

# White Paper

February 2006

## K510

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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 in this document 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 the main functions and features of this phone.

People who can benefit from this document include:

- Operators
- Service providers
- Software developers
- Support engineers
- Application developers

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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 website 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 website.

## Document history

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### Change history

2006-02-28	Version R1A	First version.
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# Product overview

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The K510 is a sleek megapixel resolution camera phone. It is sophisticated yet simple in design with a flat, large display. The 1.3 mega pixel camera captures quality pictures and records video, which can be shared with friends via MMS or email or other means of transfer. Video clips and pictures can be transferred to a computer via the provided USB cable, Bluetooth™ or Infrared. With a picture resolution sufficient for good quality printouts, this phone has the camera in focus.

A full graphic 1.8 inch 262k TFT colour screen accommodates a user-friendly atmosphere. Face Warp (a Java™ application) makes use of the camera to transform any face in a picture into a funny face, and the resulting image can be sent immediately to friends in a message.

The Media player converts the phone into a portable MP3 player. Play music, watch pictures and slide shows. The K510 stays connected for efficiency. Browse the Internet with the HTML browser, and use the news reader with RSS feeds to view up-to-the-minute news. Check email anytime, anywhere from the phone. Synchronize calendars, to-do lists and contacts between the phone and a computer, using any of the available transfer methods, including SyncML for remote synchronization.

The contents in the phone, and the appearance of the phone, can be altered to reflect user personality. With PlayNow™, content such as music, video and games may be previewed before purchase. The look of the phone can be changed by switching covers to different styles and colours. Accessories, such as a Bluetooth handsfree, a desk stand or a car handsfree can be used to enhance user experience.

With its megapixel resolution camera, large display and wide range of connection options, the K510 is focused on bringing quality imaging to the user.

**Note:** To provide 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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## 1.3 Mega pixel camera

With the 1.3 Mega pixel camera which includes 4x digital zoom and many user friendly features, taking pictures becomes easy and fun.



## Video recording

Recording a video clip and sending it as part of a picture message or as an email attachment is just a few clicks away. The video clip can also be sent via Bluetooth™, infrared or cable.



## 1.8 inch colour screen

The 1.8 inch (128x160 pixels) full graphic 262k colour screen enhances viewing of high-quality content in the phone.



## MP3

The Media player converts the phone into a portable MP3 player. Play music, watch pictures and slide shows.



## Disc2Phone

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 Disc2Phone software. Search for and select music on your computer or audio CDs and convert your existing audio tracks to MP3 format. Disc2Phone is included in the CD that comes with the phone.



## Style-up™ covers

Change the look of the phone by switching covers to different styles and colours.



## Java™ applications including Face Warp

Face Warp transforms any face in a picture into a funny face, and the resulting image can be sent to friends in a message. Download new applications, like, for example, games and utility software. This gives users a chance to personalize the functions and features in their phones, and developers the opportunity to create new applications.



### 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.



### Bluetooth™ wireless technology

Several devices can be connected to K510 simultaneously, using Bluetooth wireless technology within a range of up to 10 metres. For example, the user can answer a call using a Bluetooth headset, and send images to another phone at the same time. Several mobile phones can take part in a Bluetooth game while the phone and a computer exchange data such as images, video clips, business e-cards, music files and calendar data.



### 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.



### 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, the built in Infrared or 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).



### 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



### Polyphonic sound

Polyphonic ringtones 40 simultaneous voices/instruments.



### MMS

Multimedia Messaging Service. Logical extension of SMS and EMS, MMS defines a service enabling sound, images and video to be combined into multimedia messages.



### Calendar

Fully functional calendar with day, week and month view or simple calendar with event reminders.

# Images

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# Technologies in detail

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This chapter offers a detailed description of the technologies available in this product.

# Functions and features

The following table is a complete description of the features in this product. It also compares this product to two other Sony Ericsson products.

Feature	K510	K300	Z520
<b>3D games</b>	X	X	X
<b>Access NetFront™ Web browser</b>	X		
<b>Activity Menu</b>  The user can easily handle missed calls, new text and picture messages, task reminders, shortcuts and get quick access to favourite Internet bookmarks.	X		
<b>Alarm clock</b>	X	X	X
<b>Antenna</b>  Built-in and external antenna connector for advanced car handsfree accessory	X	X (no external antenna connector)	X
<b>Backlight screen</b>  Blue or other coloured backlight to illuminate your phone screen	X	X	X
<b>Battery</b>	3.6V, 750 mAh, Lithium Polymer	3.6V, 700 mAh, Lithium Polymer	3.6V, 900 mAh, Lithium Polymer
<b>Battery charging time</b>	At least 90% charged within 2 hours.	At least 80% charged within 1 hour.	At least 90% charged within 2 hours.
<b>Bluetooth™ wireless technology</b>  Wireless connectivity between devices within a range of up to 10 meters.	X		X
<b>Business card exchange</b>  Exchange contact information	X	X	X
<b>Calculator</b>	X	X	X
<b>Calendar</b>  Fully functional calendar with day, week and month views and reminders	X	X	X
<b>Call list</b>  View calls made and calls received	X	X	X

