



SLOVENSKI STANDARD
PSIST TR 101 370:2000
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Digital Enhanced Cordless Telecommunications (DECT); Implementing DECT Fixed
Wireless Access (FWA) in an arbitrary spectrum allocation

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Ta slovenski standard je istoveten z: **PSIST TR 101 370:2000** **TR 101 370 Version 1.1.1**
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TR 101 370 V1.1.1 (1998-09)

Technical Report

Digital Enhanced Cordless Telecommunications (DECT); Implementing DECT Fixed Wireless Access (FWA) in an arbitrary spectrum allocation

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Reference

DTR/DECT-050150 (coo00ics.PDF)

Keywords

DECT, WLL

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Sous-Préfecture de Grasse (06) N° 7803/88

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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 Introduction to DECT services and applications.....	8
4.1 Services and spectrum efficiency of DECT Fixed Wireless Access (FWA) applications.....	11
4.2 Up-banding of DECT.....	11
4.2.1 Partial up-banding.....	12
4.2.2 Full up-banding.....	12
4.3 The DECT FWA standards.....	12
4.3.1 The DECT RAP standard, ETS 300 765.....	12
4.3.2 The new DECT modulation options.....	12
5 Requirements.....	13
5.1 Definition of access channels, bearers.....	13
5.1.1 Definition of Fc, Fd, Fcu and Fcd.....	13
5.1.2 TDD.....	13
5.1.3 FDD.....	14
5.1.3.1 Time domain offset for low cost spectrum efficient FDD applications.....	14
5.2 Dynamic Channel Selection (DCS) algorithms.....	14
5.3 Antenna diversity algorithms.....	15
5.4 Operator codes, carrier number and RF-band definitions.....	15
5.5 Carrier control.....	15
5.6 General requirements related to TBR 6.....	16
5.7 Flexible generic regulatory requirements for applications of Fixed Services within 2 200 MHz to 105 GHz.....	17
5.7.1 The generic regulatory environment.....	17
Annex A (informative): Examples of DECT FWA applications in frequency band allocations for Fixed Services within 2 200 MHz to 105 GHz.....	18
A.1 Radio frequency bands for DECT Fixed Wireless Access (FWA) applications in the range 2 200 MHz to 105 GHz.....	18
A.2 FWA in frequency bands in the range 3 400 MHz to 4 200 MHz.....	18
A.2.1 Block allocations arrangement.....	19
A.2.1.1 Block allocation arrangement 50 MHz in CITELE countries.....	19
A.2.1.2 Block allocation arrangement 100 MHz in CITELE countries.....	19
A.2.1.3 Block allocation arrangements recommended in the CEPT countries.....	20
Annex B (informative): Feasibility of DECT FWA TDD applications in frequency band allocations for Fixed Services within 2 200 MHz to 105 GHz.....	22
B.1 TDD system features compared to FDD.....	22
B.2 Coexistence of DECT FWA TDD applications in frequency band allocations for Fixed Services.....	23
B.2.1 The prime source to interference is the emissions due to modulation.....	23
B.2.1.1 Requirements of emissions due to modulation.....	25
B.2.2 Probability of interference (supposing similar power and similar out-of-sub-band attenuation for modulation spectrum mask for FDD and TDD systems).....	25

Bibliography27
History28

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Foreword

This Technical Report (TR) has been produced by ETSI Project Digital Enhanced Cordless Telecommunications (DECT).

The present document provides a guide on how to implement and test DECT FWA (WLL) systems operating at frequencies outside the frequency bands described in TBR 6 [9].

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1 Scope

The present document is a guide how to implement and test Digital Enhanced Cordless Telecommunications (DECT) FWA (WLL) systems operating at frequencies outside the frequency-bands described in TBR 6 [9]. The need to have this arises if DECT equipment is to be adapted to national frequency allocations that differ from the basic 1 880 MHz to 1 900 MHz DECT frequency band. This includes not only the radio frequency band around 1,9 GHz, as stated in [19], but also the radio frequency bands for Fixed Services within 2 200 MHz to 105 GHz and has special focus on applications in the 3,4 GHz to 3,7 GHz band.

The present document is thereby also a guide for approval of such DECT systems in the above mentioned countries.

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.

- IT-**STANDARD** PREVIEW
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- PSIST TR 101 370:2000
- [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 300 175-5: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 5: Network (NWK) layer".
- [6] EN 300 175-6: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 6: Identities and addressing".
- [7] EN 300 175-7: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 7: Security features".
- [8] EN 300 175-8: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 8: Speech coding and transmission".
- [9] TBR 6: "Digital Enhanced Cordless Telecommunications (DECT); General terminal attachment requirements".
- [10] ETS 300 765-1: "Digital Enhanced Cordless Telecommunications (DECT); Radio in the Local Loop (RLL) Access Profile (RAP); Part 1: Basic telephony services".
- [11] ETS 300 765-2: "Digital Enhanced Cordless Telecommunications (DECT); Radio in the Local Loop (RLL) Access Profile (RAP); Part 2: Advanced telephony services".

