accepted for these timers, three values are needed:

- the maximum value allowed, which will use the suffix "_max";
- the minimum value allowed, which will use the suffix "_min";
- the value actually implemented, with no suffix;

EXAMPLE 1: T201_max, T201_min, and T201.

2) not standardized:

- those not defined in the protocol EN, i.e. for execution use, e.g. a timer waiting for a response. These timers begin with the prefix "T_", followed by a string in lowercase letters.

EXAMPLE 2: T_resp represents a timer for controlling the response time of the IUT.

6.1.1.9 ASP type definitions

The general conventions in subclause 6.1.1.1 applies.

The identifier of an ASP type uses the same name as the name defined in the protocol EN.

EXAMPLE: PL_TX_REQ for an ASP containing a MAC layer PDU to the peer MAC layer (the IUT).

6.1.1.10 PDU type definitions

The general conventions in subclause 6.1.1.1 applies.

The PDU type identifier shall identify the related structure or type as defined in the protocol EN.

EXAMPLE: A_MT_BASIC_CONNECTION_CONTROL.

6.1.1.11 Co-ordination Message (CM) type definitions

The CM types are copied from the ASP types in EN 300 497-5 [11] without modifications.

6.1.1.12 Alias definitions

Alias definitions are not used.

6.1.2 Constraints part

This subclause describes the naming conventions chosen for the elements of the ATS constraints part.

6.1.2A General

Constraints shall be written with the first letter in uppercase, and the rest in lowercase.

The first part of the constraint declaration identifier name is equivalent to the corresponding type identifier used in the declaration part. The second part of the name describes the content of this constraint.

EXAMPLE: Declaration part: HEADER_FIELD
Constraint part: Header_field_nt_no_b.

All constraints shall be listed in alphabetical order. If a different order of listing is maintained, the reason for doing so shall be specified.

6.1.3 Dynamic part

This subclause describes the naming conventions used for the elements of the ATS dynamic part.

6.1.3.1 General

All test cases shall be listed in the order in which they appear in the Test Suite Structure (TSS) and TP document.

6.1.3.2 Test Case (TC) identifier

The identifier of the test case is built in the same way as for the test purpose described in EN 300 497-1 [10], subclause 5.1.1, with the exception that "TP" is replaced by "TC_PT" ("PT" for Portable radio Termination). The identifier of a TC is built according to table 2.

Table 2: TC naming convention

Identifier:	TC_PT_<fm>_<x>_<nn>		
<fm> = functional module	DB	Down link Broadcast	
	PG	Paging services	
	NB	Non Continuous Broadcast	
	DC	Down link Connectionless	
	UC	Uplink Connectionless	
	BS	Bearer setup	
	CM	Connection modification	
	BH	Bearer handover	
	BR	Bearer release	
	DT	Data transfer	
	LM	Layer Management	
	TM	Test Messages	
	<x> = Type of testing	CA	Capability Tests
BV		Valid Behaviour Tests	
BI		Invalid Behaviour Tests	
<nn> = sequential number	(00-99)	Test purpose Number	

EXAMPLE: TP identifier: TP/BS/CA-00
TC identifier: TC_PT_BS_CA_00.

6.1.3.3 Test step identifier

The test step identifier is built of substrings in lowercase letters, preceded by a string of uppercase letters. The substrings are joined by underscore characters. The first substring indicates the main function of the test step; e.g. PR for preamble, PO for postamble, LTS for local tree and STP for general test step. The second substring indicates the purpose of the step.

EXAMPLE: PO_release_bearer.

6.1.3.4 Default identifier

The default identifiers begin with the prefix "DF_", followed by a string in lowercase letters.

6.1.3.5 Label identifier

The identifiers in the label column is built according to table 3:

Table 3: Naming convention for verdict assignment identifier

Identifier:	<Table><nn>		
<Table> = type of table	TB	Test Body	
	CS	Check State test step	
	DF	Default	
	PO	Postamble	
	PR	Preamble	
	TS	Test Step	
<nn> = sequential number	(00-99)	Label number	

6.1.3.6 ATS abbreviations

These abbreviations are used to shorten identifier names:

addr	address
ack	acknowledgement
bear	bearer
cap	capability
cfm	confirm
chn	channel
con	connection
ctrl	control
est	establish
ext	extension
id	identification
ind	indication
info	information
max	maximum
min	minimum
par	parameter
prop	proprietary
rel	release
req	request
rsp	response
std	standard
sys	system

6.2 Implementation conventions

6.2.1 Declaration part

The comment line of single element TTCN tables (e.g. test suite constants) is used to give a reference where the format and content of the element is described in the relevant protocol ENs. Any particularity of the element format or content is described in the comment line.