Feature	K510	K300	Z520
<b>Camera</b>	1.3 megapixel	VGA	VGA
<b>Camera button</b>  A dedicated camera button. Press once and the integrated camera activates.	X	X	X
<b>Chinese input method</b>  Text input methods based on Simplified or Traditional Chinese; Bopomofo, Pinyin or Stroke.	X		X
<b>cHTML</b>  A mobile device adapted version of the standard Internet communications protocol HTML	X	X	X
<b>Clock</b>  On the screen clock that keeps time even when the phone is off	X, possible to set to graphic analogue	X	X
<b>Co-branding area</b>	8x22 mm	7x22 mm	Outside: 5.5x16 mm Inside: 7.6x22 mm
<b>Code memo</b>  A safe place to store all your PIN codes and other information. To access Code memo, you only need one PIN code.	X	X	X
<b>Colour</b>	Midnight Black Polished Purple	Visual Blue Smooth Silver	Sandy Grey Chalky White
<b>Contacts</b>  Phonebook with fields for name, phone and fax numbers, email address, company and title	X, up to 1000 contacts, up to 2500 phone numbers in total	X	X
<b>Conference calls</b>  Support for multi-party calling	X	X	X
<b>Content online</b>  Downloadable pictures and ringtones available online	X	X	X

Feature	K510	K300	Z520
<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.).	X, OMA DRM v1	X	X
<b>Design</b>	Stick phone, dual front, exchangeable front and battery cover.	Stick phone, dual front.	Clamshell phone, internal and external display, exchangeable front and battery 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) 1.1.2.	X	X	X
<b>Digital camera menu</b>	X	X	X
<b>Digital zoom</b>	4x	4x	4x
<b>Display</b>  Type: Size: Resolution: Technology: Colours displayed together: Backlight colour:	Full graphical 1.8 inches 128x160 pixels TFT 262,000 (18 bit) White	Full graphical 1.6 inches 128x128 pixels CSTN 65,000 (16 bit) White	Full graphical 1.8 inches 128x160 pixels TFT 65,000 (16 bit) White
<b>Dual LCD</b>  Two displays – one main screen and an outside display that shows network status, time, and, who's calling.			X
<b>Email</b>  Built-in email client with inbox, outbox, compose, send and other functions	X	X	X
<b>EMS (Enhanced Messaging Service)</b>  Text messaging with pictures and sounds	X	X	X

Feature	K510	K300	Z520
<b>Exterior description</b>			
Length (mm):	101.4	99.9	93.5
Width (mm):	44.0	45.2	45.7
Thickness, thinnest (mm):	17.3 (display)	19.4 (keypad)	
thickest (mm):	18.5 (camera)	21 (display)	23.9
<b>Fast port</b>	X		X
A system connector which enables faster data transfer from phone to PC and PC to phone			
<b>File manager</b>	X	X	X
Folder structure storage to help you store and organize pictures, sounds and other phone content			
<b>Frames</b>	X	X	X
Before you take a picture, you can decide to have a frame surrounding picture and view your subject and the frame			
<b>Games download</b>	X	X	X
Replace your in-phone games with new ones			
<b>Games embedded</b>	X	X	X
<b>GPRS</b>	X	X	X
General Packet Radio Services - a communications standard enabling packet data transfer similar to Internet - 28.8 kbps - 58.6 kbps. It is recommended that you have GPRS to use MMS and content download services.			
<b>High Speed Data</b>	X	X	X
HSCSD - a communications standard enabling GSM data transfer 14.4 - 28.8 kbps			
<b>Icon Desktop</b>	X	X	X
A graphic icon desktop with interactive icons			
<b>IMAP-Idle</b>	X		
<b>Infrared port</b>	X	X	X
A wireless connector enabling you to connect your phone to a laptop or other infrared device in order to share pictures, synchronize or use the phone as a modem			

Feature	K510	K300	Z520
<b>Instant messaging</b>  Chat - several people can take part in a mobile messaging session where everyone sees what the other is writing	X	X	X
<b>Java</b>  Support for Java™ technology	Java 2, Micro Edition (J2ME™), Java 3D	Java 2, Micro Edition (J2ME™), Java 3D	Java 2, Micro Edition (J2ME™), Java 3D
<b>Joystick</b>  A four-directional stick navigation control with press function. See also navigation key.	X	X	
<b>Keypad</b>	Keypad with 12 keys, 2 selection keys, clear and back keys, 4+1 way joystick, separate on/off, camera key, activity menu key	Keypad with 12 keys, 2 selection keys, clear and back keys, 4+1 way joystick, separate on/off, camera key, operator key	Keypad with 12 keys, 2 selection keys, clear and back keys, 4+1 way navigation key, volume side keys, separate on/off, camera key, operator key
<b>Keypad lock</b>  The possibility to lock the phone keys so they do not activate a function in your phone	X	X	
<b>Light effects</b>			X
<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.	X		X
<b>Media player</b>  Store and play digital music and video	X	X	X
<b>Memory (built-in)</b>  Phone memory that is free for the user to use as you please, for pictures, sounds, and more	Up to 28 MB	Up to 12 MB	Up to 16 MB
<b>Menu shortcuts</b>  A function making it possible for you to dedicate shortcuts to your most used phone functions	X	X	X

