

White Paper

February 2007

W610



Preface

Purpose of this document

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

On 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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Product overview

The W610 is a natural step in the Sony Ericsson 'True Music' evolution. The W610 truly touches your senses as the next generation Walkman®. The everyday need for multiple devices – such as a compact mobile phone, a quality Walkman® player and a digital camera – are all in the one device with easy-to-use functionality.

Features include:

- A state of the art Walkman® player
- Dedicated music keys
- A music FM radio with RDS
- Full music track download over the air via PlayNow™
- Music recognition – TrackID™
- The latest in EDGE technology
- 2.0 megapixel camera with auto focus and built-in LED flash light
- Easy-to-use horizontal digital camera menu
- Web browser html
- RSS reader
- Easy content management with PhotoDJ™ and VideoDJ™ and more
- 3D gaming

The slim elegant compact stick phone has a large 1.96-inch 262k TFD colour screen. User free memory capacity is 64 MB internally. A 512 MB Memory Stick Micro™ (M2™) card is included in the kit at purchase. The ergonomic keypad allows you to write text messages quickly, type in phone numbers or search for particular content such as songs and pictures.

You can multitask with applications running in the background, for example, listen to your favourite tracks, talk and browse, send messages or download music at the same time.

A USB cable is provided for you to synchronize or transfer files between phone and computer.

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

Walkman® player 2.0

The Walkman® player converts the phone into a portable music player that supports AAC, AAC+, Enhanced ACC+, MP3, MP4, M4A, 3GP, AMR NB, AMR WB, WAV, SP-MIDI, G-MIDI, RealAudio 8, WMA 8, WMA 9 and Mobile XMF 1.0 audio formats.

The Walkman® player key gives you direct access to your music files without having to browse the menus. Play music and video clips, streamed or downloaded.

Music recognition - TrackID™

Obtain title, artist and album information about songs you hear and like. Recording music from an external source, using the microphone. Track ID™ is not available in all countries.

Memory Stick Micro™ (M2™) slot

The memory slot supports Memory Stick Micro™ (M2™), a 512 MB memory card which comes with your phone. Different kinds of content (pictures, audio, video clips etc.) can be stored on the memory card, and transferred to other memory card compatible consumer products, for example Sony digital cameras, camcorders, portable music players, TVs, photo printers and computers.

FM Radio with RDS

The FM radio is built-in and offers instant and easy access to FM radio channels.

2.0 Megapixel camera

The 2.0 megapixel camera includes 2.2x digital zoom for camera pictures (VGA mode), 4x digital zoom for video clips, auto focus to take quality pictures with ease and supports a built-in LED flash. The horizontal user interface adds extra usage quality when handling the camera.

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.

Built-in LED flash light

Lighting conditions can be enhanced by using the built-in LED flash light, which is easily activated via the camera settings and a keypad shortcut.

2 inch colour screen

The large 1.96 inch (176x220 pixels) full graphic 262k TFD colour screen enhances viewing, facilitating high-quality multimedia and entertainment.

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.

PictBridge

Print camera album pictures in your phone via the USB cable connected to a PictBridge™ compatible printer.

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. Picture blog is not available in all countries.

Push email

W610 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).

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 W610 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.

Images



Technologies in detail

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 W610 compared to W850 and W710.

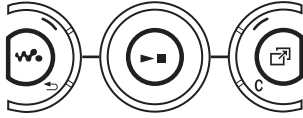
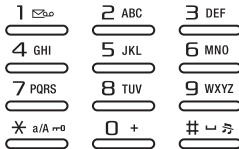
Feature	W610	W850	W710
3D games	Yes	Yes	Yes
3G Enabled Technology that enables 384 kbps data transfer and video telephony.	No	Yes	No
Activity Menu (multi-tasking) The user can easily handle missed calls, new text and picture messages, task reminders, shortcuts and get quick access to favourite Internet bookmarks.	Yes with enhanced functionality for background applications.	Yes	Yes
Alarm clock Set a time for simple or recurring weekly alarms.	Yes	Yes	Yes
Backlight White backlight to illuminate the phone screen.	Yes	Yes	Yes
Battery	3.6V, 950 mAh, Lithium Polymer	3.6V, 900 mAh, Lithium Polymer	3.6V, 900 mAh, Lithium Polymer
Battery charging time	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.	At least 90% charged within 2 hours. Fully charged within 2.5 hours.
Bluetooth™ audio streaming	Yes	Yes	Yes
Bluetooth™ audio video remote control Use the phone as a remote control for home electronics, PC applications and other accessories.	Yes	Yes	Yes
Bluetooth™ PAN Connect the phone to Internet using Bluetooth wireless technology.	Yes	No	No