The comment line in the header of multi element TTCN tables (e.g. ASPs) is used to reference to the protocol EN.

The detailed comments are used to describe any peculiarity of the table.

In the ASP, PDU, and CM declarations, the comments column is used to identify if a parameter (in ASPs) or field (in PDUs) is mandatory or optional:

- M: mandatory;
- O: optional.

In the ASP and PDU declarations the comments column is further used to give information about the parameter / field value, in particular if the parameter / field contains a fixed spare value.

6.2.2 Constraint part

The ASPs and PDUs are defined in a way that all relevant parameters / fields are parameterized. That improves the transparency of the constraints in the dynamic part, as all values which are relevant for the test are always present.

Generally no modified constraints are used. This allows an easier reuse and adaptation of constraints if they are reused in other test specifications.

The comment line of a constraint always contains a reference to the relevant protocol EN.

The detailed comments footer is used to describe any peculiarity of the table.

6.2.3 Dynamic part

All events which are defined as a conformance requirement by the TP, causes a preliminary verdict PASS if the requirement is met.

All invalid events are handled in the default tree. Only FAIL or INCONC verdicts are assigned in the default tree.

The preamble, the test body and the postamble have different defaults, which allows a specific verdict handling, e.g. only INCONC verdicts are assigned in the preamble.

Except for local trees, test steps do not contain a default. Then there is no restrictions regarding the error handling.

All verdict assignments are labelled. According to ISO/IEC 9646-3 [15], annex E, clause E.2, labels should be written to the conformance log. This allows, for example, to identify where the test failed. To allow an exact identification of the table in which the verdict was assigned, the convention described in subclause 6.1.3.5 is applied.

To avoid deadlocks, the Parallel Test Components (PTC) LT_TC and LT_MAC shall always terminate.

TP which are listed in the untestable TP list in clause 5 are not considered in the ATS, thus these TC identifiers are missing in the ATS and the numbering of the TCs is not always continuous.

Annex A (normative): Abstract Test Suite (ATS), PTC LT_TC

This ATS has been produced using the Tree and Tabular Combined Notation (TTCN) according to ISO/IEC 9646-3 [15].

The ATS was developed on a separate TTCN software tool and therefore the TTCN tables are not completely referenced in the table of contents. The ATS itself contains a test suite overview part which provides additional information and references.

A.1 The TTCN Graphical form (TTCN.GR)

The TTCN.GR representation of this ATS is contained in an Adobe Portable Document Format™ file (497p2v11.PDF contained in archive 4loi0100.ZIP) which accompanies the present document.

A.2 The TTCN Machine Processable form (TTCN.MP)

The TTCN.MP representation corresponding to this ATS is contained in an ASCII file (497p2v11.MP contained in archive 4loi0100.ZIP) which accompanies the present document.

NOTE: According to ISO/IEC 9646-3 [15], in case of a conflict in interpretation of the operational semantics of TTCN.GR and TTCN.MP, the operational semantics of the TTCN.GR representation takes precedence.

Annex B (normative): Specification of PTC LT_MAC

B.1 General requirements

The PTC LT_MAC (MAC emulation) shall, as a minimum, fulfil all requirements with profile status M in the profile Requirement List (profile RL) in ETS 300 474 [9], clause 7.

B.2 Additional requirements

A number of commands have been defined to control the behaviour of PTC LT_MAC (the MAC emulation). In annex A, these are implemented as a co-ordination message with a parameter to specify the required action. The test system shall support the actions specified in table B.1.

