

AT Command Set for Nokia TDMA Products

Version 1.0; January 31, 2003

Messaging

NOKIA

Contents

1	Introduction	6
1.1	AT Command Syntax.....	7
1.1.1	Semantics.....	7
1.1.2	Result-code and information-responses.....	8
1.2	Term Definitions.....	8
1.3	DSC Global States.....	8
2	Commands	10
2.1	ATA Answer.....	10
2.2	ATD Dial.....	10
2.3	ATEn Command Echo.....	10
2.4	ATH Hook Control.....	10
2.5	ATO Return to Online Data State.....	10
2.6	ATI Request Identification Information.....	11
2.7	ATLn Speaker Volume.....	11
2.8	ATMn Speaker Mode.....	11
2.9	ATQn Result-Code Suppression.....	11
2.10	ATS0 Automatic Answer.....	12
2.11	ATS3 Termination Character.....	12
2.12	ATS4 Line-Feed Character.....	12
2.13	ATS5 Editing Character.....	12
2.14	ATS6 Pause Before Blind Dialing.....	13
2.15	ATS7 Connection Timeout.....	13
2.16	ATS8 Comma Time.....	13
2.17	ATS10 Automatic-Disconnect Delay.....	14
2.18	ATVn Response Format.....	14
2.19	ATXn Call-Progress Monitoring.....	14
2.20	ATZ Hard Reset to Default Configuration.....	15
2.21	AT&Cn Received Line Signal Detector.....	15
2.22	AT&Dn Data Terminal Ready.....	15
2.23	AT&F Soft Reset to Default Configuration.....	15
2.24	AT+CBC Battery Charge.....	16
2.25	AT+CCS Compression Status.....	16
2.26	AT+CDNN Device Nickname.....	17
2.27	AT+COS Originating Service.....	17
2.28	AT+CRC Cellular Result Codes.....	18
2.29	AT+CSM Service Menu.....	18

2.30	AT+CSQ Signal Quality.....	19
2.31	AT+CSS Serving System	20
2.32	AT+CTA Mobile-Terminated Async Data Calls.....	20
2.33	AT+CTD Mobile-Terminated Direct Async Data Calls.....	22
2.34	AT+CTF Mobile-Terminated Fax Calls.....	23
2.35	AT+CTV Mobile-Terminated Voice Calls.....	24
2.36	AT+DR Data-Compression Reporting.....	25
2.37	AT+DS Data-Compression Selection.....	26
2.38	AT+EB Break Handling.....	27
2.39	AT+EFCS Frame Check Sequence.....	27
2.40	AT+ER Error-Control Reporting.....	28
2.41	AT+ES Error-Control Selection.....	28
2.42	AT+ETBM Call-Termination Buffer Management.....	28
2.43	AT+FAA Adaptive Answer.....	29
2.44	AT+FBO Bit Order.....	30
2.45	AT+FCC DCE Capabilities and AT+FIS Current-Session Parameters.....	30
2.46	AT+FCLASS Service Identification and Selection.....	32
2.47	AT+FCR Capability to Receive.....	33
2.48	AT+FHS Call-Termination Status.....	33
2.49	AT+FKS Session Termination.....	33
2.50	AT+FLI Local ID String.....	34
2.51	AT+FLO Flow-Control Select.....	34
2.52	AT+FNR Negotiation Reporting.....	34
2.53	AT+FPP Packet-Protocol Control.....	35
2.54	AT+FPR Port-Rate Control.....	35
2.55	AT+GCAP MT Capabilities.....	35
2.56	AT+GMI Manufacturer Identification.....	36
2.57	AT+GSN Read Electronic Serial Number.....	36
2.58	AT+ICF Data-Port Character Framing.....	36
2.59	AT+IFC Data-Port Flow Control.....	36
2.60	AT+ILRR Data-Port Local Rate Reporting.....	37
2.61	AT+IPR Fixed DTE Rate.....	37
2.62	AT+MR Modulation Reporting.....	38
2.63	AT+MS Modulation Selection.....	38
2.64	AT+WS46 Wireless Stack.....	39
2.65	AT<DC1> XON.....	39
2.66	AT<DC3> XOFF.....	40

3	Terms and Abbreviations	41
4	References	43

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AT Command Set for Nokia TDMA Products

Version 1.0; January 31, 2003

1 Introduction



Figure 1: Nokia 6360



Figure 2: Nokia 3360

The following document describes the AT commands that can be used with Nokia 6360 and 3360 TDMA phones. Included are brief descriptions of the commands, the syntax, the possible setting values, and responses of the AT commands.



Figure 3: Nokia 6360 with DLR-3P cable attached

Computers use AT commands to communicate with modems. Most communications applications, however, have a user interface that hides these AT commands from the user. AT commands can be issued via a communications application. A data cable allows you to use your phone as a wireless

modem for your PC. When the software in the Nokia product receives an AT command, it responds with a message that is displayed on the device's screen.

1.1 AT Command Syntax

The "AT" or "at" prefix must be included at the beginning of each command line. Several AT commands can be typed on the same line, and in those cases the AT or at prefix is needed only at the beginning of the command line.

The <n> used in command syntax is the setting value typed in as a part of the command. If the value is optional it is enclosed in square brackets.

[] brackets indicate an optional element.

< > brackets indicate a named element. In an actual command, the named element is replaced by an allowed value.

IRA control characters may be represented by their boldface acronym enclosed by angle brackets, e.g., IRA 1/0 may be represented by <DLE>. The brackets do not appear in the command line.

The following syntax rules apply:

- If an optional element is omitted in a single-element command, the element's default value is assumed, e.g., H is the same as H0.
- If an optional element is omitted in a multi-element write command, the omitted element is ignored, e.g., +DS=3,1 will not affect the existing compression settings for <max_dict> and <max_string>.
- If an optional element is omitted in a multi-element action command, the omitted element's default value is assumed, e.g., +CSLM=0,,,0 is the same as +CSLM=0,0,0,0.
- If all action-command subparameters are default values or are omitted, the equal sign may also be omitted, e.g., +CSLM will be the same as +CSLM= or +CSLM=0,0,0,0.
- Any trailing commas after the last included element may be omitted.

1.1.1 Semantics

The following subsection describes how the MT and BMI will interpret the command. The values column may include values with descriptions:

0 specifies what the MT or BMI should do if <value> has been set as indicated.

Unless stated otherwise, the MT or BMI will support all specified values.

All unspecified values are reserved.

Underlining indicates the required default value.

Classified by type, commands comprise the following:

- *Action* commands initiate immediate action at the MT, the BMI, or both.
- *Write* commands write a value to a stored parameter. This parameter will affect operation of the MT, the BMI, or both. A parameter may include subparameters.

- *Read* commands read the value of a parameter stored at the MT or the BMI. These commands end with “?”.
- *Test* commands return the parameter values supported by the MT or the BMI. These commands end with “=?”.