Feature	W610	W850	W710
Bluetooth™ wireless technology 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	Yes
Business card exchange Exchange contact information.	Yes	Yes	Yes
Calculator	Yes	Yes	Yes
Calendar Calendar with day, week and month views and reminders.	Yes with enhanced functionality	Yes with enhanced functionality	Yes
Call list View calls made and calls received.	Yes	Yes	Yes
Camera	2.0 Megapixel	2.0 Megapixel	2.0 Megapixel
Camera active lens cover Open the cover and camera functionality starts automatically.	No	No	No
Camera button A dedicated camera button. Press once and the integrated camera activates.	Yes	Yes	Yes
Camera file browser Browse the picture folder without leaving the camera function.	Yes	Yes	Yes
Camera keys on top When using the camera in horizontal mode - the side keys with camera functionality are on top, for a digital still camera feel.	Yes	Yes	Yes
Camera menu Easy-to-use horizontal digital camera menu.	Yes	Yes	Yes
Chinese input method Chinese input methods: Text input methods based on Simplified or Traditional Chinese. Bopomofo, Pinyin or Stroke.	Yes	Yes	No

Feature	W610	W850	W710
Clock Onscreen clock that keeps time even when the phone is off.	Yes	Yes	Yes
Co-branding area	22 x 6.5 mm	21.8 x 6.51 mm	21.8 x 6.86 mm
Code memo A safe place to store all PIN codes and other information. To access Code memo, only one PIN code is needed.	Yes	Yes	Yes
Colour	Plush Orange, Satin Black or Silver	Precious Black or Golden White	Performance Graphite or Hatha Violet
Contacts Phone book with fields for name, phone and fax numbers, email address, street address, company, title.	Yes	Yes	Yes
Conference calls Support for multi-party calling.	Yes	Yes	Yes
Content online Downloadable pictures, games, themes, ringtones available online.	Yes	Yes	Yes
Copyright protection - DRM 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	Yes
Design	Stick form	Slider form	Clamshell
Device Management (DM) 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	Yes

Feature	W610	W850	W710
Digital zoom	2.2x for pictures (VGA mode) 4x for video clips	2.5x for pictures 4x for video clips 2x for video calls	2.5x for pictures
Email Built-in email client with inbox, outbox, compose, send and other functions.	Yes	Yes	Yes
EMS (Enhanced Messaging) Text messaging (SMS) with support for pictures and sounds.	Yes	Yes	Yes
Exterior description Size mm (Length x width x thickness/thinnest).	102 x 46 x 14	98 x 47 x 21	88 x 48 x 24.5
External Antenna Connector The phone has a built-in antenna with an external connector for use with an advanced car handsfree accessory.	Yes	Yes	Yes
Fast port A system connector which enables faster data transfer between the phone and a computer.	Yes	Yes	Yes
File manager Folder structure storage to help store and organize pictures, sounds and other phone content.	Yes with enhanced functionality for camera content	Yes with enhanced functionality for camera content	Yes with enhanced functionality for camera content
Flight mode 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	Yes	Yes
FM radio with RDS	Yes	Yes	Yes
Games download Replace in-phone games with new ones.	Yes	Yes	Yes
Games embedded	Yes	Yes	Yes

