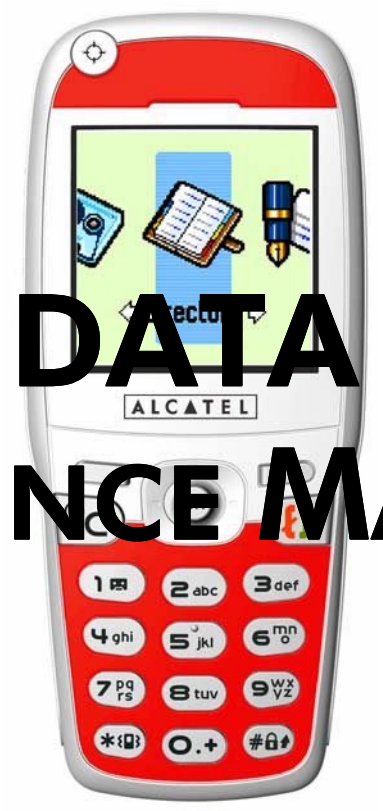
ALCATEL's ONE TOUCH™ 535



DATA REFERENCE MANUAL

SW/BH4/REFMAN/DATA - Document issue 1.0


ALCATEL

Document History

Version	Date	Author	Type of modification
0.1	12/11/2002	J. DEVRIES	Creation of the draft
0.2	27/11/2002	J. DEVRIES	Modifications agreed at review of 21/11/2002 entered in document.
1.0	04/12/2002	J. DEVRIES	Initial release following approvals

Table of Contents

1 Scope

This document will provide operators and service providers with a full understanding of the various data capabilities of ALCATEL's ONE TOUCH™ 535 handsets. These capabilities include the use of the handset as fax and modem. The functioning of the IrDA and serial link data transfer is also described.

2 References

2.1 Applicable Documents

Document Title	Reference	
Technical realisation of the SMS	3GPP TS 03.04	v4.4.0
Alphabets and Languages	3GPP TS 23.038	v7.2.0
DTE-DCE Interface for SMS and CBS	GSM 07.05 (January 1998)	v7.0.1
DTE-DCE Interface for SMS and CBS	ETSI TS 100 585	v7.0
AT Command Set for GSM Mobile Equipment	3GPP TS 07.07	v7.7.0
Asynchronous Facsimile DCE Control - Service Class 1	ITU-T T.31	08/95
Serial Asynchronous Automatic Dialing and Control	ITU-T V.25ter	07/97
ONE TOUCH™ 535 Data Pack documentation		v1.0

2.2 Glossary

APN	Access Point Name
AT command	“Hayes”-type modem Command
AT_	Accessory to Terminal path
BCD	Binary Coded Decimal
CBS	Cell Broadcast Service
CID	PDP context identifier
DCE	Data Circuit-terminating Equipment (or ME)
DTE	Data Terminal Equipment (or PC)
GAT	AT Session
HLR	Home Location Register
IP	Internet Protocol
IPCP	Internet Protocol Control Protocol
IrCOMM	Infrared serial link emulation layer
IrDA	Infrared Data Association (protocol)
IrMC	Infrared Mobile Communications
Kbps	Kilobits per second
LCP	Link Control Protocol
ME	Mobile Equipment (Terminal)

MMI	Man Machine Interface
MO	Mobile Originated
MOC	Mobile Originated Call
MS	Mobile Station (ME + SIM)
MTC	Mobile Terminated Call
NSAPI	Network Service Access Point Identifier
OBEX	Object Exchange
PAD	Packet Assembler Disassembler
PC	Personal Computer
PDP	Packet Data Protocol
PDU	Protocol Data Unit
PLMN	Public Land Mobile Network
PPP	Point-to-point protocol
PUK	Personal Unlocking Key
SC	Service Center
SCM	Stream Communication Manager
SDL	Serial Data Link
SIM	Subscriber Identity Module (“SIM card”)
SL	Serial Link
TA	Terminal Adapter
TA_	Terminal to Accessory path
TE	Terminal Equipment
UDH	User Data Header
vCalendar	Electronic appointment or schedule
vCard	Electronic business card
WAP	Wireless Application Protocol

3 Introduction

The ALCATEL ONE TOUCH™ 535 comes with data exchange capabilities which enable its user to exchange information between the handset and other devices and/or to use the handset as a data transmission device. These data exchange devices include:

- A serial link for wired connection to the PC.
- An IrDA wireless connection device (to be used either as a transmission device or as a modem).

This manual provides useful information on the capabilities of Alcatel's ONE TOUCH™ 535 and its specificity. That information includes a statement on support and compatibility with various environments, details on the serial link (supported signals, etc.).

Supported AT commands are listed in the last chapter, where details on Alcatel-specific behaviours are specified.

4 Support and Compatibility

The ONE TOUCH™ 535 data capabilities (IrDA transceiver and Data Serial Link) are compatible with the following working environments and hardware:

4.1 Environments

1.1.1 Compatible Environments/Driver Supplied

Alcatel supplies drivers for the environments listed below:

- WINDOWS 98, Millennium and XP;
- WINDOWS NT4[1] and 2000.

4.1.2 Compatible Environments

The following environments are also compatible and it would be possible to develop drivers for them.

- PALM OS versions 3 and 4;
- WIN CE enabled devices;
- PSION and SYMBIAN EPOC.

