

# White Paper

July 2006

## K610

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Sony Ericsson

# Preface

## Purpose of this document

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This White paper will be published in several revisions as the phone is developed. Therefore, some of the headings and tables below contain limited information. Additional information and facts will be forthcoming in later revisions.

The aim of this White paper is to give the reader an understanding of technology and its main applications, as well as the main functions and features of the phone.

**Note:** This document contains general descriptions for this specific Sony Ericsson mobile phone.

People who can benefit from this document include:

- Operators
- Service providers
- Software developers
- Support engineers
- Application developers
- Market units and sales

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# Sony Ericsson Developer World

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On [www.sonyericsson.com/developer](http://www.sonyericsson.com/developer), developers will find documentation and tools such as phone White papers, Developers guidelines for different technologies, SDKs and relevant APIs. The Web site also contains discussion forums monitored by the Sony Ericsson Developer Support team, an extensive Knowledge Base, Tips & Tricks, example code and news.

Sony Ericsson also offers technical support services to professional developers. For more information about these professional services, visit the Sony Ericsson Developer World Web site.

## Document history

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Change history		
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2006-03-08	Version R2A	Second edition
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# Product overview

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K610 is a small, lightweight and compact 3G phone of modern classic design, and it has an ergonomic keypad for fast texting. This product offers impressive functionality and facilitates fast communication and an effective life style, which makes it suitable both for business and leisure.

Make a video call to show what words fail to convey, or take a picture with the 2 megapixel camera and upload it to your blog page on the move. With the picture blogging feature, it is easy to share and access content anywhere at any time. Your phone comes ready to run with settings installed.

Save time with push email. Emails are sent directly to your phone without you having to download them, and new emails can be prepared when the phone is in flight mode and then be sent off as soon as you turn on the phone. Time can also be saved by multitasking with applications running in the background, for example, you can browse the Web during your phone calls.

With HTML browsing, photos, articles and graphical elements are adapted to fit the large 1.9" 262k colour display. Moreover, RSS feeds are included to help you keep updated on news and information at any time.

Connect your phone to other devices using the supplied USB cable or the built-in Bluetooth™ feature for fast and easy synchronization and file transfer. For example, keep you calendar and contacts up-to-date by synchronizing your phone with Microsoft® Outlook on your computer.

3D games, a video player and a music player are included for your amusement. Copy music from a CD to your phone using the Disc2Phone software that is included in the phone box. Music as well as audio books and language courses can be stored on the Memory Stick Micro™ (M2™). There is support for Memory Stick Micro™ (M2™) of up to 1 GB (64 MB included).

Note: To provide continuously updated information about the implemented technology and functionality of this product, this White Paper will be released in updated revisions.

# Key features

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## 2.0 Megapixel camera and Video call camera

There are two built-in cameras. The main camera is 2.0 Megapixel and includes up to 2.5x digital zoom for still images and 4x digital zoom for video recording and telephony. The horizontal user interface adds extra usage quality when handling the camera.

There is also a video call camera. When entering video call mode via the desktop menu, the video call camera is activated. During a video call, it is possible to switch between the video call camera and the main camera. By switching to the main camera you can show the recipient what you see.

## 1.9 inch colour screen

The large 1.9 inch (176x220 pixels) full graphic 262k TFT colour screen enhances viewing, facilitating high-quality multimedia and entertainment.

## Memory Stick Micro™ (M2™)

There is support for Memory Stick Micro™ (M2™) of up to 1 GB (64 MB included). Different kinds of content (pictures, audio, video clips etc.) can be stored on the Memory Stick Micro (M2™) and transferred to other Memory Stick Micro™ (M2™) compatible products, for example digital cameras, camcorders, portable music players, TVs, photo printers and computers.

## Video camera

The built-in camera captures a video recording and stores it in the phone or on the Memory Stick Micro™ (M2™). A video clip can be shared as a picture message with friends or family. The phone supports QCIF size video recording and streaming and QVGA playback.

## RSS Reader

A built-in Really Simple Syndication (RSS) reader is used in combination with the Internet browser. When browsing, frequently updated content, such as news headlines and content from selected Web sites and blogs, can be received as feeds via a Web site. RSS feeds are set via the RSS reader and shown in the Internet browser.

## HTML Web browser support

Browse the Internet and look at the Web sites in a different way with Access NetFront 3.3 – an HTML browser which supports a complete Web standard suite.

## Picture blog

The Picture blog application provides an easy way for sending pictures to the Internet. The pictures are posted on your personal Web blog page. Your friends can then easily access and comment your pictures.

### **Push email**

K610 supports push email, a method of pushing new emails automatically to mobile devices. Push email gives a high usability to mobile email, with email being delivered in the background (similar to SMS or MMS).

### **Music player and Video player**

Play music, audiobooks and video clips, streamed or downloaded. The folder system enables you, for example, to organize your favourite songs into groups and create simple playlists. The music player key gives you direct access to your music files without having to browse the menus.

### **Disc2Phone**

Computer ripping software on the CD which is included in the kit.

You can create your own playlists and albums and transfer them to the phone. Music files can be transferred from a computer to the phone by using software included on the CD in the box. Search for and select music on your computer or audio CDs and convert your existing audio tracks to MP3 format.

### **PlayNow™**

Content such as music, video and images may be previewed before purchase. A unique direct-link to download music, video, games, themes and images, which is easy to use and promises you best-selling content for mobile download. By selecting PlayNow™, you can, for example, go straight to a live list of Top Music Hits.

All formats that are supported in the phone will be possible to download. Music, video and images may be previewed before purchase. The music format is MIDI, MP3, MP4, Real®8 or WAV (Polyphonic 24 voices or more).

### **3D Gaming**

Gaming is a very popular feature in mobile phones, and with Java™, users can download new games and skill levels to further enhance the entertainment experience. Several embedded games are included in the phone at purchase.

### **Java™**

Download additional information- and entertainment- based applications, for example productivity enhancing applications, e-mail clients and games. This gives users a chance to personalize the functions and features in their phones, and developers the opportunity to create new applications.

### **Bluetooth™ wireless technology**

Several devices can be connected to K610 simultaneously using Bluetooth wireless technology within a range of up to 10 meters. For example, the user can answer a call using a Bluetooth headset and send images to another phone at the same time. There is support for Bluetooth version 2.0 with enhanced data rate (EDR).

### **Bluetooth™ audio streaming**

Listen to audio in compatible devices.

By connecting a Bluetooth A2DP compatible accessory you can enjoy high quality stereo audio streaming wirelessly from the phone. Many A2DP accessories also support the Bluetooth Audio Video Remote Control Profile (AVRCP) – allowing you to control the music player in the phone using the accessory interface.

### **USB 2.0 mass storage**

When connecting the phone to a computer using the provided USB cable, the Memory Stick Micro™ (M2™) appears on the computer screen as a removable disk along with other disks and drives in the computer. You can then quickly and easily drag and drop items between folders in the phone and the computer, such as images, documents, music and video.

### **Personal Information Management (PIM)**

Stay up to date with everyday events by synchronizing phone contacts, calendar appointments and tasks in the phone with similar programs in a computer. The USB cable which comes with the phone, or the built-in Bluetooth feature can be used together with the synchronization software which is available on the CD in the kit or can be downloaded from [www.sonyericsson.com/support](http://www.sonyericsson.com/support).



# Images

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# Technologies in detail

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This chapter includes short descriptions of the technologies available in this product compared to one other Sony Ericsson product.

# Functions and features

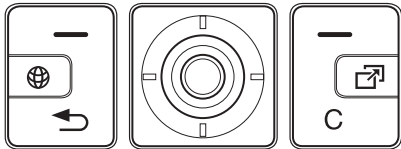
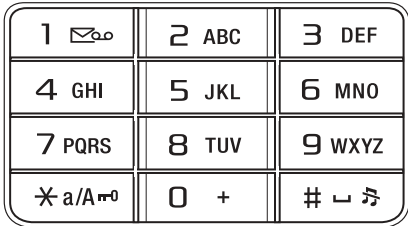
The following includes short descriptions of the technologies available in K610 compared to K600.

