

**SIEMENS**

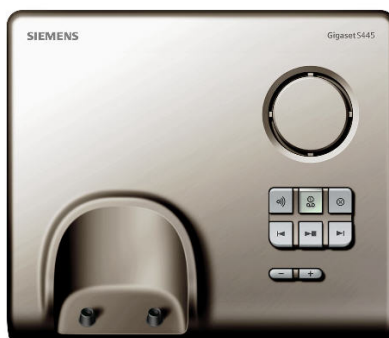
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**Gigaset S440****Gigaset S445**

Product Description Version 1.0

**The S440 digital cordless DECT telephone  
and the S445 with integrated answering machine**

**Expandable system with up to six handsets  
Free internal calls between handsets**



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## 1 Brief Description

### Gigaset S440 color system

#### Performance features

- **Multitasking with high quality**  
through enhanced hands free speaking and headset connection
- **Helps to manage daily life**  
through advanced phone book, organizer and data exchange
- **Convenient usage** - through colour display

#### Cordless DECT telephone - expandable to a telephone system

**Interface:** a/b (analog)  
**Operation:** HA / PBX  
**Standards:** DECT, GAP

#### Configuration

- Connection of 1 external line
- Up to 6 handsets can be registered
- Multibase for up to 4 base stations

#### Design

- Functional **modern high quality design**

#### Easy to use

- Plug and play
- Comfortable menu for easy use in 19 languages (partly available)
- Illuminated MWI, Handsfree key
- 1 programmable softkey

#### Handset-Display

- Illuminated 5 line graphical handset display (101x80 pixel, 4.096 colours)

#### In Idle

- Date and Time displayed (buffered in case of power loss)
- Display of screensaver (date and time are fade out)
- State of charging and field intensity displayed

#### During Connection

- Display of call duration

#### Directory

- Phonebook with up to 200 numbers and names

#### Handsfree Speaking / Headset

- Full duplex handsfree-speaking in base and handset
- Headset connection via Slim Lumberg (headset not included)

#### Dialing

- Voice-Dialing of up to 30 entries in handset
- Redialing of 10 last different dialing numbers
- Automatic redialing in handset
- Speed-Dialing using keys 2 – 9, 0 (shortcut)
- Automatic prefix dialing of network provider
- Network provider list
- Call By Call support

#### Receiving Calls

- Ringer with adjustable volume and 20 melodies (10 conventional + 10 polyphone)

#### Missed calls

- Illuminated MWI-key signaling new messages with comfortable access to message list
- Call Log /missed call list saving calls with CLIP/CNIP
- Missed call notification via SMS to external number

#### Additional features

- Support of network features
- 5 Appointments can be stored with texts in handset
- Editable internal handset name and base name
- Adjustable playback volume (3 levels)
- Adjustable internal call melody

#### Specials

- **illuminated keypad in handset**
- **10 standard ringtones + 10 polyphonic ringtones**
- Software for data transmission (download of polyphonic ring tones (PC SW and cable not in the standard package contained)
- voice announced caller ID in handset
- EMS-functionality; download of storable ringtones
- **Call charge display**
- VIP-entries, identification of VIP entries by assignment of ringer-melodies to every single entry
- **directory administration via PC** and Data transfer software (download of polyphonic ringtones) (PC-SW and cable not included in standard package)
- Keylock; dial of predefined emergency call number at keylock
- Babyphone functionality in handset

**SMS & Email**

- Sending and receiving of SMS with up to 1224 characters (concatenation of 8 SMS, provider dependent)
- Easy Text-Input-Method to help writing SMS (EATONI)
- Storage of up to 30 / 54 (AM-Version) SMS (depends on SMS length, protocol and CNIP parameters)
- Up to 3 personalized SMS-Inboxes
- Comfortable access to SMS-Services (info-channels) (provider dependent)
- Transmission of E-Mails via SMS with separate directory for E-Mail-Address
- Copy of telephone numbers from SMS to phonebook
- **MMS notification over SMS (Picasso)**
- Notification via SMS (missed calls, AM recordings)