4.2 Hardware

- V.24 Serial Link (Sub-D connector, 9 pins);
- PCs equipped with an OBEX-compatible emulator (on the Serial or the USB port);
- Toshiba, Compaq, Dell, Sony and Sharp laptops (with native IrDA transceivers);
- Other IrDA-enabled Alcatel handsets;
- Nokia, Siemens and Ericsson IrDA-enabled handsets;
- NO direct synchronisation between Palm-like devices and ONE TOUCH™ 535;
- NO direct synchronisation between WIN CE-enabled devices and ONE TOUCH™ 535.

4.3 Services

- IrDA serial data link emulation (IrCOMM);
- vCard & vCalendar exchange via IrDA (OBEX);
- WAP Provisioning (PC application);
- Integrated Fax capability (9.6 Kb Class 1);

[1] Windows NT does not support USB, so any data link between a PC running in that environment and the ONE TOUCH™ 535 would need to use IrDA beaming as a serial link.

- GSM Data Modem (9.6 Kbps and14.4 Kbps);
- GPRS Modem Class 10 (56 Kbps);
- AT commands (refer to the AT commands section for full information on support);
- IrMC (IrDA standard for PIM synchronisation) is not supported;
- IrTranP (picture exchange protocol) is not supported;
- Bluetooth is not supported.

4.4 Applications

- GPRS IP address: Static & Dynamic;
- All PC browsing software (based on Windows RAS);
- *Dedicated software includes:* data modem; GPRS configuration wizard;
- Compatible for use with third-party AT command-enabled applications (e.g., FAX, WAP provisioning, SIM directory management), should operator wish to include such products in offer;
- Compatible PIMs of the local synchronisation application: MS Outlook Express /97/98/2000, Lotus Notes 4.5/4.6/5.0/6.0 and Lotus organizer 5.0/6.0 (via Mobile Phone Tools).

5 V.24 USB Connection

Alcatel's ONE TOUCH™ 535 comes with a USB connection link that enables a wired connection between the handset and the user's personal computer. This link is composed of: a USB cable and a ONE TOUCH™ 535-specific connector.

5.1 PC USB Connection Link

This USB connection links the PC's V.24 port to the ONE TOUCH™ 535 serial interface via the USB adapter. The connector is located in the back of the handset. The USB adapter uses a number of signals listed in the tables below.

5.2 Signal Use

This table lists the V.24 signals used by the USB connection:

Signal name	Description	Use
CD	Carrier Detect	not used
104 (RxD)	Received Data: adapter data signals transferred to the PC	**used**
103 (TxD)	Transmitted Data: PC data signals transferred to the adapter	**used**
108/2 (DTR)	Data Terminal Ready	**used**
102 (GND)	Ground	**used**
107 (DSR)	Data Set Ready	not used
105 (RTS)	Request To Send	**used**
106 (CTS)	Clear To Send	**used**
RI	Ring Indicator	not used

In the USB connection case, the DSR and CD signals follow DTR.

6 IrDA as Serial Link

The device does NOT support the use of both the IrDA transceiver and the Serial Link at the same time. This involves the following consequences:

- IrDA can not be activated while the serial link is inserted.
- IrDA is automatically deactivated when the serial cable is inserted (except when it is in connected state, that is to say, when the object exchange protocol is running).
- The serial link is not taken into account as long as the IrDA transceiver is in connected state.

However, thanks to an IrCOMM serial link emulator, IrDA may be used as a serial link, enabling the reception of data calls (such as a fax) without a connection.

When there is an incoming data call, and if the serial link is not connected, IrDA is automatically activated (after temporisation during which the user is invited to insert the serial link): IrDA therefore enables the call acceptance.

Note:the user may STILL insert the serial link, hence deactivating the IrDA.

Example of Data call being received through IrDA (IrDA icon appears in status bar):

Figure 6-1: Data call received via IrDA beaming connection

7 Modem Capabilities

The Integrated Data GSM terminal operates in Data Circuit-terminating Equipment (DCE) mode when it is connected to a PC via either the serial or the IrDA link). It is seen by the PC as a modem. The PC then is the Data Terminal Equipment (DTE). When the terminal enters DCE mode, a data application is considered to be attached to the terminal. This application detaches when the terminal exits DCE mode.

The ONE TOUCH™ 535 supports autobauding (automatic data transfer speed selection) when used as a modem. The Mobile Phone Tools software provided includes a wizard which will properly install the necessary ".INF" modem driver.

This .INF modem driver is provided by Alcatel, and contains all the information necessary to use the handset as a modem. Please check the .INF file actually provided with the DATA Pack.

Best results are obtained using GPRS but that requires sending a number of AT commands to activate the handset's GPRS capabilities. GPRS enables faster output but there remain network limitations.

For more information on the use of the ONE TOUCH™ 535 as a modem, please consult the documentation provided with the ONE TOUCH™ 535 DATA PACK. There is a CD-ROM with the data drivers, Mobile Phone Tools applications and end-user documentation.

8 Resource Sharing

8.1 Interoperability of Accessories

A number of accessories are available for the ONE TOUCH™715, including:

- Headset
- Car kit
- SMS Keyboard
- Serial Data Link
- IrDA

Because they share the same resources (ports), accessories may or may not be used at the same time, according to the table below:

	IrDA	SMS keyboard	Serial Data Link
IrDA		No	No
SMS keyboard	No		Yes
Serial Data Link	No	Yes	

8.2 Access Priority

1. IrDA transmission has priority over a jack accessory.

When a jack accessory is connected to the terminal during an IrDA transmission, the accessory is detected but the IrDA transmission is not interrupted.

Because the port is used by the IrDA transmission, the Headset accessory is recognised by default.

2. IrDA transmission has priority over the SMS keyboard.

If the SMS keyboard is connected to the terminal when an IrDA transmission is launched, then power is cut from the SMS keyboard and the port is dedicated to the IrDA transmission.