1.1.2 Result-code and information-responses

The title comprises the result-code or information response variable name (e.g., RC_OK) followed by the verbose syntax (e.g., OK). The paragraphs immediately following the title describe the result code or information response.

S3 indicates the contents of the S3 register, S4 indicates the contents of the S4 register, and a blank cell indicates a null header or trailer.

In the body column, [] brackets indicate an optional element and < > brackets indicate a named element. In an actual result code or information response, the named element is replaced by an allowed value. The brackets do not appear in the body. Any trailing commas after the last included element can be omitted. Underlining indicates the required default value.

1.2 Term Definitions

Decimal-coded octet

One to three IRA characters within the following range: IRA 3/0 to IRA 3/9. The characters will represent the decimal code of an octet, e.g., 0 will represent 0000 0000 and 255 will represent 1111 1111. Unless otherwise specified, the MT will not issue leading zeros, e.g., 1 will be issued, not 001, and the default value of any decimal-coded octet will be null.

Hex-coded octet

A pair of IRA characters within the following range: IRA 2/0, IRA 3/0 to IRA 3/9, and IRA 4/1 to IRA 4/6. Each pair of IRA characters will represent the hex code of an octet, e.g., 1A 03 will represent the following two octets: 0001 1010 0000 0011. If necessary, values will be padded with trailing zeros to an octet boundary, e.g., 101 will be coded as A0. Unless otherwise specified, the MT will issue space characters between pairs of hex-coded octets sent to the DTE, and the default value of any hex-coded octet will be null.

Printable IRA character

A character in the range IRA 2/0 to 7/14, not including IRA 2/2 or 5/12. Any character (i.e., control characters or printable characters) can be included in a string by using the mechanism of V.25 *ter* §5.4.2.2, i.e., the character will be coded using a backslash followed by two digits representing the hex value of the character. Unless otherwise specified, the default value of any character string will be the null string.

1.3 DSC Global States

At any given time, the MT and BMI DSCs operate in one of the following three global states, which are similar to the three identically named states described in V.25 *ter* §3:

Command State

In *Command State*, the MT accepts from the DTE user-network commands, and it issues to the DTE network-user responses. The MT may or may not be connected to a BMI. The BMI is not connected to a far-end DCE. If the MT is not connected to a BMI, commands execute at the MT and responses issue

from the MT. If the MT is connected to a BMI, commands execute at the MT, the BMI, or both; responses issue from the MT or the BMI.

Online Command State

In *Online Command State*, the MT accepts from the DTE user-network commands, and it issues to the DTE network-user responses. The MT is connected to a BMI, and the BMI is connected to a far-end DCE. Commands execute at the MT, the BMI, or both; responses issue from the MT or the BMI.

Online Data State

In *Online Data State*, the MT transfers user data. The MT is connected to a BMI, and the BMI is connected to a far-end DCE. The MT accepts from the DTE user data, which it delivers to the BMI. The BMI, in turn, transfers the user data to a far-end DCE. The BMI receives from the far-end DCE user data, which it transfers to the MT. The MT, in turn, delivers the user data to the DTE.

2 Commands

2.1 ATA Answer

The A command answers a mobile-terminated call.

Command
D[<dial string>][:]

2.2 ATD Dial

The D command originates a call.

Command
D[<dial string>][:]

2.3 ATEn Command Echo

The En command enables and disables echoing of command characters.

Command	Values
E[<value>]	0 Do not echo command characters. <u>1</u> Echo command characters.

2.4 ATH Hook Control

The H command disconnects the call. Within a command line, any commands that appear after the H command will be ignored.

Command	Values
H[<value>]	0 Disconnect the call and release the traffic channel.

2.5 ATO Return to Online Data State

The O command returns the MT and BMI DSCs to *Online Data State*.

Command	Values
O[<value>]	0 Return to Online Data State.

2.6 ATI Request Identification Information

This command displays information about the product.

Command	Response	Description
I1	(product serial number)	
I2	(product version)	
I3	(product name)	
I9	(plug and play info)	
I4-I8 and I10-I255		Dummies that are just accepted

2.7 ATLn Speaker Volume

The Ln command does nothing. The MT responds to provide compatibility with the speaker-volume command in V.25 *ter* § 6.3.13.

Command	Values
L[<value>]	0 Low speaker volume. 1 Low speaker volume. 2 Medium speaker volume. 3 High speaker volume.

2.8 ATMn Speaker Mode

The Mn command does nothing. The MT responds to provide compatibility with the speaker-mode command in V.25 *ter* § 6.3.14.

Command	Values
M[<value>]	0 Speaker off. 1 Speaker on until carrier detected. 2 Speaker always on when off hook.

2.9 ATQn Result-Code Suppression

The Qn command enables and disables result codes.

Command	Values
Q[<value>]	0 Transmit result codes. 1 Suppress result codes.

2.10 AT50 Automatic Answer

The S0 register enables and disables automatic answer.

Command	Response	Values
S0=<value>		0 Disable automatic answer. 1 – 255 Enable automatic answer, answer on the indicated ring.
S0?	Value	

2.11 AT53 Termination Character

The S3 register defines the IRA character used to terminate command lines. The character is also used in the header and trailer of MT and BMI responses.

Command	Response	Values
S3=<value>		0 Use IRA 0/0 (<NUL>) as command-line-termination character, use <NUL> in response headers and trailers. ... <u>13</u> Use IRA 0/13 (<CR>). ... 127 Use IRA 7/15 ().
S3?	value	

2.12 AT54 Line-Feed Character

The S4 register defines the IRA character used in the header and trailer of MT and BMI responses.

Command	Response	Values
S4=<value>		0 Use IRA 0/0 (<NUL>) in response headers and trailers. ... <u>10</u> Use IRA 0/10 (<LF>). ... 127 Use IRA 7/15 ().
S4?	value	

2.13 AT55 Editing Character

The S5 register defines the IRA character used to delete the preceding character in a command line.

Command	Response	Values
S5=<value>		0 IRA 0/0 (<NUL>) deletes the preceding character in a command line.

		... 8 IRA 0/8 (<BS>) deletes the preceding character. ... 127 IRA 7/15 () deletes the preceding character.
S5?	value	

2.14 AT56 Pause Before Blind Dialing

The S6 register does nothing. The MT responds to provide compatibility with the pause-before-blind-dialing register in V.25 *ter* § 6.3.9.

Command	Response	Values
S6=<value>		2 Pause 2 seconds before blind dialing. ... 10 Pause 10 seconds before blind dialing.
S6?	value	

2.15 AT57 Connection Timeout

The S7 register sets the maximum number of seconds the BMI DCE will try to set up a connection with another DCE.

Command	Response	Values
S7=<value>		1 Connect to far-end DCE within 1 second. ... 50 Connect within 50 seconds. ... 255 Connect within 255 seconds.
S7?	value	

2.16 AT58 Comma Time

The S8 register sets the number of seconds to pause during dialing upon encountering a comma in the dial string.

