DECT - Digital Enhanced Cordless Telecommunications

Digital Enhanced Cordless Telecommunications (DECT, originally Digital European Cordless Telephony, pronounced “dekt” for short) is an international standard for telecommunications using radio technology, especially for cordless telephones. DECT is a trademark of the European Telecommunications Standards Institute (ETSI) with extensive specifications.

Fields of application

DECT is basically connection-oriented and is primarily designed for so-called picocellular telephony within buildings in which a range or a cell radius of 30 to 50 metres can be achieved; transmission distances of 300 metres are possible outdoors. The maximum permitted output power is 250 mW.

In contrast to mobile radio systems, DECT is a pure access technology with a few subscribers (1 to 6) via a common base station on a suitable basic network. DECT does not describe the network itself. The connection is made with a gateway, which is usually referred to as the base station. In most cases, they are converted into the public telephone network. Newer technologies such as IP telephony are also available on the market. However, there are also devices that do not have a gateway to a network, such as baby monitors.

DECT uses frequency ranges below 2.45 GHz other than WLAN, Bluetooth etc. and therefore does not interfere with these networks if there is sufficient interference immunity. The G.726 codec, which uses a bit rate of 32 kbit/s, is used for voice transmission. It takes into account the low data rates and limited computing power of mobile devices available for the standardization of DECT.

Mobility characteristics

DECT supports short-term mobility with specified quality and good comprehensibility. The base station within a multi-cell radio network is changed by forwarding it to another cell (automatic handover) and long-term mobility is achieved by logging it into an external network (automatic roaming). Alternatively, you can log on manually to another base station or in another base network. These mobility characteristics are not fully standardized and require appropriate precautions in the end devices or manual settings depending on the type.

If there is no mobility, a distance of several kilometres can be covered with repeaters in conjunction with a directional antenna or if mobility is restricted at close range

Radio transmission and frequencies

The transmission is based on a Time Division Duplex and Time Division Multiple Access and Frequency Division Multiple Access method and operates in Europe in the frequency range from 1880 MHz to 1900 MHz, in which 10 channels with 1728 kHz bandwidth each are defined. ETSI also specifies expansion bands in the ranges 1900-1980 MHz, 2010-2025 MHz and 2400-2480 MHz.

DECT provides dynamic channel selection and assignment. For this purpose, all DECT devices keep an RSSI list (Received Signal Strength Indication). At regular intervals (at least every 30 seconds) all idle channels are scanned and entered in the list. If a new channel is required, the mobile device or base station selects the channel with the least interference using the RSSI list.

Security

Unauthorised use and eavesdropping are made more difficult with DECT, as with other mobile radio systems, by three methods, two of which are mandatory:

- Log in: The mobile subscriber notifies the base station of his readiness for reception.
- I.D.'S: Each time a call is established, the mobile device must identify itself to the base station by using a secret key.

In addition, there is a third, optional method of the DECT specification, encryption. It is either not implemented in many devices or switched off by default. The user data (voice or data) is coded during the radio connection and decoded on the opposite side, using a key that is known to both remote stations but is not transmitted via radio itself. The encryption standard used is called DECT Standard Cipher. Eavesdropping security is not guaranteed even with correctly implemented encryption.

DECT GAP profile

A subset of DECT, DECT-GAP (Generic Access Profile), allows communication between DECT devices from different manufacturers. GAP is just one of the profiles defined by ETSI that help to integrate DECT, which in itself replaces virtually only the data cable, into larger networks.

Although GAP guarantees that a handset from one manufacturer will work at another manufacturer's base station, this only applies to pure telephony, not to comfort functions such as listening to the answering machine or browsing the telephone book. In addition, the mobile device must first be logged on to the base station. Since the registration procedures of the different manufacturers often differ, difficulties may arise.
Snom Dect-Telefone:

- DECT solutions

Here you find a nice Video how to deploy a dect multicell Solution with a 3CX.


Source: https://de.wikipedia.org/wiki/Digital_Enhanced_Cordless_Telecommunications

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