

White paper

September 2009

S312

Premium dual front Camera phone



Sony Ericsson

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 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 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

Change history

2009-9-18	Version 1	First revision

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Product overview

S312 is a sleek looking camera phone aiming to bring easy to use snapshot imaging experience to users. S312 has a 2-megapixel camera with a 2.5x digital zoom, Photo fix, LED photo light, horizontal camera UI and a large 2-inch 262 k colour screen. All this is packaged into a slim 12.3 mm phone body.

Taking pictures with S312 is just as easy as taking pictures with a digital camera. Hold it horizontally, press the camera key to start, use the large display to find the target and take the picture. Users can also quickly start record short video clips by simply pressing the video key. S312 features LED photo light which improves the picture quality when taking pictures in darker environments. Photo light is not a common feature in S312's price segment. The slide show function enables people to view all pictures stored in the picture album.

S312 also features Photo fix and picture blogging. Photo fix optimises the image quality by adjusting the light balance and contrast after a picture has been taken. Picture blogging makes it possible for users to take a picture and upload it to their site instantly. Users can also record short video clips by simply pressing the video key once they have started the camera.

Pictures and video clips can easily be shared with friends via MMS or email, or be transferred to a computer using Bluetooth™ wireless technology or a USB cable.

The built-in FM radio supports RDS and the user can pre-set channels for quick access. The media player features video playback. S312 supports the MP3 and AAC format.

The phone features no less than 15 MB built-in memory to store content such as games, pictures, video clips, sound clips, ringtones, themes and so on. The content can also be saved on a memory card, a Memory Stick Micro™ (M2™), and can be easily transferred from or to a computer by using a USB cable or Bluetooth.

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

2.0 megapixel camera

The 2.0 megapixel camera includes a 2.5x digital zoom, a built-in LED photo light and Photo fix to ensure high quality pictures. Taking a picture and sending it as part of a multimedia message or as an email attachment, or posting it on a Web site, is just a few clicks away. The dedicated camera shortcut key enables users to quickly activate the camera with just one press. The dedicated video shortcut key enables users to quickly activate the video recorder with just one press.

LED photo light

Lighting conditions can be enhanced by using the built-in LED photo light, which is easily activated via the camera settings.

2.0 inch colour screen

The 2.0 inch (220x176 pixels), full graphic, 262K TFT colour screen enhances viewing of high-quality multimedia and entertainment in the phone.

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 (Quarter CIF), 144x176 pixels resolution, size video recording, and streaming and playback.

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. A recorded video clip can also be sent via Bluetooth™ wireless technology or a USB cable to a computer.

Picture blogging

The Picture blog application provides an easy way to send pictures to the Internet. The pictures are posted on users' personal Web blog page where their friends can easily access and comment on pictures.

Bluetooth™ wireless technology

Several devices (simultaneous Bluetooth™ connections) can be connected up to 10 metres (33 feet) away using Bluetooth wireless technology. For example, when the phone rings, it can be answered with a Bluetooth headset, and images can be sent to another phone at the same time. Several mobile phones can take part in a Bluetooth-supported game and the phone and a computer can exchange data such as images, video clips, vCards, music files and calendar data. Bluetooth version 2.0 is supported.

RDS FM Radio

The FM radio with RDS (Radio Data System) offers instant and easy access to FM radio channels. Plug in the portable handsfree that works as an antenna and start listening to the radio. The RDS function brings information directly to the screen from the currently tuned in radio station. The radio can also be used as an alarm signal.

Memory Stick Micro™ (M2™)

Different kinds of content (pictures, audio, video clips and so on) can be saved on the memory card and transferred to other memory card compatible products, such as digital cameras, video cameras, portable

music players, TVs, photo printers and computers. The phone can handle memory cards (M2™) up to 2GB.

Music player

The music player converts the phone into a portable MP3, MPEG-4, H263 player, playing music and video clips, streamed or downloaded. The folder system enables users to, for example, organise their favourite songs into groups and create playlists. By using the flight mode, the music player can still be used in aeroplanes, hospitals and other places where using a mobile phone is prohibited.

USB 2.0 mass storage

When connecting the phone to a computer using the provided USB cable, the memory card appears on the computer screen as a removable disk together with other computer disks. You can then quickly and easily drag and drop, for example, music and image files between folders in the phone and the computer.

Java™

Additional Java applications give users a chance to personalise the functions in their phones, and developers the opportunity to create new applications.

Polyphonic sound

The phone supports polyphonic ringtones with 64 simultaneous voices or instruments.

TrackID™

TrackID™ enables the user to identify a track playing on the built-in radio or a track playing in the room. A few seconds of the song is sampled, the phone connects to an online database, which identifies the song and returns the title, artist and album information.