Feature	K510	K300	Z520
<b>MMS (Multimedia Messaging Service)</b>  Picture messaging with text and sound	X	X	X
<b>MMS video</b>  Support in the phone for sending video using MMS	X	X	X
<b>Modem</b>  GSM Internet dial-up support	X	X	X
<b>Music tones</b>  Music tones, also called master tones, are DRM protected music by original artists. Various digital audio formats are supported.	X	X	X
<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	X	X	X
<b>Navigation key</b>  A four-directional navigation control with press function. See also joystick.			X
<b>Networks</b>	GSM (R99) Tri-band, e-GSM 900, 1800, 1900	GSM (R99) Tri-band, e-GSM 900, 1800, 1900	GSM (R99) Quad-band, e-GSM 850, 900, 1800, 1900
<b>OMA Data Synchronization (SyncML)</b>  A device communications standard that enables remote synchronization between devices	SyncML 1.2 SyncML 1.1	SyncML 1.1	SyncML 1.1
<b>OTA settings</b>  WAP, email and other settings can be sent Over-The-Air to your phone	X	X	X
<b>Photo light</b>  When lighting conditions are poor, press the Photo light button or set Photo light in the phone menu. Better light – better pictures.			
<b>PhotoDJ™</b>	X		X

<b>Feature</b>	<b>K510</b>	<b>K300</b>	<b>Z520</b>
<b>Picture effects</b>  Add picture effects as fun layers on a picture	X	X	X
<b>Picture gallery</b>  A thumbnail image gallery where you can see sections of several pictures in your screen at the same time	X	X	X
<b>Picture phonebook</b>  Add pictures to your contacts so that, when someone calls, a picture of that person appears on the screen	X	X	X
<b>Picture wallpaper</b>  Background picture on the screen when the phone is in standby mode	X	X	X
<b>PIM sync (Personal Information Management)</b>  Synchronize the phone Organizer with a PC	X	X	X
<b>PlayNow™</b>  Download and pre-listen to music ringtones and games straight from the phone desktop in three clicks	X	X	X
<b>Polyphonic ringtones</b>	40	40	40
<b>Predictive text input</b>  When you write text, predictive text input software predicts what word you are writing and finishes it for you. The prediction is based on previous words used and a customizable dictionary.	X	X	X
<b>Push email</b>	X, OMA email notification		
<b>Redial</b>  Identify and redial the most recent caller	X	X	X
<b>RS232 cable support</b>  Computer-to-phone serial cable support.		X	



Feature	K510	K300	Z520
<b>RSS Feeds</b>  Use your phone to view up-to-the-minute news and other content from selected websites and blogs.	X		
<b>Screensaver</b>  When the phone has not been used for a while, a screensaver activates and the phone goes into 'sleep mode'	X	X	X
<b>Selection keys</b>  Also called softkeys	X	X	X
<b>Side volume keys</b>  Controls on the side of the phone that regulate the volume of incoming sound			X
<b>SIM card lock</b>  The possibility to protect your SIM card with a four-digit PIN code	X	X	X
<b>Sleep mode</b>  A power saving feature that minimizes battery power consumed when the phone is in standby	X	X	X
<b>SMS, long (Text Messaging)</b>  Concatenated SMS text messaging of up to 10 concatenations	X	X	X
<b>Sony Ericsson Remote Update Service</b>  Download the latest operator approved version of the mobile phone software over the air	X		
<b>Sony Ericsson Update Service</b>  Connect the phone to an Internet-connected computer, download the latest operator-approved version of the mobile phone software from the web, <a href="http://www.SonyEricsson.com/support">www.SonyEricsson.com/support</a> and update the mobile phone	X		X
<b>Sound recorder</b>  A mini recording device in your phone that lets you record voice messages or other sounds	X	X	X

Feature	K510	K300	Z520
<b>Speakerphone</b>  Loudspeaker suitable for using the phone as an office handsfree	X		X
<b>Speed dialling</b>  Allocating contacts in your phonebook to specific keys on the keypad	X	X	X
<b>Standby time</b>	Up to 360 hours	Up to 300 hours	Up to 400 hours
<b>Status view</b>  The display shows the network being used, time and other status information	X	X	X
<b>Stopwatch</b>	X	X	X
<b>Style-Up™ Covers</b>  Exchangeable covers to alternate the look of your phone	X		X
<b>SVG Tiny 1.1</b>  Scalable Vector Graphics for impressive animated wallpapers, menus and other graphic elements	X	X	X
<b>Synchronization Apple®</b>  Synchronize and share phone content with Apple® computers	X		X
<b>Synchronization PC</b>  Synchronize and share phone content with a computer	X	X	X
<b>Talk time</b>	Up to 7 hours	Up to 7 hours	Up to 9 hours
<b>Tasks</b>  Keeps track of important things to do	X	X	X
<b>Themes display</b>  Phone menu texts and background graphics	X	X	X
<b>Timer</b>  Set your phone to alert after a specific time lapse	X	X	X