**Features with more than 1 handset**

- 2 calls simultaneously (1 external/1 internal)
- Transfer of external calls to another handset with prior consultation call or recall
- Collective internal call in case of incoming external calls
- 3 party conference (1 external/2 internal participants)
- Directory transfer between handsets

**Connection with PABX**

- Access code

**Other**

- Ringing at handset and base
- Indoor/ outdoor up to 50/ 300 m
- Recharging of handset in base station
- Small additional charger
- Power supply
 

|         |                      |
|---------|----------------------|
| Handset | NiMH type AAA        |
| Base    | plug-in power supply |
- Operation time
 

|           |     |
|-----------|-----|
| Talk-Time | 10h |
|-----------|-----|

Differentiation to S100

Features retail version

Feature only DTAG/PTT, if urgently requested

## Gigaset S445 color system

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- 1 programmable softkey

#### Handset-Display

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#### During Connection

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#### Directory

- Phonebook with up to 200 numbers and names

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- voice announced caller ID in handset
- EMS-functionality; download of storable ringtones
- **Call charge display**
- VIP-entries, identification of VIP entries by assignment of ringer-melodies to every single entry
- **directory administration via PC** and Data transfer software (download of polyphonic ringtones) (PC-SW and cable not included in standard package)
- Keylock; dial of predefined emergency call number at keylock
- Babyphone functionality in handset

Differentiation to S150

Features retail version

Feature only DTAG/PTT, if urgently requested

**SMS & Email**

- Sending and receiving of SMS with up to 1224 characters (concatenation of 8 SMS, provider dependent)
- Easy Text-Input-Method to help writing SMS (EATONI)
- Storage of up to 30 / 54 (AM-Version) SMS (depends on SMS length, protocol and CNIP parameters)
- Up to 3 personalized SMS-Inboxes
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- Transfer of external calls to another handset with prior consultation call or recall
- Collective internal call in case of incoming external calls
- 3 party conference (1 external/2 internal participants)
- Directory transfer between handsets

**Connection with PABX**

- Access code

**Features of the integrated answering machine**

- Answering machine operations also via speaker independent voice control ("forward", "back", "delete") in 5 languages (German, English, French, Spanish, Italian) User guidance via handset and through keys on base
- Digital recording of voice messages with up to **25 minutes recording time**
- Predefined announcement (plug & play)
- 1 Individual announcement and 1 advisory announcement
- Time-controlled change between announcement and advisory message
- Display of new messages at the handset
- Calls can be recorded
- PIN-protected remote playback (4 digits)
- Date and Time are announced
- User guidance via announcement
- Recordings have unlimited protection against power failure
- Protection against Modem or Fax recordings

**Other**

- Ringing at handset and base
- Indoor/ outdoor up to 50/ 300 m
- Recharging of handset in base station
- Small additional charger
- Power supply
 

|         |                      |
|---------|----------------------|
| Handset | NiMH type AAA        |
| Base    | plug-in power supply |
- Operation time
 

|           |             |
|-----------|-------------|
| Talk-Time | 10h         |
| Standby   | up to 150 h |
- Weight
 

|         |           |
|---------|-----------|
| Handset | approx. g |
|---------|-----------|
- Dimensions
 

|         |        |         |
|---------|--------|---------|
| Handset | 1xx mm | (LxWxD) |
| Base    | 1xxmm  | (LxWxD) |

## Galicia S44

Cordless DECT mobile part

### Performance features

- **Multitasking with high quality**  
through enhanced hands free speaking and headset connection
- **Helps to manage daily life**  
through advanced phone book, organizer and data exchange
- **Convenient usage** - through colour display

#### Mobile part

- Mobile part with an illuminated 5 lines graphic display (101 x 80 pixel, 4.096 colours)
- Comfortable menu for simple use
- Illuminated MWI and free speaking button
- Illuminated keypad
- 1 programmable soft key
- Keylock ; a predefined number can be dialed if necessary
- Babyphone functionality
- Alarm clock as well as appointment function with text deposit (max. 5 entries)

#### In idle mode:

- Advertisement of date and time (safeguarded against power failure with base)
- Indication of a screen saver (Date & time are hidden)
- Advertisement of battery load and fieldstrength