9 AT Commands

All wire modems support a signaling interface of the Hayes (AT) command type, including a subset common to most modems. For complete information about the AT commands, please refer to the standards documents referenced at the beginning of this document.

This chapter describes the behavior of the ONE TOUCH™ 535 terminal upon activation of data-related commands (SMS, Phonebook and Class 1 Fax, in particular).

9.1 Command Line Structure

AT is the prefix for all command lines. Commands can be separated by a space character or simply run together. There are basic commands (with no prefix, such as ATE, ATX, AT&D, etc.) and commands with parameters (setting=x). Parameters may be mandatory or optional.

To be compliant with the autobauding algorithm, a data application should always start the initialisation sequence by first sending the command: **AT** (this command is sent as many times as necessary for the handset to respond). Once the speed and data format are set, AT adaptation will leave the autobauding mode.

In general, each command supports a read, write or request function for possible parameter settings. A command line which does not include the attention string (AT) is ignored when terminated by a carriage return.

A command line is processed from the first encountered attention string (AT) to the carriage return character. Therefore, the characters preceding the first attention string are ignored, no matter what they are.

Space characters are ignored and can be used freely for formatting purposes, unless they are embedded in a string constant.

DTR state changes can be ignored or, if DTR signal goes from ON to OFF:

- All data calls opened by the AT Session are released.
- During two seconds, the AT commands are replied.

The response format depends on the command interpreter's mode (verbose or numeric). In verbose mode and in extended mode, the response to the action is sent to the PC and the command acknowledged with OK.

In numeric mode and extended mode, the response to the action is sent to the PC on the same line as the command, and is then acknowledged by the message return code: 0.

In non-extended mode, the response is located on the same line as the command. Neither OK nor a 0 return code is sent back to the PC.

9.2 Supported Commands

The selected list of AT commands below are supported by the ONE TOUCH™ 535. They concern data call , handset-terminal (DCE)-PC (DTE) interface, phonebook, SMS message (between PC and handset) and Class 1 Fax management. Fully detailed information on these commands, their optional parameters and possible responses is provided in the listed recommendations and source documents, most notably the AT Command Set for GSM Mobile Equipment.

IMPORTANT: *IMPORTANT:Commands marked with an asterisk (*) have specific ONE TOUCH™ 535 behaviours or support optional command parameters. Those behaviours, parameters and possible responses are described in the following section.*

Command Genre and Command		Definition
Generic DCE		**Recommendation V.25ter**
AT		Test
ATW		See user profile
ATZ	*	Load saved user profile into terminal (modifying current setting)
AT+GMI		Request manufacturer identification
AT+GMM		Request model identification
AT+GMR		Request revision identification, date of ME
AT+GSN		Request product serial number identification
AT&F		Reset
AT+FCLASS		Class of service identification
AT&V		View current profile
AT&W		Select connection message format
ATI	*	Read Terminal Characteristics
AT+WS46		Select wireless network
AT+CIMI		Request IMSI number (enables SIM identification)
AT+GCAP		Request complete Terminal Adapter (TA) capabilities list

Command Genre and Command		Definition
DTE/DCE CONTROL		**Recommendation V.25ter**
ATS	*	Read/Initialize S register (escape character, XON, XOFF, etc.)
ATE		Command echo
ATQ		Result code suppression
ATV		Modem response format
ATX		Result code selection
AT&C		Circuit 109 (DCD) behavior
AT&D	*	Circuit 108 (DTR) behavior
AT&K		Flow control management
AT+IPR	*	Fixed data rate
AT+ICF	*	Character framing
AT+IFC	*	DTE - DCE local flow control
AT+CMEE		Enable extended error codes
AT+CEER		Enable extended error report
AT+CRC		Enable extended result codes
Call Processing		**Recommendation V.25ter**
ATA		Answer (Incoming Call)
ATH		Hook control: hangs up any ongoing call
ATD	*	Dial including VOICE calls
ATO		Return to online Data state (after escape in signaling mode)
ATS0		Automatic acceptance or rejection of PDP context activation
GSM General		**Recommendation 07.07**
AT+CGMI		Request manufacturer identification

Command Genre and Command		Definition
AT+CGMM		Request model identification
AT+CGMR		Request revision identification, date of ME (V: xx y format, where: xx = software version and y = customer index
AT+CGSN		Request product serial number identification
AT+CSCS	*	Select TE character set
GSM Call Processing		**Recommendation 07.07**
AT+CBST	*	Select/Request GSM Bearer Service type
AT+CRLP	*	Select RLP configuration
AT+CR		Service reporting control
AT+CRC		Cellular result codes
AT+CEER		Extended error report (extended comments supplied for same command under DTE/DCE Control heading)
AT+CIWF		Select/read connection type
GSM Network		**Recommendation 07.07**
AT+CLCK	*	Facility lock
AT+CCFC	*	Call forwarding SS
AT+CCWA	*	Call Waiting SS
AT+CHLD	*	Call related supplementary services
AT+CLIP		Calling Line Identification Presentation
AT+CLIR		Calling Line Identification Restriction
AT+COLP		COnnected Line identification Presentation
AT+CAOC		Advice Of Charge
AT+CREG		Network Registration
AT+COPS	*	Operator Selection
AT+CLCC	*	List current calls