Feature	W610	W850	W710
<p>GPRS</p> <p>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).</p>	Yes	Yes	Yes
<p>High Speed Data</p> <p>HSCSD - a communications standard enabling GSM data transfer 14.4 - 28.8 kbps.</p>	Yes	Yes	Yes
<p>Icon Desktop 12</p> <p>A graphic icon desktop with 12 interactive icons.</p>	Yes	Yes	Yes
<p>Image formats</p> <p>QQVGA (160x120 pixels) VGA (640x480 pixels)</p> <p>1 MP (1280x960 pixels) 2 MP (1600x1200 pixels) Note: MP = Megapixel (values without fractions).</p>	No Yes Yes Yes	Yes Yes Yes Yes	Yes Yes Yes Yes
<p>Infrared port</p> <p>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.</p>	Yes	Yes	Yes
<p>Instant messaging (Wireless Village)</p> <p>Chat - several people can take part in a mobile messaging session.</p>	Yes	Yes	Yes
<p>Internet blogging</p> <p>Share up to full-size pictures over the Internet on your personal Web page. The size of uploaded pictures is dependent on customizations. Picture blog is not available in all countries.</p>	Yes	Yes	Yes

Feature	W610	W850	W710
<p>Internet browser</p> <p>cHTML - A mobile device adapted version of the standard Internet communications protocol HTML.</p> <p>Full HTML support, ECMA script, DOM level 1& 2, etc.</p> <p>Progressive download of video files.</p>	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p>	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p>	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p>
<p>Internet security</p> <p>Encrypts confidential information such as credit card and bank account numbers. Necessary for mobile banking and shopping.</p>	<p>Yes, SSL/TLS</p>	<p>Yes, SSL/TLS</p>	<p>Yes</p>
<p>Java™</p> <p>Support for Java Platform, Micro Edition technology.</p>	<p>Java ME Platform, Micro Edition™, Java 3D™</p>	<p>Java ME Platform, Micro Edition™, Java 3D™</p>	<p>Java 2, Micro Edition (J2ME™), Java 3D™</p>
<p>Keys - navigation and more</p> 	<p>4+1 navigation 2 soft Back Clear Activity menu Walkman® key</p>	<p>8+1 navigation 2 soft Back Clear Activity menu Walkman® key Internet/operator</p>	<p>4+1 navigation 2 soft Back Clear Activity menu Walkman® key</p>
<p>Keys - keypad</p> 	<p>12 alphanumeric</p>	<p>12 alphanumeric</p>	<p>12 alphanumeric</p>

Feature	W610	W850	W710
Keys - side and other	separate on/off volume/camera zoom camera button multimedia (play/stop) Activity menu key on front	separate on/off volume /camera zoom camera button Photo A/B keys: A=Camera or Video shoot mode B=Camera scenes or Video Night mode Activity menu	on/off key volume camera button Activity menu internet play/pause skip forward skip backward
Long SMS (Text Messaging) Concatenated SMS text messaging.	Yes	Yes	Yes
Lunar calendar 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. Available in Chinese variants of phones.	Yes	No	Yes
Macromedia® Flash Lite™ For impressive animated wallpapers, menus and other graphic elements.	Yes	Yes	Yes
Media player 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.	See Walkman® player and Video player	See Walkman® player and Video player	See Walkman® player and Video player
Mega Bass™ An audio feature which enhances bass frequencies for better overall music experience.	Yes	Yes	Yes
Memory (built-in) User-free memory in phone.	Up to 64 MB	Up to 16 MB	Up to 10 MB

Feature	W610	W850	W710
<p>Memory Stick Micro™ (M2™)</p> <p>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.</p>	Yes 512 MB	No	Yes 512 MB
<p>Memory Stick PRO Duo™</p> <p>Slot for inserting a mini peripheral storage device (up to 4 GB).</p>	No	Yes	No
<p>Menu shortcuts</p> <p>A function making it possible to dedicate shortcuts to the most used phone functions.</p>	Yes	Yes	Yes
<p>MMS (Multimedia messaging)</p> <p>Picture messaging with text and sound.</p>	Yes	Yes	Yes
<p>MMS video</p> <p>Support in the phone for sending video using MMS.</p>	Yes	Yes	Yes
<p>Modem</p> <p>Circuit Switched/Packet Switched Internet dial-up support.</p>	Yes	Yes	Yes
<p>MusicDJ™</p> <p>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.</p>	Yes	Yes	Yes
<p>Music player</p>	See Media player	See Media player	See Media player
<p>Music player key</p> <p>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.</p>	Yes	No	Yes
<p>Music tones</p> <p>Music tones, also called master tones, are DRM protected music by original artists. Various digital audio formats are supported.</p>	Yes	Yes	Yes