Feature	K610	K600
<b>3D games</b>	Yes	Yes
<b>3G Enabled</b>  Technology that enables 384 kbps data transfer and video telephony.	Yes	Yes
<b>Activity Menu (multi-tasking)</b>  The user can easily handle missed calls, new text and picture messages, task reminders, shortcuts and get quick access to favourite Internet bookmarks.	Yes with enhanced functionality for background applications.	Yes
<b>Alarm clock</b>  Set a time for simple or recurring weekly alarms.	Yes	Yes
<b>Backlight</b>  White backlight to illuminate the phone screen.	Yes	Yes
<b>Battery</b>	3.6V, 900 mAh, Lithium Polymer	3.6V, 900 mAh, Lithium Polymer or Li-ion
<b>Battery charging time</b>	At least 90% charged within 2 hours. Fully charged within 2.5 hours.	At least 90% charged within 2 hours. Fully charged within 2.5 hours.
<b>Bluetooth™ audio streaming</b>	Yes	No
<b>Bluetooth™ audio video remote control</b>  Use the phone as a remote control for home electronics, PC applications and other accessories.	Yes	No
<b>Bluetooth™ PAN</b>  Connect the phone to Internet using Bluetooth wireless technology.	Yes	No
<b>Bluetooth™ wireless technology</b>  Wireless connectivity between devices within a range of up to 10 metres. Support for specification of the Bluetooth System, version 2.0.	Yes with enhanced data rate (EDR)	Yes

Feature	K610	K600
<b>Business card exchange</b>  Exchange contact information.	Yes	Yes
<b>Calculator</b>	Yes	Yes
<b>Calendar</b>  Calendar with day, week and month views and reminders.	Yes with enhanced functionality	Yes
<b>Call list</b>  View calls made and calls received.	Yes	Yes
<b>Camera</b>	2.0 Megapixel	1.3 Megapixel
<b>Camera active lens cover</b>  Open the cover and camera functionality starts automatically.	No	Yes
<b>Camera button</b>  A dedicated camera button. Press once and the integrated camera activates.	Yes	Yes
<b>Camera file browser</b>  Browse the picture folder without leaving the camera function.	Yes	No
<b>Camera keys on top</b>  When using the camera in horizontal mode - the side keys with camera functionality are on top, for a digital still camera feel.	Yes	Yes
<b>Camera menu</b>  Easy-to-use horizontal digital camera menu.	Yes	Yes
<b>Chinese input method</b>  Chinese input methods: Text input methods based on Simplified or Traditional Chinese. Bopomofo, Pinyin or Stroke.	Yes	Yes
<b>Clock</b>  Onscreen clock that keeps time even when the phone is off.	Yes	Yes
<b>Co-branding area</b>	22 x 6.5 mm	22 x 7 mm
<b>Code memo</b>  A safe place to store all PIN codes and other information. To access Code memo, only one PIN code is needed.	Yes	Yes
<b>Colour</b>	Urban Silver or Evening Red or Misty White	Aluminium Silver

Feature	K610	K600
<b>Contacts</b>  Phone book with fields for name, phone and fax numbers, email address, street address, company, title.	Yes	Yes
<b>Conference calls</b>  Support for multi-party calling.	Yes	Yes
<b>Content online</b>  Downloadable pictures, games, themes, ringtones available online.	Yes	Yes
<b>Copyright protection - DRM</b>  DRM (Digital Rights Management) features the rights and copy protection of downloaded content (audio, pictures, music tones, video, entertainment features such as games, Java applications etc.).	Yes	Yes
<b>Design</b>	Dual front	Dual front with active lens cover
<b>Device Management (DM)</b>  DM utilizes GPRS as bearer of the provisioning data (basic network connectivity needs to be in place) and allows the operator to access the phone and check and set different settings such as Network connectivity (GPRS), email, MMS, WAP and Java. Device Management is achieved by supporting Over The Air provisioning 7.1 (OTA), OMA Client Provisioning 1.1 (CP) and OMA Device Management (DM) 1.2.	Yes	OMA Device Management (DM) 1.1
<b>Digital zoom (still images)</b>	2.5x (VGA mode)	4x
<b>Email</b>  Built-in email client with inbox, outbox, compose, send and other functions.	Yes	Yes
<b>EMS (Enhanced Messaging)</b>  Text messaging (SMS) with support for pictures and sounds.	Yes	Yes
<b>Exterior description</b>  Size mm (Length x width x thickness/thinnest).	102.0 x 45.2 x 16.9	104.3 x 45 x 19.2
<b>External Antenna Connector</b>  The phone has a built-in antenna with an external connector for use with an advanced car handsfree accessory.	Yes	Yes

Feature	K610	K600
<b>Fast port</b>  A system connector which enables faster data transfer between the phone and a computer.	Yes	No
<b>File manager</b>  Folder structure storage to help store and organize pictures, sounds and other phone content.	Yes with enhanced functionality for camera content	Yes
<b>Flight mode</b>  All phone radio transmitters and receivers are inactivated. This starts the phone with only certain functions available, such as the calendar, music player or a game. The phone may then be used in some prohibited areas, such as aeroplanes or hospitals, where full mobile phone functionality is not allowed.	Yes	No
<b>FM radio with RDS</b>	No	Yes
<b>Games download</b>  Replace in-phone games with new ones.	Yes	Yes
<b>Games embedded</b>	Yes	Yes
<b>GPRS</b>  General Packet Radio Services - a communications standard enabling packet data transfer of 21,4 Kbit/s per timeslot. Multislot class 10 supported (max 5 simultaneously).	Yes	Yes
<b>High Speed Data</b>  HSCSD - a communications standard enabling GSM data transfer 14.4 - 28.8 kbps.	Yes	Yes
<b>Icon Desktop 12</b>  A graphic icon desktop with 12 interactive icons.	Yes	Yes
<b>Image formats</b>  <b>QQVGA</b> (160x120 pixels)  <b>VGA</b> (640x480 pixels)  <b>1 MP</b> (1280x960 pixels)  <b>2 MP</b> (1600x1200 pixels) Note: MP = Megapixel (values without fractions).	No  Yes  Yes  Yes	Yes - <b>Small</b>  Yes - <b>Medium</b>  1.3 MP (1280x1024 pixels) - <b>Large</b>  No

Feature	K610	K600
<b>Infrared port</b>  A wireless connector enabling to connect the phone to a laptop or other infrared device in order to share pictures, synchronize or use the phone as a modem.	No	Yes
<b>Instant messaging (Wireless Village)</b>  Chat - several people can take part in a mobile messaging session.	Yes	Yes
<b>Internet browser</b>  cHTML - A mobile device adapted version of the standard Internet communications protocol HTML.  Full HTML support, ECMA script, DOM level 1& 2, etc.  Progressive download of video files.	Yes  Yes  Yes  Yes	Yes  Yes  No  No
<b>Internet security</b>  Encrypts confidential information such as credit card and bank account numbers. Necessary for mobile banking and shopping.	Yes, SSL/TLS	Yes, WTLS
<b>Java™</b>  Support for Java Platform, Micro Edition technology.	Java ME Platform, Java 3D™	Java ME Platform, Java 3D™
<b>Keys - navigation and more</b>  	4+1 navigation  2 soft  Back  Clear  Activity menu  Internet/operator	4+1 navigation  2 soft  Back  Clear
<b>Keys - keypad</b>  	12 alphanumeric	12 alphanumeric

Feature	K610	K600
<b>Keys - side and other</b>	separate on/off  volume/camera zoom  camera key  multimedia (play/stop)	separate on/off  volume /camera zoom  camera key  video call key  Activity menu
<b>Long SMS (Text Messaging)</b>  Concatenated SMS text messaging.	Yes	Yes
<b>Lunar calendar</b>  A calendar system used in China and other parts of Asia. A lunar month is determined by the period required for the moon to complete its full cycle of 29.5 days.	Yes	Yes
<b>Macromedia® Flash Lite™</b>  For impressive animated wallpapers, menus and other graphic elements.	No	Yes
<b>Media player</b>  A combined digital media player for music and video. Play music and video clips, streamed or downloaded and the folder system enables, for example, organizing favourite songs into groups and creating simple playlists. A play and pause function simplifies listening.	No  See Music player or Video player	Yes
<b>Mega Bass™</b>  An audio feature which enhances bass frequencies for better overall music experience.	No	Yes
<b>Memory (built-in)</b>  User-free memory in phone.	Up to 16 MB	Up to 33 MB
<b>Memory Stick Micro™ (M2™)</b>  Slot for inserting a micro peripheral storage device. Compatible with Memory Stick Micro™ (M2™) card readers or devices. A Memory Stick Micro™ (M2™) is supplied with the phone.	Yes  64 MB	No
<b>Menu shortcuts</b>  A function making it possible to dedicate shortcuts to the most used phone functions.	Yes	Yes



Feature	K610	K600
<b>MMS (Multimedia messaging)</b>  Picture messaging with text and sound.	Yes	Yes
<b>MMS video</b>  Support in the phone for sending video using MMS.	Yes	Yes
<b>Modem</b>  Circuit Switched/Packet Switched Internet dial-up support.	Yes	Yes
<b>MusicDJ™</b>  A sampler music tool with MIDI drum, guitar, keyboard, bass and brass loops in different music styles, which can be combined to create polyphonic ringtones.	Yes	Yes
<b>Music player</b>  A digital music player. It is possible to play music files in the folder system, organize your favourite songs into groups and creating simple playlists. A play and pause function simplifies listening.	Yes	See Media player
<b>Music player key</b>  Get direct access to your music files without having to browse the menus. Press the music player key to gain direct access to the Music player.	Yes	No
<b>Music tones</b>  Music tones, also called master tones, are DRM protected music by original artists. Various digital audio formats are supported.	Yes	Yes
<b>Networks</b>  3G  GSM	UMTS 2100  GSM (R99) 900, 1800, 1900, e-GSM 900	UMTS 2100  GSM (R99) 900, 1800, 1900, e-GSM 900
<b>OMA Data Synchronization (SyncML)</b>  A device communications standard that enables remote synchronization between devices.	Yes  SyncML 1.2 SyncML 1.1	Yes  SyncML 1.1.2
<b>OTA settings</b>  WAP, email and other settings can be sent Over-The-Air to the phone.	Yes	Yes