- [12] ETR 308: "Digital Enhanced Cordless Telecommunications (DECT); Services, facilities and configurations for DECT in the local loop".
- [13] ETR 310: "Digital Enhanced Cordless Telecommunications (DECT); Traffic capacity and spectrum requirements for multi-system and multi-service DECT applications co-existing in a common frequency band".
- [14] ETR 178: "Digital Enhanced Cordless Telecommunications (DECT); A high level guide to the DECT standardization".
- [15] TBR 22: "Attachment requirements for terminal equipment for Digital Enhanced Cordless Telecommunications (DECT) Generic Access Profile (GAP) applications".
- [16] 91/287/EEC: "Council Directive of 3 June 1991 on the frequency band to be designated for the coordinated introduction of digital European cordless telecommunications (DECT) into the Community".
- [17] 91/288/EEC: "Council Directive of 3 June 1991 on the frequency band to be designated for the coordinated introduction of digital European cordless telecommunications (DECT) into the Community".
- [18] 90/388/EEC: "Commission Directive of 28 June 1990 on competition in the markets for telecommunications services".
- [19] TR 101 159 (V1.2): "Digital Enhanced Cordless Telecommunications (DECT); Implementing DECT in an arbitrary spectrum allocation".
- [20] EN 301 021: "Transmission and Multiplexing (TM); Digital Radio Relay Systems (DRRS); Time Division Multiple Access (TDMA); Point-to-multipoint DRRS in Frequency Division Duplex (FDD) bands in the range 3 GHz to 11 GHz"

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3 Definitions and abbreviations

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3.1 Definitions

For the purposes of the present document, the following definitions apply:

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.

Portable Part (DECT Portable Part) (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.

3.2 Abbreviations

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

CTA	Cordless Terminal Adapter
CTR	Common Technical Regulation
DAS	DECT Access Site
DCS	Dynamic Channel Selection
DECT	Digital Enhanced Cordless Telecommunications
ERO	European Radio communications Office
EUT	Equipment Under Test
FDD	Frequency Division Duplex
FP	Fixed Part
FS	Fixed Service
FSS	Fixed Satellite Service
FWA	Fixed Wireless Access

GAP	Generic Access Profile
GPS	Global Positioning System
ISDN	Integrated Services Digital Network
LOS	Line Of Sight
P-MP	Point-to-Multipoint
POTS	Plain Old Telephone Service
PP	Portable Part
PSTN	Public Switched Telephone Network
RAP	RLL Access Profile
RF	Radio Frequency
RFP	Radio Fixed Part
RLL	Radio in the Local Loop
TBR	Technical Basis for Regulation
TDD	Time Division Duplex
TE	Terminal Equipment
WLL	Wireless Local Loop
WRS	Wireless Relay Station

NOTE: FWA, RLL and WLL cover almost the same concept. FWA is the ITU term and has therefore been used wherever possible and suitable in this document. RLL is used in the DECT standards and most other ETSI references. WLL is used in new documents.

4 Introduction to DECT services and applications

DECT is a general radio access technology for wireless telecommunications. It is a high capacity digital technology, for a wide cell radii ranging from a few meters to several kilometres, depending on application and environment. It provides telephony quality voice services, and a broad range of data services, including Integrated Services Digital Network (ISDN) and packet data. It can be effectively implemented in a range from simple residential cordless telephones up to large systems providing a wide range of telecommunications services, including FWA (WLL).

The DECT instant or continuous dynamic channel selection provides effective coexistence of uncoordinated installations of private and public systems on the common designated DECT frequency band, and avoids any need for traditional frequency planning. See ETR 310 [13] for further explanation.

Figure 1 gives a high level graphic overview of applications and features of DECT.

A list of all ETSI standards and ETSI technical reports for DECT are given in ETR 178 [14]. Annex A of ETR 178 [14] contains a list of the essential standards and reports.

The DECT standardization has developed a modern and complete standard within the area of cordless telecommunications.

The European wide allocation of the frequency band 1 880 MHz to 1 900 MHz, has been reinforced by the Council Directive 91/287/EEC [16]. Many other countries world-wide have also adopted spectrum allocation for DECT.

DECT carriers have been defined for the whole spectrum range 1 880 MHz to 1 937 MHz in the basic DECT standards EN 300 175, parts 1 to 8 [1] to [8] and TBR 6 [9]. This allows DECT services to be introduced in countries where the basic DECT frequencies 1 880 MHz to 1 900 MHz are not available.

For rapid introduction of DECT, Common Technical Regulations (CTRs) have been established for DECT relating to harmonized DECT standards, Technical Bases for Regulation (TBRs) and ENs. TBRs contain the technical requirements of a CTR. Approval to a CTR gives access to a single European market through a simplified legal procedure.

The Council Recommendation 91/288/EEC [17] recommends that the DECT standard should meet user requirements for residential, business, public pedestrian and radio in the local loop applications. The standard should also provide compatibility and multiple access rights to allow a single handset to access several types of systems and services, e.g. a residential system, a business system and one or more public systems. The public applications should be able to support full intersystem European roaming of DECT handsets. The DECT standard provides these features. Of special importance is RAP [10], [11] and the Generic Access Profile (GAP) and the related TBR 22 [15], which define common

mobility and interoperability requirements for private and public DECT speech services. For a more comprehensive overview of the DECT standardization see ETR 178 [14].