Feature	W610	W850	W710
Networks			
GPRS	GPRS and EDGE in all bands		GPRS and EDGE in all bands
3G	No	UMTS 2100	No
GSM	GSM 850, (R99) 900, 1800, 1900, e-GSM 900	GSM (R99) 900, 1800, 1900, e-GSM 900	GSM 850 (3GPP 31.010-1), GSM 900 (CTR 19 and CTR 20) including e-GSM mode, GSM 1800 (CTR 31 and CTR 32) and GSM 1900
OMA Data Synchronization (SyncML)	Yes	Yes	Yes
A device communications standard that enables remote synchronization between devices.	SyncML 1.2 SyncML 1.1	SyncML 1.1.2 SyncML 1.2	SyncML 1.1
OTA settings	Yes	Yes	Yes
WAP, email and other settings can be sent Over-The-Air to the phone.			
Phone registration	Yes	No	Yes
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.			
Photo light (built-in)	Yes	Yes	No
When lighting conditions are poor, activate the picture light.			
PhotoDJ™	Yes	Yes	Yes
A drawing tool in the phone where existing pictures and photos can be altered.			
Picture blog	Yes	No	Yes
Share up to full size pictures over the Internet on your personal Web page. The size of uploaded pictures is dependent on customizations. Picture blog is not available in all countries.			

Feature	W610	W850	W710
Picture gallery A thumbnail image gallery where sections of several pictures can be viewed at the same time.	Yes	Yes	Yes
Picture phone book Add a picture to a saved contact. The picture appears on the screen when the stored contact calls.	Yes	Yes	Yes
PlayNow™ (direct-link) Listen to music before you purchase and download to your phone.	Yes	Yes	Yes
PlayNow™ Games (direct-link) Preview games straight from the phone desktop in three clicks before you purchase and download.	Yes	Yes	Yes
Polyphonic voices	72	40	64
Predictive text input	Yes	Yes	Yes
Print on a printer Bluetooth connection and/or Memory Stick Micro™ (M2™).	Yes	No	Yes
Push email	Yes OMA email notification IMAP Idle	Yes OMA email notification IMAP idle	Yes OMA email notification IMAP idle
RSS Feeds Use your phone to view up-to-the-minute news and other content from selected Web sites and blogs.	Yes	Yes	Yes
Screen Type: Size: Resolution: Technology: Colours displayed together: Backlight colour:	Full graphical 1.96.0 inches 220 x 176 pixels TFD, QCIF+alpha 262,000 (18 bit) White	Full graphical 2.0 inches 320 x 240 pixels TFT, QVGA 262,000 (18 bit) White	Full graphical 1.9 inches 220 x 176 pixels TFT 262,000 (18 bit) White
Screensaver	Yes	Yes	Yes

Feature	W610	W850	W710
<p>Settings download</p> <p>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.</p>	Yes	No	Yes
<p>SIM card lock</p> <p>The possibility to protect the SIM card with a four-digit PIN code.</p>	Yes	Yes	Yes
<p>Sleep mode</p> <p>A power saving feature that minimizes battery power consumed when the phone is in standby.</p>	Yes	Yes	Yes
<p>Sony Ericsson Remote Update Service</p> <p>Download the latest operator approved version of the mobile phone software over the air.</p>	Yes	Yes	Yes
<p>Sony Ericsson Update Service</p> <p>Connect the phone to an Internet - connected computer, download the latest operator-approved version of the mobile device software from the Web, www.sonyericsson.com/support and update the mobile device.</p>	Yes	Yes	Yes
<p>Sound recorder</p> <p>A mini recording device in the phone that can record voice messages or other sounds.</p>	Yes	Yes	Yes
<p>Speakerphone</p>	Yes	Yes	Yes
<p>Speed dialling</p> <p>Allocate contacts in the phone book to specific keys on the keypad.</p>	Yes	Yes	Yes
<p>Standby Time</p>	Up to 350 hours	Up to 350 hours	Up to 370 hours
<p>Status view</p> <p>The screen shows the network being used, time and other status information</p>	Yes	Yes	Yes
<p>Stopwatch</p>	Yes	Yes	Yes