Feature	K610	K600
<b>Phone registration</b>  If Settings Download is not run in the set up wizard, the user will be asked to register the phone by sending a text message to Sony Ericsson. No personal data are registered.	Yes	No
<b>Photo light (built-in)</b>  When lighting conditions are poor, activate the picture light.	No	Yes
<b>PhotoDJ™</b>  A drawing tool in the phone where existing pictures and photos can be altered.	Yes	Yes
<b>Picture blog</b>  Share up to full size pictures over the Internet on your personal Web page. The size of uploaded pictures is dependent on customizations.	Yes	No
<b>Picture gallery</b>  A thumbnail image gallery where sections of several pictures can be viewed at the same time.	Yes	Yes
<b>Picture phone book</b>  Add a picture to a saved contact. The picture appears on the screen when the stored contact calls.	Yes	Yes
<b>PlayNow™ (direct-link)</b>  Listen to music before you purchase and download to your phone.	Yes	Yes
<b>PlayNow™ Games (direct-link)</b>  Preview games straight from the phone desktop in three clicks before you purchase and download.	Yes	No
<b>Polyphonic voices</b>	72	72
<b>Predictive text input</b>	Yes	Yes
<b>Print on a printer</b>  Bluetooth connection and/or Memory Stick Micro™ (M2™).	Yes	Yes  Bluetooth connection only
<b>Push email</b>	Yes OMA email notification IMAP Idle	Yes OMA email notification

Feature	K610	K600
<b>RSS Feeds</b>  Use your phone to view up-to-the-minute news and other content from selected Web sites and blogs.	Yes	No
<b>Screen</b>  Type: Size: Resolution: Technology: Colours displayed together: Backlight colour:	Full graphical 1.9 inches 220 x 176 pixels TFT, QCIF+alpha 262,000 (18 bit) White	Full graphical 1.8 inches 220 x 176 pixels TFD 262,000 (18 bit) White
<b>Screensaver</b>	Yes	Yes
<b>Settings download</b>  Set up functions, such as the Internet browser and Picture messaging, that require a connection to the Internet. This function runs in the setup wizard or can also be chosen in the Settings Menu. It is not included for customized phones.	Yes	No
<b>SIM card lock</b>  The possibility to protect the SIM card with a four-digit PIN code.	Yes	Yes
<b>Sleep mode</b>  A power saving feature that minimizes battery power consumed when the phone is in standby.	Yes	Yes
<b>Sony Ericsson Remote Update Service</b>  Download the latest operator approved version of the mobile phone software over the air.	Yes	No
<b>Sony Ericsson Update Service</b>  Connect the phone to an Internet - connected computer, download the latest operator-approved version of the mobile device software from the Web, <a href="http://www.sonyericsson.com/support">www.sonyericsson.com/support</a> and update the mobile device.	Yes	Yes
<b>Sound recorder</b>  A mini recording device in the phone that can record voice messages or other sounds.	Yes	Yes
<b>Speakerphone</b>	Yes	Yes
<b>Speed dialling</b>  Allocate contacts in the phone book to specific keys on the keypad.	Yes	Yes

Feature	K610	K600
<b>Standby Time</b>	GSM: up to 350 hours UMTS: up to 350 hours	GSM: up to 370 hours UMTS: up to 290 hours
<b>Status view</b>  The screen shows the network being used, time and other status information	Yes	Yes
<b>Stopwatch</b>	Yes	Yes
<b>SVG Tiny 1.1</b>  Scalable Vector Graphics for impressive animated wallpapers, menus and other graphic elements.	Yes	Yes
<b>Synchronization Apple®</b>  Synchronize and share phone content with Apple® computers supporting iSync.	Pending certification	Yes
<b>Synchronization PC</b>  Synchronize and share phone content with a computer.	Yes	Yes
<b>Talk Time</b>	GSM: up to 7 hours UMTS: up to 2 hours 30 minutes	GSM: up to 8 hours 15 minutes UMTS: up to 2 hours 10 minutes
<b>Tasks</b>  Keeps track of important things to do.	Yes	Yes
<b>Themes</b>  Phone menu texts and background graphics.	Yes	Yes
<b>Timer</b>  Set the phone to alert after a specific time lapse.	Yes	Yes
<b>Twin camera</b>  Two cameras - a camera capable of taking still pictures and recording video, and a video call camera located above the screen.	Yes	Yes
<b>UMTS</b>  A 3G technology standard capable of data transfer 384 kbps.	Yes	Yes

Feature	K610	K600
<b>USB connectivity support</b>  Connect the phone to a computer using the provided USB cable. The Memory Stick Micro™ (M2™) appears on the computer screen as a mass storage device.	Yes	Yes with driver  The memory in the phone appears
<b>Vibrating alert</b>  The phone vibrates when a call comes in.	Yes	Yes
<b>Video call camera</b>	Yes	Yes
<b>Video calling</b>  When making a video call, the recipient can be seen in the screen. The service requires UMTS/WCDMA.	Yes	Yes
<b>Video call talk time</b>	Up to 1 hour 35 minutes	Up to 1 hour 40 minutes
<b>VideoDJ™</b>  Create video sequences by combining different clips and adding music and images.	Yes	Yes
<b>Video player</b>  Play video clips, streamed or downloaded. Record and transfer video clips to another phone or a computer via available transfer method.	Yes	See Media player
<b>Video streaming</b>  Real time streaming of video, for example, live cam. Media can also be downloaded and saved in the phone memory.	Yes	Yes
<b>Viewfinder</b>  When using an in-phone camera or snap-on accessory camera, the picture can be previewed before it is captured.	Yes	Yes
<b>Voice control</b>  Voice answer, reject and call. Assign voice commands to items in the phone book and when a call is made, the voice command can be used instead of pressing keys.	Yes	Yes
<b>Voice mail</b>  Support for voice mail operator service including automatic answering and message recording.	Yes	Yes
<b>WAP 1.2.1</b>  A mobile Internet standard to access specially designed Internet sites.	Yes	Yes

Feature	K610	K600
<b>WAP 2.0 XHTML</b>  A mobile Internet standard to access specially designed Internet sites. WAP 2.0 supports colour and interactive lists.	Yes	Yes
<b>Weight</b>	89 g	105 g

# Facts and figures

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This chapter offers readers a detailed listing of all the technical data relating to the product. Comprehensive descriptions of performance and technical characteristics are presented in table format for quick and easy access.

# Technical specifications

## General technical data

System	Tri-band GSM Release 99 recommendations. GSM 900, GSM 1800, EGSM and WCDMA FDD mode supported, GSM 1900 and e-GSM mode supported.
Speech coding	HR, FR, EFR, AMR supported where available, for high speech quality.
GSM SIM/ UMTS USIM card	GSM SIM - GSM 11.11, UMTS SIM - 3GPP™ TS 31.101. Small plug-in card, 1,8 V and 3 V.
Memory	Internal memory up to 16 MB (depending on software configuration/file content) + 64 MB Memory Stick Micro™ (M2™) is supplied.
Data transfer speeds	Up to 384 kbps (downlink) Up to 384 kbps (uplink)

## Performance and technical characteristics

Dimension	WCDMA	GSM 900/ e-GSM 900	GSM 1800	GSM 1900
Frequency range (MHz)	TX:1920 – 1980 RX:2110 – 2170	TX: 880 – 915 RX: 925 – 960	TX: 1710 – 1785 RX: 1805 – 1880	TX:1850 –1910 RX:1930 – 1990
Channel spacing	5 MHz with 200 kHz channel rasters	200 kHz	200 kHz	200 kHz
Number of channels	277	174 Carriers *8 (TDMA)	374 Carriers *8 (TDMA)	299 Carriers *8 (TDMA)
Modulation	QPSK	GMSK	GMSK	GMSK
TX Phase Accuracy	Error Vector Magnitude: <17.5%	< 5° RMS Phase error (burst)	< 5° RMS Phase error (burst)	< 5° RMS Phase error (burst)
Duplex spacing	190 MHz	45 MHz	95 MHz	80 MHz
Frequency stability	+/- 0.1 ppm	+/- 0.1ppm	+/- 0.1ppm	+/- 0.1ppm
Voltage operation (nominal)	3.6 V	3.6 V	3.6 V	3.6 V
Transmitter RF power output	24dBm Class 3 (0.25 W peak)	33 dBm Class 4 (2 W peak)	30 dBm Class 1 (1 W peak)	30 dBm Class 1 (1 W peak)
Transmitter Output impedance	50 ohm	50 ohm	50 ohm	50 ohm