The European Commission has elaborated an amendment of Directive 90/388/EEC [18] on competition in the market for telecommunications services. This Directive defines DECT as an important alternative to the wired Public Switched Telephone Network (PSTN)/ISDN network access. Furthermore any restriction on the combination of DECT with other mobile technologies are to be withdrawn.

The emerging deregulation of fixed services will also speed up fixed-mobile convergence in service offerings from operators. The different DECT interoperability profile standards are designed to facilitate provision of mixtures of fixed and mobile services through a single infrastructure.

Recognizing that DECT FWA in the frequency band 1 880 MHz to 1 937 MHz has been already specified in standards EN 300 175 [8], TBR 6 [9], and TR 101 159 [19], the aim of the present document is to provide technical requirements that can be applied for DECT FWA approval in countries having FWA/PMP spectrum allocation in frequency bands for Fixed Services within 2 200 MHz to 105 GHz. The present document consists of references to the relevant ETSI DECT standards (TBR 6 [9]) and amendments required for application in a general spectrum allocation band.

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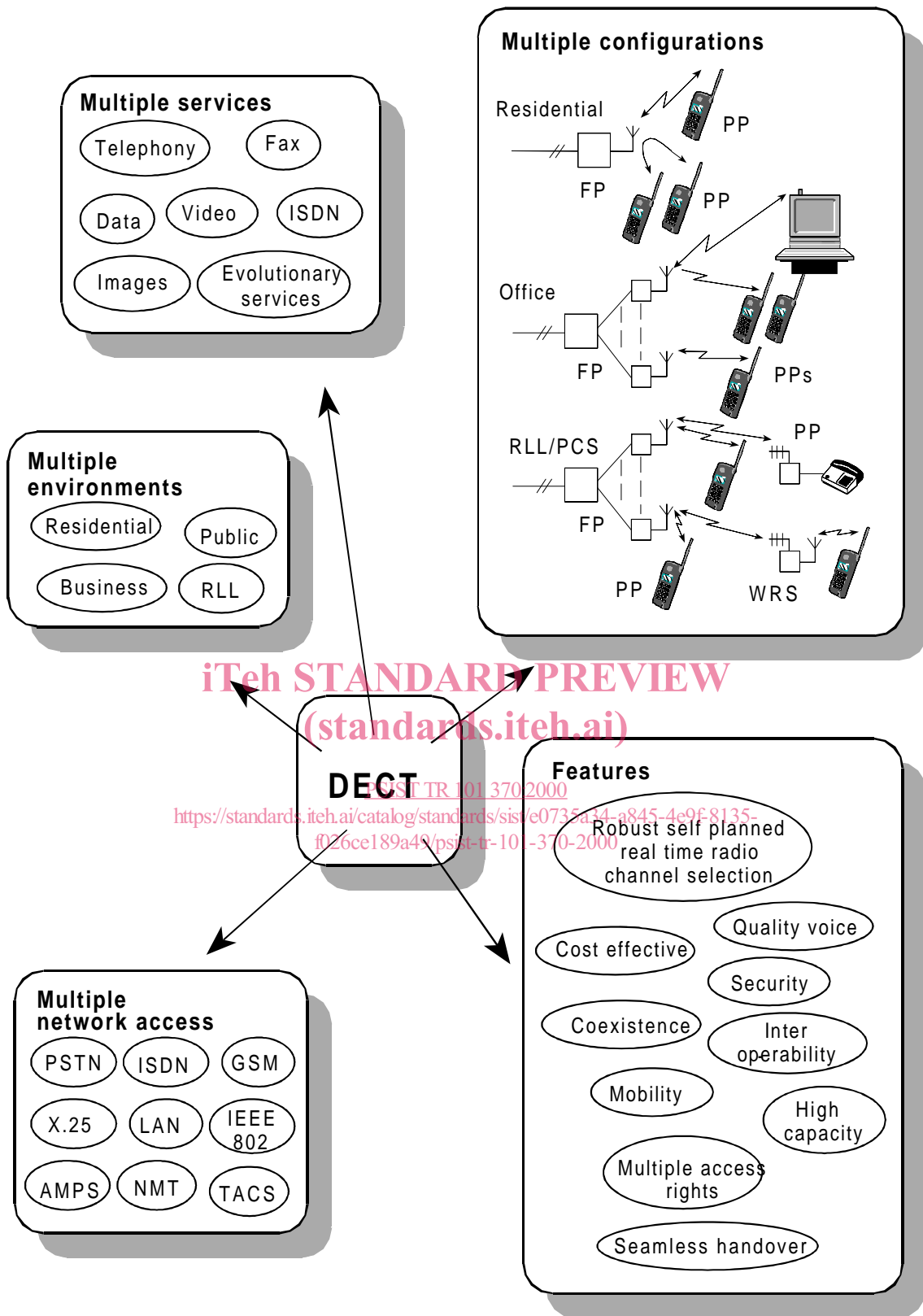


Figure 1: Overview of DECT applications and features