Command Genre and Command		Definition
TIA IS-101		**Recommendation TIA IS-101**
AT+VTS		Enables transmission of DTMF tones and arbitrary tones
AT+VTD	*	Sets the length of tones emitted as a result of AT+VTS
GPRS		**Recommendation 07.07**
ATD*99#		Request GPRS service
AT+CGDCONT	*	PDP Context Parameters specification
AT+CGQREQ	*	PDP Context Quality of Service Profile specification
AT+CGQMIN		PDP Context Minimum Acceptable Profile
AT+CGATT	*	GPRS Attachment Request (or Detachment)
AT+CGACT	*	PDP Context Activation (or Deactivation)
AT+CGDATA	*	Data State Activation
AT+CGADDR		Show a list of PDP Addresses
AT+CGAUTO		Enable/Disable automatic response to PDP context activation request from network
AT+CGANS	*	Response to network-generated PDP context activation request
AT+CGCLASS	*	Specified GPRS Mobile Class Configuration
AT+CGSMS	*	Mobile Originated SMS Messages Configuration Service
Control and Status		**Recommendation 07.07**
AT+CPAS		Phone activity status
AT+CPIN		Enter PIN code (CHV)
AT+CBC		Battery charge
AT+CSQ		Signal quality
AT+CCLK		Clock
AT+CALA		Set an alarm

Command Genre and Command		Definition
AT+CLAN	*	ME Language selection
AT+CPROT		Enter protocol mode
AT+PROV_WAP	*	WAP Provisioning protocol version checkout
Phonebook		**Recommendation 07.07**
AT+CPBS	*	Select phonebook memory storage
AT+CPBR		Read phonebook entries (between two indexes)
AT+CPBW		Write phonebook entry
AT+CPBF		Find phonebook entry
Class 1 Fax		**Recommendation TIA/EIA-578-B**
AT+FPR	*	Serial Link speed selection
AT+FTS	*	Stop transmission and wait
AT+FRS	*	Receive silence
AT+FTM	*	Facsimile transmit
AT+FRM	*	Facsimile receipt
AT+FTH	*	HDLC transmit
AT+FRH	*	HDLC receipt
PDU SMS Mode		**Recommendation 07.05**
AT+CSMS		Select message service (SMS version)
AT+CPMS	*	Select preferred SMS storage
AT+CMGF	*	SMS message type (format) between TE and ME
AT+CSCA		Select SMS Service Center address
AT+CSAS	*	Save variables set by +CSCA (SMS configuration profile)
AT+CRES		Restore settings saved by +CSAS

Command Genre and Command		Definition
AT+CNMI	*	Configuration command for message receipt by TE
AT+CNMA		New SMS PP message acknowledgement by TE
AT+CMGL	*	List SMS messages stored in specified memory
AT+CMGR		Read SMS message based on specified memory index
AT+CMGS		Send SMS message to network
AT+CMGD		Delete stored message
AT+CMGW		Write message to specified memory
AT+CMGC		Send SMS command to network
AT+CMSS	*	Send SMS message from specified memory

9.3 AT Commands ONE TOUCH™ 535-specific Behaviour

The following commands have ONE TOUCH™ 535-specific behaviors, which need to be detailed. For all other commands and for further information on AT commands, please refer to the recommendations listed in the previous section.

9.3.1 ATZ

On receiving the command, the terminal returns the user profile and the values of S registers S0, S2, S3, S4, S5, S32, S33 and S95. It also returns the settings in the following commands: ATV, ATE, ATQ, AT&C and AT&D AT&K, ATX, ATW, AT+CBST, AT+CRLP and AT+CIWF. Only one user profile can be saved by the terminal. ATZn is acknowledged by OK if n = 0 or if no setting is specified. ERROR is returned for all other settings of n.

If a call is in progress, the terminal hangs up using the AT&F command principle.

The OK response sent to the PC uses the old characteristics of the serial link (baud rates, data format) even if they have been changed. The new serial link characteristics are accepted by the PC on receiving the OK message. The OK response to this command is sent using the new parameter setting.

9.3.2 ATI

This command is used to obtain information on the terminal. Command parameter values for the ONE TOUCH™ 535 are:

0 and 1	ALCATEL + name of model;
2	ALCATEL;
3	approved software version;
4	name of model;

≥5 ALCATEL.

The response returns the same strings given above for each corresponding numeric value.

9.3.3 ATS

This command, ATSn=n, is used to read and write S registers. The S in the command is followed by a parameter-identifying integer. The second "n" is the parameter's value.

Values defined for S register parameters in the ONE TOUCH™ 535 include:

S Register	Values
S0	This register is used to activate the auto-answer function. When set to 0, the function is deactivated and a call is answered using the ATA command. When set to n, the terminal answers after n rings. Default setting: 0
S2	This register controls the Escape character. The escape sequence consists of three escape characters. Default setting: 43 (ASCII: +)
S3	This register controls the Carriage Return character. It is used to modify the ASCII code of this character. The default value is the single one supported by the mobile. ERROR is returned.for the other values. Default setting: 13
S4	This register controls the Line Feed character. It is used to modify the ASCII code of the character. 0x13 is a forbidden value. Default setting: 10 (Line Feed character LF, IA5 0/10)
S5	This register controls the Backspace character. It is used to modify the ASCII code of the character. 0x13 is a forbidden value. Default setting: 8 (Back Space character BS, IA5 0/8)
S32	This register controls the XON character. It is used to modify the ASCII code for XON. Default setting: 11h
S33	This registers controls the XOFF character. It is used to modify the ASCII code for XOFF. Default setting: 13h

S Register	Values
S95	This register controls the extended result codes. S95 is a bit mapped register, where each bit is a binary representation of a decimal number. This register can be updated via the ATW command. Bit roles are defined below: • Bit 0: Connect result code indicates modulation speed instead of the serial link speed; • Bit 1: Reserved; • Bit 2: Enable CARRIER result code; • Bit 3: Enable PROTOCOL result code; • Bit 4: Reserved; • Bit 5: Enable COMPRESSION result code; • Bits 6,7: Reserved. Default setting: 00

OK is returned for the above registers except in the case of:

- the S3 register, if the proposed value is different from the by-default value (13);
- the S4 and S5 registers, if the proposed value is equal to 0x13..