Dimension	WCDMA	GSM 900/ e-GSM 900	GSM 1800	GSM 1900
Transmitter Spurious emission (according to specification)	< -36 dBm up to 1 GHz < -30 dBm over 1 GHz (according to 3GPP™ spec.)	< -36 dBm up to 1 GHz < -30 dBm over 1 GHz	< - 30 dBm	< - 30 dBm
Receiver RF sensitivity	Better than - 106.7 dBm @ 12.2 kbps CS voice	Better than – 102 dBm	– 102 dBm	– 102 dBm
Receiver RX Bit error rate	< 0.1%	< 2.4%	< 2.4%	< 2.4%

## USSD technical data

Feature	Support
USSD support	GSM Phase 1/2 (Cross-phase compatibility)
Mode support mode	UI-mode supported SAT initiated USSD supported
UI-mode details	<ul style="list-style-type: none"> <li>It is possible to scroll the text up and down in USSD messages.</li> <li>It is possible to highlight embedded numbers and take actions accordingly.</li> </ul>

## GPRS technical data

Dimension	Support
Compatible GPRS and SMG specifications	Release 99 according to ETSI specification
Data rates	Multislot class 10 supported (max 5 simultaneously). CS-1, CS-2, CS-3, CS-4 9,050 bps, 13,400 bps, 15,600 bps, 21,400 bps supported (network-dependent).
Medium Access Modes	Dynamic allocation
Support of Packet Control Channels (PBCCH/PCCCH)	Yes
Network operation mode	NOM I, II, III
Support of GPRS/CS combined procedures	Yes
Network control mode	NC0 and 2

Dimension	Support
Support of access in 2 phases	Yes
Support of PRACH on 11 bits	Yes
Support of GPRS re-selection C31/ C32	Yes
Support of static and dynamic addressing	Yes
Support of power control Uplink and Downlink	Uplink = yes, Downlink is a network feature.
Support of ciphering algorithms	GEA1, GEA2, GEA3
Support of compression algorithms	Yes, V42bis and IP header compression.
Mode of operation	Class B and Class C modes of operation supported.
R Reference point	Physical layer: Support of RS232. PPP is supported as L2 layer in the R reference point. Authentication algorithms PAP, CHAP supported.
IP connectivity	PDP type IP is supported. IP termination in mobile or TE (laptop, PDA) supported.
PDP context	10 PDP context descriptions are stored in mobile. PDP context description is edited via application in mobile, AT-command or via OTA. Simultaneous PDP contexts are supported, maximum 4.
SIM	GPRS aware, as well as non-GPRS aware; SIM cards are supported.
AT commands	Some of the supported commands: AT+CGDCONT - DEFINE PDP CONTEXT AT+CGEQREQ - Quality of Service Profile (REQUESTED) AT+CGEQMIN - Quality of Service Profile (Minimum Acceptable) AT+CGATT - PACKET DOMAIN SERVICE ATTACH OR DETACH AT+CGACT - PDP CONTEXT ACTIVATE OR DEACTIVATE AT+CGDATA - ENTER DATA STATE  For more information, see <a href="http://www.sonyericsson.com/developer">www.sonyericsson.com/developer</a> ,

## SIM AT services supported

Service	Mode	Support
CALL CONTROL BY SIM		Yes
MO SMS CONTROL		No
DATA DOWNLOAD TO SIM	Cell Broadcast SMS	Yes Yes

Service	Mode	Support
DISPLAY TEXT	Text of up to 240 characters (120 UCS2 coded).	Yes
	bit 1: 0 = normal priority	Yes
	1 = high priority	Yes
	bit 8: 0 = clear message after a delay	Yes
	1 = wait for user to clear message	Yes
GET INKEY	General: The GET_INKEY requires that the user confirms his/her choice.	Yes
	bit 1: 0 = digits (0-9, *, # and +) only	Yes
	1 = alphabet set	Yes
	bit 2: 0 = SMS default alphabet	Yes
	1 = UCS2 alphabet	Yes
	bit 3: 0 = character sets defined by bit 1 and bit 2 are enabled.	Yes
	1 = character sets defined by bit 1 and bit 2 are disabled and the Yes/No response is requested.	Yes
GET INPUT	General: No. of hidden input characters	252
	bit 1: 0 = digits (0-9, *, # and +) only	Yes
	1 = alphabet set	Yes
	bit 2: 0 = SMS default alphabet	Yes
	1 = UCS2 alphabet	Yes
	bit 3: 0 = ME may echo user input on the display	Yes
	1 = user input not to be revealed in any way (see note)	Yes
	bit 4: 0 = user input to be in unpacked format	Yes
	1 = user input to be in SMS packed format	Yes
	bit 8: 0 = no help information available	Yes
	1 = help information available	Yes
LAUNCH BROWSER		Yes
MORE TIME		Yes
PLAY TONE		Yes
POLLING OFF		Yes
POLL INTERVAL		Yes

Service	Mode	Support
PROVIDE LOCAL INFORMATION	'00' = Location Information (MCC, MNC, LAC and Cell Identity)	Yes
	'01' = IMEI of the ME	Yes
	'02' = Network Measurement results	Yes
	'03' = Date, time and time zone (DTTinPLI)	Yes
	'04' - Language setting	Yes
	'05' - Timing setting	Yes
REFRESH	General: The reset option requests the user to wait while the phone restarts.	Yes
	'00' =SIM Initialization and Full File Change Notification	Yes
	'01' = File Change Notification	Yes
	'02' = SIM Initialization and File Change Notification	Yes
	'03' = SIM Initialization	Yes
	'04' = SIM Reset	Yes
SELECT ITEM		Yes
SEND DTMF		Yes
SEND SHORT MESSAGE	bit 1: 0 = packing not required	Yes
	1 = SMS packing by the ME required	Yes
SEND SS		Yes
SEND USSD		Yes
SET UP CALL	General: Capability configuration	Yes
	Set-up speech call CallParty	No
	Subaddress DTMF support	Yes
	'00' = set up call, but only if not currently busy on another call	Yes
	'01' = set up call, but only if not currently busy on another call, with re-dial	Yes
	'02' = set up call, putting all other calls (if any) on hold	Yes
	'03' = set up call, putting all other calls (if any) on hold, with re-dial	Yes
	'04' = set up call, disconnecting all other calls (if any)	Yes
	'05' = set up call, disconnecting all other calls (if any), with re-dial	Yes

Service	Mode	Support
SET UP EVENT LIST	'00' = MT call	Yes
	'01' = Call connected	Yes
	'02' = Call disconnected	Yes
	'03' = Location status	Yes
	'04' = User activity	Yes
	'05' = Idle screen available	Yes
	'06' = Card reader status	Not Applicable
	'07' = Language selection	Yes
	'08' = Browser termination	Yes
	'09' = Data available	Yes
	'0A' = Channel status	Yes
SET UP IDLE MODE TEXT		Yes, 1 row of text is supported
SET UP MENU		Yes
TIMER MANAGEMENT		Yes
OPEN CHANNEL		Yes
CLOSE CHANNEL		Yes
RECEIVE DATA		Yes
SEND DATA		Yes
GET CHANNEL STATUS		Yes

## User Interaction with SIM AT

### Display text

Text of up to 240 characters (120 UCS coded) is supported.

Text clearing times are 5-20 seconds and a 60-second time-out limit for the user to clear the text.

'Key' responses:

- 'Long Back' – Proactive session terminated by user.
- 'Back' – Backward move in proactive session.

Any other key clears the screen if the command is performed successfully.

### Get inkey

Prompt for a one-character input. Pressing 'Ok' without entering a character gives warning message "Minimum 1 character". 'Key' responses:

- 'C' clears current character.
- 'Long Back' terminates the proactive session.
- 'Back' – Backward move in proactive session.
- 'OK' – Command performed successfully.

## Get input

Prompt for character input. The phone will refuse to accept further input when maximum response length is exceeded. UI Maximum Response lengths:

- Digits Only – 160 characters.
- SMS default alphabet characters – 160 characters.
- Hidden Characters (digits only) – 20 characters.

‘Key’ responses:

- ‘C’ clears current character.
- ‘Long Back’ terminates the proactive session.
- ‘Back’ – Backward move in proactive session.
- ‘OK’ – Command performed successfully.

## Select item

Scroll to highlight item for selection. ‘Key’ responses:

- Navigational key press down – Scroll down list.
- Navigational key press up – Scroll up list.
- Long ‘Back’ terminates proactive session.
- ‘Back’ – Backward move in proactive session.
- ‘OK’ – Command performed successfully.