Command	Response	Values
S8=<value>		0 When a comma is encountered in a dial string, pause 0 seconds. ... 2 Pause 2 seconds. ...

		255 Pause 255 seconds.
S8?	value	

2.17 AT S10 Automatic-Disconnect Delay

The S10 register sets the duration of received-line-signal loss that the BMI DCE will tolerate. If the duration is exceeded, the BMI DCE will disconnect.

Command	Response	Values
S10=<value>		1 Disconnect after 0.1 second of received-line-signal loss. ... <u>14</u> Disconnect after 1.4 seconds of received-line-signal loss. ... 255 Ignore received-line-signal loss; do not disconnect.
S10?	value	

2.18 AT Vn Response Format

The Vn command sets the response format: header content, trailer content, and terse or verbose result codes.

Command	Values
V<value>	0 For information responses, set <i>Header</i> to null and set <i>Trailer</i> to S3 S4, use terse result codes. <u>1</u> For information responses, set <i>Header</i> and <i>Trailer</i> to S3 S4, use verbose result codes.

2.19 AT Xn Call-Progress Monitoring

The Xn command enables or disables busy-tone detection. Note the following differences with V.25 *ter* § 6.2.7:

- The command does not affect result codes; this standard does not support result codes of the form CONNECT <text>.
- The command does not control dial-tone detection prior to dialing; the BMI DCE will not receive a dial tone upon originating a call.

Command	Values
X[<value>]	0, 1, 2 Disable busy detection. <u>3</u> Enable busy detection. 4 Enable busy detection.

2.20 ATZ Hard Reset to Default Configuration

The Z command resets the MT to its default settings, and if a call is active, disconnects the call.

Command	Values
Z[<value>]	<u>0</u> Reset all parameters and registers to default values. Disconnect any active call and release the traffic channel.

2.21 AT&Cn Received Line Signal Detector

The &Cn command sets how circuit 109 behaves in response to received line signals.

Command	Values
&C[<value>]	<u>0</u> Turn on circuit 109. <u>1</u> Turn on circuit 109 when suitable line signals are present; turn off circuit 109, when suitable line signals are not present.

2.22 AT&Dn Data Terminal Ready

The &Dn command sets how the MT responds to circuit 108/2.

Command	Values
&D[<value>]	<u>0</u> Ignore circuit 108/2. <u>1</u> In <i>Command State</i> or <i>Online Command State</i> , upon an on-to-off transition of circuit 108/2, abort execution of any unconfirmed command string. In <i>Online Data State</i> , upon an on-to-off transition of circuit 108/2, enter <i>Online Command State</i> . <u>2</u> Upon an on-to-off transition of circuit 108/2, execute an H command. If circuit 108/2 is off, disable automatic answer. (In <i>Command State</i> , this aborts execution of any unconfirmed command string, and if the MT and BMI are connected, releases the traffic channel. In <i>Online Command State</i> , this aborts any unconfirmed command string, disconnects the call, and releases the traffic channel. In <i>Online Data State</i> , this disconnects the call and releases the traffic channel.)

2.23 AT&F Soft Reset to Default Configuration

The &F command resets the MT and BMI DCE to their default settings.

Command	Values
&F[<value>]	<u>0</u> Reset all parameters and registers to default values.

2.24 AT+CBC Battery Charge

+CBC stores the battery-connection status and the battery-charge level.

Command	Response	Values
+CBC?	+CBC: CBC1, CBC2	Battery-Connection Status <BCS> 0 The MT is powered by a battery. 1 The MT has a battery connected, but is not powered by it. 2 The MT does not have a battery connected. 3 Recognized power fault. Calls inhibited. Battery Charge Level <BCL> 0 The battery is exhausted or the MT does not have a battery connected. ... 51 The battery has 51% capacity remaining. ... 100 The battery is fully charged.
+CBC=?	+CBC: (0-3), (0-100)	

2.25 AT+CCS Compression Status

+CCS stores the radio-interface V.42 *bis* compression parameters for the current call. If no call is active, +CCS stores the parameters for the previous call.

Command	Response	Values
+CCS?	+CCS: CCS1, CCS2, CCS3	Compression Direction <P0> 00 Compression off in both directions. 01 Compression on in the BMI-to-MT direction only. 10 Compression on in the MT-to-BMI direction only. 11 Compression on in both directions. Maximum Number of Codewords <P1> 512 Maximum number of codewords: 512. ... 65535 Maximum number of codewords: 65535. Maximum Number of Characters per Codeword <P2> 6 Maximum number of characters per codeword: 6. ... 250 Maximum number of characters per codeword: 250.
+CCS=?	+CCS: (00- 11),(512- 65535),(6-250)	

2.26 AT+CDNN Device Nickname

+CDNN sets a device nickname for the mobile termination.

Command	Response	Values
+CDNN=["<value>"]		Null: Clear the device nickname. Printable IRA characters: Set the device nickname to the indicated string.
+CDNN?	+CDNN: "CDNN"	
+CDNN=?	+CDNN: "{20-7E}"	

2.27 AT+COS Originating Service

+COS specifies the service to be requested for mobile-originated calls.

Command	Response	Values
+COS=[<SC>],[<BW>],[<FCS>],[<PM>]		<p>Service Code <SC></p> <p>0 Request analog speech only.</p> <p>1 Request digital speech only.</p> <p>2 Request analog or digital speech – analog preferred.</p> <p>3 Request analog or digital speech – digital preferred.</p> <p>4 Request <i>Async Data Service</i>. <SC> will be set to this value after every ADS, DADS, or fax call</p> <p>5 Request <i>Fax Service</i>.</p> <p>7 Request <i>STU-III Service</i>.</p> <p>8 Request <i>Direct Async Data Service</i>.</p> <p>Bandwidth <BW></p> <p>0 Request half-rate digital traffic channel.</p> <p>1 Request full-rate digital traffic channel.</p> <p>2 Request half-rate or full-rate digital traffic channel — full-rate preferred.</p> <p>3 Request half-rate or full-rate digital traffic channel — half-rate preferred.</p> <p>4 Request double-rate digital traffic channel.</p> <p>5 Request triple-rate digital traffic channel.</p> <p>6 Request double-rate or full-rate digital traffic channel — double-rate preferred.</p> <p>7 Request triple-rate, double-rate, or full-rate digital traffic channel — triple-rate preferred.</p> <p>Note: All values except 1 are optional.</p> <p>Frame Check Sequence <FCS></p> <p>2 Request a 2-octet (16-bit) FCS.</p> <p>3 Request a 3-octet (24-bit) FCS.</p> <p>Note</p> <p>1. <FCS> will be ignored for service codes 0, 1, 2, 3.</p>

		and 7. Privacy Mode <PM> 0 Disable privacy. <u>1</u> Enable privacy.
+COS?	+COS: COS1, COS2, COS3, COS4	
+COS=?	+COS: (0-4,5-8),(0-7), (2,3),(0,1)	If the MT does not support the indicated bandwidths of (0-5), the supported range will appear in the response.

