



SLOVENSKI STANDARD PSIST ETR 308:1999

01-april-1999

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Digital Enhanced Cordless Telecommunications (DECT); Services, facilities and configurations for DECT in the local loop

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Ta slovenski standard je istoveten z: ^{PSIST ETR 308:1999} **ETR 308 Edition 1**
<https://standards.iteh.ai/catalog/standards/sist/b514186-9987-4f40-90b1-6920d8747d11/psist-etr-308-1999>

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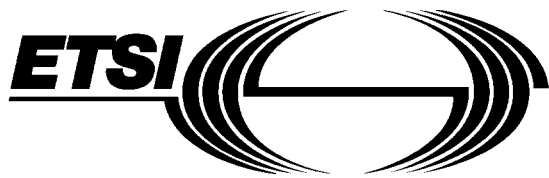
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ETSI
TECHNICAL
REPORT

ETR 308

August 1996

Source: ETSI TC-RES

Reference: DTR/RES-03074

ICS: 33.020, 33.060.50

Key words: Access, configuration, DECT, facility, profile, RLL, service, traffic

**Radio Equipment and Systems (RES);
Digital Enhanced Cordless Telecommunications (DECT);
Services, facilities and configurations
for DECT in the local loop**

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Foreword

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

ETRs are informative documents resulting from ETSI studies which are not appropriate for European Telecommunication Standard (ETS) or Interim European Telecommunication Standard (I-ETS) status. An ETR may be used to publish material which is either of an informative nature, relating to the use or the application of ETSs or I-ETSs, or which is immature and not yet suitable for formal adoption as an ETS or an I-ETS.

This ETR has been produced in response to the requirement for an overview of the services, facilities and configurations to be offered by Digital Enhanced Cordless Telecommunications (DECT) Radio in the Local Loop (RLL) systems.

This ETR focuses on services and facilities, including Operation, Administration and Maintenance (OA&M) which should be supported by a DECT RLL Access Profile (RAP), and configurations for the DECT RLL access systems.

Introduction

The primary objective of a RLL technology is to deliver to end users, by radio means, the telecommunication services that are normally obtained through fixed cables from a telecommunications system.

RLL technologies present opportunities for telecommunications operators to serve new customers in developing countries and in other areas where provision of wired public telephony has been uneconomic or impractical, and to promote competition in the local loop in more developed markets. RLL operators are already licensed in a number of countries within and outside Europe and other licences are likely following deregulation of fixed access in the European Community in 1998.

The local loop (also known as the access network) is that part of a Public Telecommunications Operators (PTOs) network between the Local Exchange (LE) and a Network Termination Point (NTP) on the customers premises or at defined air interface with customers portable radio terminal. In this ETR RLL describes the situation where part or whole of the Local Loop is realized by radio means to deliver service either to the user's premises or directly to the customer's portable terminal. DECT RLL describes the situation where the radio component of an RLL system uses the DECT air interface standards

Characteristically, a RLL system has a network-side interface and a customer-side interface. Between these is at least one radio interface. Ideally, services are transported transparently and unimpaired between the end interfaces. In practice, using a normal radio link will almost always result in a system that is not completely transparent, and so specifications for RLL systems contain means to ensure transparency for those services that would otherwise not be properly carried by radio. Hence, this ETR defines the services, facilities and configurations to be supported by the DECT RLL service. It defines which services are mandatory and which are not. It also defines the maximum impairments to service that are permitted within the RLL system.

Because fixed cables are subject to failure, they are in most cases periodically tested for integrity using the OA&M procedures of the network operator. Clearly, a RLL system is subject to different failure mechanisms. In order to minimize the cost of locating and repairing faults in the RLL system, existing OA&M procedures need not only to be maintained, but they also need to be augmented to address the specific issues raised by RLL systems. These include dealing with uncertain radio coverage, power failures, backup batteries, subscriber registration and so on. This ETR addresses the essential OA&M requirements.