OK is returned for the other registers and for unknown registers.

9.3.4 AT&C

The command is supported for IrDA only. The by-default setting is 1.

9.3.5 AT&D

The by-default setting is 2.

9.3.6 AT+ICF

In the ONE TOUCH™ 535, the default settings are AT+ICF: 0,1 (autodetect and even parity).

9.3.7 AT+IFC

The ONE TOUCH™ 535 provides CT105 (RTS) and CT106 (CTS) signals on the serial link interface and supports only 0,0 and 2,2 settings.

9.3.8 ATD

This command is used to make an outgoing DATA , FAX or VOICE call. The command is followed by the character string to be dialled. This string is composed of dialling characters and dial modifiers.

The supported dialling characters are: from '0' to '9', 'A', 'B', 'C', 'D', '*', '#', '+'.

The 'D' dialling character should be ignored.

In order to initiate a VOICE call, the user application will terminate the dialing character string with the ';' modifier. Once the call is initiated, the TA returns to command state immediately (or after possible +COLP result code).

9.3.9 AT&K

This command, AT&Kn, is used to select the flow control mode between terminal and PC.

The by-default mode is flow control, if RTS/CTS are used (n=3).

Only the commands AT&K0 andAT&K3 are supported. All other parameter values return ERROR.

9.3.10 AT+CSCS

This command, AT+CSCS = [<chset>], enables selection of the character set used by the PC. The ME is then able to convert character strings correctly between DTE and DCE character sets.

Values defined for the [<chset>] parameter include:

GSM	GSM default aphabet. This is the by-default setting;
UCS2	16-bit universal multiple-octet coded character set (ISO/IEC 10646).

The AT+CSCS? and AT+CSCS=? commands are supported.

Any setting other than those specified generates the ERROR response.

IMPORTANT: *IMPORTANT:if the User application did not select the "UCS2" character set and characters are coded as UCS2 strings inside the Mobile, AT Adaptation sends UCS2-coded characters to the DTE.*

9.3.11 AT+CBST

This command, AT+CBST=[Transmission Speed[, Transmission Mode[, Connection Mode]]] is used to select a GSM bearer service. The AT+CBST? and AT+CBST=? commands are supported.

IMPORTANT: *IMPORTANT:if this command is received after an AT+FCLASS=1 command, it updates the FCLASS parameter to 0. A data call is set up upon receipt of an ATD command.*

Values defined for the [Transmission Speed] parameter include:

Setting	Mode
0	Autobauding (by default)
2 (*)	V.22 1200 bps
4 (*)	V.22bis 2400 bps
5 (*)	V.26ter 2400 bps
6 (*)	V.32 4800 bps
7	V.32 9600 bps
14	V34 14400 bps

66 (*)	1200 bps UDI
68 (*)	2400 bps UDI
70 (*)	4800 bps UDI
71	9600 bps UDI
75	14400 bps UDI

(*) These settings are only supported in non-transparent mode.

Values defined for the Transmission Mode parameter include:

Setting	Mode
0	Asynchronous (by default)

Values defined for the Connection Mode parameter include:

Setting	Mode
0	Transparent
1	Non-Transparent (by default)
2	Both, Transparent preferred
3	Both, Non-Transparent preferred

The by-default values for the Transmission Speed, Transmission Mode and Connection Mode parameters are 0,0,1 respectively (autobauding, asynchronous, non-transparent).

The transmission speed parameter updates the interconnection parameter for the AT+CIWF command, in conformance with the rule defined in the Appendix to this document.

The general response process is applied to this command except for the transmission speeds not supported in transparent mode. An ERROR message will be sent to the User application in response to the following commands:

AT+CBST=n,0,0n=2, 4, 5, 6, 66, 68, 70

9.3.12 AT+CRLP

This command, AT+CRLP = [<iws>[, <mws>[, <T1>[, <N2>[, <ver>[, <T4>]]]]]], is used to configure radio link protocol (RLP) system parameters:

- the RLP version is set by the <ver> parameter value;
- acknowledgment window size (maximum number of I frames that can be acknowledged) from IWF to MS is set by the <iws> parameter value;
- acknowledgment window size from MS to IWF is set by the <mws> parameter value;
- duration of the T1 timer; upon expiration of the timer unacknowledged frames are retransmitted;
- the maximum possible number of re-transmissions is set by the <N2> parameter value;

All parameters are optional.

AT+CRLP, AT+CRLP? The general response process is applied to this command. If unsupported settings are received, the ERROR message is returned to the PC.

AT+CRLP=? For the ONE TOUCH™ 535 product, the response is:

+CRLP: (0-61), (0-61), (45-255), (1-10), (0-1)

IMPORTANT: *IMPORTANT:in the ONE TOUCH™ 535, DATA objects support the T4 parameter.*

9.3.13 AT+CLCK

The execute command, AT+CLCK=<fac>,<mode>[,<passwd>[,<class>]], is used to lock, unlock or interrogate an ME or network facility.

