C510

Beautifully simple Cyber-shot™

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

Sony Ericsson Developer World

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

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

Document history

Change history		
2009-02-27	Version 1	First release

Contents

February 2009

Product overview

C510 is a stylish and easy to use Cyber-shot™ camera phone. Among the latest imaging features are Smile Shutter™ and face detection. Both of these innovative features make it easy for you to capture the best moments. C510 has a 3.2 megapixel camera with digital zoom and Photo light. Designed with imaging in mind, C510 has easy access camera-related shortcuts and image editing features. If you want to share your photos or video clips with others, you can have them online in seconds.

Key features

3.2 megapixel camera
The main camera is 3.2 megapixel and includes auto focus, 3.2x digital zoom, Photo light, Auto rotate, Face detection, Smile Shutter™ and Photo fix. All this means high quality photos. The Photo light can be used as video light when recording videos. The camera is protected by a lens cover. The horizontal user interface allows for easier camera handling. A photo can be shared as a picture message, email message or blog with friends or family. Photos can also be transferred to another phone or computer using any available transfer method, such as Bluetooth™ wireless technology or USB cable.

Smile Shutter™
Smile Shutter™ knows when the subject of your picture is smiling and automatically activates the camera shutter and the smile is captured the moment it happens.

YouTube™ upload and download

Enjoy everywhere access to the largest video sharing site on the Web. You can shoot some video using your phone and upload it straight away. You can also enjoy any of the millions of videos on YouTube™ wherever you are.

Video telephony

Video telephony lets you share moments with friends and family as they happen or save them to share later. You can also use video telephony to see others while talking to them. Video telephony takes people connecting to the next level and is the next best thing to being there in person.

2.2-inch QVGA scratch resistant mineral glass screen

The large 2.4-inch (240x320 pixels) full graphic QVGA 262k colour screen enhances viewing, facilitating high-quality multimedia and entertainment.

Auto rotate

Capturing a portrait photo with a horizontal camera, usually results in a photo which must be rotated manually when viewed later, in the phone. Auto rotate is a new feature, which enables HB108 R1.1 to register how the phone is oriented when the photo is taken, whether it is held in portrait or landscape mode. This information is saved with the photo. When viewed, the photo is automatically rotated and presented with the same orientation as it was originally taken.

Video camera

The camera captures a video recording and saves it in the phone or on a memory card. A video clip can be shared as a picture message or email with friends and family or using any available transfer method, such as Bluetooth™ wireless technology. The phone supports QVGA size video recording.

HTML Web browser support

Browse the Internet and look at Web sites in a different way with Access NetFront™ 3.4 – an HTML browser which supports a complete Web standard suite.

Mobile blogging

Send photos and video clips using the Internet to show on your personal blog, allowing people easy access to view and comment on your photos and video clips.

PictBridge™ – Camera printing

Print photos from the phone using the USB cable directly to a printer, without a computer or photo editing software.

Media

A unique Sony Ericsson media experience. All media can be accessed directly from the desktop. Navigate seamlessly through captured photos and video clips, pictures, photo tags, music, videos and more.

Music player

Located in Media. Play downloaded music and audio. The navigation system enables you, for example, to browse through your favourite tracks and create simple playlists.

Bluetooth™ wireless technology

Several devices (simultaneous Bluetooth™ wireless technology 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 wireless technology-supported game and the phone and a computer can exchange data such as images, video clips, vCards, music files and calendar data. Bluetooth wireless technology version 2.0 and Enhanced Data Rate (EDR) is supported.

Images

Technologies in detail

This chapter includes short descriptions of the technologies available in this product.

Feature	C510 Cyber-shot™
3D games	Yes
3G enabled	Yes
Activity menu (multi-tasking) The user can easily handle missed calls, new text and picture messages, task reminders, shortcuts and get quick access to favourite Internet bookmarks	Yes with enhanced functionality for background applications
A-GPS Assisted GPS. Support for control plane and SUPL (Secure User Plane Location protocol)	No
Alarm clock Set up to five individual times for single or recurring weekly alarms	Yes
Auto rotate The photo appears as a landscape or portrait photo, as it was originally taken	Yes
Backlight White backlight to illuminate the phone screen	Yes

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Feature	C510 Cyber-shot™
Battery	BST-38 3.6 V, 930 mAh, Lithium Polymer
Battery charging time	At least 90% charged within 2 hours. Fully charged within 2.5 hours
BestPic™ Enhance photo taking by automatically capturing a range of 7 photos ranging from before to after a camera key press. Select the best photo to catch the moment. You can also save more than one photo. Select BestPic™ speed BestPic™ with light	No No No
Bluetooth™ audio streaming Listen to audio in compatible devices	Yes
Bluetooth™ audio video remote control Control music player functions from a Bluetooth™ accessory, and control the volume in the accessory from the phone	Yes
Bluetooth™ PAN Connect the phone to Internet using Bluetooth™ wireless technology	Yes
Bluetooth™ wireless technology Wireless connectivity between devices within a range of up to 10 metres (33 feet). Support for specification of the Bluetooth System, version 2.0 and EDR	Yes
Business card exchange Exchange contact information	Yes
Buy Now Mark a track if you are interested in buying it later. Option to buy the track when synchronising with Microsoft® Windows Media® Player. The Buy Now service requires a subscription and account with a downloadable music service, a computer with Microsoft® Windows Media® Player 11 or subsequent compatible version of Windows Media® Player, and a USB computer connection	Yes
Calculator	Yes
Calendar Calendar with day, week and month views and reminders	Yes

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Feature	C510 Cyber-shot™
Call list View calls made and received	Yes
Camera	3.2 megapixel
Camera retractable lens cover Open the cover and camera functionality starts automatically	Yes
Camera auto focus The camera automatically focuses on the subject in a focus area in the screen/viewfinder	Yes
Camera face detection The camera brings an off-centre face into focus	Yes
Camera file browser Browse the photo folder without leaving the camera function	Yes
Camera flash	Yes
Camera image stabiliser Photo and video image stabiliser functionality. If available, use to keep the image steady	No
Camera key A dedicated camera key	Yes
Camera keys on top When the camera is used in horizontal mode, the side keys with camera functionality are on top, for a digital still camera feel. For photo key functionality, see also "Keys – side and other" on page 16	Yes
Camera menu Easy-to-use horizontal digital camera menu	Yes
Camera mode switch Use to switch between photo, video and play modes	No
Camera scene modes Use predefined settings when taking photos in different environments, for example, at night or fast-moving objects	Yes Dedicated key for scenes
Camera settings bar Settings bar with options and info texts	Yes