Table B.1: Actions to be supported by the test system

Action	Ref. to EN 300 175-3 [3]	Requirement
TSC_action2	6.2.5.1	Generate A field CRC error in NT messages.
TSC_action4	11.5.1	Generate an incorrect message for RFPI handshake. Change the RFPI transmitted by the Lower Tester on all bearers to the IUT by inverting bits a16 to a23.
TSC_action5	10.8.1.1	Acknowledge received Cs segment only after three receipt.
TSC_action6	10.6.1	Allow bearer handover, broadcast an appropriate bearer handover information, wait 640 ms to let the IUT to recognize this and jam the currently occupied channel, {RF-carrier; slot} (to force an intracell bearer handover)
TSC_action7	10.6.1	Power down the signal strength of the currently used RFP stepwise by TSPX_decay_rate dB/sec to force handover to a different RFP (intercell bearer handover).
TSC_action8	10.5.1	Ignore any received "acces_request" messages in basic bearer setup
TSC_action9	10.5.1.1	When receiving an ACCESS_REQUEST message, send a WAIT message and then repeat doing this when receiving a WAIT message.
TSC_action10	11.3.3	Transmit forever incorrect A-field CRC in frame 0 (Timer T207 testing).
TSC_action11	7.2.4.3	Transmit blind slot information in a zero length page with only one slot available. This one available slot shall have a minimum distance of two slots to the dummy bearer of the LT.
TSC_action12	7.2.4.3	Transmit "other bearer" or "dummy or C/L bearer position" twice to tell a new bearer position, which is a minimum distance of two slots from the old position, to the PP and release the old dummy bearer afterwards. In the moment of transmission of the new position there has to be a new active dummy bearer at the LT at the new position. Repeat this three times.
TSC_action13	7.2.3.3	Transmit the extended RF carrier information QT message.
TSC_action19	10.5.1	Ignore any received "bearer_handover_request" messages in bearer setup for handover.
TSC_action20	10.5.1.1	Don't use wait for bearer setup.
TSC_action21	10.5.1.1	Configure MAC layer to use one wait cycle during bearer setup.
TSC_action22	10.5.1	Establish a dummy bearer using a free cell and an unused RPN.
TSC_action23	7.2.4.3	Transmit blind slot information for the position of the dummy bearers and the slots on either side of the dummy bearers on both cells.
TSC_action24	10.6	Ignore all intracell handover request received.

Action	Ref. to EN 300 175-3 [3]	Requirement
TSC_action30	-	Support a TARI matching one of the IUTs PARKs (PARI and SARI do not match any of the IUTs PARKs)
TSC_action31	-	Transmit RFP busy in the RFP status message
TSC_action32	-	Transmit system busy in the RFP status message
TSC_action33	-	Force FP to transmit bit a40 set to 1 in extended higher layer capabilities
TSC_action34	-	Use TSPX_rfp1 in the SARI list contents and TSPX_rfp1_not_allowed for PARI
TSC_action35	-	Transmit the QT SARI list contents message containing BLACK ARI equal to the IUT PARK (the LT PARI does not match the IUT PARK)
TSC_action36	-	Request the PTC_MAC to transmit the QT SARI list contents message containing BLACK ARI mask that includes the IUT PARK (the LT PARI does not match the IUT PARK)
TSC_start	11.3.2	Start test case synchronization.
TSC_stop	11.5.1	Stop testcase synchronization.

NOTE: These actions are defined as test suite constants in the ATS (see annex A).

Annex C (normative): Partial PIXIT proforma for DECT MAC

Notwithstanding the provisions of the copyright clause related to the text of the present document, ETSI grants that users of the present document may freely reproduce the PIXIT proforma in this annex so that it can be used for its intended purposes and may further publish the completed PIXIT.

The PIXIT Proforma is based on ISO/IEC 9646-6 [18]. Any additional information needed can be found in this international standard document.

C.1 Identification summary

Table C.1

PIXIT Number:	
Test Laboratory Name:	
Date of Issue:	
Issued to:	

C.2 ATS summary

Table C.2

Protocol Specification:	EN 300 175-3
Protocol to be tested:	
ATS Specification:	EN 300 497-2
Abstract Test Method:	EN 300 497-2 clause 4

C.3 Test laboratory

Table C.3

Test Laboratory Identification:	
Test Laboratory Manager:	
Means of Testing:	
SAP Address:	

C.4 Client identification

Table C.4

Client Identification:	
Client Test manager:	
Test Facilities required:	

C.5 SUT

Table C.5

Name:	
Version:	
SCS Number:	
Machine configuration:	
Operating System Identification:	
IUT Identification:	
PICS Reference for IUT:	
Limitations of the SUT:	
Environmental Conditions:	