PlayNow™

The phone gives a unique direct-link to download games and music. This link is easy to use and gives the user access to best-selling content that can be previewed before purchase. Users can, for example, go straight to a live list of top music hits. The PlayNow service is not supported in all markets or regions.

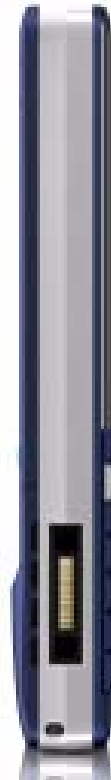
HTML Web browser support

Browse the Internet and look at the Web sites.

Picture Messaging (MMS)

MMS (Multimedia messaging service) is the logical extension of SMS (Short Messaging Service) and EMS (Enhanced Messaging Service). MMS allows sound, image and video to be combined in a message.

Images



Technologies in detail

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

Functions and features

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

Feature	S312	F305	S302
3D games	Yes	Yes	Yes
Alarm clock Set a time for simple or recurring weekly alarms	Yes	Yes	Yes
Antenna Built-in	Yes	Yes	Yes
Backlight Illuminates your phone screen	Yes	Yes	Yes
Battery	3.6 V, 930mAh, Lithium Polymer	3.6 V, 950 mAh, Lithium Polymer	3.6 V, 950 mAh, Lithium Polymer
Battery charging time	At least 90% charged within 2.5 hours	At least 90% charged within 2 hours	At least 90% charged within 2 hours
Bluetooth™ wireless technology Wireless connectivity between devices. The out of range distance varies and depends on where you are. Support for specification of the Bluetooth System, version 2.0	Yes	Yes	Yes
Business card exchange, vCard Exchange contact information	Yes	Yes	Yes
Calculator	Yes	Yes	Yes
Calendar Fully functional calendar with day, week and month views and reminders	Yes	Yes	Yes
Call list View calls made and calls received	Yes	Yes	Yes
Camera	2.0 megapixel	2.0 megapixel	2.0 megapixel
Camera activation Dedicated camera activation. Press once and the integrated camera activates	Yes, camera button	Yes, camera button	Yes, camera button

Feature	S312	F305	S302
Video recorder activation Dedicated video recorder activation. Press once and the integrated video recorder activates	Yes	No	No
Camera menu Easy-to-use horizontal digital camera menu	Yes	Yes	Yes
Chinese input method Text input methods based on Simplified or Traditional Chinese; Bopomofo, Pinyin or Stroke	Yes	Yes	Yes
Clock Visible clock on the screen	Yes	Yes	Yes
Co-branding area	7x22 mm	6.25x22 mm	7x22 mm
Code memo A safe place to save all your PIN codes and other information. To access code memo, only one PIN code is needed	Yes	Yes	Yes
Colour	Dawn Blue Honey Silver	Mystic Black Polar White	Crystal Blue Thunder Grey
Contacts Phonebook with fields for name, phone and fax numbers, email addresses, Web address, company address info, personal address info and birthday	Yes	Yes	Yes
Conference calls Support for multi-party calling	Yes	Yes	Yes
Content online Downloadable pictures and 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 and Java applications)	Yes, OMA DRM v1	Yes, OMA DRM v1	Yes, OMA DRM v1

Feature	S312	F305	S302
Design	Stick phone, dual front	Slider phone, exchangeable front and battery cover	Stick phone, dual front
CSS Cascading Style Sheets, the de facto standard style sheet language on the Web, specified by W3C	Yes	Yes	Yes
Digital camera menu	Yes	Yes	Yes
Digital zoom	2,5x for still pictures 4x for video	2.5x for pictures (in VGA mode) 4x for video clips	2.5x
DOM2 Document Object Model (DOM) Level 2 HTML Specification, specified by W3C	Yes	Yes	Yes
Email Built-in email client with inbox, outbox, compose, send and other functions. Supports attachments	Yes	Yes	Yes
EMS (Enhanced Messaging Service) Text messaging (SMS) with pictures and sounds	Yes	Yes	Yes
Exterior description Length (mm): Width (mm): Thickness (mm): Weight (g):	100 45.6 12.3 80.1	96.2 47.2 14.6 97.5	100.5 46.3 10.9 (screen) 12.0 (camera) 85
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 you save and organize pictures, sounds and other phone content	Yes	Yes	Yes