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Feature	C510 Cyber-shot™
Chinese input method Chinese input methods: Text input methods based on Simplified or Traditional Chinese. Bopomofo, Pinyin or Stroke	Yes
Circuit Switched Data	
CSD	Yes
HSCSD – a communications standard enabling GSM data transfer 14.4 Kbps.	Yes
Co-branding area	20 x 6.4 mm
Code memo A safe place to save all PIN codes and other information. To access Code memo, only one PIN code is needed	Yes
Colour	Future black Radiation Silver
Contact photos Add a photo to a saved contact. The picture appears on the screen when the saved contact calls	Yes
Contacts Phonebook with fields for name, phone, fax and instant messaging information, presence information, email address, Web site, title, company address info, personal address info and birthday	Yes
Conference calls Support for multiparty calling	Yes
Connector A1 (Fast port)	Yes (side)
Content online Downloadable pictures, games, themes, ringtones available online	Yes
Copyright protection DRM (Digital Rights Management) features the rights and copy protection of downloaded content (audio, pictures, music tones, video clips and entertainment features such as games, Java applications etc.)	Yes, OMA DRM 1.0, 2.0 and 2.1, Microsoft DRM Janus

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Feature	C510 Cyber-shot™
Device Management (DM) DM utilises GPRS as a bearer (basic network connectivity needs to be in place) of the provisioning data and allows the operator to access the phone, check and send out different settings such as network connectivity (GPRS), email, MMS, Internet settings and Java™. Device Management is achieved by supporting OMA Client Provisioning 1.1 (CP) and OMA Device Management (DM) 1.2	Yes
Digital zoom	16x for all photo sizes except big sizes and video recording
Dual microphones Two microphones give stereo sound to video clips recorded by the phone	Yes
Email Built-in email client with inbox, outbox, compose/send and other functions	Yes
EMS (Enhanced messaging) Text messaging (SMS) with support for pictures and sounds Note: EMS is not available for operators who use unified messaging	Yes
Exterior description Size mm (Length x width x thickness/thinnest)	107 x 46.6 x12.5 (mm)
Fast port A system connector which enables faster data transfer between the phone and a computer	Yes
File manager Folder structure storage to help save and organise pictures, sounds and other phone content	Yes, with enhanced functionality for camera content
Flash themes	Yes

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Feature	C510 Cyber-shot™
Flight mode All phone radio transceivers are inactivated. Flight mode starts the phone so that only certain functions are available, such as the calendar, the music player or a game. The phone may then be used in some areas, such as aeroplanes or hospitals, where full mobile phone functionality is not allowed Bluetooth™ wireless technology function availability in Flight mode	Yes Yes
FM radio with RDS FM radio with presets, auto and manual search. The handsfree is used as an antenna. The radio can also be used as an alarm signal	Yes, 100 kHz tuning interval
FM radio with TrackID™ Identify tracks playing on the radio	Yes
Form factor	Stick
Games download Add more games to your phone	Yes
Games embedded	Yes
Geo tagging Photos are tagged with geo data and can be shown on a map	Yes, geo data from Cell ID
Google Maps™ for mobile Preloaded application with support for cell-id. View satellite imagery, find locations and calculate routes	Yes
GPRS General Packet Radio Services – a communications standard enabling packet data transfer of 21.4 Kbps per time slot. Multislot class 10 supported (max 5 simultaneously)	Yes
High Speed Data HSDPA – High Speed Downlink Packet Access HSUPA - High Speed Uplink Packet Access	 Yes Yes
Icon Desktop 12 A graphic icon desktop with 12 interactive icons	Yes

Feature	C510 Cyber-shot™
Image formats	
8 MP (3264 x2448 pixels)	No
5 MP (2592x1944 pixels)	No
3.2 MP (2048x1536 pixels)	Yes
3 MP (2048x1536 pixels)	No
2 MP (1632x1224 pixels)	Yes
1 MP (1280x960 pixels)	Yes
VGA (640x480 pixels)	Yes
Instant messaging (Wireless Village™) Chat – several people can take part in a mobile messaging session. Instant messaging/Wireless Village server community	Yes
Internet blogging Share over the Internet on your personal Web site. The size of uploaded photos is dependent on customizations	Yes
Internet browser Full HTML support, ECMA script, DOM level 1&2, CSS 1&2 etc. Support for AJAX (Asynchronous JavaScript and XML) Progressive download of video files. Direct access to Bookmarks, Search Internet and Enter address Mouse Pointer Text Wrapping Pan&Zoom	Yes Yes Yes Yes Yes Yes Yes Yes
Internet security Encrypts confidential information such as credit card and bank account numbers. Necessary for mobile banking and shopping	Yes, SSL/TLS

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Feature	C510 Cyber-shot™
Java^{TM} Support for J2ME™ technology Sony Ericsson Java Platform Support for new Java programming features including banking, payment transactions, user identification and authentication through secure encryption technology.	Java 2, Micro Edition (J2ME™), Java 3D™ JP-8.4 Yes
Keys – navigation and more	4 navigation keys 3 selection keys C (Clear) key Activity menu key End and on/off key Call key
Keys – keypad	12 alphanumeric
Keys – side and other	Volume/camera zoom key Camera key
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 and is available in Chinese phone variants	Yes
Adobe™ Flash Lite™ For animated wallpapers, menus and other graphic elements	Yes
Media A centre for all media content with horizontal and vertical navigation. You can view photos, listen to music, watch video clips	Yes
Media player	See Music player and Video player

Feature	C510 Cyber-shot™
Mega Bass™ An audio feature which enhances bass frequencies for better overall music experience	Yes
Memory (built-in) Phone memory that is free to use (depending on software configuration and file content). Many applications share phone memory. The maximum amount of storage available for any one application, such as calendar entries, is affected by the amount of memory used by other applications, such as messaging, music, photos and so on	Up to 120 MB
Memory card reader (slot) A slot for inserting a micro peripheral storage device Memory card support: Memory Stick Micro™ (M2™) SanDisk microSD™/Transflash™	Yes Yes No
Menu layout options Possibility to change the layout of the icons in the main menu	Yes
Menu shortcuts A function making it possible to dedicate shortcuts to the most-used phone functions	Yes
MMS (Multimedia messaging) Picture messaging with text and sound	Yes
MMS video Support in the phone for sending video clips using MMS	Yes
Modem Circuit Switched/Packet Switched Internet dial-up support	Yes
MusicDJ™ A music composer tool with MIDI drum, guitar, keyboard, bass and brass loops in different music styles, which can be combined to create polyphonic ringtones	Yes
Music listening time	Up to 20 hours

Feature	C510 Cyber-shot™
Music player 3.0 A digital music player with horizontal navigation. Play music you have transferred or downloaded. The list structure system enables you, for example, to organise favourite songs into groups and create simple playlists	Yes
Music tones Music tones, also called master tones, are DRM protected music by original artists. Various digital audio formats are supported	Yes
My time zone Select the time zone manually by country or city	Yes
Networks Variant 1 UMTS/HSUPA/HSDPA 2100 GSM/GPRS/EDGE 900, 1800, 1900 _____ Variant 2 UMTS/HSUPA/HSDPA 2100 GSM/GPRS/EDGE 900, 1800, 1900 Variant 3 GSM/GPRS/EDGE 850, 900, 1800, 1900	Yes Yes Yes
Notes Make notes of things to remember. A note can be shown in standby	Yes
OMA Data Synchronization (SyncML) A device communications standard that enables remote synchronization between devices	Yes OMA DS 1.2 OMA DS 1.1.2
OTA settings Internet, email and other settings can be sent over the air to the phone	Yes OMA CP 1.1
Photo light (built-in) When lighting conditions are poor, activate the picture light	Yes
PhotoDJ™ A drawing tool in the phone where existing photos can be altered	Yes