C.6 Protocol layer information

C.6.1 Protocol identification

Table C.6

Name:	DECT - MAC layer EN 300 175-3
Version:	
PICS References:	

C.6.2 IUT information

Table C.7: Addresses

Item	Parameter	Parameter Type	Explanation	Value
1	TSPX_ipui	Bitstring	International Portable User Identity (EN 300 175-6 [5])	
2	TSPX_rfp1	B_40 - (Bitstring[40])	RFPI for RFP number 1 (EN 300 175-6 [5])	
3	TSPX_rfp1_invalid	B_40 - (Bitstring[40])	derived from item 2 RFPI for RFP number 1 with bit a16 to a23 inverted (EN 300 175-6 [5])	
4	TSPX_rfp2	B_40 - (Bitstring[40])	RFPI for RFP number 2 (EN 300 175-6 [5])	

Table C.8: Parameter values

Item	Parameter	Parameter Type	Explanation	Value
1	TSPX_dummy_bearer_duration	INTEGER	Value of wait timer used to delay the test case after setting up a second dummy bearer in case of intercell handover testing	
2	TSPX_intracell_behaviour	INTEGER	Value 0,1 for handling intracell bearer handover 0 = Normal tester behaviour 1 = force tester to ignore all intracell handover request	
3	TSPX_decay_rate	INTEGER	Ramp gradient for power down the RFP power. Used for TSC_action7. Shall be between 0 and 10 dB/s	

Annex D (normative): Protocol Conformance Test Report (PCTR) proforma for DECT MAC

Notwithstanding the provisions of the copyright clause related to the text of the present document, ETSI grants that users of the present document may freely reproduce the PCTR proforma in this annex so that it can be used for its intended purposes and may further publish the completed PCTR.

The PCTR proforma is based on ISO/IEC 9646-6 [18]. Any additional information needed can be found in the present document.

D.1 Identification summary

D.1.1 Protocol conformance test report

Table D.1

PCTR Number:	
PCTR Date:	
Corresponding SCTR Number:	
Corresponding SCTR Date:	
Test Laboratory Identification:	
Test Laboratory Manager:	
Signature:	

D.1.2 IUT identification

Table D.2

Name:	
Version:	
Protocol specification:	
PICS:	
Previous PCTR if any:	

D.1.3 Testing environment

Table D.3

PIXIT Number:	
ATS Specification:	
Abstract Test Method:	Remote test method, Embedded variant with no UT
Means of Testing identification:	
Date of testing:	
Conformance Log reference(s):	
Retention Date for Log reference(s):	

D.1.4 Limits and reservation

Additional information relevant to the technical contents or further use of the test report, or the rights and obligations of the test laboratory and the client, may be given here. Such information may include restriction on the publication of the report.

.....

.....

.....

.....

.....

D.1.5 Comments

Additional comments may be given by either the client or the test laboratory on any of the contents of the PCTR, for example, to note disagreement between the two parties.

.....

.....

.....

.....

.....

D.2 IUT Conformance status

This IUT has or has not been shown by conformance assessment to be non conforming to the specified protocol specification.

Strike the appropriate words in this sentence. If the PICS for this IUT is consistent with the static conformance requirements (as specified in clause D.3 in this report) and there are no "FAIL" verdicts to be recorded (in clause D.6 in this report) strike the words "has or", otherwise strike the words "or has not".

D.3 Static conformance summary

The PICS for this IUT is or is not consistent with the static conformance requirements in the specified protocol.

Strike the appropriate words in this sentence.

D.4 Dynamic conformance summary

The test campaign did or did not reveal errors in the IUT.

Strike the appropriate words in this sentence. If there are no "FAIL" verdicts to be recorded (in clause D.6 of this report) strike the words "did or" otherwise strike the words "or did not".

Summary of the results of groups of test:

.....
.....
.....
.....
.....
.....
.....
.....
.....
.....

D.5 Static conformance review report

If clause D.3 indicates non-conformance, this subclause itemizes the mismatches between the PICS and the static conformance requirements of the specified protocol specification.

.....
.....
.....
.....
.....
.....
.....
.....
.....
.....