Feature	S312	F305	S302
<p>Flight mode</p> <p>All radio transmitters and receivers are deactivated, making it possible to use the phone only as a music player in aeroplanes, hospitals and other situations where using a mobile phone is prohibited</p>	Yes	Yes	Yes
<p>FM radio with RDS</p> <p>FM radio with presets, auto and manual search. Portable handsfree is used as an antenna. The radio can also be used as an alarm signal</p>	Yes	Yes	Yes
<p>Games download</p> <p>Replace your in-phone games with new ones</p>	Yes	Yes	Yes
<p>Games embedded</p>	Yes	Yes	Yes
<p>Gaming shortcut key</p> <p>Dedicated game activation key. Press once to activate the integrated game menu</p>	No	Yes	No
<p>GPRS</p> <p>General Packet Radio Services – a communications standard enabling packet data transfer similar to Internet at 28.8-58.6 Kbps. It is recommended that you have GPRS to use MMS and content download services</p>	Yes Multislot class 10 supported (4+2)	Yes Multislot class 10 supported (4+2)	Yes Multislot class 10 supported (4+2)
<p>HTML</p> <p>Hyper Text Markup Language, the standard Internet communications protocol</p>	Yes	Yes	Yes
<p>Icon Desktop</p> <p>A graphic icon desktop with interactive icons</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</p>	Yes	Yes	Yes
<p>Internet security</p> <p>Encrypts confidential information such as credit card and bank account numbers. Necessary for mobile banking and shopping</p>	Yes	Yes	Yes

Feature	S312	F305	S302
Java™ 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™
Keys - Dedicated gaming keys	No	Cross and circle keys	No
Keys - Navigation and more	4+1 way navigation key 3 soft keys 2 selection keys C (Clear) key Call key End/on/off key	4+1 way navigation key 3 soft keys 2 selection keys C (Clear) key Call key End/on/off key Gaming shortcut key	4+1 way navigation key 3 soft keys 2 selection keys C (Clear) key Call key End/on/off key
Keys - Keypad	12 alphanumeric keys	12 alphanumeric keys	12 alphanumeric keys
Keys - side	Volume/camera zoom Camera key Video key	Volume/camera zoom Camera key	Volume/camera zoom Camera key
Keypad lock Lock the phone keys so they do not activate a function in the phone	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	Yes	Yes	Yes
Memory (built-in) Phone memory that is free to use (depending on software configuration/file content)	No less than 15 MB	More than 10 MB	Up to 20 MB
Memory card (included) Separate memory card for storing pictures, audio, video clips and so on	No	No	512 MB on Memory Stick Micro™ (M2™)

Feature	S312	F305	S302
<p>Memory Stick Micro™ (M2™) slot</p> <p>Slot for inserting a mini peripheral storage device (up to 2GB). Compatible with many cameras, computers and other devices</p>	Yes	Yes	Yes
<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 Service)</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>GSM Internet dial-up support</p>	Yes	Yes	Yes
<p>Motion games</p>	No	Yes	No
<p>Music player</p> <p>A digital music player with sideways navigation. Play music you have transferred or downloaded.</p>	Yes	Yes	Yes
<p>Music tones</p> <p>Music tones, also called master tones, are DRM (Digital Rights Management) protected music by original artists. Various digital audio formats are supported</p>	Yes	Yes	Yes
<p>My friends</p> <p>Wireless Village™ server community</p>	Yes	Yes	Yes
<p>Networks</p>	GPRS and EDGE in all bands GSM (R99) GSM 900, GSM 1800, e-GSM 900	GSM (R99) GSM 850, GSM 900, GSM 1800, GSM 1900, e-GSM 900	GSM (R99) GSM 850, GSM 900, GSM 1800, GSM 1900, e-GSM 900
<p>OMA Data Synchronisation (SyncML™)</p> <p>A device communications standard that enables remote synchronisation between devices</p>	SyncML 1.1.2	SyncML 1.1.2	SyncML 1.1.2

Feature	S312	F305	S302
<p>OTA settings</p> <p>WAP and other settings can be sent over-the-air to the phone</p>	Yes	Yes	Yes
<p>Picture gallery</p> <p>A thumbnail image gallery where sections of several pictures can be viewed at the same time</p>	Yes	Yes	Yes
<p>Picture phonebook</p> <p>Add pictures to the contacts. When someone calls, a picture appears on screen</p>	Yes	Yes	Yes
<p>Picture wallpaper</p> <p>Background picture seen on the screen when the phone is in standby mode</p>	Yes	Yes	Yes
<p>PlayNow™ (direct link)</p> <p>Listen to music or preview games before you purchase and download to your phone</p>	Yes	Yes	Yes
<p>Polyphonic ringtones</p>	64 tones	64 tones	64 tones
<p>Predictive text input</p> <p>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</p>	Yes	Yes	Yes
<p>Redial</p> <p>Identify and redial the most recent caller</p>	Yes	Yes	Yes
<p>Screen</p> <p>Type: Size: Resolution: Technology: Screen colours:</p>	<p>Full graphical 2.0 inches 176x220 pixels TFT 262,000 (18 bit)</p>	<p>Full graphical 2.0 inches 176x220 pixels TFT 262,000 (18 bit)</p>	<p>Full graphical 2.0 inches 176x220 pixels TFT 262,000 (18 bit)</p>
<p>Screen saver</p> <p>When the phone has not been used for a while, a screen saver activates and the phone goes into "sleep mode"</p>	Yes	Yes	Yes