The ONE TOUCH™ 535 implementation of this command supports the following <fac> parameter vallues:

SC	SIM (lock SIM card) (SIM asks password in ME power-up and when this lock command issued)
AO	BAOC (Barr All Outgoing Calls) (refer to GSM 02.88 clause 1)
OI	BOIC (Barr Outgoing International Calls) (refer to GSM 02.88 clause 1)
OX	BOIC-exHC (Barr Outgoing International Calls except to Home Country) (refer to GSM 02.88 clause 1)
AI	BAIC (Barr All Incoming Calls) (refer to GSM 02.88 clause 2)
IR	BIC-Roam (Barr Incoming Calls when Roaming outside the home country) (refer to GSM 02.88 clause 2)
AB	All Barring services (refer to GSM 02.30) (applicable only for <mode>=0)
AG	All outGoing barring services (refer to GSM 02.30) (applicable only for <mode>=0)
AC	All inComing barring services (refer to GSM 02.30) (applicable only for <mode>=0)
PN	Network Personalisation (refer to GSM 02.22)
PU	network sUbset Personalisation (refer to GSM 02.22)
PP	service Provider Personalisation (refer to GSM 02.22)
PC	Corporate Personalisation (refer to GSM 02.22)

The <passwd> parameter's string-type value is the same as the password specified for the facility via the ME user interface or input via the command Change Password +CPWD

The <class> parameter's value is a sum of integers each representing a class of information (by default value = 7). The ONE TOUCH™ 535 implementation supports the following values:

1	voice
2	data (refers to all bearer services with <mode>=2. This may refer only to some bearer services if TA does not support the values 16, 32, 64 and 128)
4	fax
8	short message service (SMS)
32	data circuit async

For the command AT+CLCK=<fac>,<mode>[,<passwd>[,<class>]], when <mode>=0 or 1, the general response process is applied.

9.3.14 AT+CCFC

This command, AT+CCFC= <reason>, <mode>[, <number>, [<type>, [<class> [,<subaddress>, <satype>,[,<time>]]]]]], allows control of the call forwarding supplementary service according to GSM 02.82.

Registration, erasure, activation, deactivation, and status query are supported. When querying the status of a network service (<mode>=2) the response line for the 'not active' case (<status>=0) should be returned only if the service is not active for any <class>.

All values defined for the command's parameters are supported, except in the case of [<classx>. The <classx> value is a sum of integers each representing a class of information (by default 7). Values supported for the [<classx> parameter include:

1	voice (telephony)
2	data (refers to all bearer services; with <mode>=2 this may refer only to some bearer service if TA does not support values 16, 32, 64 and 128)
4	fax (facsimile services)
8	short message service
32	data circuit async

9.3.15 AT+CCWA

This command, AT+CCWA = [<n>[, <mode>[,<class>]]], allows control of the Call Waiting supplementary service according to GSM 02.83 []. Activation, deactivation and status query are supported. When querying the status of a network service (<mode>=2) the response line for the 'not active' case (<status>=0) should be returned only if the service for any <class> is not active.

All values defined for the command's parameters are supported, except in the case of [<classx>. The <classx> value is a sum of integers each representing a class of information (by default 7). Values supported for the [<classx> parameter include:

1	voice (telephony)
2	data (refers to all bearer services; with <mode>=2 this may refer only to some bearer service if TA does not support values 16, 64 and 128)
4	fax (facsimile services)
8	short message service
32	data circuit async

9.3.16 AT+CHLD

This command, AT+CHLD = [n], enables the following speech call-related services in its ONE TOUCH™ 535 implementation:

- Call waiting
- Call hold
- Multiparty

It cannot be used while any data call is in progress (EstablishingActive or TransmissionActive).

Values defined for the <n> parameter include:

0	releases all held calls or sets User Determined User Busy (UDUB) for a waiting call;
1	releases all active calls (if any exist) and accepts the other (waiting or held) call;
2	places all active calls (if any are ongoing) on hold and accepts the other (held or waiting) call.

9.3.17 AT+COPS

This command, AT+COPS=[<mode>[,<format>[,<oper>]]], forces an attempt to select and register the GSM network operator.

All values defined for the set command's parameters are supported

In the response to the test command (AT+COPS=?), , the returned list of the operators is restricted to the current, available and Forbidden PLMN. The format of that response is:

+COPS: [list of supported ([<stat>, long alphanumeric <oper>, short alphanumeric <oper>, numeric <oper>)s]
[, , (list of supported <mode>s), list of supported <format>s]

For this command, supervision timers are armed in the DTE when the processing of some transactions that require further interaction with the GSM/GPRS network begins.

If the action is successfully finished before the timer expires, the timer should be released. Otherwise, if the timer expires before the action is finished, command processing is stopped, all the resources are released, and ERROR is sent to the PC. The actions and the corresponding timer values are listed below.

ActionTimer Value

Automatic operator selection60 seconds

Manual operator selection60 seconds

Operator selection termination20 seconds

List available PLMNs15 seconds

9.3.18 AT+CLCC

This command, AT+CLCC, is used to return the list of the current calls of the ME. If no calls are available but the command executes successfully, no information response is sent to the TE.

When the +CLCC command executes successfully, its reply format can be:

[+CLCC: <id1>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>[,<alpha>]]

[<CR><LF>+CLCC:
<id2>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>[,<alpha>]]

All values defined for the response parameters are fully supported except in the case of the <mode> parameter. The ONE TOUCH™ 535 supports the following values for the <mode> parameter:

0	Voice
1	Data
2	Fax

9	Unknown

9.3.19 AT+VTD

The "Zero" value sets a “manufacturer specific” value. This value corresponds to a duration of 100ms.

9.3.20 AT+CGDCONT

Only the point-to-point (PPP) protocol value can be implemented using this command’s <PDP_type> parameter. Inputting any of the other values (X25, IP, OSPIH) identified in the 3GPP TS 07.07 returns an error code.