Feature	K510	K300	Z520
<b>USB connectivity support</b>  Connect the phone to a computer using a USB cable	X	X	X
<b>Vibrating alert</b>  The phone vibrates and you feel when a call comes in	X	X	X
<b>Video player</b>  Record, play and transfer video clips to another phone or a computer via available transfer methods. File format – video: MPEG4.	X	X	X
<b>Video streaming</b>  Real time streaming of video, for example, live cam	X	X	X
<b>VideoDJ™</b>  Create video sequences by combining different clips and adding music and images	X		X
<b>Viewfinder display</b>  When using an in-phone camera or snap-on accessory camera, the picture can be previewed before it is captured	X	X	X
<b>Voice control</b>  Voice answer, reject and call. Assign voice commands to items in your phone book.	X	X	X
<b>Voicemail</b>  Support for voicemail operator service including automatic answering and message recording	X	X	X
<b>Volume control</b>	X	X	X
<b>WAP 1.2.1</b>  A mobile Internet standard enabling you to access specially designed Internet sites	X	X	X
<b>WAP 2.0 XHTML</b>  A mobile Internet standard enabling you to access specially designed Internet sites. WAP 2.0 supports colour and interactive lists.	X	X	X

Feature	K510	K300	Z520
<b>Weight</b>			
with battery:	82 g	85 g	96 g
<b>WTLS</b>	X		X
Wireless Layer Transmission Security – encrypts confidential information such as credit card and bank account numbers. Necessary for mobile banking and shopping.			

# 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	GSM phase 2 recommendations. Tri-band GSM 900 and GSM 1800 and GSM 1900
Speech coding	HR, FR, EFR, AMR supported where available, for high speech quality.
GSM SIM/USIM card	Small plug-in card, 1.8V and 3V.
Memory (user free)	Up to 28 MB

## Performance and technical characteristics

Dimension	GSM 900	GSM 1800	GSM 1900
Frequency range (MHz)	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
Number of channels	174 Carriers *8 (TDMA)	374 Carriers *8 (TDMA)	299 Carriers *8 (TDMA)
Modulation	GMSK	GMSK	GMSK
TX Phase Accuracy	< 5° RMS Phase error (burst)	< 5° RMS Phase error (burst)	< 5° RMS Phase error (burst)
Duplex spacing	45 MHz	95 MHz	80 MHz
Frequency stability	+/- 0.1ppm	+/- 0.1ppm	+/- 0.1ppm
Voltage operation (nominal)	3.6 V	3.6 V	3.6 V
Transmitter RF power output	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
Transmitter Spurious emission (according to specification)	< -36 dBm up to 1 GHz < -30 dBm over 1 GHz	< - 30 dBm	< - 30 dBm
Receiver RF sensitivity	Better than – 102 dBm	– 102 dBm	– 102 dBm
Receiver RX Bit error rate	< 2.4%	< 2.4%	< 2.4%

## USSD technical data

Feature	Support
USSD support	GSM Phase 1/2 (Cross-phase compatibility) GPRS behaviour according to class B
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 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 (4+2). CS-1, CS-2, CS-3, CS-4. 9,050 bps, 13,400 bps, 15,600 bps, 21,400 bps supported (network-dependent)
Indicator of attachment to the GPRS service	Yes, an icon in the top left corner, a filled triangle if attached
Indicator of PDP context activation	Yes, an icon on the right side. Animated globe.
Data volume counter	The Data volume counter details the volume of data exchanged in bytes for the up/down link for last call for each PDP context. The Total data counter details the sum of all GPRS sessions (i.e. not the sum of total data received + sent during the last GPRS session.) The total data counter can be reset by the user.
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
Support of GPRS re-selection C31/C32	Yes

<b>Dimension</b>	<b>Support</b>
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
Support of compression algorithms	Yes, V42bis and IP header compression
Support of the QoS modification procedure	Yes, when initiated by the network (not by the handset)
Downlink data rate	Up to 85,600 bps for packet data communication, using 4 time slots in coding scheme CS-4
Uplink data rate	Up to 42,800 bps for packet data communication, using 2 time slots in coding scheme CS-4
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.
Application	WAP over GPRS supported (UDP/IP and GPRS-SMS)- SMS over GPRS supported (SMS-MT, SMS-MO).
QoS	QoS negotiation supported. Default requested QoS sent by the handset at PDP context activation is reliability Class 3. Peak/Mean/Delay/Precedence. Class: subscribed. Precedence class supported (1,2,3). Reliability class 1-5 supported. Delay classes supported (1,2,3,4). Mean and peak throughput rate limited by multi slot class 4 and CS-4.
PDP context	10 PDP context descriptions are stored in the phone. PDP context description is edited via application in mobile, AT-command or via OTA. Simultaneous PDP contexts are supported, maximum 2.