Feature	S312	F305	S302
Side volume keys Controls on the side of the phone that regulate the volume of incoming sound	Yes	Yes	Yes
SIM card lock The possibility to protect the SIM card with a four-digit PIN code	Yes	Yes	Yes
Sleep mode A power saving feature that minimises battery power consumed when the phone is in standby	Yes	Yes	Yes
SMS, long (Text Messaging) Concatenated SMS text messaging	Yes	Yes	Yes
Sound recorder A mini recording device in your phone that lets you record voice messages or other sounds	Yes	Yes	No
Speakerphone Loudspeaker suitable for using the phone as an office handsfree	Yes	Yes	Yes
Speed dialling Allocating contacts in your phonebook to specific keys on the keypad	Yes	Yes	Yes
Standby time	Up to 400 hours	350-400 hours	Up to 300 hours
Status view The screen shows the network being used, time and other status information	Yes	Yes	Yes
Stopwatch	Yes	Yes	Yes
SVG Tiny 1.1 Scalable Vector Graphics for impressive animated wallpapers, menus and other graphic elements	Yes not in browser	Yes not in browser	Yes not in browser
Style-up™ cover	No	Yes	No
Talk time	Up to 8 hours	7-8 hours	Up to 7 hours
Tasks Keeps track of important things to do	Yes	Yes	Yes

Feature	S312	F305	S302
Themes Phone menu texts and background graphics	Yes	Yes	Yes
Timer Set the phone to alert after a specific time lapse	Yes	Yes	Yes
USB connectivity support Connect the phone to a computer with a USB cable and the memory in the phone 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 player Record, play and transfer video clips to another phone or a computer via an available transfer method	Yes	Yes	Yes
Video streaming Real time streaming of video, for example, live cam	Yes	Yes	Yes
Voicemail Support for voicemail operator service including automatic answering and message recording	Yes	Yes	Yes
WAP 2.0 XHTML™ A mobile Internet standard to access specially designed Internet sites. WAP 2.0 supports colour and interactive lists	Yes	Yes	Yes

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	Dual band. e-GSM 900, GSM 1800. GPRS and EDGE in all bands.
Speech coding	HR, FR, EFR, AMR supported where available, for high speech quality.
GSM SIM/USIM card	Small plug-in card, 1.8 V and 3 V.
Memory (built-in)	No less than 15 MB internal (depending on software configuration/file content). Memory Stick Micro™ (M2™) which has a capacity of up to 2GB.
Data transfer speeds	Up to 85.6 Kbps (downlink) Up to 42.8 Kbps (uplink)

Performance and technical characteristics

Dimension	GSM 900/E-GSM 900	GSM 1800
Frequency range (MHz)	TX: 880–915 RX: 925–960	TX: 1710–1785 RX: 1805–1880
Channel spacing	200 kHz	200 kHz
Number of channels	174 Carriers *8 (TDMA)	374 Carriers *8 (TDMA)
Modulation	8PSK/GMSK	8PSK/GMSK
TX phase accuracy	< 5° RMS Phase error (burst)	< 5° RMS Phase error (burst)
Duplex spacing	45 MHz	95 MHz
Frequency stability	+/- 0.1ppm	+/- 0.1ppm
Voltage operation (nominal)	3.6 V	3.6 V
Transmitter RF power output	33 dBm Class 4 (2 W peak)	30 dBm Class 1 (1 W peak)
Transmitter Output impedance	50 ohm	50 ohm
Transmitter Spurious emission (according to specification)	< -36 dBm up to 1 GHz < -30 dBm over 1 GHz	< -30 dBm
Receiver RF sensitivity	Better than -102 dBm	-102 dBm
Receiver RX Bit error rate	< 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"> Option to scroll up and down in USSD messages Option 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	<ul style="list-style-type: none"> Multislot class 10 supported (4+2) CS-1, CS-2, CS-3, CS-4 9.05 Kbps, 13.4 Kbps, 15.6 Kbps, 21.4 Kbps 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, dynamic from left side. Animated globe.
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
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