#### In the conversation condition:

- Charge indicator or conversation time advertisement

#### Phone book

- Phone book for approx. 200 numbers/names
- Language phone book with 30 entries
- Identification of VIP entries by assignment of ringer-melodies to every single entry
- Phone book administration over PC (PC SW and cable not in the standard package contained)

#### Handsfree Speaking / Headset

- Full duplex handsfree-speaking
- Headset connection via Slim-Lumberg (Headset not containing in the scope of supply)

#### Making a telephone call

- Voice dialing in handset
- Redialing of the last 10 entries
- Automatic redialing
- Speed dialing over the buttons 2 –9, 0

#### Missed calls

- An illuminated MWI button signals the receipt of missed calls (with base)
- Fast access of the message list (with base)
- Caller list or missed calls are saved by means of CLIP (with base)
- Missed call notification via SMS to an external number (with base)

#### Audio

- 10 standard ring tones, 10 polyphonic ring tones, volume adjustable
- Software for data transmission (download of polyphonic ring tones + screensaver (PC SW and cable not in the standard package contained)
- voice announced caller ID in handset
- VIP-entries, identification of VIP entries by assignment of ringer-melodies to every single entry
- Regulable volume  
Hearing (3 steps); (5 steps) handsfree speaking

### Miscellaneous

- Indoor / outdoor up to 50/300 m
- Regcharging of the handset in the enclosed charger
- Power supply  
Mobile part      NiMH type AAA
- Operating time  
Talk time      10 H  
Stand-by      up to 150 H
- Weight  
Mobile part      tbd  
Charger      tbd
- Measurements  
Mobile part      tbd  
Charger      tbd
- Colours      tbd

### Differentiation to S1

## **2 Productdescription**

### **2.1 Gigaset S440 base station**

There are no controls on the base station apart from the registration/paging key. All further settings are made on the handset.

Up to 6 Gigaset S44 handsets can be registered. A internal call between 2 S44 handsets and simultaneously 1 external call from a further S44 handset is possible. The handset is charged in the charger and a flashing battery icon on the handset display indicates that charging is in progress; an audible tone indicates that the handset has been docked correctly into the base station.

The Gigaset S440 base station can be operated on a main analogue telephone line or on a PABX. Power is supplied to the base station by an external power supply unit.

### **2.2 Gigaset S445 base station**

#### **4.2.1 Operating**

The Gigaset S445 base station has all the controls needed for operating the integrated answering machine. However, all AM operations can also be done by every handset Gigaset S44 which is registered at the base station:

- Registration/ paging key
- Illuminated answering machine on/off key (also indicates new messages by flashing)
- Keys for playing back, skipping and deleting AM messages
- Keys for adjusting playback volume of the answering machine