2.28 AT+CRC Cellular Result Codes

+CRC enables and disables cellular result codes.

Command	Response	Values
+CRC=<value>		<u>0</u> Disable cellular result codes. 1 Enable cellular result codes except for +CNAME and +CNUMBER. 2 Enable all cellular result codes.
+CRC?	+CRC: <i>CRC</i>	
+CRC=?	+CRC: (0,1)	

2.29 AT+CSM Service Menu

+CSM stores the values of information elements received in the *Service Menu* message. The *Service Menu* message identifies the services supported by the BMI.

Command	Response	Values
+CSM?	+CSM: <i>CSM</i>	null: the <i>Service Menu</i> is unknown, e.g., because the MT is not tuned to a digital control channel. hex-coded octets: the <i>Service Menu</i> message coded as per TIA-136-123. Trailing zeros will be used to pad the <i>Service Menu</i> message to an integer number of octets. Space characters (IRA 2/0) will separate the hex-coded octets, e.g., 1A 6F F6 ...
+CSM=?	+CSM: (20,30-39, 41-46)	

2.30 AT+CSQ Signal Quality

+CSQ stores a signal-quality measure and Bit Error Rate (BER) for the radio channel to which the MT is tuned.

Command	Response	Values
+CSQ?	+CSQ: CSQ1, CSQ2, CSQ3, CSQ4	<p>Signal-Quality Measure mapped from Received Signal Strength Indication <SQM></p> <p>0: -113 dBm or less. 1: -111 dBm. 41: -31 dBm or greater. 99: RSSI is not known or is not detectable.</p> <p>Bit Error Rate <BER></p> <p>0: < 0.01 % 1: 0.01 % to less than 0.1 % 2: 0.1 % to less than 0.5 % 3: 0.5 % to less than 1.0 % 4: 1.0 % to less than 2.0 % 5: 2.0 % to less than 4.0 % 6: 4.0 % to less than 8.0 % 7: ≥ 8.0 % 99: <BER> is not known or is not detectable.</p> <p>Carrier-to-Interference Ratio <CIR></p> <p>0: < 8.0 dB 1: ≥ 8.0 dB and < 9.0 dB 2: ≥ 9.0 dB and < 10.0 dB 14: ≥ 21.0 dB and < 22.0 dB 15: ≥ 22 dB 99: <CIR> is not known or is not detectable.</p> <p>Word Error Rate <WER></p> <p>0: 0% 1: > 0% and ≤ 2% 2: > 2% and ≤ 4% 3: > 4% and ≤ 6% 4: > 6% and ≤ 8% 5: > 8% and ≤ 10% 6: > 10% and ≤ 12% 7: > 12% and ≤ 14% 8: > 14% and ≤ 18% 9: > 18% and ≤ 20% 10: > 20% and ≤ 25% 11: > 25% and ≤ 30% 12: > 30% and ≤ 40% 13: > 40% and ≤ 50%</p>

		14: > 50% and ≤ 60% 15: > 60% 99: <WER> is not known or is not detectable.
+CSQ=?	+CSQ: (0-31,99), (0-7,99), (0-15,99), (0-15,99)	

2.31 AT+CSS Serving System

+CSS stores the frequency band and System Identification (SID) of the serving system.

Command	Response	Values
+CSS?	+CSS: <i>CSS1</i> , <i>CSS2</i>	<p>Frequency Band <FB> A The MT is registered with an A-band 800 MHz system. B The MT is registered with a B-band 800 MHz system. a The MT is registered with an A-band 1900 MHz system. b The MT is registered with a B-band 1900 MHz system. c The MT is registered with a C-band 1900 MHz system. d The MT is registered with a D-band 1900 MHz system. e The MT is registered with an E-band 1900 MHz system. f The MT is registered with an F-band 1900 MHz system. Z The MT is not registered with any system.</p> <p>System Identification <SID> 0 The MT is registered with system 0. 1 The MT is registered with system 1. ... 16383 The MT is registered with system 16383. 99999 The MT is not registered with any system.</p>
+CSS=?	+CSS: (A,B,a- f,Z), (0- 16383, 99999)	

2.32 AT+CTA Mobile-Terminated Async Data Calls

+CTA specifies the attributes to be requested for mobile-terminated async data calls, including any request to change to another service.

Command	Response	Values
+CTA= [<EN>], [<BW>], [<FCS>],		<p>Enable <EN> 0 Disable acceptance of ADS calls. <u>1</u> Enable acceptance of ADS calls. 10 Enable acceptance of ADS calls. Request voice service,</p>

[<PM>]		<p>analog only.</p> <p>11 Enable acceptance of ADS calls. Request voice service, digital only.</p> <p>12 Enable acceptance of ADS calls. Request voice service, analog preferred.</p> <p>13 Enable acceptance of ADS calls. Request voice service, digital preferred.</p> <p>14 Enable acceptance of ADS calls. Request ADS.</p> <p>15 Enable acceptance of ADS calls. Request fax service. Except for <EN>, which will be ignored, use the subparameters from +CTF.</p> <p>16 Disable acceptance of ADS calls.</p> <p>17 Enable acceptance of ADS calls. Request STU-III service. Except for <EN>, which will be ignored, use the subparameters from +CTS.</p> <p>18 Enable acceptance of ADS calls. Request DADS. Except for <EN>, which will be ignored, use the subparameters from +CTD.</p> <p>Bandwidth <BW></p> <p>0 Request half-rate digital traffic channel.</p> <p><u>1</u> Request full-rate digital traffic channel.</p> <p>2 Request half-rate or full-rate digital traffic channel — full-rate preferred.</p> <p>3 Request half-rate or full-rate digital traffic channel — half-rate preferred.</p> <p>4 Request double-rate digital traffic channel.</p> <p>5 Request triple-rate digital traffic channel.</p> <p>6 Request double-rate or full-rate digital traffic channel — double-rate preferred.</p> <p>7 Request triple-rate, double-rate, or full-rate digital traffic channel — triple-rate preferred.</p> <p>Note: All values except 1 are optional.</p> <p>Frame Check Sequence <FCS></p> <p><u>2</u> Request a 2-octet (16-bit) FCS.</p> <p>3 Request a 3-octet (24-bit) FCS.</p> <p>Privacy Mode <PM></p> <p>0 Disable privacy.</p> <p><u>1</u> Enable privacy.</p>
+CTA?	+CTA: CTA1, CTA2, CTA3, CTA4	
+CTA=?	+CTA: (0,1,10-18),(0-7),(2,3),(0,1)	<p>If the MT does not support the indicated bandwidths of (0-5), the supported range will appear in the response.</p> <p>If the MT does not support the indicated services, the supported range will appear in the response.</p>

2.33 AT+CTD Mobile-Terminated Direct Async Data Calls

+CTD specifies the attributes to be requested for mobile-terminated DADS calls, including any request to change to another service.