Dimension	Support
Support of compression algorithms	Yes, IP header compression
Support of the QoS modification procedure	Yes, when initiated by the network (not by the phone)
Downlink data rate	Up to 85.6 Kbps for packet data communication, using 4 time slots in coding scheme CS-4
Uplink data rate	Up to 42.8 Kbps 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.
IP connectivity	PDP type IP is supported. IP termination in mobile or TE (laptop, PDA) supported.
Application	<ul style="list-style-type: none"> • WAP over GPRS supported (UDP/IP and GPRS-SMS) • SMS over GPRS supported (SMS-MT, SMS-MO)
QoS	<ul style="list-style-type: none"> • QoS negotiation supported. Default requested QoS sent by the phone 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	<ul style="list-style-type: none"> • 10 PDP context descriptions are stored in the phone • PDP context description is edited via application in mobile or AT-command • Simultaneous PDP contexts are supported, maximum 2
SIM	GPRS aware, as well as non-GPRS aware, SIM cards are supported

SIM AT services supported

Service	Mode	Support
CALL CONTROL BY SIM		Yes
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: number 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
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

Service	Mode	Support
SET UP CALL	General: capability configuration	Yes
	Set-up speech call CallParty	No
	Sub address 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
SET UP EVENT LIST	'05' = set up call, disconnecting all other calls (if any), with redial	Yes
	'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	Yes	
	'0A' = Channel status	Yes
SET UP IDLE MODE		Yes, 1 row of text is supported
SET UP MENU		Yes
TIMER MANAGEMENT		Yes
OPEN CHANNEL		Yes
CLOSE CHANNEL		Yes
RECEIVE DATA		Yes

Service	Mode	Support
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 display 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 reached. 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:

- 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 user is on a call when the “Set up call, putting all other calls on hold” command is sent, the user will see the text, “Let SIM card setup call”. The user can press OK for the current call to be put on hold and the new call to be set up.

If the user is on a call when the “Set up call, disconnecting all other calls” command is sent, the user will see the text, “Let SIM card set call.” The user can press OK for the current call to be disconnected and the new call to be set up.

Set up menu

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

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

Entertainment

Audio and video

File types	Formats	Extensions
Audio	AAC MP3 (192 kbit/s for local playback) 3GP AMR-NB WAV General MIDI (GM) SP-MIDI	.mp4, .3gp .mp3 .3gp .amr .wav .mid .mid
Video (including audio part)	MP4 (video: MPEG-4, audio: AAC) 3GP (video: MPEG-4 or H.263, audio: AAC or AMR)	.mp4 .3gp
Streaming transport	RTSP according to 3GPP™	
Video encoding	H.263	
Video decoding	MPEG-4 Simple Visual Profile Level 0 H.263 H.264	
Audio encoding	AMR-NB	
Audio decoding	AAC AMR-NB AMR-WB AAC+ eAAC+ WAV SP-MIDI 3gp MP4 MP3	

Feature	Support
Automatic pause on telephone call	Yes
Playlists	Yes
Play mode	Shuffle or Loop
Equaliser	Yes
Stereo widening	Yes
Sorting by artist or file	Yes
Minimising the music player	Yes

Ringtone file formats

File types	Formats	Extensions
Ringtones	MIDI (General MIDI 1, SP-MIDI) AMR-NB MP3 3GP WAV	.mid .amr .mp3 .3gp .wav

Radio with RDS

System	VHF/FM
Output	<ul style="list-style-type: none"> • Portable handsfree • Internal loudspeaker • External loudspeakers
Save channels	Yes, 10 presets
Antenna	Stereo portable handsfree

Imaging/Messaging

2.0 MP camera

Facts and figures	
Picture sizes (resolution)	VGA (640x480) 1 MP (1280x960) 1280x1024 2 MP (1600x1200)
Colour depth	18 bit, 262K colours
Camera memory	Phone memory or memory card, no memory dedicated to the camera only.
Digital zoom	2.5x zoom for pictures (in VGA mode) 4x for video clips
Night mode	Yes
Self-timer	Yes
Effects	Negative, Sepia, Black&White or None
Picture quality	Choose between Fine and Normal
Shutter sound	On or Off

Facts and figures

Shoot mode	Normal or Burst
White balance	Auto, Daylight, Cloudy, Fluorescent or Incandescent
Video recorder	
Video sizes	176x144
Shoot mode	For picture message or normal quality video
Microphone	On or Off

Pictures and animations

Formats	JPEG, BMP, GIF (including animated), PNG and WBMP, SWF and SVG-t
Sharing via	MMS, EMS, WAP, BT, 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
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	87a/89a	128x128 pixels	256	GIF
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, 24 bit default is VGA
WBMP		
PNG		