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Feature	C510 Cyber-shot™
Photo fix Improves an under-exposed photo by calculating and adjusting the light balance	Yes
PictBridge™ Transfer images from the phone via the USB cable directly to a printer, without a computer or photo editing software	Yes
Picture gallery A thumbnail image gallery where sections of several photos can be viewed at the same time	Yes Use photo tags
PlayNow™ (direct link) Listen to music before you purchase and download it to your phone	Yes
PlayNow™ Games (direct link) Download and purchase games straight from the phone desktop	Yes
Polyphonic voices	72
Powersave default setting for display light	Yes
Predictive text input	Yes
Push email	Yes
RSS reader	See Web feeds
Screen Type: Size: Resolution: Technology: Colours displayed together: Backlight colour:	 Full graphical 2.2 inches 240x320 pixels TFT, QVGA 262,000 (18 bit) White
Screen saver	Yes
Settings download (Ready to run) Set up functions that require a connection to the Internet such as the Internet browser and picture messaging. This function runs in the setup wizard or can also be chosen in the Settings menu. This function is not included in the setup wizard for customised phones	Yes

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Feature	C510 Cyber-shot™
Shake control Shake control for music and gaming	No
SIM card lock The possibility to protect the SIM card with a four-digit to eight-digit PIN code	Yes
Smart search Search for numbers and contacts from standby by using the number keys. Smart filter and smart search by names in contacts list by entering some keys. Call or send messages from a filtered list of search results.	Yes
SMS long (Text messaging) Concatenated SMS text messaging	Yes
Smile Shutter™ In autofocus mode, the camera detects a smile and automatically takes the picture.	Yes
Sleep mode A power-saving feature that minimises the battery power consumed when the phone is in standby	Yes
Sony Ericsson Remote Update Service Download the latest software over the air	Yes
Sony Ericsson Update Service Connect the phone to an Internet-connected computer, download the latest software from the Web site, www.sonyericsson.com/support and update the mobile device	Yes
Sony Ericsson Update Service Pro Update the phone with the latest software at your local Sony Ericsson retailer	Yes
Sound recorder A recording device in the phone that can record voice messages or other sounds	Yes
Speakerphone	Yes
Speed dialling Allocate contacts in the phone book to specific keys on the keypad	Yes

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Feature	C510 Cyber-shot™
Standby time GSM UMTS	Up to: 400 hours 400 hours
Status view The screen shows the network being used, the time and other status information	Yes
Stereo microphone	Yes
Stopwatch	Yes
SVG Tiny Scalable Vector Graphics for impressive animated wallpapers, menus and other graphic elements	Yes
Synchronization PC Synchronise and share phone content with a computer	Yes
Talk time GSM UMTS	Up to: 10hours 2.5 hours
Tasks Keeps track of important things you have to do	Yes
Themes Phone menu texts and background graphics	Yes
Timer Set the phone to alert after a specific time	Yes
TrackID™ Music recognition	 Yes
Text search for artist, album, track, lyrics etc.	Yes
UMTS	Yes
USB connectivity support Connect the phone to a computer using the USB cable provided	Yes USB 2.0 Hi-Speed

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Feature	C510 Cyber-shot™
USB ethernet emulation Connect to the Internet using the phone or the computer	Yes
Vibrating alert The phone vibrates when a call comes in	Yes
Video blogging Share video clips over the Internet on your personal Web site. The size of uploaded video clips is dependent on customizations	Yes
Video call camera	Yes
Video call talk time	Up to 1 hours 30 minutes
VideoDJ™ Create video sequences by combining different clips and adding music and images	Yes
Video player Play video clips you have transferred or downloaded. Transfer video clips to another phone or a computer using an available transfer method	Yes
Video streaming Real-time streaming of video clips, for example, live cam. Media can also be downloaded and saved in the phone memory	Yes
Video telephony When you make a video call, the other party can be seen on the screen. The service requires UMTS/WCDMA	Yes
Viewfinder When using the camera, a photo can be previewed before it is captured	Yes
Voice control Voice answer, reject and call. Assign voice commands to items in the phonebook. When a call is made, the voice command can be used instead of pressing keys	Yes
Voicemail Support for voicemail operator service including automatic answering and message recording	Yes

Feature	C510 Cyber-shot™
Web feeds Frequently updated content delivered as feeds via a Web site, for example, news headlines in the browser	Yes
Web feeds ticker View news headers in standby	Yes
Weight	91.5 g

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

Technical specifications

General technical data

System	Tri-band Edge: GSM 850/1800/1900 and GSM 900/1800/1900 Tri band HSUPA 850,1900,2100 supported
Speech coding	HR, FR, EFR, AMR, supported where available, for high speech quality.
GSM SIM/ UMTS USIM/SIM card	GSM SIM - 3GPP TS 51.011; UMTS USIM - 3GPP TS 31.102; UMTS ISIM - 3GPP TS 31.103. Small plug-in card, 1.8 V and 3 V.
Memory	Up to 120 MB internal (depending on software configuration/file content) plus extra slot for supported memory cards.
Data transfer speeds	Up to 7.2 Mbps (downlink, HSDPA, cat 8) Up to 2.0 MBps (uplink, HSUPA, Cat 5)

Performance and technical characteristics

Property	WCDMA 2100
Frequency range (MHz)	TX: 1920–1980 RX: 2110–2170
Channel spacing	5 MHz with 200 kHz channel rasters
Number of channels	277
Modulation	QPSK (WCDMA R99) QPSK/16 QAM (HSDPA)
TTI	10 ms (WCDMA R99) 2 ms (HSDPA)
TX phase accuracy	Error Vector Magnitude: <17.5%
Duplex spacing	190 MHz
Frequency stability	+/–0.1 ppm
Voltage operation (nominal)	3.6 V
Transmitter RF power output	24 dBm Class 3 (0.25 W peak)
Transmitter Output impedance	50 ohm
Transmitter spurious emission (according to specification)	< –36 dBm up to 1 GHz < –30 dBm over 1 GHz (according to 3GPP™ spec.)