Dimension	Support	
SIM	GPRS aware, as well as non-GPRS aware, SIM cards are supported	
AT commands supported	AT+CGDCONT - DEFINE PDP CONTEXT AT+CGQREQ - Quality of Service Profile (REQUESTED) AT+CGQMIN - Quality of Service Profile (Minimum Acceptable) AT+CGATT - PACKET DOMAIN SERVICE ATTACH OR DETACH	AT+CGACT - PDP CONTEXT ACTIVATE OR DEACTIVATE AT+CGDATA - ENT

## Cell broadcast service

Feature	Support	
User notification of the reception of a CB message	Message displayed on screen	
Handling of reception of several unread messages	The last message overwrites the previous one	
Support of all CBMI from 0 to 65534	Yes	
File support	CBMI	
Support CB SIM data download	Yes	
Support of all applicable Data Coding Scheme values as defined in 3G TS 23.038 V3.3.0		
Ability to display clearly a message with a DCS "language unspecified" whatever be the language set in the SIM card	Yes	
Ability to extract a phone number or short number of a CB message to re-use it (to send an SMS or call the sender)	No	
Support of multi-page CB messages	Yes	

## SIM AT services supported

Service	Mode	Support
CALL CONTROL BY SIM		Yes
MO SMS CONTROL		No

Service	Mode	Support
DATA DOWNLOAD TO SIM	Cell Broadcast SMS	Yes Yes
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	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

Service	Mode	Support
POLL INTERVAL		Yes
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

Service	Mode	Support
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 redial	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 redial	Yes
	'04' = set up call, disconnecting all other calls (if any)	Yes
	'05' = set up call, disconnecting all other calls (if any), with redial	Yes
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	N/A
	'07' = Language selection	Yes
	'08' = Browser termination	Yes
	'09' = Data available	No
	'OA' = Channel status	No
SET UP IDLE MODE		Yes, 1 row of text is supported
SET UP MENU		Yes
TIMER MANAGEMENT		Yes
OPEN CHANNEL		No

Service	Mode	Support
CLOSE CHANNEL		No
RECEIVE DATA		No
SEND DATA		No
GET CHANNEL STATUS		No

## 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 display if the command is performed successfully.

### Get inkey

Prompt for a one-character input. Pressing 'YES' 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) – 11 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:

- Navigation key press down – Scroll down list.
- Navigation 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.

## Media player

File types	Formats	Extensions
Audio	MP3 (192 kbit/s for local playback) MP4 M4A 3GP (Audio encoded in AAC or AMR) AMR WAV G-MIDI (level 1 with 40 voices polyphony)	.mp3 .mp4 .m4a .3gp  .amr .wav .mid
Video (including audio part)	MP4 (video: MPEG4, audio: AAC or AMR)  3GP (video: MPEG4 or H.263, audio: AAC or AMR)	.mp4   .3gp
Streaming transport	RTSP according to 3GPP™	
Video coding	MPEG-4 Simple Visual Profile Level 0 H.263 Profile 0 Level 10	
Audio coding	AAC, AMR, MPEG layer 3	
Features	Automatic loop of songs in folder Automatic pause on telephone call	
Ringtone file formats	MIDI (General MIDI 1, SP-MIDI) E-Melody I-Melody AMR-NB MP3 MP4 3GP M4A WAVE RHZ XMF	

## 1.3 Megapixel camera

Facts and figures	
Picture sizes (resolution)	1280x1024 640x480 160x120
Colour depth	24 bit (8 bit per RGB channel), 262k colours
Camera memory	Using phone memory, no memory dedicated to the camera only.
Digital zoom	4x zoom
Picture light	No
Night mode	Yes
Self-timer	Yes
Effects	Negative/ Solarize/ Sepia/ Black&White/ Off
Picture quality	Choose between Normal and Fine
Shoot mode	Normal/ Panorama/ Frames/ Burst
Video recorder	
Video sizes	176x144 128x96
Shoot mode	For picture message/ High quality video

## Pictures and animations

Formats	JPEG, BMP, GIF (including animated), PNG, WBMP and Scalable Vector Graphics (SVG)
Sharing via	MMS, EMS, WAP, IR, Bluetooth™, email or Cable

## Image decoders

Decoder	Details	Size	Colour depth	File format
GIF	87a/89a	128x128 pixels	256	GIF
JPEG	ISO/IEC JPEG Baseline DCT Progressive DCT Non-differential Huffman coding Symbol 'SOF2'	VGA		JFIF v1.02 EXIF
BMP	The bitmap image format used by Windows®	XRAM dependent, default is VGA	24 bit	

WBMP

PNG

## Image encoders

Decoder	Details	Size	Colour depth	File format
GIF	89a			
JPEG	ISO/IEC JPEG Baseline DCT Non-differential Huffman coding Symbol 'SOF0'	VGA		JFIF v1.02
BMP	The bitmap image format used by Windows®.	XRAM dependent, default is VGA	24 bit	
WBMP				