Command	Response	Values
+CTD= [<EN>], [<BW>], [<FCS>], [<PM>]		<p>Enable <EN></p> <p>0 Disable acceptance of DADS calls.</p> <p><u>1</u> Enable acceptance of DADS calls.</p> <p>10 Enable acceptance of DADS calls. Request voice service, analog only.</p> <p>11 Enable acceptance of DADS calls. Request voice service, digital only.</p> <p>12 Enable acceptance of DADS calls. Request voice service, analog preferred.</p> <p>13 Enable acceptance of DADS calls. Request voice service, digital preferred.</p> <p>14 Enable acceptance of DADS calls. Request ADS. Except for <EN>, which will be ignored, use the subparameters from +CTA.</p> <p>15 Enable acceptance of DADS calls. Request fax service. Except for <EN>, which will be ignored, use the subparameters from +CTF.</p> <p>16 Disable acceptance of DADS calls.</p> <p>17 Enable acceptance of DADS calls. Request STU-III service. Except for <EN>, which will be ignored, use the subparameters from +CTS.</p> <p>18 Enable acceptance of DADS calls. Request DADS.</p> <p>Bandwidth <BW></p> <p>0 Request half-rate digital traffic channel.</p> <p><u>1</u> Request full-rate digital traffic channel.</p> <p>2 Request half-rate or full-rate digital traffic channel — full-rate preferred.</p> <p>3 Request half-rate or full-rate digital traffic channel — half-rate preferred.</p> <p>4 Request double-rate digital traffic channel.</p> <p>5 Request triple-rate digital traffic channel.</p> <p>6 Request double-rate or full-rate digital traffic channel — double-rate preferred.</p> <p>7 Request triple-rate, double-rate, or full-rate digital traffic channel — triple-rate preferred.</p> <p>Note: All values except 1 are optional.</p> <p>Frame Check Sequence <FCS></p> <p><u>2</u> Request a 2-octet (16-bit) FCS.</p> <p>3 Request a 3-octet (24-bit) FCS.</p> <p>Privacy Mode <PM></p> <p>0 Disable privacy.</p> <p><u>1</u> Enable privacy.</p>
+CTD?	+CTD: CTD1, CTD2,	

	CTD3, CTD4	
+CTD=?	+CTD: (0,1,10-18), (0-7),(2,3), (0,1)	If the MT does not support the indicated bandwidths of (0-5), the supported range will appear in the response. If the MT does not support the indicated services, the supported range will appear in the response.

2.34 AT+CTF Mobile-Terminated Fax Calls

+CTF specifies the attributes to be requested for mobile-terminated fax calls, including any request to change to another service.

Command	Response	Values
+CTF= [<EN>], [<BW>], [<FCS>], [<PM>]		<p>Enable <EN></p> <p>0 Disable acceptance of fax calls.</p> <p><u>1</u> Enable acceptance of fax calls.</p> <p>10 Enable acceptance of fax calls. Request voice service, analog only.</p> <p>11 Enable acceptance of fax calls. Request voice service, digital only.</p> <p>12 Enable acceptance of fax calls. Request voice service, analog preferred.</p> <p>13 Enable acceptance of fax calls. Request voice service, digital preferred.</p> <p>14 Enable acceptance of fax calls. Request ADS. Except for <EN>, which will be ignored, use the subparameters from +CTA.</p> <p>15 Enable acceptance of fax calls. Request fax service.</p> <p>16 Disable acceptance of fax calls.</p> <p>17 Enable acceptance of fax calls. Request STU-III service. Except for <EN>, which will be ignored, use the subparameters from +CTS.</p> <p>18 Enable acceptance of fax calls. Request DADS. Except for <EN>, which will be ignored, use the subparameters from +CTD.</p> <p>Bandwidth <BW></p> <p>0 Request half-rate digital traffic channel.</p> <p><u>1</u> Request full-rate digital traffic channel.</p> <p>2 Request half-rate or full-rate digital traffic channel — full-rate preferred.</p> <p>3 Request half-rate or full-rate digital traffic channel — half-rate preferred.</p> <p>4 Request double-rate digital traffic channel.</p> <p>5 Request triple-rate digital traffic channel.</p> <p>6 Request double-rate or full-rate digital traffic channel — double-rate preferred.</p> <p>7 Request triple-rate, double-rate, or full-rate digital traffic channel — triple-rate preferred.</p> <p>Note: All values except 1 are optional.</p>

		Frame Check Sequence <FCS> <u>2</u> Request a 2-octet (16-bit) FCS. 3 Request a 3-octet (24-bit) FCS. Privacy Mode <PM> 0 Disable privacy. <u>1</u> Enable privacy.
+CTF?	+CTF: CTF1, CTF2, CTF3, CTF4	
+CTF=?	+CTF: (0,1,10-18), (0-7),(2,3), (0,1)	If the MT does not support the indicated bandwidths of (0-5), the supported range will appear in the response. If the MT does not support the indicated services, the supported range will appear in the response.

2.35 AT+CTV Mobile-Terminated Voice Calls

+CTV specifies the attributes to be requested for mobile-terminated voice calls, including any request to change to another service.

Command	Response	Values
+CTV= [<EN>], [<BW>], [<PM>]		Enable <EN> 0 Disable acceptance of voice calls. <u>1</u> Enable acceptance of voice calls. 10 Enable acceptance of voice calls. Request voice service, analog only. 11 Enable acceptance of voice calls. Request voice service, digital only. 12 Enable acceptance of voice calls. Request voice service, analog preferred. 13 Enable acceptance of voice calls. Request voice service, digital preferred. 14 Enable acceptance of voice calls. Request ADS. Except for <EN>, which will be ignored, use the subparameters from +CTA. 15 Enable acceptance of voice calls. Request fax service. Except for <EN>, which will be ignored, use the subparameters from +CTF. 16 Disable acceptance of voice calls. 17 Enable acceptance of voice calls. Request STU-III service. Except for <EN>, which will be ignored, use the subparameters from +CTS. 18 Enable acceptance of voice calls. Request DADS. Except for <EN>, which will be ignored, use the subparameters from +CTD. Bandwidth <BW> 0 Request half-rate digital traffic channel. <u>1</u> Request full-rate digital traffic channel. 2 Request half-rate or full-rate digital traffic channel — full-rate

		<p>preferred.</p> <p>3 Request half-rate or full-rate digital traffic channel — half-rate preferred.</p> <p>4 Request double-rate digital traffic channel.</p> <p>5 Request triple-rate digital traffic channel.</p> <p>6 Request double-rate or full-rate digital traffic channel — double-rate preferred.</p> <p>7 Request triple-rate, double-rate, or full-rate digital traffic channel — triple-rate preferred.</p> <p>Notes</p> <p>1. All values except 1 are optional.</p> <p>2. This subparameter will be ignored for analog-only voice service.</p> <p>Privacy Mode <PM></p> <p>0 Disable privacy.</p> <p><u>1</u> Enable privacy.</p> <p>Notes</p> <p>1. This subparameter will be ignored for analog-only voice service.</p>
+CTV?	+CTV: CTV1, CTV2, CTV3	
+CTV=?	+CTV: (0,1,10-18), (0-7),(0,1)	<p>If the MT does not support the indicated bandwidths of (0-5), the supported range will appear in the response.</p> <p>If the MT does not support the indicated services, the supported range will appear in the response.</p>

2.36 AT+DR Data-Compression Reporting

+DR enables or disables data-compression reporting.