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Property	WCDMA 2100
Receiver RF sensitivity	Better than –106.7 dBm @ 12.2 kbps CS voice
Receiver RX bit error rate	< 0.1%

Property	GSM 850	GSM 900/ E-GSM 900
Frequency range (MHz)	TX: 824–849 RX: 869–894	TX: 880–915 RX: 925–960
Channel spacing	200 kHz	200 kHz
Number of channels	124 Carriers *8 (TDMA)	174 Carriers *8 (TDMA)
Modulation	GMSK	GMSK
TX phase accuracy	< 5° RMS phase error (burst)	< 5° RMS phase error (burst)
Duplex spacing	45 MHz	45 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)	33 dBm Class 4 (2 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	< –36 dBm up to 1 GHz < –30 dBm over 1 GHz
Receiver RF sensitivity	Better than –104 dBm	Better than –102 dBm
Receiver RX bit error rate	< 2.4%	< 2.4%

Property	GSM 1800	GSM 1900
Frequency range (MHz)	TX: 1710–1785 RX: 1805–1880	TX:1850–1910 RX:1930–1990
Channel spacing	200 kHz	200 kHz
Number of channels	374 Carriers *8 (TDMA)	299 Carriers *8 (TDMA)
Modulation	GMSK	GMSK
TX Phase Accuracy	< 5° RMS Phase error (burst)	< 5° RMS Phase error (burst)
Duplex spacing	95 MHz	80 MHz
Frequency stability	+/–0.1ppm	+/–0.1ppm
Voltage operation (nominal)	3.6 V	3.6 V
Transmitter RF power output	30 dBm Class 1 (1 W peak)	30 dBm Class 1 (1 W peak)

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Property	GSM 1800	GSM 1900
Transmitter output impedance	50 ohm	50 ohm
Transmitter spurious emission (according to specification)	< −30 dBm	< −30 dBm
Receiver RF sensitivity	Better than −102 dBm	Better than −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)
Mode support	• UI-mode supported • SAT initiated USSD supported
UI-mode details	• It is possible to scroll the text up and down in USSD messages • It is possible to highlight embedded numbers and take actions accordingly

GPRS technical data

Property	Support
Compatible GPRS/EDGE and SMG specifications	Release 99 according to ETSI specification
Data rates GPRS (per time slot)	Coding scheme CS-1: 9 Kbps CS-2: 13,4 Kbps CS-3: 15,6 Kbps CS-4: 21,4 Kbps (network-dependent).
Data rates EDGE (per time slot)	Modulation & coding scheme (MCS) MCS-1 (GMSK): 8.0 Kbps MCS-2 (GMSK): 11.4 Kbps MCS-3 (GMSK): 14.8 Kbps MCS-4 (GMSK): 17.6 Kbps MCS-5 (8-PSK): 22.4 Kbps MCS-6 (8-PSK): 29.4 Kbps MCS-7 (8-PSK): 44.8 Kbps MCS-8 (8-PSK): 54.4 Kbps MCS-9 (8-PSK): 59.2 Kbps
Medium Access Modes	Dynamic allocation
Support of Packet Control Channels (PBCCH/PCCCH)	Yes
Network operation mode	NOM I, II, III

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Property	Support
Support of GPRS/CS combined procedures	Yes
Network control mode	NC0 and NC2
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
Support of compression algorithms	Yes, V42bis and IP header compression
Mode of operation	Class B and Class C modes of operation supported
R Reference point	• Physical layer: Support of RS232 • PPP is supported as L2 layer in the R reference point • Authentication algorithms PAP, CHAP supported
IP connectivity	• PDP type IP is supported • IP termination in mobile or TE (laptop, PDA) is supported
PDP context	• 10 PDP context descriptions saved in the phone • PDP context description is edited via application in the phone • AT-command or via OTA • Simultaneous PDP contexts are supported, maximum 4
SIM	GPRS aware, as well as non-GPRS aware, SIM cards are supported
AT commands	Some of the supported commands: AT+CGDCONT - DEFINE PDP CONTEXT AT+CGEQREQ - Quality of Service Profile (REQUESTED) AT+CGEQMIN - Quality of Service Profile (Minimum Acceptable) AT+CGATT - PACKET DOMAIN SERVICE ATTACH OR DETACH AT+CGACT - PDP CONTEXT ACTIVATE OR DEACTIVATE AT+CGDATA - ENTER DATA STATE For more information, see www.sonyericsson.com/developer

SIM AT services supported

Service	Mode	Support
CALL CONTROL BY SIM		Yes
MO SMS CONTROL		Yes

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
		1 = alphabet set
			Yes

			Yes
	bit 2:	0 = SMS default alphabet 1 = UCS2 alphabet	Yes
			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
		1 = alphabet set
			Yes

			Yes
	bit 2:	0 = SMS default alphabet 1 = UCS2 alphabet	Yes
			Yes
	bit 3:	0 = ME may echo user input on the display	Yes
		1 = user input not to be revealed in any way (see note)	Yes
	bit 4:	0 = user input to be in unpacked format 1 = user input to be in SMS packed format	Yes
			Yes
	bit 8:	0 = no help information available 1 = help information available	Yes
			Yes
LAUNCH BROWSER			Yes
MORE TIME			Yes
PLAY TONE			Yes
POLLING OFF			Yes
POLL INTERVAL			Yes

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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 advance	Yes
REFRESH	General: The reset option requests the user to wait while the phone restarts	Yes
	'00' = (U)SIM Initialization and Full File Change Notification	Yes
	'01' = File Change Notification	Yes
	'02' = (U)SIM Initialization and File Change Notification	Yes
	'03' = (U)SIM Initialization	Yes
	'04' = (U)SIM Reset	Yes
	'05' = USIM Application Reset	Yes
	'06' = 3G Session Reset	Yes
SELECT ITEM		Yes
SEND DTMF		Yes
SEND SHORT MESSAGE	bit 1: 0 = packing not required 1 = SMS packing by the ME required	Yes Yes
SEND SS		Yes
SEND USSD		Yes

Service	Mode	Support
SET UP CALL	General: Capability configuration Set-up speech call CallParty Subaddress DTMF support	Yes No Yes
	'00' = set up call, but only if not currently busy on another call	Yes
	'01' = set up call, but only if not currently busy on another call, with re-dial	Yes
	'02' = set up call, putting all other calls (if any) on hold	Yes
	'03' = set up call, putting all other calls (if any) on hold, with re-dial	Yes
	'04' = set up call, disconnecting all other calls (if any)	Yes
	'05' = set up call, disconnecting all other calls (if any), with re-dial	Yes
SET UP EVENT LIST	'00' = MT call	Yes
	'01' = Call connected	Yes
	'02' = Call disconnected	Yes
	'03' = Location status	Yes
	'04' = User activity	Yes
	'05' = Idle screen available	Yes
	'06' = Card reader status	Not Applicable
	'07' = Language selection	Yes
	'08' = Browser termination	Yes
	'09' = Data available	Yes
	'OA' = Channel status	Yes
SET UP IDLE MODE TEXT		Yes, 1 row of text is supported
SET UP MENU		Yes
TIMER MANAGEMENT		Yes
OPEN CHANNEL		Yes
CLOSE CHANNEL		Yes
RECEIVE DATA		Yes

Service	Mode	Support
SEND DATA		Yes
GET CHANNEL STATUS		Yes

User Interaction with SIM AT

BIP – Open Channel

A user confirmation is displayed with the default text "Open channel" when no alpha identifier is present. Alpha identifier text replaces the default text when the Alpha Identifier is present & not null. No user indication is provided (transparent mode) when alpha identifier is present and null.