In common with other DECT applications, the DECT RLL access network comprises a Portable radio Termination (PT), a Fixed radio Termination (FT) and optionally one or more Wireless Relay Stations (WRSs). (In configurations where the DECT RLL is delivering service to the user's premises via a unmoveable PT into which standard Terminal Equipment (TE) may be connected the PT is known as Cordless Terminal Adapter (CTA) although this still complies with the general requirements of a PT.) It is for the RLL application attached to the DECT network to deal in the correct manner with the services specified and this ETR does not directly address the customer-side and network-side interfaces. It does, however, make a number of assumptions about these interfaces and lists those standard interfaces which are appropriate to the RLL service.

The RAP is the standard which implements the requirements contained within this ETR so far as it serves fixed users. RAP-compliant equipment from different manufacturers will inter-operate to provide customers and RLL system operators with a choice of equipment to use. This is achieved by basing the RAP standard on the DECT Generic Access Profile (GAP), ETS 300 444 [9]. The RAP only addresses the procedures and data structures on the DECT air interface and in the DECT network.

So far, it has been assumed that a RLL system provides the same services as a fixed telecommunications network. However, the use of radio provides the ability to offer new services that cannot be delivered over fixed cables. These new services include the use of direct radio communication from the fixed network to a portable telecommunications terminal, rather than providing a fixed socket. This provides limited mobility directly to the user in the same way as using a normal cordless telephone connected to a fixed socket. However, the RLL service defined in this ETR goes further, and extends this concept to provide the possibility of wider mobility within the access network. In this case the radio interface with the PT should comply with the GAP.

This ETR also highlights some difficulties raised by the RLL service concepts described here. These grey areas include the role and application of regulation, and the overlap of service provided by RLL systems with the service provided by other applications (e.g. telepoint).

The substantive clauses of this ETR are as follows:

Clause 4 develops the concept of DECT RLL and defines:

- a reference model which identifies the interfaces which are important for describing the DECT RLL and the services, facilities and OA&M needed to support it;
- identifies a number of configurations which are representative of RLL applications and a few similar configurations which are not considered RLL applications and explains why these are so classified.

Clause 5 lists and describes services and facilities which are relevant to DECT RLL and indicates which are mandatory service and which are optional. It also address those performance parameters (both attributes and impairments) which should be achieved by a DECT RLL system.

Clause 6 addresses over the air OA&M aspects, discusses those tests facilities and alarm events which should be supported by a DECT RLL system and looks at specific OA&M aspects affected by portable subscriber units.

Clause 7 addresses the radio related issues such as range, capacity and spectrum needs.

Clause 8 considers specific safety issues which become relevant specifically in RLL systems.

Clause 9 raises some regulatory issues which are relevant to RLL systems but does not attempt to indicate whether these are significant problems - not to propose solutions.

Clause 10 explores some of the issues of mobility in RLL systems.

1 Scope

This ETSI Technical Report (ETR) introduces the concept of Digital Enhanced Cordless Telecommunications (DECT) Radio in the Local Loop (RLL) and specifies the service requirements to be met by a DECT RLL network. It amplifies and refines the general service requirements for RLL systems contained in ETR 139 [10] and provides the specific technical detail needed to implement each service requirement through the use of the DECT RLL Access Profile (RAP), ETS 300 765, parts 1 and 2 [15] and [16].

Some of these requirements are specified in terms of the transparency to services and facilities which a DECT RLL system shall, or may, make available to support applications. Some requirements are already supported by existing procedures within the DECT standards, while others require new features to be specified. These issues all imply requirements on the various DECT network components, and on the air interface(s) between them. Hence they imply requirements on the DECT RAP. However, this ETR is not concerned with how these requirements are met.

Further requirements are described which are imposed upon a DECT RLL network to support essential O&M facilities.

Various network configurations, which include DECT RLL networks are described, which need to be supported. Similar configurations incorporating DECT networks, but which are not considered DECT RLL applications, are also illustrated.

The ETR also identifies issues which might imply requirements and constraints on DECT RLL networks covering such aspects as safety, spectrum utilization and capacity as well as regulation issues which are not within ETSI domain to address in detail.