## Short Messaging Service

Feature	Support
SMS Centre Number	It is possible to pre-load the SMS 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.
Input methods	Predictive text input and multitap
Reply to messages	It is possible to reply to received messages by SMS, MMS, phone call or email.
Message creation methods support	Predictive writing and multitap
Copy, cut and paste words	Yes
Teaching of predictive words that are not in the predictive dictionary	Yes
Possibilities when creating a message:	
save a message in an "Unsent items" folder	Yes
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



Feature	Support
use predefined messages	Yes
Possibilities when receiving a message:	
reply to the sender	Yes (only to the sender, not to all or part of the message recipients)
forward the message	Yes
get delivery time and date	Yes
Possibilities of the previously sent message:	
delivery report of the message	Yes
forward the message	Yes
save the message on SIM	Yes
know the remaining capacity storage	No, but notification when 95% full.
Possibilities of the previously received message:	
reply to the sender	Yes (only to the sender, not to all or part of the message recipients)
save the message on SIM	Yes
forward the message	Yes
know the remaining capacity storage	No, but notification when 95% full.
Supported ways of replying to a received SMS message:	
via SMS	Yes
via MMS	Yes
via Email	Yes
via phone call (set up a call to the number contained in the message body)	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
Possibility to offer the user the ability of sending an SMS message to a list of recipients	Yes, using groups in Contacts or adding multiple separate recipients.
Possibility to write an email address as a recipient address	Yes, if SMS type = email.

Feature	Support
SMS storage	200 and the space left on the SIM card
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	20
Capacity storage	200 and the space left 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, text formatting can be inserted in a new message, if the object is not protected using ODI</li> </ul>
Concatenated messages	A receipt is received in the handset when all parts of a concatenated message have been delivered
Insert objects	It is possible to add pictures, animations and sounds to an EMS message
Text formatting	<ul style="list-style-type: none"> <li>• Centred, left and right aligned text</li> <li>• Small, normal and large font size</li> <li>• Bold, italic, underlined and strikethrough style</li> </ul>
Sounds	Chimes high, chimes low, ding, tada, notify, drum, claps, fanfare, chords high, chords low
I-melody	Yes, version 1.2
Melodies	It is possible to: <ul style="list-style-type: none"> <li>• send and receive melodies via EMS, if the melodies are not protected by copyright</li> <li>• download melodies and commercial tunes from WAP portals</li> <li>• create melodies on WAP portals</li> </ul>
WBMP	Yes

Feature	Support
Picture sizes	16x16 pixels, 32x32 pixels, variable size in black and white
Pictures	It is possible to: <ul style="list-style-type: none"> <li>• send and receive pictures via EMS, if the pictures are not protected by copyright</li> <li>• create pictures on WAP portals</li> <li>• download pictures from WAP portals</li> <li>• receive pictures in enhanced messages originated by service providers</li> </ul>
Animations	The handset supports the following animations: Angry, Crying, Flirty, Happy, Kiss, Sad, Tongue, Wow, Confused, Devil, Glasses, Indifferent, Laughter, Sceptical and Wink. Plus the other animations defined in 3GPP™ TS 23.040 v4.3.0. It is possible to: <ul style="list-style-type: none"> <li>• send and receive colour 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 a WAP profile. A WAP 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>
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 from the parameters set 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
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

Feature	Support
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 recipient(s) address(es)</li> <li>• delivery report request</li> <li>• read report request</li> <li>• MSISDN recipient address</li> </ul>
The user can insert multimedia elements into multimedia messages from:	<ul style="list-style-type: none"> <li>• File Manager</li> <li>• Camera</li> <li>• Contacts</li> <li>• Calendar</li> </ul>
Possibility for sent messages to be memorized into a folder in the memory of the phone	Yes
Actions that the user can perform after message notification:	<ul style="list-style-type: none"> <li>• Auto Download</li> <li>• Always Ask</li> </ul>
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 people SMS/MMS</li> <li>• forward the message MMS</li> <li>• delete the message</li> <li>• save message into the phone</li> <li>• call the sender of a message</li> </ul>
Multimedia codecs/formats supported for audio	AMR
Multimedia codecs/formats supported for video	MPG4, 3GPP™, SDP
Multimedia codecs/formats supported for image	JPEG, GIF87, GIF89A, 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 phone for message	Content Class and Creation mode are applied. Also maximum size is possible to customize.
MMS User Agent will report problems to user in case of:	<ul style="list-style-type: none"> <li>• message not sent causes no user subscription to service, if included in ResponseText (please see WAP209).</li> <li>• message not sent causes required functionality not supported by MMS Relay/Server, if included in ResponseText (please see WAP209).</li> <li>• message not sent causes insufficient credit (in case of prepaid charging), if included in ResponseText (please see WAP209).</li> </ul>

## Bluetooth™ technical data

Feature	Support
Bluetooth capability statement	This phone is manufactured to meet Bluetooth Specification 2.0
Bluetooth profiles	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 Object Push Profile Personal Area Network Profile Serial Port Profile Synchronization Profile SyncML OBEX binding
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	2mW (3 dBm)
Frequency band	2.4 GHz - the unlicensed ISM band.
Power consumption	GSM host processor excluded: <ul style="list-style-type: none"> <li>Standby, Bluetooth On mode: &lt;0.9mA</li> <li>Voice mode: 24 mA</li> <li>Data mode average: 25mA</li> </ul>
Data transmission rate	Up to 600 kbps asynchronous and up to 350 kbps synchronous from an application level.