Display text

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

Text clearing times are 5-20 seconds with a 60-second time-out limit for the user to clear the text. 'Key' responses:

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

MSK clears the screen if the command is performed successfully.

Get inkey

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

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

Get input

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

- Digits Only – 160 characters.

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

'Key' responses:

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

Select item

Scroll to highlight item for selection. 'Key' responses:

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

Send short message

Alpha Identifier text is displayed, if it is present. Otherwise, there is no user indication if the customization for default text is not enabled. If the customization for default text is enabled, and there is no Alpha Identifier, default message "Sending message" is displayed. Default responses are "Message failed" or "Message sent" for the customization enabled case with no Alpha Identifier.

'Key' responses:

- End key or 'Back' ends the proactive session.

Set up call

If you are on a call when the commands 'Set up Call', 'Putting all other calls on hold' are sent, the user will see the "Let SIM card setup call" user confirmation text. If 'OK' is pressed the current call will be put on hold and the new call set up. If the phone is on a call when the command 'Set Up Call, disconnecting all other calls' is sent, the user will

see the 'Let SIM card setup call' user information text. If the 'OK' key is pressed the current call will be 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 null alpha identifier is supplied and several items are found in the menu, the default title "ONLINE SERVICES" is used. If the SIM AT Menu Item is selected by pressing 'Select', all the items sent in the Set Up Menu command will be available for selection, in the same way as the Select Item command.

Entertainment

Audio and Video

File types	Formats	Extensions
Audio (All listed audio file formats are supported ringtone file formats)	3GP	.3gp
	AAC	.aac
	MP4	.mp4
	M4A	.m4a
	MP3	.mp3
	AMR	.amr
	AMR-WB	.awb
	WAV	.wav
	SMF (Standard MIDI File format)	.mid
	iMelody	.imy
	XMF (Mobile XMF supported)	.xmf, .mxmf
	WMA	.wma
Video (including audio part)	MP4 (Video: MPEG4 or H.264, Audio: AAC or AAC+ or eAAC+)	.mp4
	3GPP™ (Video: MPEG4, H.263 or H.264, Audio: AMR-NB, AMR-WB, AMR-WB+, AAC, AAC+ or eAAC+	.3gp
	WMV	.wmv, .asf
Streaming transport	RTSP according to 3GPP™	
Video encoding	H.263 Profile 0, Level 10 MPEG-4 Visual Simple Profile Level 3	
Audio encoding	AMR-NB AAC (for video recording only)	

File types	Decoder format	Supported in file format
Video decoding	MPEG-4 Visual Simple Profile	3GP/MP4
	H.264 Baseline Profile	3GP/MP4
	H.263 Profile 0	3GP
	VC-1 (WMV9)	WMV
Audio decoding	MPEG-1/2/2.5, audio layer 3	MP3
	AAC	3GP/AAC/MP4/M4A
	AAC+	3GP/AAC/MP4/M4A
	eAAC+	3GP/AAC/MP4/M4A
	AMR-NB	3GP/AMR
	AMR-WB	3GP/AMR/AMR-WB
	AMR-WB+	3GP
	WMA version 2, 7, 8: Class 1	WMA
	WMA version 9: Level 3	WMA
	WMA Pro (profile M0a)	WMA
	General MIDI (GM)	SMF
	GML	SMF
	SP-MIDI	SMF, XMF
	DLS (Mobile DLS supported)	XMF
	Linear/A-law/μ-law PCM	WAV

Java™

Feature	Functionalities
Java™ Platform, Micro Edition	• JSR-75 PDA Optional Packages for J2ME™
	• JSR-82 Bluetooth Wireless Technology API
	• JSR 118 MIDP 2.0
	• JSR-120 Wireless Messaging API
	• JSR-205 Wireless Messaging API 2.0
	• JSR-135 Mobile Media API 1.1
	• JSR 139 CLDC 1.1
	• JSR-172 J2ME™ Web Services Specification
	• JSR-177 Security and Trust Services API for J2ME™
	• JSR-179 Location API (built-in GPS)
	• JSR-180 SIP API for J2ME™
	• JSR-184 Mobile 3D Graphics API for J2ME™
	• JSR 185 Java™ Technology for the Wireless Industry
	• JSR-211 Content Handler API
	• JSR-226 SVG API for J2ME™
	• JSR-229 Payment API
	• JSR-234 Advanced Multimedia Supplements
	• JSR-238 Mobile Internationalization API
	• JSR-239 OpenGL ES
	• JSR-248 Mobile Services Architecture
	• JSR-256 Mobile Sensor API (accelerometer)
	• Nokia UI Extension API
Java 3D	• Mascot Capsule Micro3D Version 3
	• JSR-239 OpenGL ES
	• JSR-184 Mobile 3D Graphics API for J2ME™

Imaging/Messaging

3.2 megapixel camera

Digital still camera (DSC)	
True colour	Yes
Digital zoom	Main camera: 3.2x zoom
Photo fix	Improves an under-exposed photo by calculating and adjusting the light balance
Still camera settings bar	
Shoot modes	Normal, Panorama, Frames, Smile shutter
Scenes	Auto, Twilight landscape, Twilight portrait, Landscape, Portrait, Beach/Snow, Sports, Document
Photo sizes (resolution)	**3.2 MP** (2048x1536 pixels) **2 MP** (1632x1224 pixels) **1 MP** (1280x960 pixels) **VGA** (640x480 pixels) Note: MP = megapixel
Focus	Auto, Macro, Infinity, Face detection
Flash	On, Auto
ISO setting	ISO 400, ISO 200, ISO 100, ISO Auto
Self-timer	Off, On
Effects	Off, Black & white, Negative, Sepia, Solarize
White balance	Auto, Daylight, Cloudy, Fluorescent, Incandescent
Metering mode	Normal, Spot
Still camera setup	
Picture quality	Normal, Fine
Shutter sounds	Yes
Auto rotate	Off, On
Reset file number	Yes
Save to memory	Memory card, phone memory
Video recorder	
Video size (resolution)	QVGA 320x240 pixels
Frame rate	30 fps (frames per second)

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Digital zoom	3.2x
Video camera settings bar	
Video clip length	Normal, For picture message
Light	Off, Auto
Focus	Same as camera
Night mode	Off, On
Self-timer	Yes, same as camera
Effects	Yes, same as camera
White balance	Yes, same as camera
Metering mode	Yes, same as camera
Turn on/off microphone	Off, On
Video camera setup	
Reset file number	Yes, same as camera
Save to memory	Yes, same as camera

Video telephony

Photo sizes (resolution)	QCIF (176x144 pixels) SQCIF (128x96 pixels)
Digital zoom	3.2x zoom
Night mode	Yes
White balance	Auto
Brightness	Yes
Video coding	H.263 MPEG-4 Visual Simple Profile Level 0
Audio coding	AMR

Images
Images can be shared using a Bluetooth wireless technology connection, MMS, email message, computer file transfer or memory card.

