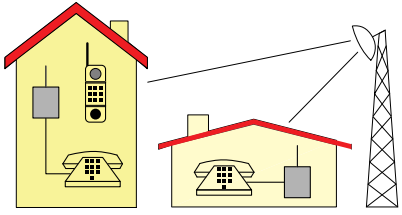
Optimizing wireless local loop systems

DECT is not only used for classic applications such as domestic cordless phones, but is also considered a solution for making the last step in the implementation of new telecommunications networks. This application called WLL (wireless local loop) is at present being tested in various field trials. Other than with GSM, DECT frequencies are not allocated to a specific operator but can be used by every type-approved DECT application. Consequently, the DECT frequency band has to be shared with DECT units working in an uncoordinated manner. The DECT standard allows for this by defining dynamic channel selection (DCS) and associated handover procedures that switch over to other channels in case of interference or sliding collisions to ensure interruption-free communication.

The algorithm for dynamic channel selection has not been defined exactly. The solutions are manufacturer-specific and not disclosed to the public. The traffic capacity specified for DECT, which is high in comparison with GSM, is based on theoretical considerations assuming an optimum DCS algorithm. To attain the specified value under real-world conditions, not only well-proven DCS algorithms but also geographical conditions have to be utilized optimally (eg by means of directional antennas at the transmitter and receiver end).



DECT Protocol Tester TS1220 (see News from Rohde & Schwarz No. 148) supports the operators of DECT WLL networks both in the assessment of DCS algorithms and the optimal positioning of antennas. In the monitoring mode the system synchronizes itself to a user-defined DECT fixed part and logs all data packets exchanged with portable parts via the air interface without intervening with the DECT network. On the basis of the data collected, failed or successful handover and communication attempts as well as occupied channels can be detected. Thus the operator can draw conclusions about the strong and weak points of channel selection algorithms.

In addition, the optional channel occupancy software informs the user about the receive levels measured on all DECT channels (RSSI value) and about the origin of the signals received. The signals might originate from coordinated or uncoordinated DECT units and non-identifiable interference sources (FIG). The physical parameters of the DECT signals and the identities exchanged are also indicated, so the signals can very easily be allocated to sources inside or outside the network. Moreover, the option allows antenna positions to be optimized using the RSSI values which are referred to the identities displayed. TS1220 can either be installed in a vehicle for mobile use and operated with its own height-adjustable antenna. Or it can be connected direct to the antennas used in the network.

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Reader service card 152/12 for further information on TS1220