The ETR is aimed both at the general reader without detailed knowledge of DECT or of RLL and at those readers who wish to understand the standards applicable to RLL using DECT technology who will wish to use this ETR as an introduction to the DECT RAP.

2 References

[PSIST ETR 308:1999](https://standards.iteh.ai/catalog/standards/sist/b514186-9987-440-90b1-6920d8747d11/psist-etr-308-1999)

For the purposes of this ETR, the following references apply:

- [1] ETS 300 175-1: "Radio Equipment and Systems (RES); Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 1: Overview".
- [2] ETS 300 175-2: "Radio Equipment and Systems (RES); Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 2: Physical Layer".
- [3] ETS 300 175-3: "Radio Equipment and Systems (RES); Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 3: Medium Access Control (MAC) layer".
- [4] ETS 300 175-4: "Radio Equipment and Systems (RES); Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 4: Data Link Control (DLC) layer".
- [5] ETS 300 175-5: "Radio Equipment and Systems (RES); Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 5: Network (NWK) layer".
- [6] ETS 300 175-6: "Radio Equipment and Systems (RES); Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 6: Identities and addressing".
- [7] ETS 300 175-7: "Radio Equipment and Systems (RES); Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 7: Security features".

- [8] ETS 300 175-8: "Radio Equipment and Systems (RES); Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 8: Speech coding and transmission".
- [9] ETS 300 444: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Generic Access Profile (GAP)".
- [10] ETR 139: "Radio Equipment and Systems (RES); Radio in the Local Loop (RLL)".
- [11] ETS 300 659-1: "Public Switched Telephone Network (PSTN); Subscriber line protocol over the local loop for display (and related) services; Part 1: On hook data transmission".
- [12] ETS 300 659-2: "Public Switched Telephone Network (PSTN); Subscriber line protocol over the local loop for display (and related) services; Part 2: Off hook data transmission".
- [13] ETS 300 659-3: "Public Switched Telephone Network (PSTN); Subscriber line protocol over the local loop for display (and related) services; Part 3: Server display and script services".
- [14] ETR 310: "Radio Equipment and Systems (RES); Digital Enhanced Telecommunications (DECT); Traffic capacity and spectrum requirements for multi-system and multi-service applications co-existing in a common frequency band".
- [15] ETS 300 765-1: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); DECT Radio local loop Access Profile (RAP); Part 1: Basic telephony services".
- [16] ETS 300 765-2: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); DECT Radio local loop Access Profile (RAP); Part 2: Advanced telephony services".
- [17] ETR 246: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Application of DECT Wireless Relay Stations (WRS)".
- [18] ITU-R Recommendation 697: "Error performance objectives for the local-grade portion at each end of an ISDN connection utilizing digital radio-relay systems".
- [19] 92/44/EEC: "Council Directive 92/44/EEC of 5 June 1992 on the application of open network provision to leased lines".
- [20] ETS 300 450: "Business TeleCommunications (BTC); Ordinary and Special quality voice bandwidth; 2-wire analogue leased lines (A2O and A2S); Terminal equipment interface".
- [21] TBR 15: "Business TeleCommunications (BTC); Ordinary and Special quality voice bandwidth 2-wire analogue leased lines (A2O and A2S); Attachment requirements for terminal equipment interface".
- [22] ETS 300 453: "Business TeleCommunications (BTC); Ordinary and Special quality voice bandwidth 4-wire analogue leased lines (A4O and A4S); Terminal equipment interface".
- [23] TBR 17: "Business TeleCommunications (BTC); Ordinary and Special quality voice bandwidth 4-wire analogue leased lines (A4O and A4S); Attachment requirements for terminal equipment interface".