Short Messaging Service

Feature	Support
SMS Centre number	Ability to pre-load the SMS Centre number
Pictures	Ability to insert a picture or an icon into the text message. EMS compliant mobile phones will be able to see the picture correctly
Input methods	Predictive text input and multitap
Reply to messages	Ability 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	No
Teaching of predictive words that are not in the predictive dictionary	Yes
Options when creating a message	
Save a sent message in a Sent messages folder	Yes
Insert a line in the message	Yes
Assign a validity period to the message	Yes
Use pre-defined messages	Yes
Options when receiving a message	
reply to the sender	Yes
forward the message	Yes
save the message on the SIM card	No
get delivery time and date	Yes
Options of the previously sent message	
delivery report of the message	Yes (if delivery report was requested at time of sending)
forward the message	Yes
save the message on SIM	No
know the remaining capacity storage	No, but notification when 95% full
Options of the previously received message	

Feature	Support
reply to the sender	Yes
save the message on SIM	No
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	No
via email	No
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)	No
via USSD session	No
Option to offer the user the ability of sending an SMS message to a list of recipients	Yes
Option to write an email address as a recipient address	Yes
SMS storage	In the phone
Capacity storage	500 or more, depending on available user memory
Nokia Picture Messaging	Yes

Enhanced Messaging Service

Feature	Support
Level of compliance supported by the phone 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 phone is able to handle to generate a concatenated message	20
Capacity storage	200 or more, depending on available user memory
Outgoing messages	<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.

Feature	Support
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. • Option to re-use the content of an EMS message. Sounds and pictures can be inserted in a new message, if the object is not protected using ODI.
Concatenated messages	A receipt is received in the phone when all parts of a concatenated message have been delivered
Insert objects	Options 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	<ul style="list-style-type: none"> • Send and receive melodies via EMS, if the melodies are not protected by ODI. • Download melodies and commercial tunes from WAP portals. • Create melodies on WAP portals.
WBMP	Yes
Picture sizes	16 x 16 pixels, 32 x 32 pixels, variable size in black and white.
Pictures	<ul style="list-style-type: none"> • Edit pictures by using the phone keypad. • Send and receive pictures via EMS, if the pictures are not protected by ODI. • Create pictures on WAP portals. • Download pictures from WAP portals. • Receive pictures in enhanced messages originated by service providers.
Animations	The phone supports 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. Send and receive colour animations
TP-PID field value given by the phone before sending an EMS message	0 x 00

Multimedia Messaging Service

Feature	Support
MMS/CSD parameters and MMS/GPRS parameters placement	MMS 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
Option to pre-configure the MMS parameters in factory	<ul style="list-style-type: none"> • MMS/CSD: Yes • MMS/GPRS: Yes

Feature	Support
Option to configure the MMS parameters by OTA provisioning	<ul style="list-style-type: none"> • MMS/CSD: Yes • MMS/GPRS: Yes
Option 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
Capacity storage	50 or more, depending on available user memory
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
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 recipient(s) address(es) • Message Bcc recipient(s) address(es) • Delivery report request • Delivery time • MSISDN recipient address • Validity period
The user can insert multimedia elements into multimedia messages from	<ul style="list-style-type: none"> • File Manager • Camera • Contacts • Calendar
Option for sent messages to be memorized into a folder in the phone memory	Yes
Actions the user can perform after message notification	<ul style="list-style-type: none"> • Auto Download - home/roaming
Actions the user can perform after message retrieval	<ul style="list-style-type: none"> • Reply to the sender of the message SMS/MMS/Voice message • Reply to the sender and to Cc people MMS/Voice message • Reply to the sender and to Bcc people MMS/Voice message • Forward the message MMS • Delete the message • Save message in the phone memory • Call the sender of a message • View details • Save items
Multimedia codecs/formats supported for audio	AMR, MP3, 3GPP™, WAV, MP4/M4A, MIDI, iMelody

Feature	Support
Multimedia codecs/formats supported for video	3GPP™, SDP
Multimedia codecs/formats supported for images and animations	JPEG, GIF87, GIF89A, WBMP, BMP, PNG, SWF and SVG-t
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 phone for message	Maximum size can be customised.
MMS User Agent will report problems to user in case of	<ul style="list-style-type: none"> • Message not sent causes no user subscription to service, if included in ResponseText (please see WAP209) • Message not sent causes required functionality not supported by MMS Relay/Server, if included in ResponseText (please see WAP209) • Message not sent causes insufficient credit (in case of prepaid charging), if included in ResponseText (please see WAP209)

Email client technical data

Feature	Support
Bearer type GSM data (IP)	Yes, ISDN and analog
Character sets	<ul style="list-style-type: none"> • 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 • Cyrillic: KOI8-R • Simplified Chinese: GB2312 • Traditional Chinese: BIG5
OTA provisioning solution	No
Protocols	POP3, IMAP4 and SMTP
Push email	No
Secure email	SSL/TLS, both port methods (POPS/IMAPS) and STARTTLS
HTML mail	Yes (tags removed)
Inline images	No

Feature	Support
Message management	<ul style="list-style-type: none">• Window of 20 latest messages• Headers only or size limits
ESMTP	Yes
Background sending	Yes