## Send short message

Default message “Sending message, please wait” can be replaced for the Alpha Identifier text, or suppressed completely if a null text is provided. Default responses are “MESSAGE FAILED” or “MESSAGE SENT”. ‘Key’ responses:

- Long ‘Back’ or ‘Back’ ends the proactive session.

## Set up call

If the ME is on a call when the command ‘Set up Call’, ‘putting all other calls on hold’ is sent, the user sees the text ‘Setting up a call current call will be held’. If ‘OK’ is pressed, the current call will be put on hold and the new call set up. If the ME is on a call when the command ‘Set Up Call, disconnecting all other calls’ is sent, the user sees the text ‘Setting up a call current call will be disconnected’. If the ‘OK’ key is pressed, the current call is disconnected and the new call set up.

## Set up menu

Incorporates a SIM Application Toolkit Menu Item into the ME’s main menu structure.

If an Alpha Identifier is supplied in the Set Up Menu command, this is used as the SIM AT entry in the ME’s main menu. If no alpha identifier is supplied and several items are found in the menu, a default title is used. If the SIM AT Menu Item is selected by pressing ‘Select’, all the items sent in the Set Up Menu command are available for selection, in the same way as the Select Item command.

# Entertainment

## Audio and Video

File types	Formats	Extensions
Audio (all listed audio file formats are supported ringtone file formats)	MP4 (AAC, AAC+, eAAC+) MP3 (Up to 320 kbit/s) M4A 3GPP™ (AAC, AMR) AMR-NB AMR-WB WAV G-MIDI 1 SP-MIDI RealAudio 8 eMelody iMelody RHZ XMF WMA	.mp4 .mp3 .m4a .3gp, .3ga .amr .awb, .amr .wav .mid .mid .ra, .rm .emy .imy .rhz .xmf .wma
Video (including audio part)	MP4 (video: MPEG-4, audio: AAC or AMR) 3GPP™ (video: MPEG-4, H.263 or H.264, audio: AAC or AMR) RealVideo 8 WMV	.mp4 .3gp  .rv, .rm .wmv
QVGA playback	MP4, 3GPP™, RealVideo 8, WMV	
Streaming transport	RTSP according to 3GPP™	
Video encoding	H.263 Profile 0, Level 10	
Video decoding	MPEG-4 Simple Visual Profile Level 0 H.263 Profile 0, Level 10 H.264 Baseline Profile (Main subset), Level 1b RealVideo 8	
Audio encoding	AMR	
Audio decoding	AAC, AMR, MPEG-1 Layer 3, RealAudio 8	

# Java™

Feature	Functionalities
Java Platform, Micro Edition	<ul style="list-style-type: none"> <li>• CLDC 1.1 (JSR 139)</li> <li>• MIDP 2.0 (JSR 118)</li> <li>• Wireless Messaging API (JSR 120/205)</li> <li>• Mobile Media API (JSR 135)</li> <li>• Java Technology for the Wireless Industry (JSR 185)</li> <li>• Java API for Bluetooth (JSR 82)</li> <li>• PDA Optional Packages for Java ME Platform (JSR 75)</li> <li>• Web Services (JSR 172)</li> <li>• Advanced Multimedia Supplements (JSR-234, camera capabilities only)</li> </ul>
Java 3D	<ul style="list-style-type: none"> <li>• Mascot Capsule Micro3D Version 3</li> <li>• Mobile 3D Graphics API for Java ME Platform (JSR 184)</li> </ul>

## Imaging/Messaging

### 2.0 Megapixel camera

Facts and figures	
Picture sizes (resolution)	<b>VGA</b> (640x480 pixels) <b>1 MP</b> (1280x960 pixels) <b>2 MP</b> (1600x1200 pixels)  Note: MP = Megapixel (values without fractions)
Video sizes (resolution)	QCIF (176 x 144 pixels - applicable for video recording and video telephony) SQCIF (128 x 96 pixels - applicable only for video telephony)
Colour depth	24 bit (8 bits per RGB channel)
Camera memory	Using phone memory or Memory Stick Micro™ (M2™); no memory dedicated to the camera only.
Digital zoom	2.5x zoom for still images (VGA mode). 4x zoom for video recording and telephony.
Night mode	Yes
Self-timer	Yes
Effects	Negative/ Sepia/ Black&White/ Off



**Facts and figures**

White balance	Auto/ Incandescent/ Fluorescent/ Daylight/ Cloudy
Picture quality	Choose between Normal and Fine
Time and date	Add a time and date to a picture

## Video telephony

**Facts and figures**

Picture sizes (resolution)	QCIF (176 x 144 pixels) SQCIF (128 x 96 pixels)
Digital zoom	2.0 Megapixel camera: 4x zoom Video call camera: 2x zoom
Night mode	Yes
White balance	Auto
Brightness	Yes
Video coding	H.263 MPEG-4 (Simple Visual Profile Level 0)
Audio coding	AMR

## Images

Images can be shared via Bluetooth connection, MMS, email, computer file transfer or Cable.

Amount of free XRAM controls upper limit of image size and/or complexity that can be decoded.

Formats	Details
JPEG	ISO/IEC JPEG Baseline DCT Progressive DCT Non-differential
GIF	87a, 89a, support for interlacement, animation and transparency
BMP	Windows® bitmap format
PNG	
SVG	SVG Tiny 1.1, support for anti aliasing, compression, opacity and gradients
WBMP	Wireless bitmap

## Short Messaging Service

Feature	Support
SMS Service Centre Number	It is possible to pre-load the SMS Service Centre Number.
Pictures	It is possible to insert a picture or an icon into the text message. EMS compliant mobile handsets will be able to see the picture correctly.
Reply to messages	It is possible to reply to received messages by SMS, MMS, voice message and email.
Input methods	Predictive writing and multitap.
Copy and paste words	Yes
Teaching of predictive words that are not in the predictive dictionary	Yes
Possibilities when creating a message:	
save a sent message in a "Sent items" folder	Yes
insert a line in the message	Yes
assign a validity period to the message	Yes
use pre-defined messages	Yes
Possibilities when receiving a message:	
reply to the sender	Yes
forward the message	Yes
save the message on SIM	Yes
get delivery time and date	Yes
Possibilities of the previously sent message:	
delivery report of the message	Yes (if requested when sending).
forward the message	Yes
save the message on SIM	Yes
know the remaining capacity storage	Yes, > 95% full warning, capacity on SIM when saving to SIM.
Possibilities of the previously received message:	
reply to the sender	Yes
save the message in the Inbox	Yes
forward the message	Yes

Feature	Support
know the remaining capacity storage	Yes, > 95% full warning, capacity on SIM when saving to SIM.
Supported ways of replying to a received SMS message:	
via SMS, MMS, voice message, email	Yes
via phone call (set up a call to the number contained in the message body)	Yes
via WAP call (go to the WAP address contained in the message body)	Yes
via USSD session	No
Print via infrared	No
Possibility to offer the user the ability of sending an SMS message to a list of recipients	Yes
Possibility to write an email address as a recipient address	Yes, if email gateway is present.
SMS storage	On the SIM and in the phone.
Nokia Picture Messaging	Yes

## Enhanced Messaging Service

Feature	Support
Level of compliance supported by the handset regarding the specifications described in release 99.	Enhanced Messaging Service (EMS) according to the standard 3GPP™ TS 23.040 v4.3.0, with the addition of the ODI feature from 3GPP™ TS 23.040 v5.0.0.
Number of messages that the handset is able to handle to generate a concatenated message	10
Capacity storage	Up to 1000 and the space on the SIM card.
Outgoing messages	It is possible to: <ul style="list-style-type: none"> <li>• see how many short messages an EMS message consists of before sending.</li> <li>• choose whether to send the message or not after writing.</li> </ul>
Incoming messages	<ul style="list-style-type: none"> <li>• A signal is heard once all parts of the message have been received or when a timeout occurs.</li> <li>• It is possible to re-use the content of an EMS message. Sounds, pictures, and animations can be inserted in a new message, if the object is not protected using ODI.</li> </ul>

Feature	Support
Delivery report for concatenated messages	A receipt is received in the handset when all parts of a concatenated message have been delivered if a delivery report is requested when sending.
Insert objects	It is possible to add pictures, animations and sounds to an EMS message.
Sounds	Chimes high, chimes low, ding, tada, notify, drum, claps, fanfare, chords high, chords low.
iMelody	Yes, version 1.2.
Melodies	It is possible to: <ul style="list-style-type: none"> <li>• receive (always), send via EMS (if not copyright protected).</li> <li>• download melodies and commercial tunes from WAP/WAP portals.</li> </ul>
WBMP	Yes
Picture sizes	16x16, 32x32 pixels, variable size in black and white.
Pictures	It is possible to: <ul style="list-style-type: none"> <li>• edit pictures using PhotoDJ™.</li> <li>• receive (always), send via EMS (if not copyright protected).</li> <li>• download pictures from WAP/WAP portals.</li> </ul>
Animations	There is support for the following animations: Angry, Crying, Flirty, Happy, Kiss, Sad, Tongue, Wow, Confused, Devil, Glasses, Indifferent, Laughter, Sceptical and Wink, as defined in 3GPP™ TS 23.040 v4.3.0. It is possible to: <ul style="list-style-type: none"> <li>• send and receive animations.</li> </ul>
TP-PID field value given by the handset before sending an EMS message	0x00