The image size is limited by the amount of free RAM.

Formats	Details
JPEG	• ISO/IEC JPEG • Baseline DCT • Progressive DCT • Non-differential • nlimited size
GIF	• 87a, 89a, support for interlacement, animation and transparency • Unlimited size
BMP	Windows® bitmap format
PNG	Unlimited size
SVG	SVG Tiny 1.2
WBMP	• Wireless bitmap • Unlimited size

Supported character set

Decoding text (Incoming MMS)	
US-ASCII ISO-8859-1 ISO-8859-2 Windows-1251 ISO 10646 (UCS-2) UTF-7 UTF-8	UTF-16 KOI8-R GB2312 GB 18030 GB 13000 BIG-5
Coding Text (Outgoing MMS)	
UTF-8	

Short Messaging Service

Feature	Support
SMS Service Centre Number	It is possible to pre-load the SMS Service Centre Number
Pictures	It is possible to insert a picture or an icon into the text message. EMS compliant mobile phones will be able to see the picture correctly
Reply to messages	It is possible to reply to received messages by SMS, MMS, voice message and email
Input methods:	Predictive writing and multitap

Feature	Support
Copy and paste words	Yes
Teaching of predictive words that are not in the predictive dictionary	Yes
Options when creating a message:	
Save a sent message in a "Sent items" folder	Yes
Insert a line in the message	Yes
Assign a validity period to the message	Yes
Use predefined messages	Yes
Options when receiving a message:	
Reply to the sender	Yes
Forward the message	Yes
Save the message on the SIM card	Yes
Get delivery time and date	Yes
Options with the previously sent message:	
Delivery report of the message	Yes (if requested when sending)
Forward the message	Yes
Save the message on the SIM card	Yes
Know the remaining capacity storage	Yes, > 95% full warning, capacity on SIM when saving to SIM
Options with the previously received message:	
Reply to the sender	Yes
Save the message in the inbox	Yes
Forward the message	Yes
Know the remaining capacity storage	Yes, > 95% full warning, capacity on SIM when saving to SIM
Supported ways for replying to a received SMS:	
Via SMS, MMS, voice message, email	Yes
Via phone call (set up a call to the number contained in the message body)	Yes
Via Web browser (go to the Web address contained in the message body)	Yes
Via USSD session	No

Feature	Support
Print via infrared	No
Possibility to enable the user to send a text message to a list of recipients	Yes
Possibility to write an email address as a recipient address	Yes, if email gateway is present
SMS storage	In the phone memory, on the SIM card, or on memory card
Capacity	Up to 1,000 messages
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	10
Outgoing messages	It is possible to: • See how many short messages an EMS message consists of before sending it. • Choose whether to send the message or not after writing it.
Incoming messages	• A signal is heard once all parts of the message have been received or when a time-out occurs. • It is possible to re-use the content of an EMS message. Sounds, pictures, and animations can be inserted in a new message, if the object is not protected using ODI.
Delivery report for concatenated messages	A receipt is received in the phone when all parts of a concatenated message have been delivered if a delivery report is requested when it is being sent
Insert objects	It is possible to add pictures, animations and sounds to an EMS message
Sounds	Chimes high, chimes low, ding, tada, notify, drum, claps, fanfare, chords high, chords low
I-melody	Yes, version 1.2

Feature	Support
Melodies	It is possible to: • Receive (always), send using EMS (if not copyright protected). • Download melodies and commercial tunes from the Web.
WBMP	Yes
Picture sizes	16x16, 32x32 pixels, variable size in black and white
Pictures	It is possible to: • Edit pictures using PhotoDJ™. • Receive (always), send using EMS (if not copyright protected). • Download pictures from the Web.
Animations	There is support for the following animations: Angry, Crying, Flirty, Happy, Kiss, Sad, Tongue, Wow, Confused, Devil, Glasses, Indifferent, Laughter, Sceptical and Wink, as defined in 3GPP™ TS 23.040 v4.3.0. It is possible to send and receive animations
TP-PID field value given by the phone before sending an EMS message	0x00
EMS storage capacity	Up to 1,000 messages

Multimedia Messaging Service

Feature	Support
MMS/CSD parameters and MMS/GPRS parameters placement	• MMS is bound to an MMS profile. • A MMS profile is bound to a Data account. • A data account contains either CSD parameters or GPRS parameters and possibly proxy settings
Possibility to pre-configure the MMS parameters in the factory	• MMS/CSD: Yes • MMS/GPRS: Yes
Possibility to configure the MMS parameters by OTA provisioning	• MMS/CSD: Yes • MMS/GPRS: Yes
Possibility for all the parameters from the parameters set to be OTA provisioned at the same time	• MMS/CSD: Yes • MMS/GPRS: Yes
Possibility for only one parameter, in the set of parameters, to be OTA provisioned	• MMS/CSD: No • MMS/GPRS: No
Supplier indication of realized interoperability tests between its MMS User Agent and MMS Relay/Server from other suppliers	Yes

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Feature	Support
Support of a standard procedure for OTA provisioning of MMS parameters	OMA Client Provisioning 1.1
Functionalities that the user is able to set during message composition:	• Message subject • Message priority • Email recipient address • Message Cc, Bcc recipient(s) address(es) • Delivery report request • MSISDN recipient address • Validity period
From where can the user insert multimedia elements into multimedia messages:	File Manager Photo album Camera Contacts Calendar Task Note Browser (vBookmark) VideoDJ™ PhotoDJ™ MusicDJ™ Sound recorder
Possibility for sent messages to be memorised into a folder in phone memory	Yes
Actions that the user can perform after message retrieval:	• Reply to the sender of the message SMS/MMS • Reply to the sender and to Cc, Bcc people SMS/MMS • Forward the message • Delete the message • Save message in a dedicated folder • Call the sender of a message • Save item • Mark as unread • Details
Multimedia codecs/formats supported for audio	AAC, AMR, MPEG Layer 3, AWB, WAV, MP4, MIDI, iMelody, 3GPP™, XMF, M4A, WMA
Multimedia codecs/formats supported for video	MPG4, 3GPP™, SDP, WMV
Multimedia codecs/formats supported for image	JPEG, GIF87, GIF89A, PNG, SVG, WBMP, BMP
Supported formats for message presentation:	• Message body plus 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	Content Class and Creation mode are applied. Maximum size can also be customised
Maximum number of objects supported in a message	30 objects is standard. It is possible to increase the number through configuration