Connectivity

Bluetooth™ technical data

Dimension	Support
Bluetooth capability statement	This phone supports Bluetooth Specification, version 2.0 with enhanced data rate (EDR)
Bluetooth profiles	Advanced Audio Distribution Profile Audio/Video Remote Control Profile Basic Imaging Profile Dial-up Networking Profile File Transfer Profile Generic Access Profile Generic Object Exchange Profile Handsfree Profile Headset Profile Object Push Profile Phonebook Access Profile Serial Port Profile Synchronisation 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 between the connected devices and the occurrence of obstacles. Up to 10 metres (33 feet)
Transmission power	Class 2, typical +3 dBm or 2 mW
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: <0.76 mA (active every 1.28S during paging and 2.56s inquiry_scan) • Voice to headset (one active SCO link HV3): <30 mA (active sending and receiving HV3 packets to and from headset over Bluetooth) • One ACL link (no scanning): <25mA (Active but no data: Is active sending and receiving null packets that contain no data over Bluetooth)

OMA Data Synchronisation (SyncML™) technical data

Feature	Support for SyncML
SyncML compliance	The phone is fully SyncML compliant, having passed SyncML conformance testing. SyncML 1.1.2 is used and supported in Server-alerted synchronisation
Basic data formats	Contacts: vCard 2.1, Calendar: vCalendar 1.0 (vEvent), Tasks: vCalendar 1.0 (vTodo)
Option for operators to extend SyncML functionality	The device may be configured to include preset SyncML settings, and SyncML 1.1.2 is used
Option to synchronize other phones using SyncML	No
Transport method for SyncML messages	HTTP
Synchronisation application placement	Inside the phone
Option 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 and Notes), Username and PWD for Databases, Databases to be synchronized (on/off), Internet profile, Synchronisation interval, Server ID and Server PWD, and permission to allow server-alerted synchronisation. Can be provisioned with OMA Client provisioning v1.1
Mechanisms used by the phone to capture changes made by the end user (that is how does the SyncML client in the phone 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	No
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, ISDN and analogue

Feature	Support in the browser
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 BT, SMS, MMS and email
Cache	Yes (size 300 kB)
Character sets *	<ul style="list-style-type: none"> • 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 • Windows: windows-1250, windows-1251, windows-1252, windows-1253, windows-1254, windows-1255, windows-1256, windows-1257 • US-ASCII • 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 • Japanese: Shift_JIS, EUC-JP, ISO-2022-JP • Simplified Chinese: GB2312, GB_2312-80, GBK • Traditional Chinese: BIG5 • Korean: EUC-KR, KS_C_5601-1987 • Cyrillic: KOI8-R • Thai: windows-874, TIS-620 • Special: x-euc-jp, x-sjis, ISO8859-1 <p>*When creating WML applications, always save the page contents as UTF-8, and clearly indicate this 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 with. 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>
Clear cache	Yes
Colour	Colour display
Home page	Yes, up to 10 different; one for each WAP profile
HTML version for WAP browser	XHTML, Mobile Profile 1.2, HTML 4.01, WAP 2.0/WML 1.3, CSS, DOM2, ECMAScript
Hyperlinks in text	Yes, highlighted as blue text
Hyperlinks in images	Yes, indicated by a frame
Image animation	Yes
Image and animation formats	GIF (including animated) WBMP, no transparent layers, JPEG, PNG, BMP, SWF and SVG-t
Network settings	Up to 10 different settings available by selecting WAP profile (Internet, Banking, Gateway and so on)
OTA support	Yes

Feature	Support in the browser
PPP authentication	PAP, supported
Reload page	Yes
Security	<ul style="list-style-type: none"> • TLSv1 • SSLv3 • WIM on SIM ICC • X.509 certificate support, WAP Profile
User agent profiles	Yes, list of client characteristics - for example display size
WAP/WML	WAP 2.0/WML 1.3
Internet profiles	Dynamic - up to 10 Internet profiles, each with its own settings

Operator technical data

Feature	Support for WAP
Web Browser	OpenWave 7.2
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 profile • 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, PNG, BMP, WBMP

PROVISIONING

Provisioning types	OMA Client Provisioning (v1.1)
Total parameter sets	10 (shared between the provisioning types). < or = 10 (total number of profiles).
Parameter set list	<ul style="list-style-type: none"> • 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
Parameter sets include	CSD, GPRS (different sets)