- [24] ETS 300 448: "Business TeleCommunications (BTC); Ordinary quality voice bandwidth 2-wire analogue leased line (A2O); Connection characteristics and network interface presentation".
- [25] ETS 300 449: "Business TeleCommunications (BTC); Special quality voice bandwidth 2-wire analogue leased line (A2S); Connection characteristics and network interface presentation".
- [26] ETS 300 451: "Business TeleCommunications (BTC); Ordinary quality voice bandwidth 4-wire analogue leased line (A4O); Connection characteristics and network interface presentation".
- [27] ETS 300 288: "Business TeleCommunications (BTC); 64 kbit/s digital unrestricted leased line with octet integrity (D64U); Network interface presentation".
- [28] ETS 300 289 with amendment A1: "Business TeleCommunications (BTC); 64 kbit/s digital unrestricted leased line with octet integrity (D64U); Connection characteristics".
- [29] ETS 300 290 with amendment A1: "Business TeleCommunications (BTC); 64 kbit/s digital unrestricted leased line with octet integrity (D64U); Terminal equipment interface".
- [30] TBR 14 with amendment A1: "Business TeleCommunications (BTC); 64 kbit/s digital unrestricted leased line with octet integrity (D64U); Attachment requirements for terminal equipment interface".
- [31] ITU-T Recommendation G.113: "Transmission impairments".
- [32] ITU-T Recommendation G.114: "One-way transmission time".
- [33] ITU-T Recommendation G.173: "Transmission planning aspects of the speech service in digital public land mobile networks".
<https://standards.iteh.ai/catalog/standards/psist-etr-308-1999/40-90b1-6920d8747d11/psist-etr-308-1999>
- [34] ITU-T Recommendation G.821: "Error performance of an international digital connection forming part of an integrated services digital network".
- [35] ETS 300 109: "Integrated Services Digital Network (ISDN); Circuit-mode 64 kbit/s 8 kHz structured bearer service category usable for speech information transfer; Service description".
- [36] ITU-T Recommendation I.231: "Circuit-mode bearer service categories".
- [37] ETS 300 110: "Integrated Services Digital Network (ISDN); Circuit-mode 64 kbit/s 8 kHz structured bearer service category usable for 3,1 kHz audio information transfer; Service description".
- [38] ETS 300 001: "Attachments to Public Switched Telephone Network (PSTN); General technical requirements for equipment connected to an analogue subscriber interface in the PSTN".
- [39] 91/263/EEC: "Council Directive of 29 April 1991 on the approximation of the laws of the Member States concerning telecommunications terminal equipment, including the mutual recognition of their conformity".
- [40] ETS 300 452: "Business TeleCommunications (BTC); Special quality voice bandwidth 4-wire analogue leased line (A4S); Connection characteristics and network interface presentation".
- [41] ETS 300 324: "Signalling Protocols and Switching (SPS); V interfaces at the digital Local Exchange (LE); V5.1 interface for the support of Access Network (AN)".

- [42] ETS 300 347: "Signalling Protocols and Switching (SPS); V interfaces at the digital Local Exchange (LE) V5.2 interface for the support of Access Network (AN)".
- [43] TBR 6: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); General terminal attachment requirements".
- [44] TBR 10: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT) General terminal attachment requirements; Telephony applications".
- [45] TBR 22: "Radio Equipment and Systems (RES); Attachment requirements for terminal equipment for Digital Enhanced Cordless Telecommunications (DECT) Generic Access Profile (GAP) applications".
- [46] CCITT Recommendation V.23 (1988): "600/1200-baud modem standardized for use in the general switched telephone network".
- [47] ITU-T Recommendation V.34: "A modem operating at data signalling rates of up to 28 800 bit/s for use on the general switched telephone network and on leased point-to-point 2-wire telephone-type circuits".
- [48] IEC 1000-4-5 (1995): "Electromagnetic compatibility (EMC) Part a: Testing and measurement techniques, Section 5: Surge immunity test"
- [49] CCITT Recommendation E.182 (1988): "Application of tones and recorded announcements in telephone services".
- [50] ITU-R Recommendation 755: "Point-to-multipoint systems used in the fixed service".
 (standards.iteh.ai)
- [51] ITU-R Recommendation 756: "TEMA point-to-multipoint systems used as radio concentrators".
<https://standards.iteh.ai/catalog/standards/sist/fb514186-9987-440-90b1-102307757-1/pb514186-9987-440-90b1-102307757-1>
- [52] ITU-R Recommendation 757: "Basic system requirements and performance objectives for cellular type mobile systems used as fixed systems".
- [53] British Telecom Technology Journal Vol 7 No 2 (April 1989): "RG Blake: The role of radio for the fixed local access".
- [54] ETS 300 049: "Integrated Services Digital Network (ISDN); ISDN Packet Mode Bearer Services (PMBS) ISDN Virtual Call (VC) and Permanent Virtual Call (PVC) bearer services provided by the D-channel of the user access - basic and primary rate".
- [55] ITU-R Recommendation F.697: "Error performance and availability objectives for the local-grade portion at each end of an ISDN connection utilizing digital radio-relay systems".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of this ETR, the following definitions apply:

authentication (user): The process whereby a DECT subscriber is positively verified to be a legitimate user of a particular Fixed Part (FP).

NOTE 1: 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 2: Call may sometimes be used to refer to processes of all layers, since lower layer processes are implicitly required.

cell: The domain served by a single antenna(e) system (including a leaky feeder) of one FP.

NOTE 3: A cell may include more than one source of radiated Radio Frequency (RF) energy (i.e. more than one radio end point).

Cordless Terminal Adapter (CTA): Fixed physical grouping that contains a DECT PT and a line interface.

DECT Radio in the Local Loop (RLL): A RLL system where DECT air interface is used to connect Customer Premises Equipment (CPE) to the operator's equipment.

NOTE 4: The customer as well as the operator's equipment are determined by the position of the Network Termination Point (NTP).

DECT RLL Access Profile (RAP): The profile that ensures the air interface interoperability of DECT RAP CTAs and DECT RAP FPs and WRS, if applied.

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

incoming call: A call received at a DECT Portable Part (PP) or CTA.

meter pulses: Are used for initiation of unit-based subscriber charging.

Network Termination Point (NTP): Is the point that defines the border between the equipment provided by the network operator and the CPE.

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

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

Radio in the Local Loop (RLL): Diversity of techniques & applications where connection of customers' TE to the LE is achieved by a configuration which includes an air interface (ETR 139 [10]).

register recall (Earth Loop register Recall / Time Break register Recall (ELR/TBR)): The ability of the CTA to request the initiation of the supplementary service "register recall" over the DECT interface and the ability of the DECT FP to transmit the request to the LE.

subscription registration: The infrequent process whereby a subscriber obtains access rights to one or more FPs.

NOTE 5: Subscription registration is usually required before a user can make or receive calls.

subscription load/modify: A procedure of loading subscription registration data in a PP or CTA in real-time over the air interface.

Wireless Relay Station (WRS): A physical grouping that combines elements of both PTs and FTs to relay information on a physical channel from one DECT termination to a physical channel to another DECT termination.

NOTE 6: The DECT termination can be a PT or an FT or another WRS.

WRS-CTA: A physical grouping comprising both the functions of a WRS for communication with a DECT PP, and a CTA with a port for connection of a (wired) terminal.

3.2 Abbreviations

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

ADPCM	Adaptive Differential Pulse Code Modulation
B-ISDN	Broadband Integrated Services Digital Network
CLIP	Calling Line Identity Presentation
CPE	Customer Premises Equipment
CTA	Cordless Terminal Adapter
CTM	Cordless Terminal Mobility
DAS	DECT Access Site
DECT	Digital Enhanced Cordless Telecommunications
DTMF	Dual Tone Multi Frequency
DT-AS	Dual Tone Alerting Signal
ELR	Earth Loop register Recall
FP	Fixed Part
FT	Fixed radio Termination
FRU	Field Replaceable Unit
GAP	Generic Access Profile
GoS	Grade of Service
ISDN	Integrated Services Digital Network
LD	Loop Disconnect
LE	Local Exchange
NT1	ISDN Network Termination 1
NT2	ISDN Network Termination 2
NTP	Network Termination Point
OA&M	Operation, Administration and Maintenance
ONP	Open Network Provision
PBX	Private Branch Exchange
POTS	Plain Old Telephone Service
PSTN	Public Switched Telephone Network
PP	Portable Part
PT	Portable radio Termination
PTO	Public Telecommunications Operator
QDU	Quantization Distortion Unit
RAP	RLL Access Profile
RFP	Radio Fixed Part
RLL	Radio in the Local Loop
RP-AS	Ringling Pulse Alerting Signal
TAS	Terminal Alerting Signal
TBR	Time Break register Recall
TE	Terminal Equipment
TE1	ISDN Terminal Equipment type 1
UPT	Universal Personal Telecommunication
WRS	Wireless Relay Station
WAM	Wide Area Mobility