Command	Response	Values
+DR=[<value>]		<p>0 Disable data-compression reporting. Do not issue +DR result codes.</p> <p>1 Enable data-compression reporting. Issue +DR result codes.</p>
+DR?	+DR: <value>	
+DR=?	+DR: (0,1)	

2.37 AT+DS Data-Compression Selection

For ADS and DADS, +DS controls V.42 *bis* compression between the MT and the far-end DCE. For fax service, +DS may be used to request V.42 *bis* compression between the MT and BMI. The BMI may or may not grant the request.

Command	Response	Values
+DS= [<direction>], [<negotiation>], [<max_dict>], [<max_string>]		<p>Direction of Compression <direction> 0 Disable compression (V.42 <i>bis</i> P0 = 00). 1 If the MT supports data compression, enable compression MT to BMI DCE. For ADS and DADS, request compression BMI DCE to far-end DCE. 2 If the MT supports data compression, enable compression BMI DCE to MT. For ADS and DADS, request compression far-end DCE to BMI DCE. 3 If the MT supports data compression, enable compression in both directions between MT and DCE. For ADS and DADS, request compression in both directions between BMI DCE and far-end DCE (V.42 <i>bis</i> P0 = 11).</p> <p>Compression Negotiation <negotiation> 0 If compression direction is not as requested, do not disconnect. 1 If compression direction is not as requested, disconnect.</p> <p>Maximum Dictionary Size <max_dict> 512 Maximum size of dictionary in octets (V.42 <i>bis</i> P1). <max_dict> applies between BMI DCE and far-end DCE. 513 to 65535</p> <p>Maximum String Length <max_string> Description 6 Maximum number of characters that may be compressed into one word (V.42 <i>bis</i> P2). <max_string> applies between BMI DCE and far-end DCE. 7 to 250</p>
+DS?	+DS: <direction>, <negotiation>, <max_dict>, <max_string>	
+DS=?	+DS: (0-3),(0,1),(512-65535),(6-250)	If the BMI DCE does not support the indicated maximum dictionary size of 65535 and the maximum string length of 250, the supported values will replace these two numbers.

2.38 AT+EB Break Handling

+EB controls *break* handling at the MT.

Command	Response	Values
+EB= [<selection>], [<timed>], [<dfi_length>]		<p>Break Selection <selection></p> <p>0 Ignore <i>break</i>.</p> <p>1 Non-expedited, non-destructive: deliver <i>break</i> in sequence with any buffered data.</p> <p>2 Expedited, non-destructive: deliver <i>break</i> immediately, retain any buffered data.</p> <p>3 Expedited, destructive: deliver <i>break</i> immediately, discard any buffered data.</p> <p>Break-Length Indication to Far-End DCE <timed></p> <p>0 Set <i>break</i> length to 0. The BMI DCE shall not pass <i>break</i> length to the far-end DCE.</p> <p>1 Set <i>break</i> length as received from the data port. The BMI DCE shall pass the <i>break</i> length to the far-end DCE.</p> <p>Default Break Length Signaled to the DTE <dfi_length></p> <p>0 Do not deliver <i>break</i> to the DTE.</p> <p>...</p> <p>30 Deliver 300 ms <i>break</i>.</p> <p>...</p> <p>254 Deliver 2.54 s <i>break</i>.</p> <p>255 Deliver <i>break</i> of longer than 2.54 s.</p>
+EB?	+EB: EB1, EB2, EB3	
+EB=?	+EB: (0-3),(0,1),(0-255)	

2.39 AT+EFCS Frame Check Sequence

+EFCS specifies whether a 16-bit or 32-bit Frame Check Sequence (FCS) will be used for data links between the BMI DCE and the far-end DCE.

Command	Response	Values
+EFCS=[<value>]		<p>0 Use 16-bit FCS.</p> <p>1 Use 32-bit FCS if available in far-end DCE; otherwise, use 16-bit FCS.</p> <p>2 Use 32-bit FCS if available in far-end DCE; otherwise, disconnect.</p>
+EFCS?	+EFCS: <value>	
+EFCS=?	+EFCS: (0-2)	

2.40 AT+ER Error-Control Reporting

+ER enables or disables error-control reporting.

Command	Response	Values
+ER=[<value>]		0 Disable error-control reporting. Do not issue +ER result codes. 1 Enable error control reporting. Issue +ER result codes.
+ER?	+ER: <value>	
+ER=?	+ER: (0,1)	

2.41 AT+ES Error-Control Selection

+ES controls V.42 error-control negotiation between the BMI DCE and the far-end DCE.

Command	Response	Values
+ES= [<orig_rqst>], [<orig_fbk>], [<ans_fbk>]		Originating Requested Mode <orig_rqst> 1 Disable error control, use buffered mode. 2 Initiate V.42 without detection phase. 3 Initiate V.42 with detection phase. Originating Fallback Mode <orig_fbk> 0 If V.42 is unavailable, fall back to buffered mode. 3 If V.42 is unavailable, disconnect. Answering Fallback Mode <ans_fbk> 1 Disable error control, use buffered mode. 2 If V.42 is unavailable, fall back to buffered mode. 5 If V.42 is unavailable, disconnect.
+ES?	+ES: <orig_rqst>, <orig_fbk>, <ans_fbk>	
+ES?	+ES: (1-3),(0,3),(1,2,5)	

2.42 AT+ETBM Call-Termination Buffer Management

+ETBM controls the handling of data buffers upon call termination.

Command	Response	Values
+ETBM= [<Tx_buf>], [<Rx_buf>], [<timer>]		Mode of Operation When DTE Disconnects <Tx_buf> 0 Upon receiving Command_Req {H}, the BMI DCE will stop retrieving data from LLO, and it will return Command_Con {RC_OK}. 2 Upon receiving Command Req {H}, the BMI DCE will continue to

		<p>retrieve data from LLO. It will not issue Command_Con {RC_OK} until the data-delivery timer expires or the far-end DCE disconnects.</p> <p>Mode of Operation When Far-End DCE Disconnects</p> <p><Rx_buf></p> <p><u>0</u> Upon detecting that the far-end DCE has disconnected, the BMI DCE will issue Disc_Ind {RC_NCR}.</p> <p><u>2</u> Upon detecting that the far-end DCE has disconnected, the BMI DCE will continue to deliver data to LLO. It will not issue a Disc_Ind {RC_NCR} until the data-delivery timer expires.</p> <p>Data-Delivery Timer <timer></p> <p><u>0</u> Set data-delivery timer to 0 seconds.</p> <p>...</p> <p><u>30</u> Set data-delivery timer to 30 seconds.</p> <p>...</p> <p><u>255</u> Set data-delivery timer to 255 seconds.</p>
+ETBM?	+ETBM: <Tx_buf>, <Rx_buf>, <timer>	
+ETBM=?	+ETBM: (0,2),(0,2), (0-255)	

2.43 AT+FAA Adaptive Answer

+FAA enables or disables adaptive answer.