Feature	Support
Maximum text size	5,000 characters/text
Storage capacity	Up to 500 messages

Email client technical data

Feature	Support
Bearer type (IP)	Yes
Bearer type GSM Data (IP)	Yes, GPRS and HSCSD
Character sets	- ISO: ISO-8859-1, ISO-8859-2, ISO-8859-5, ISO-8859-7, ISO-8859-9, ISO-8859-10, ISO-8859-11 - Windows: Windows-1251, Windows-1252, Windows-1254, Windows-1255, Windows-1258 - US-ASCII - Unicode: UTF-7, UTF-8, UTF-16 - Japanese: Shift_JIS, ISO-2022-JP - Cyrillic: KOI8-R - Simplified Chinese: GB2312, GB18030 - Traditional Chinese: Big5
OTA provisioning solution	OMA Client Provisioning 1.1
Protocols	POP3 and IMAP4
Push email	IMAP IDLE (extension of IMAP4 Rev1), OMA Email Notification 1.0 and scheduled checking, Exchange ActiveSync® (EAS)
Secure email	SSL/TLS, both port methods (POPS/IMAPS) and STARTTLS
HTML mail	Yes (tags removed)
Thumbnailed image attachments	Yes
Message management	User selectable inbox size, save messages to Memory Stick, arrange messages by date, size and Email address
ESMTP	Yes
Background sending	Yes

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Connectivity

Bluetooth™ wireless technology technical data

Dimension	Support
Bluetooth™ wireless technology capability statement	This phone supports Bluetooth Specification, version 2.0 with enhanced data rate (EDR)
Bluetooth™ wireless technology 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 Human Interface Device Profile Object Push Profile Personal Area Networking Profile Phonebook Access 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 between the connected devices and the occurrence of obstacles. Up to 10 metres (33 feet)
Transmission power	Class 1, typical +3 dBm or 2 mW
Frequency band	2.4 GHz – the unlicensed ISM band
Power consumption	GSM host processor excluded: • Standby, Bluetooth On mode: <0.6 mA • Voice to headset (HV3 master): 11 mA (7 mA with EDR functionality, 2EV3 master). Dependent on various parameters such as if the phone is master or slave • Data mode average: 27mA at 172.8 Kbps symmetrical (DH1) •
Data transmission rate	• Data speed at least 800 Kbps on a Dial-up Networking connection (requires access to HSDPA network and may be limited by capacity situation on the 3G base station) • Data speed typically 1.0 Mbps on an Object Push connection between two phones (in case of using similar phones and if no other Bluetooth devices are connected)

OMA Data Synchronization (SyncML™) technical data

Feature	Support for Sync ML
SyncML compliance	The phone is fully SyncML compliant, having passed SyncML Conformance testing. OMA DS 1.2 or OMA DS 1.1.2 is used depending on configuration and both are supported in Server-alerted synchronization
Basic data formats	Contacts: vCard 2.1, Calendar: vCalendar 1.0 (vEvent) Tasks: vCalendar 1.0 (vTodo) Notes: text/plain, Bookmarks:vBookmark 1.0
Possibility for operators to extend SyncML functionality	The device may be configured to include preset SyncML settings, and to control whether SyncML 1.1 or SyncML 1.2 will be used
Transport method for SyncML messages	HTTP, HTTPS, OBEX (USB, Bluetooth)
Possibility for the user to configure login parameters (for example, username and password) to access the remote database	Yes
Configuration parameters that can be entered/modified by the user	Server URL, Username, User PWD, Paths to databases (Calendar, Contacts, Notes, Tasks and Bookmarks), UserID and PWD for databases, Databases to be synchronised (On/Off), Internet profile, Synchronization interval, Server ID and Server PWD, permission to allow server-alerted synchronization and roaming options. Can be provisioned with OMA Client provisioning v1.1 and OMA Device Management v1.2
Ability to deal with multiple servers	Yes
Ability to perform conflict resolution actions	Yes

Microsoft® Exchange ActiveSync®

Feature	Support for Exchange ActiveSync
Protocol version	The phone supports version 2.5 of Microsoft Exchange ActiveSync
Supported applications	Email, Calendar, Phonebook
Transport method used	HTTP, HTTPS
Possibility for the user to configure login parameters for remote server	Yes

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Feature	Support for Exchange ActiveSync
Configuration parameters that can be entered/modified by the user	Server URL, username, domain name, password, applications to sync, email message size, email attachment size, email date range, message alert sound, calendar date range, interval sync, secure connection, roaming option
Ability to perform conflict resolution	No

Web browser technical data

Feature	Support in the browser
Bookmarks	Yes, with folders and sorting supported
Bookmark Export/Import	Yes, can be sent and received using vBookmark format using Bluetooth™ wireless technology, SMS, MMS and email
Browser compliancy	The Web browser is compliant with the following standards: HTML ver. 4.01 XHTML Basic 1.0 XHTML 1.1, Module-based XHTML XHTML Mobile profile WML 1.3 Cascading Style Sheets, level 2 revision 1, CSS 2.1 Specification Wireless CSS Specification, Version 26-Oct-2001 (WAP-239-WCSS-20011026-a) ECMA-script according to specifications found at http://www.ecma-international.org/publications/standards/Stnindex.htm ECMAScript Mobile Profile AJAX Document Object Model Level 2 (DOM 2) Scalable Vector Graphics, Mobile SVG Profile: SVG Tiny, version 1.2 For further details, see the *WAP User Agent strings and profiles for Sony Ericsson mobile phones* Developers guidelines at Developer World http://developer.sonyericsson.com/
Browser version	Access NetFront 3.4
Cache	Yes (size 2 MB)
Character sets *	Most standard character sets, among others UTF-8 (Default), UTF-16, USASCII, Latin1, UCS2. For updated and detailed information, see the *WAP User Agent strings and profiles for Sony Ericsson mobile phones* Developers guidelines at Developer World http://developer.sonyericsson.com/ * When creating pages, it is recommended to always save the page contents as UTF-8.
Clear cache	Yes, persistent. By user interaction, at SIM card change or master reset
Frames	Full Frame support: Frames, IFrames