## OMA Data Synchronization (SyncML) technical data

Feature	Support for SyncML
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
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

Feature	Support for SyncML
Transport method for SyncML messages.	HTTP, OBEX (IR, USB, Bluetooth)
Synchronization application placement.	Inside the handset.
Possibility for the user to configure login parameters (e.g. 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 and Notes), 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 1.1.2
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

## Browser technical data

Feature	Support in the browser
Back to previous page	Yes
Bearer type GPRS (IP)	Yes
Bearer type GSM Data (IP)	Yes, HSCSD, ISDN and analogue
Bookmarks	Yes, up to 100 named bookmarks for easy access to frequently visited pages, with folders and sorting supported.
Bookmark Export/Import	Yes, can be sent and received using vBookmark format via Infrared, Bluetooth™, SMS, MMS and email.
Cache	Yes (size 300 kB).
Character sets *	UTF-8 (Default), UTF-16, USASCII, Latin1, UCS2.
Clear cache	Yes
Colour	Colour display

Feature	Support in the browser
Home page	Yes, up to 10 different; one for each WAP profile.
HTML version for browser	XHTML, Mobile Profile 1.2, HTML 4.01, WML 1.3.
Hyperlinks in Text	Yes, highlighted as blue text.
Hyperlinks in Images	Yes, indicated by a frame.
Image Animation	Yes
Image Formats	GIF (interlaced and non-interlaced) WBMP, no transparent layers, JPEG, PNG, BMP, SVG-Tiny.
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	WTLS class 1-3 TLS version 1, Client authentication SSL version 3, Client authentication WIM on SIM ICC X.509 certificate support, WAP Profile WPKI OTA download of trusted certificates
Tables	Yes
User Agent Profiles	Yes, list of client characteristics - for example display size
WAP/WML	WAP 2.0/WML 1.3
WAP profiles	Dynamic - up to 10 internet profiles, each with its own settings.
	*) When creating WML applications, it is recommended that to always save the page contents as UTF-8, 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.

## Operator technical data

Feature	Support for WAP
<b>Web Browser</b>	Access NetFront™ 3.3
Version	2.0 baseline
HTML	XHTML Mobile Profile

Feature	Support for WAP	
Access NetFront™ 3.3	<ul style="list-style-type: none"><li>• HTML 4.01, XHTML 1.1 Including mobile profile</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, MNG, BMP, WBMP</li></ul>	
PROVISIONING		
Provisioning types	The Ericsson-Nokia OTA solution	OMA Client provisioning (v1.1)
	Over the Air Settings Specification, v7.1 © Ericsson and Nokia	
Total Parameter sets	10 (shared between the provisioning types). < or = 10 (total number of profiles).	
Parameter set list	name, homepage and homepage title (1st bookmark element), proxy/GW address, bookmarks (remaining bookmark elements), CSD phone number, CSD data rate, CSD dial type, GPRS APN, protocol authentication, GW authentication, secure connection on/off	name, homepage, proxy/GW address, CSD phone number, CSD data rate, CSD dial type, CSD response timer, GPRS APN, protocol authentication, GW authentication, GPRS QoS
Parameter sets include	WAP/CSD, WAP/GPRS (different sets)	
Factory pre-configuration	WAP/CSD (possibility to lock a setting), WAP/GPRS	
OTA	WAP/CSD, WAP/GPRS configuration possible	
Security mechanism		
Bearer	The Ericsson-Nokia solution	OMA Client Provisioning
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> ).
Interface		
Bearer	The Ericsson-Nokia solution	OMA Client Provisioning



Feature	Support for WAP	
OTA via SMS	A question whether to install, with the code if available is asked. The user may have to choose to create a new profile or to replace an existing 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
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 security, both WTLS connections and digital signatures.	
SWIM certificate	Both client and trusted certificates can be used for WTLS connections and digital signatures.	
Applicative provisioning		
Preferred bearer customization	Yes	
Email customization	Yes, but not through provisioning.	
Other applications/features	Yes (MMS, SyncML, Wireless Village).	
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, Cell Broadcast	
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	

<b>Feature</b>	<b>Support for WAP</b>
Cache Operation (CO) content type	Yes
Session Initiation Application (SIA)	Yes
<b>User 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	No
HTTP push session	Yes
White list	Service Center , IP address
<b>User agent profile</b>	
UA profile content sent at beginning of WSP session	No
URL sent pointing to the UA profile at the beginning of WSP session	No, WSP not supported
URL location	On the manufacturer WAP site
<b>WTAI</b>	
WTA Make Call	Yes
WTA Send DTMF	Yes
WTA Add Phonebook	Yes
Other WTA/WTAI	No
<b>DOWNLOAD</b>	
<b>WAP solutions</b>	

<b>Feature</b>	<b>Support for WAP</b>
SAR/WSP/HTTP GET solution to download content over WAP	Yes
Download Fun from Openwave	No
Other download content over WAP	Yes, download limit (HTTP protocol).
<b>Features</b>	
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.
<b>Object formats</b>	
	All formats that are supported in the phone will be possible to download
<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	Yes
<b>Elements</b>	
Pop-up menus	Yes, in XHTML.
Radio buttons	Yes, in XHTML.
Check boxes	Yes, in XHTML.
Buttons	Available as XHTML form controls.