## 2.2.2 Controls

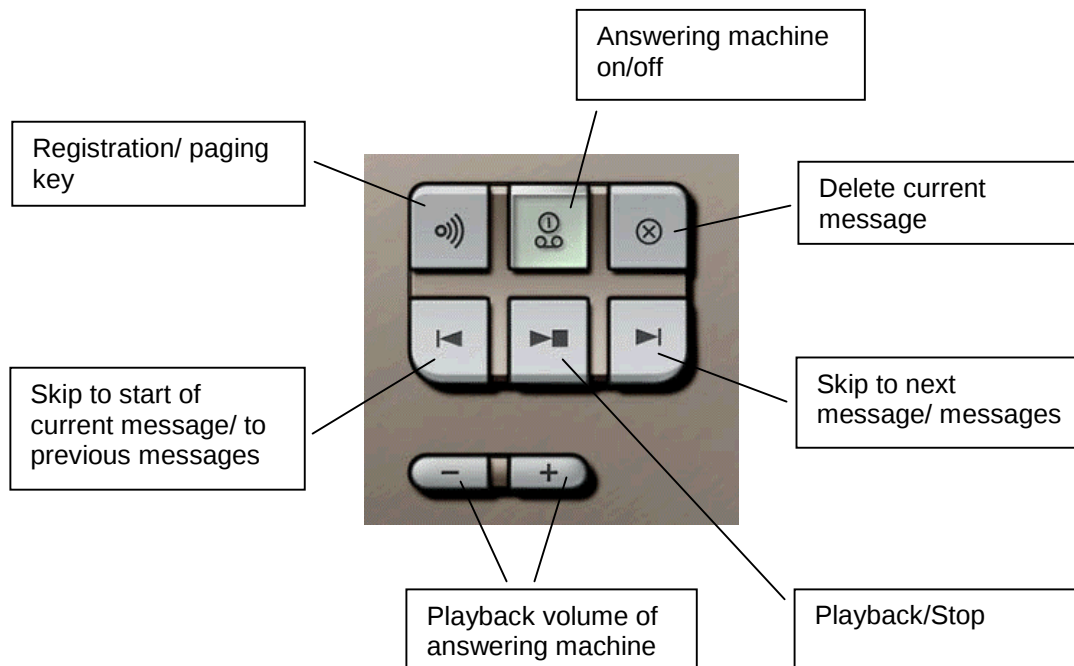


Fig. 1 – Controls on the Gigaset S445 base station

## 2.3 Gigaset S44 handset

To register a S44 handset for the first time it must be placed in the charging unit on the base station and the base station must be connected to the power supply. The registration process is automatic and takes about one minute. The handset has been successfully registered if the internal name of the handset appears in the display (e.g. "INT 1").

On registration, the handset is automatically assigned the next free number (1-6) and name (INT 1-6). A handset can also be assigned another internal number later or another name can be edited.

If a handset is already registered on another base station it must be manual registered. Hold down the registration key on the base station to place the base station in the registration status. Registration must be selected on the handset. Enter the 4-digit PIN to register the handset on the base station.

A handset can be deregistered by selecting it from the list of internal users.

### 2.3.1 Operating

The operating concept for the Gigaset S44 is based on menu-controlled user prompts, the navi key and two soft keys.

The difference between a hard key and a soft key is that the soft key is not allocated a predefined function. Each soft key is associated with a display field that shows the function of the soft key in the current context. The soft keys are therefore much more flexible than a comparable arrangement of hard keys.

The handset has an illuminated graphic LCD so it can be used without any problems even in poor lighting conditions.

### 2.3.2 Controls

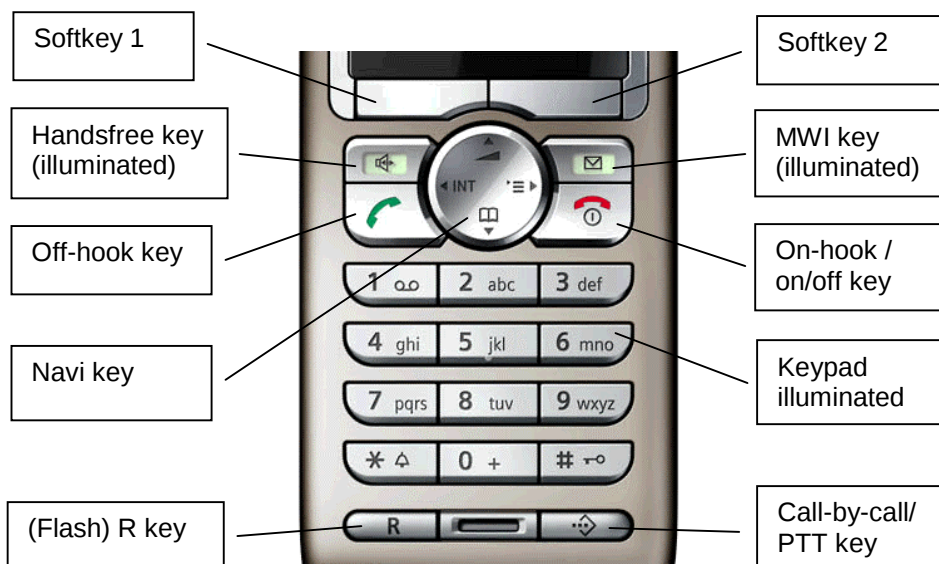
Each handset has all the controls needed for setting up and clearing down calls and for accessing the various features:

- Standard alphanumeric telephone keypad (12-key block)
- Talk and end-call keys for setting up and clearing down calls and for switching the handset on and off (long press on the end-call key)
- Tones for internal or external calls, confirmation tones, information tones and warning tones (to draw attention to incorrect keying for example)
- Illuminated handsfree key for signalling incoming calls and for switching the handsfree function on and off.
- MWI key: illuminated key for signalling new messages as well as for simple access to message lists
- Call-by-call key: key for access to the call-by-call list (prefixes of network operators) or to the list of PTT service numbers
- Signal key (R) (for operation on a PABX)

Special function keys for menu control on the handset:

- Navi key for navigation and the following functions when the handset is idle:
  - Telephone book on the "Down" navi key
  - Internal list on the "Left" navi key
  - Menu on the "Right" navi key
  - Voice dialling on the "Up" navi key (Longpress)
  - Volume Control on the "Up" navi key (Shortpress)

- Softkeys
  - Selecting menu options (also possible with the navi key)
  - Activating status-related functions (e.g. conference calls, consultation hold, etc.)
- 5-line illuminated colour display for showing
  - dialling and call duration or call charge information (only PTT)
  - date and time (power-failure protected with base)
  - messages (e.g. system messages, appointments, alarm times, anniversaries )
  - SMS messages



**Fig. 2 – Keypad**



Fig. 3 – Main menu with icons  
(Icons not final)



Fig. 4 – Display in idle mode

## 2.4 Gigaset Charger

The Gigaset Charger provides the same charging current as the Gigaset S440 base station. The recharge time is about five hours. The charging process for the handset battery is indicated by a flashing bar in the display. An acoustic signal sounds as soon as the handset is docked correctly into the charging unit. Commercially available NiMH AAA batteries can be charged with the Gigaset Charger. Power is supplied to the charging unit by an external power supply unit.



**Fig. 5 – Charger**

## 2.5 Setting up the telephone

The telephone is designed for straightforward installation by the user:

- Plug connection to the telephone line, impossible to insert incorrectly
- Plug-in power supply unit, impossible to insert incorrectly
- Standard configuration for simple setup (default settings for the main telephone station)
- Simple programming procedures for changing parameters or setting up features

Automatic registration is activated when an unregistered Gigaset S44 handset (i.e. the handset has not yet been registered on any base station) is placed in the charging unit of the base station. The registration process takes about one minute.

There is a manual registration procedure for registering further handsets on the base station (Gigaset S44 handsets that have already been registered on a different base station, and all GAP-compatible handsets). These handsets are registered by holding down the registration key on the top of the base and entering the four-digit PIN (Personal Identification Number). This ensures that other people cannot register on your base station via the air interface.

## 2.6 Scope of supply

The units are shipped in environmentally friendly packaging (cardboard box, no polystyrene).

Design parts are wrapped in polyethylene bags.

Gigaset S440/S445 pack:

(1 basic colour: silver)

- 1 Gigaset S440 or S445 base station
- 1 Gigaset S44 handset
- 1 power supply unit for the base station
- 2 NiMH AAA batteries
- 1 telephone cable
- 1 set of operating instructions
- 1 battery compartment cover for the handset
- 1 belt clip for the handset

Gigaset S44 handset and Charger bundle pack:

(1 basic colour: silver)

- 1 Gigaset S44 handset
- 1 set of operating instructions
- 1 belt clip
- 1 battery compartment cover for the handset
- 2 NiMH AAA batteries
- 1 charging unit
- 1 power supply unit for the charging unit

## 2.7 Colours

The Gigaset S440/S445 and S44 will be available in silver.

### 3 Compatibility

GAP will be supported with Products which are not included in PF2004.