## Multimedia Messaging Service

Feature	Support
MMS/CSD parameters and MMS/GPRS parameters placement	MMS is bound to an MMS profile. An MMS profile is bound to an Internet profile. An Internet profile is bound to a Data Account. A Data Account contains either CSD parameters or GPRS parameters.
Possibility to pre-configure the MMS parameters in factory	<ul style="list-style-type: none"> <li>• MMS/CSD: Yes</li> <li>• MMS/GPRS: Yes</li> </ul>
Possibility to configure the MMS parameters by OTA provisioning	<ul style="list-style-type: none"> <li>• MMS/CSD: Yes</li> <li>• MMS/GPRS: Yes</li> </ul>

Feature	Support
Possibility for all the parameters from the parameters set to be OTA provisioned at the same time	<ul style="list-style-type: none"> <li>• MMS/CSD: Yes</li> <li>• MMS/GPRS: Yes</li> </ul>
Possibility for only one parameter, in the set of parameters, to be OTA provisioned	<ul style="list-style-type: none"> <li>• MMS/CSD: No</li> <li>• MMS/GPRS: No</li> </ul>
OTA provisioning solution	OTA Settings Specification v7.1 © Ericsson and Nokia and OMA provisioning
Supplier indication of realized interoperability tests between its MMS User Agent and MMS Relay/Server from other suppliers	Yes
Support of a standard or a proprietary procedure for OTA provisioning of MMS parameters	Proprietary and OMA provisioning
Functionalities that the user is able to set during message composition:	<ul style="list-style-type: none"> <li>• message subject</li> <li>• message priority</li> <li>• email recipient address</li> <li>• message Cc, Bcc recipient(s) address(es)</li> <li>• delivery report request</li> <li>• read report request</li> <li>• MSISDN recipient address</li> <li>• Delivery time</li> <li>• Validity period</li> </ul>
From where can the user insert multimedia elements into multimedia messages:	File Manager Camera Contacts Calendar Task Note Browser (vBookmark)
Possibility for sent messages to be memorized into a folder in the phone memory	Yes
Actions that the user can perform after message retrieval:	<ul style="list-style-type: none"> <li>• reply to the sender of the message SMS/MMS</li> <li>• reply to the sender and to Cc, Bcc people SMS/MMS</li> <li>• forward the message</li> <li>• delete the message</li> <li>• save message in a dedicated folder</li> <li>• call the sender of a message</li> <li>• save item</li> <li>• mark as unread</li> <li>• details</li> </ul>
Multimedia codecs/formats supported for audio	AMR-NB, AMR-WB, MP3, RealAudio 8, WAV, MP4, MIDI, iMelody, 3GPP™, XMF, M4A, RHZ, WMA.
Multimedia codecs/formats supported for video	MP4, 3GPP™, SDP, RealVideo 8, WMV.

Feature	Support
Multimedia codecs/formats supported for image	JPEG, GIF, PNG, SVGT, WBMP, BMP.
Supported formats for message presentation:	<ul style="list-style-type: none"> <li>message body + attachments (email presentation)</li> <li>SMIL version as described in OMA MMS IOP document version 1.2</li> </ul>
Maximum message size that can be handled by the handset for message	Content Class and Creation mode are applied. Also maximum size is possible to customize.

## Email client technical data

Feature	Support
Bearer type UMTS (IP)	Yes
Bearer type GSM Data (IP)	Yes, GPRS, HSCSD, ISDN and analog
Character sets	ISO: ISO-8859-1, ISO-8859-2, ISO-8859-5, ISO-8859-7, ISO-8859-9, ISO-8859-10 Windows: Windows-1251, Windows-1252, Windows-1254, Windows-1255, Windows-1258 US-ASCII Unicode: UTF-7, UTF-8, UTF-16 Japanese: Shift_JIS, ISO-2022-JP Cyrillic: KOI8-R Simplified Chinese: GB2312, GB18030 Traditional Chinese: Big5
OTA provisioning solution	Yes
Protocols	POP3 and IMAP4
Push email	IMAP Idle (extension of IMAP4Rev1), OMA Email Notification 1.0 and scheduled checking
Secure email	SSL/TLS, both port methods (POPS/IMAPS) and STARTTLS
Remote configuration	OMA Client Provisioning and Nokia Smart Messaging
HTML mail	Yes (tags removed)
Inline images	Yes
Message management	Window of 50 latest messages Headers only or size limits
ESMTP	Yes
Background sending	Yes

# Connectivity

## Supplied Memory Stick Micro™ (M2™) technical data

The medium indicating “class0” is for use with the bundled product. Certain functions might be limited when using “Class 0” medium with any other product.

### Facts and figures

Memory capacity	64 MB
Size (Length x width x thickness)	15 x 12.5 x 1.2 mm
Connector Pin	11-pin (Electrical contact)

## Bluetooth™ technical data

Dimension	Support
Bluetooth capability statement	This phone supports Bluetooth Specification, version 2.0 with enhanced data rate (EDR).
Bluetooth functions	Basic Imaging Profile Dial-up Networking Profile File Transfer Profile Generic Access Profile Generic Object Exchange Profile Handsfree Profile Headset Profile Human Interface Device (HID) Profile JSR-82 Java API Object Push Profile Personal Area Networking Profile Serial Port Profile Synchronization Profile SyncML OBEX binding Advanced Audio Distribution Profile (A2DP) Audio/Video Remote Control Profile Phonebook Access Profile
Connectable devices	All products supporting Bluetooth spec. 1.1, or higher, and at least one of the profiles above.
Coverage area	Varies due to radio performance on remote device and the occurrence of obstacles. Up to 10 metres (33 feet).
Transmission power	Class 2, typical +3dBm or 2mW
Frequency band	2.4 GHz - the unlicensed ISM band.

Dimension	Support
Power consumption	GSM host processor excluded: <ul style="list-style-type: none"> <li>Standby, Bluetooth On mode: &lt;0.6 mA</li> <li>Voice to headset (HV3 master): 11 mA (7 mA with EDR functionality, 2EV3 master). Dependent on various parameters such as if the phone is master or slave.</li> <li>Data mode average: 27mA at 172.8 kbps symmetrical (DH1)</li> </ul>
Data transmission rate	Up to 400 kbps

## USB technical data

Dimension	Support
USB cable	DCU-60 (supplied with the phone)
Connector	Fast port
USB 2.0 full speed	Up to 12 Mbit/s
USB classes	Mass Storage Obex Modem Ethernet Device Management

## OMA Data Synchronization (SyncML) technical data

Feature	Support for Sync ML
SyncML compliance	The handset is fully SyncML compliant, having passed SyncML Conformance testing. SyncML 1.2 or SyncML 1.1.2 is used depending on configuration and both are supported in Server-alerted synchronization.
Basic data formats	Contacts: vCard 2.1, Calendar: vCalendar 1.0 (vEvent) Tasks: vCalendar 1.0 (vTodo) Notes: text/plain, Bookmarks:vBookmark 1.0
Possibility for operators to extend SyncML functionality.	The device may be configured to include preset SyncML settings, and to control whether SyncML 1.1 or SyncML 1.2 will be used.
Possibility to synchronize other handsets using SyncML.	No
Transport method for SyncML messages.	HTTP, OBEX (USB, Bluetooth connection)
Synchronization application placement.	Inside the handset.



Feature	Support for Sync ML
Possibility for the user to configure login parameters (for example, username and password) to access the remote database.	Yes
Configuration parameters that can be entered/modified by the user.	Server URL, Username, User PWD, Paths to databases (Calendar, Contacts, Tasks, Notes and Bookmarks), UserID and PWD for Databases, Databases to be synchronized (on/off), Internet profile, Synchronization interval, Server ID and Server PWD, and permission to allow server-alerted synchronization. Can be provisioned with Ericsson Nokia OTA Settings Specification v7.1, OMA Client provisioning v1.1, and OMA Device Management 1.2
Mechanisms used by the handset to capture changes made by the end user (i.e. how does the SyncML client in the handset know which changes were made to the address book).	It uses a change log where it marks the contact as updated.
Ability to deal with multiple servers.	Yes
Ability to perform conflict resolution actions.	No

## Web browser technical data

Feature	Support in the browser
Back/forward to previous/next page	Yes
Bearer type GPRS	Yes
Bearer type GSM Data	Yes, HSCSD, ISDN and analog.
Bookmarks	Yes, with folders and sorting supported.
Bookmark Export/Import	Yes, can be sent and received using vBookmark format via Bluetooth connection, SMS, MMS and email.
Cache	Yes (size 300 kB).
Clear cache	Yes
Home page	Yes, up to 10 different; one for each Internet profile.
HTML version for WAP browser	XHTML, Mobile Profile 1.2 HTML 4.01 ECMA Script is supported DOM level 1 & 2 is supported WAP 2.0/WML 1.3
Hyperlinks in Text	Yes, highlighted as blue underlined text.
Hyperlinks in Images	Yes, indicated by a frame.