Feature	Support in the browser
Image formats and animations	GIF (interlaced and non-interlaced) WBMP, JPEG, PNG, BMP and SVG. Animated GIFs, animated SVG and Flash
Schemes	Http:, https:, rtsp:, mailto:, smsto:, mmsto:, tel:, wtai:
Streaming	Progressive download, RTSP, Java script controls
Web feeds	Ticker, podcasts, enclosures, OPML import. No support for ATOM
User agent profile	
User Agent Profiles	Yes, list of client characteristics - for example, screen size. For details, see the *WAP User Agent strings and profiles for Sony Ericsson mobile phones* Developers guidelines at Developer World http://developer.sonyericsson.com/
URL sent pointing to the UA profile at the beginning of browser session	Yes. For details, see the *WAP User Agent strings and profiles for Sony Ericsson mobile phones* Developers guidelines at Developer World http://developer.sonyericsson.com/
Download	
OMA download functionality	Yes
HTTP GET solution to download content/ Uses browser for download	Yes
Other download content	Yes. No download limit when using HTTP protocol
Download application/product memory check	Yes
Downloaded object solution	Yes. The user is informed where the content is saved and asked if it should be used at once or later
UAP indication for downloading	Yes
Other features	Yes. Save, delete, forward, use, manage
Object formats	All formats can be downloaded and saved, but only formats supported by the phone can be used by the phone
Resume	Yes
Background download	Yes
Progressive download	Yes
Streaming	Yes
Browser navigation	
Selection keys	Yes. Two selection keys and centre navigation key
Search from standby	Yes. Enter address, search the web or bookmarks.
Separate/dedicated back or erase keys	Yes

Feature	Support in the browser
Display backlight on when browsing	Yes
Predictive writing	Yes
"http://" string displayed automatically when entering URLs	Not displayed but the "http://" is added automatically to the URL
"www" added automatically when entering URLs	Yes
Combined Search/Go To input field	Intelligent input field changes appearance (Search or Go to) depending on user input. "www", ".com" and other URL syntax can be used to trigger the Go To appearance
Internet network features	
Bluetooth™ wireless technology (as local connection)	Yes
Infrared (as local connection)	No
Network settings	Yes
PPP Authentication	PAP, CHAP supported
Security	HTTPS authentication TLS version 1 SSL version 3 WIM on SIM ICC X.509 certificate support, Mobile Profile WPKI OTA download of trusted certificates
USB (as local connection)	Yes
PUSH	
Content types	
Service Indication (SI)	Yes
Service Loading (SL)	Yes
Cache Operation (CO) content type	No
Session Initiation Application (SIA)	Yes
Man Machine Interface	
SI/content retrieval postponing	Yes
SI menu structure accessibility	Messaging, Inbox
SL reception warning	The user can make a choice if a dialogue is wanted or not before loading the SL

Feature	Support in the browser
SIA reception warning	Yes
Cache size limitations	The oldest push in the inbox will be discarded
Number of push messages	Depends on the size of the push messages. Around 20 push messages with a size of 1024 bytes URL and 1024 bytes Indications for Service Indication can be saved.
Push deactivate	Yes
Dynamic push menu changes	No. There are no changes in the menus when activating/deactivating push
Security	
Mechanisms for push	None
Trust with PPG	Sending a SIA is the most reliable
WSP push sessions	No
HTTP push sessions	The White List (a setting to allow push messages only from certain addresses) is supported for IP address
SMS connection-less push	The White List (a setting to allow push messages only from certain addresses) is supported for SMS Center
Denial of service/spoofing	Setting to select when to allow push messages: Always, always ask or never. There is also a setting to select whether to allow push messages from all senders or only from certain addresses (the White List)

Client Provisioning

Feature	Support
Provisioning types	**OMA Client Provisioning (v1.1)**
Total Parameter sets	25 (shared between the provisioning types) < or = 25 (total number of data accounts)
Parameter set list	See the *Device Management v4* Developers Guideline at Developer World http:// www.sonyericsson.com
Factory pre-configuration	Yes. This also provides the possibility to lock a setting
Security mechanism	
Bearer	

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Feature	Support
SMS	Uses security mechanism (SEC) methods according to OMA-WAP-ProvCont-v1_1-20050428-C (see www.openmobilealliance.org). 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
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 wireless security, both SSL/TLS connections and digital signatures
Applicative provisioning	
Preferred bearer customization	Yes
Other applications/features	Yes (MMS, Email, OMA Data Synchronization, Wireless Village, OMA Device Management, Streaming)
Technologies	
OMA Client Provisioning	Yes, Client Provisioning version 1.1
Nokia/Ericsson OTA	No
Openwave OTA	No
Other	No
Provisioning bearer	SMS

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Abbreviations

3GPP™

3rd Generation Partnership Project

AAC

Advanced Audio Coding

AAC+

High Efficiency AAC v.1

AJAX

Asynchronous JavaScript and XML

AMR

Adaptive Multi Rate. Audio format for speech sounds

AMR-NB

Adaptive Multi Rate Narrow Band

AMR-WB

Adaptive Multi Rate Wide Band, a more efficient codec that supports speech with higher quality

API

Application Programming Interface

Bluetooth PAN

Bluetooth Personal Area Network

CS

Circuit Switched

CSD

Circuit Switched Data

DRM

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

DTMF or Touch Tone

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

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 provides increased network capability

eAAC+

High Efficiency AAC v.2

EDR

Enhanced Data Rate

EFR

Enhanced Full Rate, speech coding

EMS

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

ETSI

European Telecommunications Standards Institute

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FM

Frequency Modulation of the (radio) carrier wave

FR

Full Rate, speech coding.**GIF**

Graphics Interchange Format

GPRS

General Packet Radio Services

GSM

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

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

HR

Half Rate, speech coding

HSCSD

High Speed Circuit Switched Data

HSDPA

High Speed Downlink Packet Access

HTML

HyperText Markup Language

HTTP

HyperText Transfer Protocol

JPEG

Joint Photographer Expert Group

MIDI

Musical Instrument Digital Interface

ME

Mobile Equipment

MP

Megapixel

MP3

Short for "MPEG-1 layer 3", an audio coding scheme

MPEG4/MPG4

Moving Picture Experts Group. MPEG-4 is a standard used primarily to compress audio and visual digital data.

MT

Mobile Termination

ODI

Object Distribution Indicator

OMA

Open Mobile Alliance

OTA

Over The Air

PDA

Personal Digital Assistant

PDP

Packet Data Protocol

PIM

Personal Information Management

PNG

Portable Network Graphic

QCIF

Quarter Common Intermediate Format

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

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

TTI

Transmission Time Interval

UI

User Interface

UMTS

Universal Mobile Telecommunications System

URL

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

USSD

Unstructured Supplementary Services Data

vCard

vCard automates the exchange of personal information typically found on a traditional business card, for use in applications such as Internet mail, voicemail, 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

WAV

Waveform audio format

WMA

Windows Media Audio

WMA Pro

Windows Media Audio Professional

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WBMP

Wireless BitMap.
A graphic format optimised for mobile computing
devices

WCDMA

Wideband Code Division Multiple Access

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**WWW**
World Wide Web

XHTML™

Extensible HyperText Markup Language

XML

Extensible Markup Language

Related information

Documents

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

Links

- www.sonyericsson.com/
- www.ericsson.com/mobilityworld/
- www.midi.org
- www.extendedsystems.com
- www.gsmworld.com/
- www.bluetooth.com
- www.imc.org
- www.3gpp.org
- www.etsi.fr

- www.openmobilealliance.org
- www.imc.org/pdi/
- www.w3.org/TR/xhtml-basic/
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February 2009

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