## 4 General description of a DECT system

### 4.1 Description of DECT in general

The worldwide DECT standard, which was defined by the European Standards Institute (ETSI), describes radio and protocol specifications for the development of cordless telecommunication systems and equipment. In addition to the requirements of this standard, the European Commission has stipulated that all its members must keep the frequency band from 1880 to 1900 MHz free for DECT. In Europe at least, the DECT standard is now firmly established, with worldwide approval and introduction gaining in pace and with appropriate steps having already been taken in many countries. This harmonisation is making the approval process simpler and is therefore counteracting fragmentation of the European and worldwide telecommunication markets. The DECT standard, which has been officially endorsed since 1992, defines the radio and protocol requirements for a series of services and applications such as cordless telephony and data transfer, cordless LANs (**Local Area Networks**) and radio links between telephone users and the public switched telephone network (known as “**Wireless Local Loop**” or “**Radio in the Local Loop**”).

Radio transmission, i.e. the “air interface” between the base station and the handset, is standardised and organised as follows:

Several calls can be handled simultaneously by a radio unit.

Internal calls can be made free of charge.

Digital voice quality without hissing or clicking.

Automatic switching of radio channels in the event of a fault (optimised radio connection between the base station and the handset).

Rapid connection setup between the base station and the handset.

High call density is also possible within a radio cell.

High level of protection against eavesdropping thanks to digital transmission between the base station and the handset.

Several DECT units can be operated in close proximity without cell planning, i.e. the system can be expanded without any problems at all.

Innovative technology with Europe-wide approval for the air interface.

Data and voice can be transmitted.

GFSK (**G**aussian **F**requency **S**hift **K**eying) is the modulation method.

TDMA (**T**ime **D**ivision **M**ultiplex **A**ccess) is the transmission method

There are ten carrier frequencies in the range from 1880 to 1900 MHz.

The maximum transmission rate is 1.152 Mbit/s.

There are 24 simplex or 12 duplex channels per carrier frequency.

The voice information to be transmitted undergoes analogue/digital conversion with the aid of the ADPCM method (**A**daptive **D**ifferential **P**ulse **C**ode **M**odulation) and is compressed to a data rate of 32 kbit/s.

## 4.2 Description of GAP

In connection with the EN 301 406 (formerly CTR 06) and CTR 10 approval guidelines, the Generic Access Profile (GAP) specifies the air interface for the 3.1 kHz teleservice under the DECT standard. As a pure air-interface specification the

- basic telephony functions such as setting up and clearing down the voice connection,
  - associated radio-specific requirements and
  - mobility requirements
- are specified by GAP.

- Convenience functions that go beyond these basic functions,
- applications that go beyond voice communication,
- system configurations,
- local functions in the base station or handset and
- the user interface

are not specified and need not be supported by any manufacturer in their base stations or handsets. There is therefore adequate freedom for individual product design.

Following GAP Features are available for the customer:

- Outgoing call
- Off hook
- On hook (full release)
- Dialed digits (basic)
- Register recall
- Go to DTMF signalling (defined tone length)
- Pause (dialling pause)
- Incoming call
- Alerting
- Calling Line Identification (CLIP)

The difference between the DECT standard and GAP is as follows. The DECT standard can be used universally for different applications and allows features to be implemented in different ways. The DECT standard is therefore the basis for the DECT profiles; i.e., profiles are derived from the standard. A DECT profile specifies a particular application; in the case of GAP this is the air interface for the 3.1 kHz teleservice for DECT.

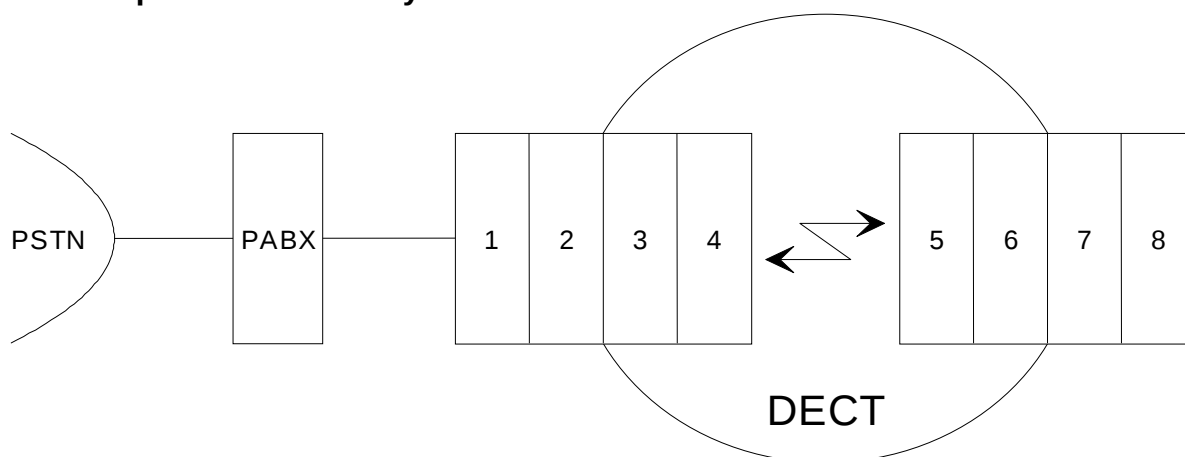
Implementing GAP achieves the following in terms of standardised functionality:

- DECT devices for telephony applications are checked for protocol compliance as part of the approval procedure.
- Each GAP-compliant handset will operate with any GAP-compliant base station in the home, office or in the public sector.
- Service providers can assume that a large number of potential customers already own a handset that can access the planned service.

- Customers can mix handsets and base stations of different manufacturers when putting their telephone systems together or when choosing their cordless telephones.

GAP, or the applicable CTR22 technical specification, guarantees compatibility of basic functions between different DECT systems (also between different manufacturers' systems).

### 4.3 Description of a DECT system



PSTN

PABX

Base station

Handset

- (1) a/b line
- (2) Analogue/digital conversion and digital/analogue conversion in the base station
- (3) Burst Mode Control (BMC)
- (4) Radio unit in base station
- (5) Radio unit in handset
- (6) Burst Mode Control
- (7) Analogue/digital conversion and digital/analogue conversion in the handset
- (8) User interface (acoustics, display and keypad)

The function blocks are described below:

#### **a/b line:**

Block (1) matches the electrical properties of the a/b line of the base station to that of the analogue telephone network. It also includes components for ring detection, dial pulse/tone generation and the flash function.

#### **Analogue/digital conversion and digital/analogue conversion:**

The voice information to be transmitted undergoes analogue/digital conversion with the aid of the ADPCM method (**A**daptive **D**ifferential **P**ulse **C**ode **M**odulation) and is compressed to a data rate of 32 kbit/s. The converted voice data is buffered until fetched by the burst mode controller. This block also handles echo suppression.

Conversion takes place in both directions, i.e. from analogue to digital and vice versa.

The same functionality is implemented in the base station and in the handset.

**Burst Mode Control (BMC):**

In the BMC function block the ADPCM-converted voice data is packed together with control information and other voice channels into a frame structure and is transmitted as a burst to the radio unit. In the opposite direction the burst is split into its separate channels and forwarded accordingly. The BMC also controls transmission and reception in the radio unit. Basically, the same functionality is implemented in the BMC in the base station and in the handset, with additional switching functions implemented in the base station.

**Radio unit:**

The function of the radio unit can be summarised as follows:

- Transmitting and receiving DECT radio signals
- Generating 10 carrier frequencies
- Switching between carrier frequencies
- Amplifying the DECT radio signal to its rated output
- Modulating/demodulating and Gaussian filtering the digital transmit/receive data
- Switching between the two antennas for diversity reasons (better coverage of the radio range) in the base station; there is only one antenna in the handset
- Measuring the receive field strength to evaluate the radio field
- Reducing power consumption during idle periods (between two bursts)

**User interface:**

The user interface converts the digital voice and control data into audible and visual signals that the user can understand. There is also a keypad for entering dialling information and so on.

## 5 Glossary

|       |                                              |
|-------|----------------------------------------------|
| ADPCM | Adaptive Differential Pulse Code Modulation  |
| DECT  | Digital Enhanced Cordless Telecommunications |
| DTMF  | Dual Tone Multit-Frequency (tone dialling)   |
| GAP   | Generic Access Profile                       |
| GFSK  | Gaussian Frequency Shift Keying (Modulation) |
| PABX  | Private Automatic Branch eXchange            |
| PIN   | Personal Identification Number               |

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