Feature	Support in the browser
Character sets *	<p>ISO: ISO-8859-1, ISO-8859-2, ISO-8859-3, ISO-8859-4, ISO-8859-5, ISO-8859-6, ISO-8859-7, ISO-8859-8, ISO-8859-8-i, ISO-8859-9, ISO-8859-10</p> <p>Windows: windows-1250, windows-1251, windows-1252, windows-1253, windows-1254, windows-1255, windows-1256, windows-1257</p> <p>US-ASCII</p> <p>Unicode: UTF-8, UTF-16BE, UTF-16LE, ISO-10646-UCS-2, ISO-10646-UCS-2_LE, ISO-10646-UCS-4, ISO-10646-UCS-4_LE</p> <p>Japanese: Shift_JIS, EUC-JP, ISO-2022-JP</p> <p>Simplified Chinese: GB2312, GB_2312-80, GBK, GB18030</p> <p>Traditional Chinese: Big5</p> <p>Korean: EUC-KR, KS_C_5601-1987</p> <p>Cyrillic: KOI8-R</p> <p>Thai: windows-874, TIS-620</p> <p>Special: x-euc-jp, x-sjis, ISO8859-1</p> <p>*) When creating HTML applications, it is recommended to always save the page contents as UTF-8 (Default), and that this is clearly indicated in the pages before publishing. This ensures that the contents of the application can be viewed, regardless of character sets used in gateways and the phone. All characters are not supported in all phones. The software version depends on which market the phone is associated to. Also, please note that the phone may not support input on a WAP Service which uses certain characters (languages), even if those characters are supported for browsing in the phone.</p>
Image Animation	Yes
Image Formats	GIF, Animated GIF, JPEG, Progressive JPEG, PNG, BMP, WBMP, SVG
Network Settings	Up to 10 different settings available by selecting WAP profile (Internet, Banking, Gateway etc.).
OTA Support	Yes
PPP Authentication	PAP, CHAP supported.
Reload page	Yes
Security	<p>TLSv1</p> <p>SSLv3</p> <p>WIM on SIM ICC</p> <p>X.509 certificate support, WAP Profile</p> <p>WPKI OTA download of trusted certificates</p>
Tables	Yes

Feature	Support in the browser
User Agent Profiles	Yes, list of client characteristics - for example screen size.
Internet profiles	Dynamic - up to 10 WAP profiles, each with its own settings.

## Web browser and Operator technical data

Feature	Support for browser																						
<b>Web browser</b>																							
Version	2.0 baseline																						
HTML	XHTML Mobile Profile																						
Access NetFront 3.3	<ul style="list-style-type: none"> <li>HTML 4.01, XHTML 1.1 Including mobile phone</li> <li>CSS 1 &amp; CSS 2 (Partial)</li> <li>ECMAScript 3rd edition (equal to Java script 1.5)</li> <li>DOM level1, level2 and Dynamic HTML (Partial)</li> <li>Graphic formats: GIF, Animated GIF, JPEG, Progressive JPEG, PNG, BMP, WBMP, SVGt.</li> </ul>																						
<b>Provisioning</b>																							
<b>Provisioning types</b>	<b>The Ericsson-Nokia OTA solution</b> <b>OMA Client provisioning (v1.1)</b>																						
	Over the Air Settings Specification, v7.1 © Ericsson and Nokia																						
Total Parameter sets	10 (shared between the WAP provisioning types). < or = 10 (total number of WAP profiles).																						
Parameter set list	<table> <tr> <td>name</td><td>name</td></tr> <tr> <td>homepage and homepage title (1st bookmark element)</td><td>homepage</td></tr> <tr> <td>proxy/GW address</td><td>proxy/GW address</td></tr> <tr> <td>bookmarks (remaining bookmark elements)</td><td>CSD phone number</td></tr> <tr> <td>CSD phone number</td><td>CSD data rate</td></tr> <tr> <td>CSD data rate</td><td>CSD dial type</td></tr> <tr> <td>CSD dial type</td><td>CSD response timer</td></tr> <tr> <td>GPRS APN</td><td>GPRS APN</td></tr> <tr> <td>protocol authentication</td><td>protocol authentication</td></tr> <tr> <td>GW authentication</td><td>GW authentication</td></tr> <tr> <td>secure connection on/off</td><td>GPRS QoS</td></tr> </table>	name	name	homepage and homepage title (1st bookmark element)	homepage	proxy/GW address	proxy/GW address	bookmarks (remaining bookmark elements)	CSD phone number	CSD phone number	CSD data rate	CSD data rate	CSD dial type	CSD dial type	CSD response timer	GPRS APN	GPRS APN	protocol authentication	protocol authentication	GW authentication	GW authentication	secure connection on/off	GPRS QoS
name	name																						
homepage and homepage title (1st bookmark element)	homepage																						
proxy/GW address	proxy/GW address																						
bookmarks (remaining bookmark elements)	CSD phone number																						
CSD phone number	CSD data rate																						
CSD data rate	CSD dial type																						
CSD dial type	CSD response timer																						
GPRS APN	GPRS APN																						
protocol authentication	protocol authentication																						
GW authentication	GW authentication																						
secure connection on/off	GPRS QoS																						
Parameter sets include	CSD, GPRS (different sets).																						
Factory pre-configuration	CSD (possibility to lock a setting), GPRS.																						
<b>OTA</b>	CSD, GPRS configuration possible.																						
<b>Security mechanism</b>																							

<b>Feature</b>		<b>Support for browser</b>
<b>Bearer</b>	<b>The Ericsson-Nokia solution</b>	<b>OMA Client Provisioning</b>
OTA via SMS	Operator verification through a code that can be included in the OTA configuration data. This code is shown to the user who can choose to install or not.	Uses security mechanism (SEC) methods according to WAP-183-ProvCont-20010724-a. See <a href="http://www.openmobilealliance.org">www.openmobilealliance.org</a>
<b>Interface</b>		
<b>Bearer</b>	<b>The Ericsson-Nokia solution</b>	<b>OMA Client Provisioning</b>
OTA via SMS	A question whether to install, with the code if available is asked. The user may have to choose whether to create a new WAP profile or to replace an existing WAP profile.	For NETWPIN the user is asked to accept to install received settings. For USERPIN, USERNETWPIN and USERPINMAC the user is subsequently asked to enter a PIN code that is a shared secret between the service provider and the user.
OTA via Cell Broadcast	-	-
<b>Re-provisioning Interface</b>		<b>OMA Client Provisioning</b>
	<b>The Ericsson-Nokia solution</b>	
OTA via SMS	Same interface as above.	If the settings previously installed were privileged or have higher priority, the settings might not be possible to install again unless the terminal is reset, otherwise as above.
OTA via Cell Broadcast	-	-
Carrier reset/provisioning	Yes, but not if the set is pre-configured in the factory and locked.	
SWIM	Not used for provisioning. The SWIM is only used for WAP security, both SSI/TLS connections and digital signatures.	
<b>Applicative provisioning</b>		
Preferred bearer customization	Yes	
Email customization	Yes	
Other applications/features	Yes (MMS, SyncML, Wireless Village, OMA Device Management, Streaming).	