Command	Response	Values
+FAA=<value>		<u>0</u> Answer only as a class-2 fax device. Do not switch service class based on the calling device.
+FAA?	0	
+FAA=?	(0)	

2.44 AT+FBO Bit Order

+FBO sets bit transmission order on the PSTN interface.

Command	Response	Values
+FBO=<value>		<u>0</u> Use data-port bit order for Phase-B, Phase-C, and Phase-D data. 1 Use data-port bit order for Phase-B and Phase-D data. Use reversed bit order for Phase-C data.
+FBO?	<value>	
+FBO=?	(0,1)	

2.45 AT+FCC DCE Capabilities and AT+FIS Current-Session Parameters

+FCC and +FIS set the T.30 parameters for the current session.

Command	Response	Values
+FCC=[<VR>], [],[<WD>], [<LN>],[<DF>], [<EC>],[<BF>], [<ST>],[<JP>] +FIS=[<VR>], [],[<WD>], [<LN>],[<DF>], [<EC>],[<BF>], [<ST>],[<JP>]		Resolution <VR> <u>00</u> R8 (8 dot/mm) x 3.85 line/mm, Normal 01 R8 x 7.7 line/mm, Fine 02 R8 x 15.4 line/mm 04 R16 (16 dot/mm) x 15.4 line/mm 08 200 dots per inch (dpi) x 100 lines per inch (lpi) 10 200 dpi x 200 lpi 20 200 dpi x 400 lpi 40 300 dpi x 300 lpi Bit Rate
 0 2400 bit/s 1 4800 bit/s 2 7200 bit/s <u>3</u> 9600 bit/s 4 12000 bit/s 5 14400 bit/s, V.8 optional 6 16800 bit/s, V.8 required 7 19200 bit/s, V.8 required 8 21600 bit/s, V.8 required 9 24000 bit/s, V.8 required A 26400 bit/s, V.8 required B 28800 bit/s, V.8 required C 31200 bit/s, V.8 required D 33600 bit/s, V.8 required

		<p>Page Width in Pixels <WD></p> <table border="1"> <thead> <tr> <th>WD</th> <th>R8</th> <th>R16</th> <th>200 dpi</th> <th>300 dpi</th> <th>400 dpi</th> </tr> </thead> <tbody> <tr> <td><u>0</u></td> <td>1728</td> <td>3456</td> <td>1728</td> <td>2592</td> <td>3456</td> </tr> <tr> <td>1</td> <td>2048</td> <td>4096</td> <td>2048</td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>2432</td> <td>4864</td> <td>2432</td> <td></td> <td></td> </tr> </tbody> </table> <p>Page Length <LN></p> <p><u>0</u> A4, 297 mm 1 B4, 364 mm 2 Unlimited length</p> <p>Data Format <DF></p> <p><u>0</u> 1-D Modified Huffman (ITU-T T.4). 1 2-D Modified Read (ITU-T T.4). 2 2-D Uncompressed Mode (ITU-T T.4). 3 2-D Modified Modified Read (ITU-T T.6). 4 Single-progression sequential coding (ITU-T T.85). 5 Capable of T.85 and T.4. 6 Capable of T.85 and T.6. 7 Capable of T.85, T.6, and T.4. 8 Single-progression sequential coding optional L0 (T.85). 9 Capable of T.85 L0 and T.4. A Capable of T.85 L0 and T.6. B Capable of T.85 L0, T.6, and T.4. C Capable of T.85 L0 and T.85. D Capable of T.85 L0, T.85, and T.4. E Capable of T.85 L0, T.85, and T.6. F Capable of T.85 L0, T.85, T.4, and T.6.</p> <p>Error Correction <EC></p> <p><u>0</u> Disable ECM. 1 T.30 Annex A or T.30 Annex F with V.34 half-duplex. 2 T.30 Annex C half-duplex. 3 T.30 Annex C full-duplex, including V.34.</p> <p>File Transfer <BF></p> <p><u>00</u> Disable file transfer modes. 01 BFT, ITU-T T.434. 02 Document Transfer Mode. 04 Edifact Mode. 08 Basic Transfer Mode. 10 Character Mode, T.4 Annex D. 20 Mixed Mode, T.4 Annex E. 40 Processable Mode, ITU-T T.505.</p>	WD	R8	R16	200 dpi	300 dpi	400 dpi	<u>0</u>	1728	3456	1728	2592	3456	1	2048	4096	2048			2	2432	4864	2432		
WD	R8	R16	200 dpi	300 dpi	400 dpi																					
<u>0</u>	1728	3456	1728	2592	3456																					
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		<p>Scan Time per Line <ST></p> <table border="1"> <thead> <tr> <th>ST</th> <th>VR = 0 (normal)</th> <th>VR > 0 (fine)</th> </tr> </thead> <tbody> <tr> <td><u>0</u></td> <td>0 ms</td> <td>0 Ms</td> </tr> <tr> <td>1</td> <td>5 ms</td> <td>5 Ms</td> </tr> <tr> <td>2</td> <td>10 ms</td> <td>5 Ms</td> </tr> <tr> <td>3</td> <td>10 ms</td> <td>10 Ms</td> </tr> <tr> <td>4</td> <td>20 ms</td> <td>10 Ms</td> </tr> <tr> <td>5</td> <td>20 ms</td> <td>20 Ms</td> </tr> <tr> <td>6</td> <td>40 ms</td> <td>20 Ms</td> </tr> <tr> <td>7</td> <td>40 ms</td> <td>40 ms</td> </tr> </tbody> </table> <p>JPEG <JP> <u>00</u> Disable JPEG coding. 01 Enable JPEG coding (ITU-T T.81). 02 Full color mode. 04 Enable preferred Huffman tables [1]. 08 12 bits/pel/component. 10 No subsampling (1:1:1). 20 Custom illuminant. 40 Custom gamut range.</p> <p>Note 1. The BMI DCE will ignore the +FCC and +FIS values when generating T.30 DIS or DTC frames.</p>	ST	VR = 0 (normal)	VR > 0 (fine)	<u>0</u>	0 ms	0 Ms	1	5 ms	5 Ms	2	10 ms	5 Ms	3	10 ms	10 Ms	4	20 ms	10 Ms	5	20 ms	20 Ms	6	40 ms	20 Ms	7	40 ms	40 ms
ST	VR = 0 (normal)	VR > 0 (fine)																											
<u>0</u>	0 ms	0 Ms																											
1	5 ms	5 Ms																											
2	10 ms	5 Ms																											
3	10 ms	10 Ms																											
4	20 ms	10 Ms																											
5	20 ms	20 Ms																											
6	40 ms	20 Ms																											
7	40 ms	40 ms																											
+FCC? +FIS?	<VR>, , <WD>,<LN>, <DF> ,<EC>, <BF>,<ST>, <JP>																												
+FCC=? +FIS=?	(0-7F),(0-D), (0-2),(0-2), (0-F), (0-3), (0-7F),(0-7), (0-7F)																												

2.46 AT+FCLASS Service Identification and Selection

+FCLASS selects the service for mobile-originated and mobile-terminated calls.