Feature	W610	W850	W710
SVG Tiny 1.1 Scalable Vector Graphics for impressive animated wallpapers, menus and other graphic elements.	Yes	Yes	Yes
Synchronization Apple® Synchronize and share phone content with Apple® computers supporting iSync.	Pending certification	No	Yes
Synchronization PC Synchronize and share phone content with a computer.	Yes	Yes	Yes
Talk Time	More than 7 hours	Up to 7 hours	Up to 9 hours
Tasks Keeps track of important things to do.	Yes	Yes	Yes
Themes Phone menu texts and background graphics.	Yes	Yes	Yes
Timer Set the phone to alert after a specific time lapse.	Yes	Yes	Yes
Twin camera Two cameras - a camera capable of taking still pictures and recording video, and a video call camera located above the screen.	No	Yes	Yes
UMTS A 3G technology standard capable of data transfer 384 kbps.	No	Yes	No
USB connectivity support 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	Yes
Vibrating alert The phone vibrates when a call comes in.	Yes	Yes	Yes
Video call camera	No	Yes	No

Feature	W610	W850	W710
<p>Video calling</p> <p>When making a video call, the recipient can be seen in the screen. The service requires UMTS/WCDMA.</p>	No	Yes	No
<p>Video call talk time</p>	No	1 hour 55 minutes	No
<p>VideoDJ™</p> <p>Create video sequences by combining different clips and adding music and images.</p>	Yes	Yes	Yes
<p>Video player</p> <p>Play video clips, streamed or downloaded. Record and transfer video clips to another phone or a computer via available transfer method.</p>	Yes	Yes	Yes
<p>Video streaming</p> <p>Real time streaming of video, for example, live cam. Media can also be downloaded and saved in the phone memory.</p>	Yes	Yes	No
<p>Viewfinder</p> <p>When using an in-phone camera or snap-on accessory camera, the picture can be previewed before it is captured.</p>	Yes	Yes	Yes
<p>Voice control</p> <p>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.</p>	Yes	Yes	Yes
<p>Voice mail</p> <p>Support for voice mail operator service including automatic answering and message recording.</p>	Yes	Yes	Yes
<p>Walkman® player</p> <p>A digital music player. It is possible to play music files and video clips in the folder system, organize your favourite songs into groups and creating simple playlists. A play and stop function simplifies listening.</p>	Yes	Yes	Yes

Feature	W610	W850	W710
<p>Walkman® player key</p> <p>Get direct access to your music files without having to browse the menus. Press the Walkman® player key to gain direct access to the Walkman® player.</p>	Yes	Yes	Yes
<p>WAP 1.2.1</p> <p>A mobile Internet standard to access specially designed Internet sites.</p>	Yes	Yes	Yes
<p>WAP 2.0 XHTML</p> <p>A mobile Internet standard to access specially designed Internet sites. WAP 2.0 supports colour and interactive lists.</p>	Yes	Yes	Yes
Weight	95 g	118 g	100

Facts and figures

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	Quad band GSM phase 2 recommendations. GSM 850 (3GPP 31.101-1), GSM 900 (CTR 19 and CTR 20), GSM 1800 (CTR 31 and CTR 32), GSM 1900 and e-GSM mode supported.
Speech coding	HR, FR, EFR, AMR supported where available, for high speech quality.
GSM SIM card	GSM SIM - GSM 11.1, 3GPP™ TS 31.101. Small plug-in card, 1,8 V and 3 V.
Memory	Internal memory up to 64 MB (depending on software configuration/file content) + 512MB Memory Stick Micro™ (M2™) is supplied.
Data transfer speeds	Up to 236.8 kbps (downlink) Up to 118.4 kbps (uplink)