Feature	Support for browser
<b>Technologies</b>	
OMA Client provisioning	Yes, WAP provisioning document v1.1.
Openwave OTA	No
Other	Yes, the Ericsson-Nokia solution. OTA Settings Specification v7.1.
Provisioning bearer	SMS
Parameter sets available	< or = 10 (total number of Internet profiles)
Parameter sets for OTA modification	< or = 10 (total number of Internet profiles)
<b>PUSH</b>	
<b>Content types</b>	
Service Indication (SI)	Yes
Service Loading (SL)	Yes
Cache Operation (CO) content type	Yes
Session Initiation Application (SIA)	Yes
<b>Man Machine Interface</b>	
SI/content retrieval postponing	Yes
SI menu structure accessibility	Messaging, Inbox
SL reception warning	The user can make a choice if a dialogue is wanted or not before loading the SL. Messaging/Settings/Push/Allow push msg/Always ask
SIA reception warning	Yes
Cache size limitations	The oldest push in the inbox will be discarded.
Number of push messages	Depending on the size of the push messages. Around 20 push messages with a size of 500 bytes can be stored.
Push de-activate	Yes (Messaging/Settings/Push/Allow push msg).
Dynamic push menu changes	No. There are no changes in the menus when activating/deactivating push.
<b>Security</b>	
Mechanisms for push	None
Trust with PPG	Sending a SIA is the most trustful.
WSP push sessions	The White List is supported.
<b>User agent profile</b>	

Feature	Support for browser
UA profile content sent at beginning of WSP session	No
URL sent pointing to the UA profile at the beginning of WSP session	Yes
URL location	On the manufacturer Internet site.
<b>WTAI</b>	mailto:scheme smsto:scheme mmsto:scheme
WTA Make Call	Yes
WTA Send DTMF	Yes
WTA Add Phone Book	Yes
<b>DOWNLOAD</b>	
OMA download functionality	Yes
HTTP GET solution to download content	Yes
Other download content	Yes. No download limit when using HTTP protocol.
Download application/product memory check	Yes
Downloaded object solution	Yes. The user is informed where the content is saved and asked if it should be used at once or later.
UAP indication for downloading	Yes
Other features	Yes. Store, delete, forward, use, manage.
Object formats	Formats supported in the phone.
<b>GRAPHICAL USER INTERFACE</b>	
<b>Man Machine Interface</b>	
Selection keys	Yes
Separate/dedicated back or erase keys	Yes
Display backlight on when browsing	Yes
Predictive writing	Yes
“http://” string displayed automatically when entering URLs	Not displayed but the “http://” is added automatically to the URL.
<b>Elements</b>	
Pop-up menus	Yes
Radio buttons	Yes

Feature	Support for browser
Check boxes	Yes
Buttons	Yes

# Abbreviations

## **3GPP™**

3rd Generation Partnership Project

## **AAC**

Advanced Audio Coding

## **AAC+**

Also known as HE-AAC v1 and aacPlus v1. See AAC.

## **AMR**

Adaptive Multi Rate  
Audio format for speech sounds

## **API**

Application Programming Interface

## **CIF**

Common Intermediate Format (352x288)

## **CS**

Circuit Switched

## **CSD**

Circuit Switched Data

## **Deck**

A collection of WML cards.

## **DRM**

Digital Rights Management; controlling copying and distribution of contents, with respect to intellectual property rights.

## **DTMF or Touch Tone**

Dual Tone Multi-Frequency signal – codes sent as tone signals. Used for telephone banking, accessing an answering machine, etc.

## **eAAC+**

Also known as HE-AAC v2, aacPlus v2 and Enhanced aacPlus. See AAC.

## **e-GSM**

Extended GSM. New frequencies specified by the European Radio Communications Committee (ERC) for GSM use when additional spectrum is needed (network-dependent). It allows operators to transmit and receive just outside GSM's core 900 frequency band. This extension gives increased network capability.

## **EDR**

Enhanced Data Rate.

## **EFR**

Enhanced Full Rate, speech coding.

## **EMS**

Enhanced Messaging Service. Allows the user to add simple pixel pictures and animations, sounds and melodies to a text message. The EMS 3GPP™ standard also includes text formatting.

## **ETSI**

European Telecommunications Standards Institute.

## **FM**

Frequency Modulation of the (radio) carrier wave.

## **FR**

Full Rate, speech coding.

## **GIF**

Graphics Interchange Format

## **GPRS**

General Packet Radio Services



**GSM**

Global System for Mobile Communications. GSM is the world's most widely-used digital mobile phone system, now operating in over 100 countries around the world, particularly in Europe and Asia-Pacific.

The GSM system family includes GSM 850, GSM 900, GSM 1800 and GSM 1900. There are different phases of roll-out for the GSM system and GSM phones are either phase 1 or phase 2 compliant.

**H.263**

Video coding for low bit-rate communication. ITU-T recommendation.

**H.264**

Also known as MPEG-4 Part 10. Joint ITU-T recommendation / MPEG standard for advanced video coding.

**HR**

Half Rate, speech coding.

**HSCSD**

High Speed Circuit Switched Data

**HTML**

HyperText Markup Language

**HTTP**

HyperText Transfer Protocol

**IETF**

Internet Engineering Task Force

**JPEG**

Joint Photographer Expert Group

**MIDI**

Musical Instrument Digital Interface

**ME**

Mobile Equipment

**MMI**

Man-Machine Interface. See UI.

**MP**

Megapixel

**MP3**

MPEG-1 layer 3, an effective audio coding scheme. See MPEG4/MPG4.

**MPEG4/MPG4**

Moving Picture Experts Group  
MPEG-4 is an ISO/IEC standard developed by MPEG. MPEG-4 extends the earlier MPEG-1 and MPEG-2 algorithms with synthesis of speech and video, fractal compression, computer visualisation and artificial intelligence-based image processing techniques.

**MT**

Mobile Termination

**ODI**

Object Distribution Indicator

**OMA**

Open Mobile Alliance

**OTA**

Over-the Air Configuration. To provide settings for the phone by way of sending an SMS message over the network to the phone. This reduces the need for the user to configure the phone manually.

**PAN**

Personal Area Network

**PDA**

Personal Digital Assistant

**PDP**

Packet Data Protocol

## **PIM**

Personal Information Management

## **PNG**

Portable Network Graphic

## **QCIF**

Quarter CIF. See CIF.

## **RDS**

Radio Data System

## **RSS**

Really Simple Syndication

## **RTSP**

Real Time Streaming Protocol session control.

## **SI**

Service Indication

## **SIM card**

Subscriber Identity Module card – a card that must be inserted in any GSM-based mobile phone. It contains subscriber details, security information and memory for a personal directory of numbers. The card can be a small plug-in type or credit card-sized, but both types have the same functions. The phone uses the small plug-in card.

## **SL**

Service Loading

## **SMS**

Short Messaging Service. Allows messages of up to 160 characters to be sent and received via the network operator's message centre to a mobile phone.

## **SP-MIDI**

Scalable Polyphony MIDI. See MIDI.

## **SQCIF**

Sub QCIF. See QCIF.

## **SS**

Supplementary Services

## **SSL**

Secure Socket Layer

## **SVG**

Scalable Vector Graphics

## **SVGT**

Scalable Vector Graphics Tiny

## **TLS**

Transport Layer Security

## **UI**

User interface

## **URL**

Uniform Resource Locator.  
The global address of documents and other resources on the World Wide Web.

## **USSD**

Unstructured Supplementary Services Data

## **vCard**

vCard automates the exchange of personal information typically found on a traditional business card, for use in applications such as Internet mail, voice mail, Web browsers, telephony applications, call centres, conferences, PIMs /PDAs, pagers, fax, office equipment, and smart cards. vCard is specified by IETF. See IETF.

## **VGA**

Video Graphics Array

**WAP**

Wireless Application Protocol. Handheld devices, low bandwidth, binary coded, a deck/card metaphor to specify a service. A card is typically a unit of interaction with the user, that is, either presentation of information or request for information from the user. A collection of cards is called a deck, which usually constitutes a service.

**WAP Application**

A collection of WML cards, with the new context attribute set in the entry card.

**WAP service**

A WML application residing on a Web site.

**WAV**

Windows Media Audio.

**WBMP**

Wireless BitMap.  
A graphic format optimized for mobile computing devices.

**WML**

Wireless Markup Language. A markup language used for authoring services, fulfilling the same purpose as HyperText Markup Language (HTML) does on the World Wide Web (WWW). In contrast to HTML, WML is designed to fit small handheld devices.

**WML Script**

WML Script can be used to enhance the functionality of a service, just as, for example, Java Script may be utilized in HTML. It makes it possible to add procedural logic and computational functions to WAP-based services.

**WSP**

Wireless Session Protocol

**WTLS**

Wireless Transport Layer Security

**WWW**

World Wide Web

**XHTML**

Extensible HyperText Markup Language

**XML**

Extensible Markup Language

# Related information

## Documents

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- Sony Ericsson User Guide
- Sony Ericsson FAQ
- AT Command Reference Manual
- WAP 2.0 Specifications

## Links

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- [www.sonyericsson.com/](http://www.sonyericsson.com/)
- [www.ericsson.com/mobilityworld/](http://www.ericsson.com/mobilityworld/)
- [www.midi.org](http://www.midi.org)
- [www.extendedsystems.com](http://www.extendedsystems.com)
- [www.gsmworld.com/](http://www.gsmworld.com/)
- [www.bluetooth.com](http://www.bluetooth.com)
- [www.imc.org](http://www.imc.org)
- [www.3gpp.org](http://www.3gpp.org)
- [www.etsi.fr](http://www.etsi.fr)
- [www.wapforum.org](http://www.wapforum.org)
- [www.imc.org/pdi/](http://www.imc.org/pdi/)
- [www.syncml.org](http://www.syncml.org)
- [www.w3.org/TR/xhtml-basic/](http://www.w3.org/TR/xhtml-basic/)
- [www.java.sun.com](http://www.java.sun.com)
- [www.memorystick.org/](http://www.memorystick.org/)
- [www.memorystick.com/](http://www.memorystick.com/)

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