# Java™

Feature	Functionalities
Java 2, Micro Edition (J2ME™)	<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 J2ME™ Platform (JSR 75)</li><li>• Web Services (JSR 172)</li></ul>
Java 3D	<ul style="list-style-type: none"><li>• Mascot Capsule Micro3D Version 3</li><li>• Mobile 3D Graphics API for J2ME™ (JSR 184)</li></ul>

# Abbreviations

## **3GPP™**

3rd Generation Partnership Project. Collaboration between a number of telecommunications standards bodies to specify 3G. 3GPP also maintains and develops the specifications for GSM.

## **AMR**

Adaptive Multi-Rate. 3GPP standard for speech coding (compression).

## **API**

Application Programming Interface

## **CS**

Circuit Switched. Connection from A to B which has a fixed bandwidth and is maintained over a period of time, for example a voice telephone call.

## **CS-1 to CS-4**

Coding Scheme. Determines the data rate per timeslot in GPRS.

## **CSD**

Circuit Switched Data. CSD is a GSM service providing a CS data connection at a rate of 9.6 or 14.4kbps.

## **Deck**

A collection of WML cards.

## **DM**

Device Management. DM utilizes GPRS as bearer (basic network connectivity needs to be in place) of the provisioning data and allows the operator to access the phone and check and set different settings such as Network connectivity (GPRS), email, MMS, WAP and JAVA.

## **DRM**

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

## **DTMF or Touch Tone**

Dual Tone Multi Frequency. A method of coding digits as a combination of two audible tones.

## **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.

## **EFR**

Enhanced Full Rate, speech coding.

## **EMS**

Enhanced Messaging Service. An extension of SMS enabling pictures, animations, sound and text formatting to be added to text messages. 3GPP has included EMS in the standards for SMS.

## **ETSI**

European Telecommunications Standards Institute.

## **FR**

Full Rate, speech coding.

## **GIF**

Graphics Interchange Format. Format for storing images which also supports animated images. Highly compressed by limiting the colour palette to 16 or 256 colours.

## **GPRS**

General Packet Radio Services

## **GSM**

Global System for Mobile Communications. The GSM system family includes GSM 850, GSM 900, GSM 1800 and GSM 1900.

## **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 Photographic Experts Group, best known for the .JPG format for still image compression.

## **LED**

Light Emitting Diode

## **MIDI**

Musical Instrument Digital Interface

## **ME**

Mobile Equipment (phone excluding SIM card)

## **MMI**

Man-Machine Interface. Same as User Interface (UI).

## **MMS**

Multimedia Messaging Service. Logical extension of SMS and EMS, MMS defines a service enabling sound, images and video to be combined into multimedia messages.

## **MP3**

MPEG-1 layer 3, an effective audio coding scheme.

## **MPEG**

Moving Picture Experts Group. A working group of ISO/IEC in charge of the development of standards for coded representation of digital audio and video.

## **MPEG4/MPG4**

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.

## **ODI**

Object Distribution Indicator. Part of EMS release 5, ODI is a mechanism for controlling distribution of contents (pictures, melodies etc.) within short messages.

## **OMA**

Open Mobile Alliance

## **OTA**

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

## **PDA**

Personal Digital Assistant

## **PDP**

Packet Data Protocol

**PIM**

Personal Information Management. Generic term for applications such as Contacts, Calendar, Tasks etc.

**PNG**

Portable Network Graphic

**SI**

Service Indication

**SL**

Service Loading

**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.

**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.

**SS**

Supplementary Services

**SSL**

Secure Socket Layer

**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. Narrow-band GSM data service.

**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.

**VGA**

Video Graphics Array. Graphics standard introduced by IBM, having a resolution of 640x480 pixels.

**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 service**

A WML application residing on a web site.

**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.

**WSP**

Wireless Session Protocol

## **WTLS**

Wireless Transport Layer Security. Part of WAP, WTLS provides privacy, data integrity and authentication on transport layer level between two applications.

## **XHTML**

Extensible HyperText 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.imc.org/pdi/](http://www.imc.org/pdi/)
- [www.3gpp.org](http://www.3gpp.org)
- [www.etsi.fr](http://www.etsi.fr)
- [www.wapforum.org](http://www.wapforum.org)
- [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.access-netfront.com/](http://www.access-netfront.com/)
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