4 RLL reference model and configurations

4.1 Definition

The **local loop** is that part of a Public Telecommunications Operators (PTOs) network between the LE (see subclause 4.2.1) and either a NTP at the customer's premises or a defined air interface to customers' portable TE.

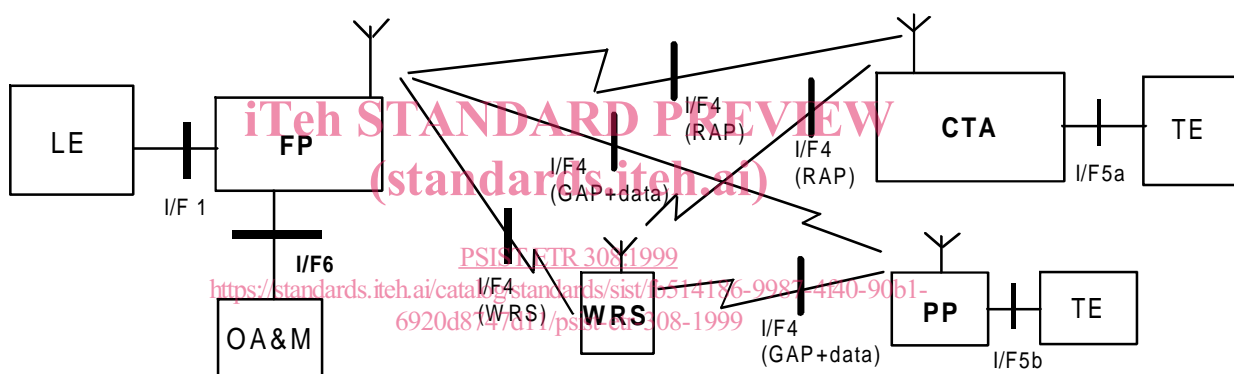
RLL describes the situation where the service is delivered to the customer's premises or to the customers portable TE by radio means. **DECT RLL** describes the situation where this radio interface complies with DECT Air Interface Standards.

Hence:

DECT RLL is the whole of that segment of a PTOs network between the LE and either a NTP on the customers premises or the customers portable terminal, provided that the service is delivered to the customer's premises or portable terminal by a radio interface compliant with the DECT air interface standards.

4.2 The DECT RLL reference model

A reference model for DECT RLL systems is presented in figure 1. This reference model originates from ETR 139 [10], but has been refined for the purpose of this ETR.



TE: Terminal Equipment	I/F1: LE to FP Interface
FP: Fixed Part	I/F4: DECT Air Interface
WRS: Wireless Relay Station	I/F5a: CTA to Terminal Interface
CTA: Cordless Terminal Adapter	I/F5b: PP to Terminal Interface
PP: Portable Part	I/F6: OA&M Interface

NOTE 1: In ETR 139 [10] reference model, two separate entities, i.e. the controller and the Radio FPs comprises what is called FP in the DECT RLL reference model. In this respect there is no reason to define an I/F3 interface.

NOTE 2: A single CTA can serve more than one TEs simultaneously.

Figure 1: DECT RLL reference model

The DECT RLL reference model differs from the one described in the ETR 139 [10], due to:

- the presence of the WRS;
- the presence of both CTA and PP.

Depending on whether the end-user uses a CTA or a PP, the IF/4 interface can be either RAP or GAP compliant. This ETR focuses on RAP and describes the services at IF/1 expected to be provided at IF/5a. The OA&M facilities defined in this ETR are only the ones that require information to be transported over the RAP air interface.