The by-default PDP context (used by ATD*99#) cannot be modified by the command AT+CGDCONT.

9.3.21 AT+CGQREQ

Although the possibility of defining more than one PDP context has been reserved in the ONE TOUCH™ 535 (see AT+CGDATA command comments below), only one defined PDP context definition can be activated.

9.3.22 AT+CGATT

The 3GPP TS 07.07 states, “Any active PDP contexts will be automatically deactivated when the attachment state changes to detached.” Given that two applications might simultaneously be using the GPRS connection, ALCATEL has implemented an adaptation to avoid untimely session closure: If there is an embedded application such as the WAP running when the command AT+CGATT=0 is issued, detachment does not occur.

9.3.23 AT+CGACT

According to the 3GPP TS 07.07 (section 10.1.5):

- if no <cid>s are specified the activation form of the command activates all defined contexts;
- if no <cid>s are specified the deactivation form of the command deactivates all active contexts.

In the ONE TOUCH™ 535:

- if the [<cid>] parameter’s value is unknown, that is to say no value is supplied, issuance of the AT+CGACT command activates the by-default PDP context;
- if the [<cid>] parameter value supplied is unknown, an ERROR message is returned to the PC.

The by-default PDP context is defined by the command AT+CGDCONT.

9.3.24 AT+CGDATA

This command causes the mobile termination (MT) to perform such actions as are required to set up TE-network communications via one or more GPRS PDP types. The syntax, as defined in the 3GPP TS 07.07 (section 10.1.6), includes two optional parameters:

- [L2P*and*
- [,cid [,cid [,…]]]]

L2P is a string parameter that indicates the layer 2 protocol to be used between the TE and the MT. The ONE TOUCH™ 535 supports only the PPP value.

<cid> is a numeric parameter that specifies a particular PDP context definition (context id). If several <cid> parameters are located in this command, the AT manager implements only the first one (see comments on the AT+CGQREQ command above).

9.3.25 AT+CGANS

a network request for GPRS PDP context activation is not supported by the ONE TOUCH™ 535.

9.3.26 AT+CGCLASS

The set command is used to set the MT to operate according to the specified GPRS mobile class: A, B, CG (class C in GPRS-only mode) or CC (class C in circuit-switched only mode).

The ONE TOUCH™ 535 supports the B, CG or CC settings

9.3.27 AT+CGSMS

Only the AT+CGSMS? and AT+CGSMS=? commands are supported.

9.3.28 AT+CLAN

The set command is not supported in the ONE TOUCH™ 535.

The read command gives the current language as output. If the language has been set to "AUTO", the read command returns the current language set from the SIM card. Hence, the "AUTO" code is never returned by the read command.

The test command returns supported <code>s.

9.3.29 AT+PROV_WAP

This ONE TOUCH™ 535 proprietary command checks the version of the WAP provisioning protocol. It may read, delete, modify or create a Profile Object.

9.3.30 AT+CPBS

The set command AT+CPBS=<storage> selects the phonebook storage memory. The ONE TOUCH™ 535 supports the following <storage> parameter values, among those reserved by the 3GPP TS 07.07 (section: 8.11)

FD	=	FDN
LD	=	LND (Last Number Dialled list)*
MC	=	Missed call
ON	=	MSISDN*
RC	=	Received calls
SM	=	ADN (phonebook by default)

It does not support the following values, also reserved:

ME	=	ME*
DC	=	ME dialled calls list
EN	=	SIM (or ME) emergency number
MT	=	combined ME and SIM phonebook
TA	=	TA phonebook

9.3.31 AT+FPR

This command is used to select the serial link speed

Command syntax: AT+FPR=<setting>

IMPORTANT: *it will execute the command AT+IPR=<setting> Default setting is 0. AT+FPR? and FPR=? are supported.*

Formats:

Setting	Speed
0	Autobauding (default)
1	Serial link speed 2400
2	Serial link speed 4800
4	Serial link speed 9600
8	Serial link speed 19200

Response:

OK is returned for settings 0, 1, 2, 4 and 8. ERROR is returned for other settings.

9.3.32 AT+FTS

The unit of time is 10 ms

9.3.33 AT+FRS

The unit of time is 10 ms.

9.3.34 AT+FTM

The ONE TOUCH™ 535 will return:

+FTM: 96

9.3.35 AT+FRM

The ONE TOUCH™ 535 will return:

+FTM: 96

9.3.36 AT+FTH

The modulation rate has only one possible setting - 3 - specifying V.21 modulation at 300 bits/sec

9.3.37 AT+FRH

The modulation rate has only one possible setting - 3 - specifying V.21 modulation at 300 bits/sec

9.3.38 AT+CSMS

The ONE TOUCH™ 535 supports two of the three values reserved by the 3GPP TS 07.05 for this command's <Setting> parameter:

- mt1=mobile terminated (MT) SMS supported;
- mo1=mobile-originated (MO) SMS supported;
- bm0=broadcast message (BM) SMS not supported.

9.3.39 AT+CPMS

This command is used to select three memories for SMS storage:

- MEM1 is selected for all SMS read and delete actions (commands AT+CMGL, +CMGR and +CMGD);
- MEM2 is selected for all SMS write and send actions (commands AT+CMSS and +CMGW);
- MEM3 is selected as the preferred SMS storage.

The only setting supported is "SM", which corresponds with the lists managed in the SIM card for point-to-point SMS messaging (SMS PP).

9.3.40 AT+CMGF

This command, AT+CMGF=[<mode>], is used to define input and output message format (=mode) for the TA. Two values are reserved for the [<mode>] parameter by the 3GPP TS 07.05:

- 0=packet data unit (PDU) mode (by default when implemented);
- 1=text mode.