Feature	Support for WAP
Factory pre-configuration	CSD (possibility to lock a setting), GPRS
OTA	CSD, GPRS configuration possible
Security mechanism	
Bearer	OMA Client Provisioning
OTA via SMS	Uses security mechanism (SEC) methods according to WAP-183-ProvCont-20010724-a (see www.openmobilealliance.org)
Interface	
Bearer	OMA Client Provisioning
OTA via SMS	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	
Re-provisioning Interface	OMA Client Provisioning
OTA via SMS	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, 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
Provisioning bearer	SMS
Parameter sets available	< or = 10 (total number of Internet profiles)
Parameter sets for OTA modification	< or = 65535 (total number of Internet profiles)
PUSH	
Content types	
Service Indication (SI)	Yes

Feature	Support for WAP
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	<ul style="list-style-type: none"> 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 saved
Push de-activate	Yes (Messaging/Settings/Push/Allow push msg)
Dynamic push menu changes	No, there are no changes in the menus when activating or deactivating push
Security	
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 Centre, IP address
User agent profile	
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
WTAI	
WTA Make Call	Yes
WTA Send DTMF	Yes
WTA Add Phonebook	Yes
DOWNLOAD	
WAP solutions	

Feature	Support for WAP
HTTP GET solution to download content over WAP	Yes
Download Fun from Openwave	No
Other download content over WAP	Yes, download limit (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. Save, delete, forward, use and manage
Object formats	All formats that are supported in the phone can be downloaded
GRAPHICAL USER INTERFACE	
Man Machine Interface	
Selection keys	Yes
Separate/dedicated back or delete keys	Yes
Display backlight on when browsing	Yes
Predictive writing	Yes
“http://” string displayed automatically when entering URLs	Yes
Elements	
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">• JSR-75 PDA/File• JSR 118 MIDP 2.1• JSR-120 Wireless Messaging API 1.1• JSR-135 MMAPI 1.2• JSR 139 CLDC 1.1• JSR-184 Mobile 3D Graphics 1.1• JSR 185 Java™ Technology for the Wireless Industry 1.0• Mascot Capsule Micro3D Version 3• Nokia UI API 1.1
Java 3D	<ul style="list-style-type: none">• JSR-184 Mobile 3D Graphics API for J2ME™• Mascot Capsule Micro3D Version 3

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.

AAC

Advanced Audio Coding

AMR

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

API

Application Programming Interface

CLDC

Connected Limited Device Configuration

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.

CSS

Cascading Style Sheet

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 and so on.

EDGE

Enhanced Data rates for GSM Evolution.

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

FM

Frequency Modulation of the (radio) carrier wave

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. There are different phases of roll-out for the GSM system and GSM phones are either phase 1 or phase 2 compliant.

HR

Half Rate, speech coding.

HSCSD

High Speed Circuit Switched Data

HTML

HyperText Markup Language

HTTP

HyperText Transfer Protocol

IMAP

Internet Message Access Protocol. It is a method of accessing email or bulletin board messages that are kept on a mail server. IMAP Idle is an optional expansion of the IMAP email protocol that allows the server to send new message updates to the client in real time.

JPEG

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

MIDI

Musical Instrument Digital Interface

MIDP

Mobile Information Device Profile

ME

Mobile Equipment (phone excluding SIM card)

MMAPI

Mobile Media Application Programming Interface

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.

MT

Mobile Termination

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. It promotes interoperability and a wireless standard for delivering email, textbased Web pages and data to mobile phones, PDAs, pagers and other mobile terminals. OMA email enables the mobile email client to be notified of a new email using mobile network protocols.

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 and so on.

PNG

Portable Network Graphic

Quad band

GSM 850/900/1800/1900.

QVGA

Quarter Video Graphics Array

RDS

Radio Data System

RSS

Really Simple Syndication

RTSP

Real Time Streaming Protocol session control.

SI

Service Indication

SL

Service Loading

SIM card

Subscriber Identity Module card. It is 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.

SP-MIDI

Scalable Polyphony MIDI

SS

Supplementary Services

SSL

Secure Socket Layer

TLS

Transport Layer Security

Tri band

GSM 850/1800/1900 or GSM 900/1800/1900.

UI

User interface

URL

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

USB mass storage

When connecting a PC to the phone, the phone's memory appears as a removable disk along with other disks and drives in the PC. You can then quickly and easily drag and drop items between folders in the phone and the PC such as images, documents, music and video.

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, Voicemail, Web browsers, telephony applications, call centers, 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.

VHF

Very High Frequency. A band of radio frequencies falling between 30 and 300 MHz.

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.

WAV

Waveform Audio File

WBMP

Wireless BitMap. A graphic format optimised 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

XHTML

Extensible HyperText 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.ianywhere.com
- www.gsmworld.com
- www.imc.org
- www.imc.org/pdi
- www.3gpp.org
- www.irda.org
- www.etsi.org
- www.wapforum.org
- www.syncml.org
- www.w3.org/TR/xhtml-basic
- www.java.sun.com
- www.cognimatics.com

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