Performance and technical characteristics

Dimension	GSM 850	GSM 900/ e-GSM 900	GSM 1800	GSM 1900
Frequency range (MHz)	TX:824 – 849 RX:869 – 894	TX: 880 – 915 RX: 925 – 960	TX: 1710 – 1785 RX: 1805 – 1880	TX:1850 –1910 RX:1930 – 1990
Channel spacing	200 kHz	200 kHz	200 kHz	200 kHz
Number of channels	124 Carriers *8 (TDMA)	174 Carriers *8 (TDMA)	374 Carriers *8 (TDMA)	299 Carriers *8 (TDMA)
Modulation	GMSK	GMSK	GMSK	GMSK
TX Phase Accuracy	< 5° RMS Phase error (burst)	< 5° RMS Phase error (burst)	< 5° RMS Phase error (burst)	< 5° RMS Phase error (burst)
Duplex spacing	45 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	33 dBm Class 4 (2 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	GSM 850	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 spec.)	< -36 dBm up to 1 GHz < -30 dBm over 1 GHz	< - 30 dBm	< - 30 dBm
Receiver RF sensitivity	Better than – 102 dBm	Better than – 102 dBm	– 102 dBm	– 102 dBm
Receiver RX Bit error rate	< 2.4%	< 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"> It is possible to scroll the text up and down in USSD messages. It is possible to highlight embedded numbers and take actions accordingly.

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
Support of access in 2 phases	Yes
Support of PRACH on 11 bits	Yes

Dimension	Support
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 www.sonyericsson.com/developer ,

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

Walkman® player 2.0, Video player

File types	Formats	Extensions
Audio	AAC, AAC+, Enhanced ACC+ MP3 MP4 M4A 3GP AMR NB AMR WB WAV SP-MIDI G-MIDI RealAudio 8 WMA 8 WMA 9 Mobile XMF 1.0	.mp4, .3gp .mp3 .mp4 .m4a .3gp .amr .awb .wav .mid .mid .ra .wma .wma .xmf
Video (including audio part)	MP4 (video: MP4, audio: AAC, AMR) 3GP (video: MPEG4 or H.263, H.264, audio: AAC or AMR) RealVideo 8 WMV 8 WMV 9	.mp4 .3gp .rv .wmv .wmv
Streaming transport	RTSP according to 3GPP™	
Video coding	MPEG-4, H.263, H.264, RealVideo 8, WMV 9	
Audio decode	AAC, AAC+, eAAC, WAV, WMA 8, WMA 9, AMR NB, AMR WB, MP3, Real Audio 8, Mobile XMF 1.0, SP-MIDI, G-MIDI	
Features	Automatic pause on telephone call Playlists Play mode (shuffel or loop) Equalizer Stereo widening Visulizations Light effects Skins Sorting by artist or file Minimizing the Walkman® player	

Java™

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

Imaging/Messaging

2.0 Megapixel camera

Facts and figures	
Picture sizes (resolution)	VGA (640x480 pixels) 1 MP (1280x960 pixels) 2 MP (1600x1200 pixels)
	Note: MP = Megapixel (values without fractions)
Video sizes (resolution)	QCIF (176 x 144 pixels - applicable for video recording)
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	2.2x zoom for still images (VGA mode). 4x zoom for video recording.
Night mode	Yes
Self-timer	Yes
Effects	Off/Black&White/ Negative/Sepia/Solarize
White balance	Auto/ Incandescent/ Fluorescent/ Daylight/ Cloudy

Facts and figures

Picture quality	Choose between Normal and Fine
Time and date	Add a time and date to a picture

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	Yes
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

Feature	Support
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
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"> • see how many short messages an EMS message consists of before sending. • choose whether to send the message or not after writing.
Incoming messages	<ul style="list-style-type: none"> • A signal is heard once all parts of the message have been received or when a timeout occurs. • 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.
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"> • receive (always), send via EMS (if not copyright protected). • download melodies and commercial tunes from WAP/WAP portals.
WBMP	Yes
Picture sizes	16x16, 32x32 pixels, variable size in black and white.
Pictures	It is possible to: <ul style="list-style-type: none"> • edit pictures using PhotoDJ™. • receive (always), send via EMS (if not copyright protected). • download pictures from WAP/WAP portals.