The ONE TOUCH™ 535 supports only the PDU value (0).

9.3.41 AT+CSAS

The execution command, AT+CSAS[=<profile>], saves active message service settings to a non-volatile memory. A TA can contain several manufacturer-specific settings profiles, numbered from 0 through 255.

ALCATEL has reserved the numbers 0 through 5 in which to store those formats, with "0" the by-default setting.

9.3.42 AT+CNMI

The set command, +CNMI=[<mode>[,<mt>[,<bm>[,<ds>[,<bfr>]]]]], selects the procedure used for signalling the reception of new messages from the network to the TE, when the TE is active (DTR signal is ON).

The relevant technical specification, the 3GPP TS 07.05 identifies four values for the [<mode> parameter. The ONE TOUCH™ 535 supports values 0, 1 and 2 and is set by default to 0.

The TS identifies four values for the [,<mt> parameter. The ONE TOUCH™ 535 supports values 0, 1 and 3 and is set by default to 0.

The TS identifies four values for the [,<bm> parameter. The ONE TOUCH™ 535 supports value 0 only.

The TS identifies three values for the [,<ds> parameter. The ONE TOUCH™ 535 supports values 0 and 1 and is set by default to 0.

The TS identifies two values for the [,<bfr> parameter, both of which are supported by the ONE TOUCH™ 535. The by-default setting is 0.

9.3.43 AT+CMGL

This command, AT+CGML [=stat], returns messages with status value <stat> from preferred message storage <mem1> to the TE. In the ONE TOUCH™ 535 the only supported setting is 4 for "all", so the returned list represents all stored messages. The AT+CMGL=? command is supported.

9.3.44 AT+CMSS

This command, AT+CMSS=<index>[,<da>[,<toda>]], is used to send a message with location value <index> from message storage <mem2> to the network (SMS-SUBMIT or SMS-COMMAND). The optional new recipient <da> address parameter reserved by the GSM 07.05 Version 5.5.0/January 1998 3GPP TS 07.05 is not implemented in the ONE TOUCH™ 535.

9.4 Unsupported AT commands

9.4.1 Recognised commands

The commands listed below are not supported by the ONE TOUCH™ 535 but they are recognised by the terminal. That means that they generate error messages for the PC (ERROR) when receiving read, write or request actions related to them.

- AT&Y (management of parameters upon terminal power-up).
- MNP protocols: AT\A, AT\N, AT\G, AT\B, AT\L, AT\K.

9.4.2 Unknown commands

The commands listed below are not supported by the ONE TOUCH™ 535. They are not recognised at all by the terminal therefore do not generate error messages.

A/:	repeat last command	AT+COPN:	Read operator names
AT+CSTA:	select Type of address	AT+CALM:	Alert sound mode
AT+CMOD:	call mode	AT+CRSL:	Ringer sound level
AT+CHUP:	HangUp call	AT+CVIB:	Vibrator mode
AT+CHST:	HSCSD command	AT+CLVL:	Loudspeaker volume level
AT+CHSN:	HSCSD command	AT+CMUT:	Mute control
AT+CHSC:	HSCSD command	AT+CACM:	Accumulated call meter
AT+CSNS:	single numbering scheme	AT+CAMM:	Accumulated call meter maximum
AT+CNUM:	subscriber number	AT+CPUC:	Price per unit and currency table
AT+CPWD:	change password	AT+CCWE:	Call Meter maximum event
AT+CCUG:	closed user group	AT+CPWC:	Power class
AT+CUSD:	unstructured supplementary service data	AT+CLAE :	Language Event

AT+CFUN:	set phone functionality
AT+CMEC:	mobile equipment control mode
AT+CKPD:	keypad control
AT+CDIS:	display control
AT+CMER:	mobile equipment event reporting
AT+CPBF:	find phonebook entries
AT+CRSM:	restricted SIM access
AT+CMSS:	send message from storage
AT+CESP:	enter SMS Block Mode Protocol
AT+CSCC:	secure control command
AT+CSSN:	supplementary service notifications
AT+CIND:	indicator control
AT+CSIM:	generic SIM access
AT+ILRR:	DTE-DCE Local Rate Reporting
AT+CLCC:	list current calls
AT+CVHU:	Voice hang-up control
AT+CPOL:	Preferred operator list

AT+CSGT:	Set Greeting Text
AT+CSVM:	Set Voice Mail Number
AT+CRMP:	Ring Melody Playback
AT+CMAR:	Master Reset
AT+CLAC:	List all available AT commands
AT+VBT:	buffer threshold setting
AT+VCID:	calling number ID presentation
AT+VGR:	receive gain selection
AT+VGT:	transmit gain selection
AT+VIP:	initialize voice parameters
AT+VIT:	inactivity timer
AT+VLS:	line selection
AT+VRX:	receive data state
AT+VTX:	tone duration
AT+VTX:	transmit data state
AT+VSM:	select compression method
AT+CGLPAD:	sets value of a specified X.3 PAD parameter in the local PAD
AT+CGREP:	enables/disables sending of unsolicited result codes
AT+CGREG:	GPRS network registration status

10 <.INF> Modem Driver

The <.INF> modem driver file is provided in the ONE TOUCH™ 535 DATA PACK. Driver installation is user-friendly: an installation wizard takes the user through the process. For additional information on modem driver installation and configuration, please refer to the documentation provided with the dedicated *Mobile Phone Tools for Alcatel ONE TOUCH™ 535*. package.

END OF DOCUMENT