D.6 Test campaign report

Table D.4

ATS Reference	Selected?	Run?	Verdict	Observations (Reference to any observations made in clause 7)
TC_PT_BH_CA_00	Yes/No	Yes/No		
TC_PT_BH_CA_01	Yes/No	Yes/No		
TC_PT_BR_CA_00	Yes/No	Yes/No		
TC_PT_BS_BV_00	Yes/No	Yes/No		
TC_PT_BS_CA_00	Yes/No	Yes/No		
TC_PT_BS_CA_01	Yes/No	Yes/No		
TC_PT_DB_BV_01	Yes/No	Yes/No		
TC_PT_DB_BV_02	Yes/No	Yes/No		
TC_PT_DB_BV_50	Yes/No	Yes/No		
TC_PT_DB_BV_51	Yes/No	Yes/No		
TC_PT_DB_BV_52	Yes/No	Yes/No		
TC_PT_DB_BV_53	Yes/No	Yes/No		
TC_PT_DB_BV_54	Yes/No	Yes/No		
TC_PT_DB_BV_55	Yes/No	Yes/No		
TC_PT_DT_BI_00	Yes/No	Yes/No		
TC_PT_DT_CA_00	Yes/No	Yes/No		
TC_PT_DT_CA_01	Yes/No	Yes/No		
TC_PT_DT_CA_02	Yes/No	Yes/No		
TC_PT_LM_CA_00	Yes/No	Yes/No		
TC_PT_LM_CA_01	Yes/No	Yes/No		
TC_PT_LM_CA_02	Yes/No	Yes/No		
TC_PT_LM_CA_03	Yes/No	Yes/No		
TC_PT_LM_CA_04	Yes/No	Yes/No		
TC_PT_PG_BV_02	Yes/No	Yes/No		
TC_PT_PG_BV_03	Yes/No	Yes/No		
TC_PT_PG_CA_00	Yes/No	Yes/No		
TC_PT_PG_CA_01	Yes/No	Yes/No		

D.7 Observations

Additional information relevant to the technical content of the PCTR is given here.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

Bibliography

The following material, though not specifically referenced in the body of the present document, gives supporting information.

- EN 300 175-5: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 5: Network (NWK) layer".
- EN 300 824: "Digital Enhanced Cordless Telecommunications (DECT); Cordless Terminal Mobility (CTM), CTM Access Profile (CAP)".
- ETR 015: "Digital Enhanced Cordless Telecommunications (DECT); Reference document".
- ETR 022: "Advanced Testing Methods (ATM); Vocabulary of terms used in communications protocols conformance testing".
- ETR 041: "Transmission and Multiplexing (TM); Digital Enhanced Cordless Telecommunications (DECT); Transmission aspects 3,1 kHz telephony Interworking with other networks".
- ETR 042: "Digital European Cordless Telecommunications (DECT); A Guide to DECT features that influence the traffic capacity and the maintenance of high radio link transmission quality, including the results of simulations".
- ETR 043: "Digital European Cordless Telecommunications (DECT); Common interface (CI); Services and facilities requirements specification".
- ETR 056: "Digital European Cordless Telecommunications (DECT); System description document".
- TBR 6: "Digital Enhanced Cordless Telecommunications (DECT); General terminal attachment requirements".
- TBR 10: "Digital Enhanced Cordless Telecommunications (DECT); General terminal attachment requirements; Telephony applications".
- TBR 22 including Amendment 2: "Digital Enhanced Cordless Telecommunications (DECT); Attachment requirements for terminal equipment for DECT Generic Access Profile (GAP) applications".
- Directive 98/13/EC of the European Parliament and of the Council of 12 February 1998 relating to telecommunications terminal equipment and satellite earth station equipment, including the mutual recognition of their conformity.
- EWOS/ETSI Project Team No 5: "Project Report and Technical Report. OSI Conformance Testing Methodology and Procedures in Europe".
- CEPT Recommendation T/SGT SF2 (89) 6/0: "Draft Recommendation T/SF Services and Facilities of Digital Enhanced Cordless Telecommunications".

History

Document history		
Edition 1	August 1996	Publication as ETS 300 497-2
Edition 2	February 1998	Publication as ETS 300 497-2
V0.3.0	August 1998	Public Enquiry PE 9852: 1998-08-28 to 1998-12-25