Feature	Support
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"> • send and receive animations.
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"> • MMS/CSD: Yes • MMS/GPRS: Yes
Possibility to configure the MMS parameters by OTA provisioning	<ul style="list-style-type: none"> • MMS/CSD: Yes • MMS/GPRS: Yes
Possibility for all the parameters from the parameters set to be OTA provisioned at the same time	<ul style="list-style-type: none"> • MMS/CSD: Yes • MMS/GPRS: Yes
Possibility for only one parameter, in the set of parameters, to be OTA provisioned	<ul style="list-style-type: none"> • MMS/CSD: No • MMS/GPRS: No
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"> • message subject • message priority • email recipient address • message Cc, Bcc recipient(s) address(es) • delivery report request • read report request • MSISDN recipient address • Delivery time • Validity period

Feature	Support
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"> • reply to the sender of the message SMS/MMS • reply to the sender and to Cc, Bcc people SMS/MMS • forward the message • delete the message • save message in a dedicated folder • call the sender of a message • save item • mark as unread • details
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.
Multimedia codecs/formats supported for image	JPEG, GIF, PNG, SVGT, WBMP, BMP.
Supported formats for message presentation:	<ul style="list-style-type: none"> • message body + attachments (email presentation) • SMIL version as described in OMA MMS IOP document version 1.2
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)	No
Bearer type GSM Data (IP)	Yes, GPRS, HSCSD, ISDN and analog

Feature	Support
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	512 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	<ul style="list-style-type: none"> 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.
Power consumption	GSM host processor excluded: <ul style="list-style-type: none"> • Standby, Bluetooth On mode: <0.6 mA • 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. • Data mode average: 27mA at 172.8 kbps symmetrical (DH1)
Data transmission rate	Up to 400 kbps

USB technical data

Dimension	Support
USB cable	DCU-65 (supplied with the phone)
Connector	Fast port

Dimension	Support
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.
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, SVGT
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																						
Web browser																							
Version	2.0 baseline																						
HTML	XHTML Mobile Profile																						
Access NetFront 3.3	<ul style="list-style-type: none"> HTML 4.01, XHTML 1.1 Including mobile phone CSS 1 & CSS 2 (Partial) ECMAScript 3rd edition (equal to Java script 1.5) DOM level1, level2 and Dynamic HTML (Partial) Graphic formats: GIF, Animated GIF, JPEG, Progressive JPEG, PNG, BMP, WBMP, SVGT. 																						
Provisioning																							
Provisioning types	<table border="0"> <thead> <tr> <th>The Ericsson-Nokia OTA solution</th> <th>OMA Client provisioning (v1.1)</th> </tr> </thead> <tbody> <tr> <td>Over the Air Settings Specification, v7.1 © Ericsson and Nokia</td> <td></td> </tr> </tbody> </table>	The Ericsson-Nokia OTA solution	OMA Client provisioning (v1.1)	Over the Air Settings Specification, v7.1 © Ericsson and Nokia																			
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Total Parameter sets	10 (shared between the WAP provisioning types). < or = 10 (total number of WAP profiles).																						
Parameter set list	<table border="0"> <thead> <tr> <th>name</th> <th>name</th> </tr> </thead> <tbody> <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> </tbody> </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																						
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Parameter sets include	CSD, GPRS (different sets).																						
Factory pre-configuration	CSD (possibility to lock a setting), GPRS.																						
OTA	CSD, GPRS configuration possible.																						
Security mechanism																							

Feature	Support for browser	
Bearer	The Ericsson-Nokia solution	OMA Client Provisioning solution
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 www.openmobilealliance.org
Interface		
Bearer	The Ericsson-Nokia solution	OMA Client Provisioning solution
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	-	-
Re-provisioning Interface	The Ericsson-Nokia solution	OMA Client Provisioning solution
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.	
Applicative provisioning		
Preferred bearer customization	Yes	
Email customization	Yes	
Other applications/features	Yes (MMS, SyncML, Wireless Village, OMA Device Management, Streaming).	

Feature	Support for browser
Technologies	
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)
PUSH	
Content types	
Service Indication (SI)	Yes
Service Loading (SL)	Yes
Cache Operation (CO) content type	Yes
Session Initiation Application (SIA)	Yes
Man Machine Interface	
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.
Security	
Mechanisms for push	None
Trust with PPG	Sending a SIA is the most trustful.
WSP push sessions	The White List is supported.
User agent profile	

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.
WTAI	mailto:scheme smsto:scheme mmsto:scheme
WTA Make Call	Yes
WTA Send DTMF	Yes
WTA Add Phone Book	Yes
DOWNLOAD	
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.
GRAPHICAL USER INTERFACE	
Man Machine Interface	
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.
Elements	
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.

EDGE

Enhanced Data rates for Global Evolution.

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

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

Links

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

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