Command	Response	Values
+FCLASS=<value>		<u>0</u> Async Data 2.0 G3 Fax (Class 2.0)

		2.1 G3 Fax (Class 2.1)
+FCLASS?	FCLASS	
+FCLASS=?	0,2.0,2.1	

2.47 AT+FCR Capability to Receive

+FCR indicates whether or not the DTE can receive fax data.

Command	Response	Values
+FCR=<value>		0 Disable reception of fax data. Disable the capability of polling a remote fax machine. <u>1</u> Enable reception of fax data.
+FCR?	<value>	
+FCR=?	(0,1)	

2.48 AT+FHS Call-Termination Status

+FHS returns a valid, but meaningless value — nominally, the hang-up cause for the last call. The MT responds to provide compatibility with the +FHS command in T.32.

Command	Response	Values
+FHS?	00	<u>00</u> Normal and proper end of connection.
+FHS=?	(00)	
	+FHS: <value>	The BMI DCE will set <value> and operate in conformance with T.32 § 8.4.5.

2.49 AT+FKS Session Termination

+FKS disconnects the fax call in an orderly fashion. It also may be used to disconnect a voice call. Within a command line, any command that follows the +FKS command will be ignored.

Command
+FKS
+FKS=?

2.50 AT+FLI Local ID String

+FLI sets the ID to be used in the T.30 CSI or TSI messages.

Command	Response	Values
+FLI="<value>"		Null: Send no ID to the remote fax machine. Printable IRA characters: Send the indicated ID. The ID shall comprise no more than 20 printable IRA characters.
+FLI?	"<value>"	
+FLI=?	"(20-7E)"	

2.51 AT+FLO Flow-Control Select

+FLO specifies the type of flow control. Writing +FLO alters +IFC.

Command	Response	Values
+FLO=<value>		0 Disable flow control. 1 Enable software flow control. Use XON/XOFF in either direction. 2 Enable hardware flow control. Use circuit 133 for flow control of the MT by the DTE and circuit 106 for flow control of the DTE by the MT.
+FLO?	0 (If <i>IFC1</i> = 0 and <i>IFC2</i> = 0) 1 (If <i>IFC1</i> = 1 and <i>IFC2</i> = 1) 2 (If <i>IFC1</i> = 2 and <i>IFC2</i> = 2) 255 (Otherwise)	
+FLO=?	(0-2,255)	

2.52 AT+FNR Negotiation Reporting

+FNR controls the reporting of messages generated during T.30 Phase-B negotiations.

Command	Response	Values
+FNR= <rpr>, <tpr>, <idr>, <nstr>		Receiver Parameters <rpr> 0 Do not report receiver parameters. Suppress +FIS and +FTC reports. 1 Report receiver parameters. Generate +FIS and +FTC reports. Transmitter Parameters <tpr> 0 Do not report transmitter parameters. Suppress +FCS reports, but update the +FCS parameter. 1 Report transmitter parameters. Generate +FCS reports. ID Strings <idr> 0 Do not report ID strings. Suppress +FTI, +FCI, and +FPI reports.

		<p>1 Report ID strings. Generate +FTI, +FCI, and +FPI reports.</p> <p>NSF Frames <nsr></p> <p><u>0</u> Do not report non-standard frames. Suppress +FNF, +FNS, and +FNC reports.</p> <p>1 Report non-standard frames. Generate +FNF, +FNS, and +FNC reports.</p>
+FNR?	<rpr>, <tpr>, <idr>, <nsr>	
+FNR=?	(0,1),(0,1), (0,1),(0,1)	

2.53 AT+FPP Packet-Protocol Control

+FPP enables or disables the packet protocol. Packet protocol will be disabled.

Command	Response	Values
+FPP=<value>		<u>0</u> Disable the MT-to-DTE packet protocol.
+FPP?	0	
+FPP=?	(0)	

2.54 AT+FPR Port-Rate Control

+FPR sets the data-port rate for fax operations. The MT will autobaud.

Command	Response	Values
+FPR=<value>		<u>0</u> The MT will autobaud.
+FPR?	0	
+FPR=?	(0)	

2.55 AT+GCAP MT Capabilities

+GCAP returns the MT's capabilities.

Command	Response
+GCAP	The MT will report the TIA number and version of this standard, i.e., +GCAP: TIA-136-350
+GCAP=?	

2.56 AT+GMI Manufacturer Identification

+GMI returns the MT manufacturer code.

Command	Response	Values
+GMI	+GMI: <value>	0 to 16,777,215 Reports the manufacturer-identification parameter (<i>GMI</i>) stored in configuration memory. Note: <i>GMI</i> will be the decimal equivalent of the following from TIA-136-005 [9]: <i>Expanded Manufacturer Code</i> concatenated with <i>Manufacturer Code</i> . The most-significant bit used to calculate <value> will be the most-significant bit of the <i>Expanded Manufacturer Code</i> .
+GMI=?		

2.57 AT+GSN Read Electronic Serial Number

+GSN returns the MT Electronic Serial Number (ESN).

Command	Response	Values
+GSN	+GSN: <value>	hex-coded octets: Reports the value of the expanded electronic serial number specified in TIA-136-005.
+GSN=?		

2.58 AT+ICF Data-Port Character Framing

+ICF specifies the character framing used at the MT data port.

Command	Response	Values
+ICF=[<value>]		<u>0</u> Automatically detect start, data, parity, and stop bits.
+ICF?	+ICF: 0	
+ICF=?	+ICF: (0)	

2.59 AT+IFC Data-Port Flow Control

+IFC sets the flow-control operation of the MT data port.

Command	Response	Values
+IFC=[<MT_by_DTE>], [<DTE_by_MT>]		MT_by_DTE Flow Control <MT_by_DTE> 0 Disable local flow control. 1 Interpret XON (IRA 1/1) and XOFF (IRA 1/3) characters on circuit 103 as flow control. Do not pass XON and XOFF to the BMI.

		<p><u>2</u> Interpret circuit 133 (Ready for Receiving) as flow control.</p> <p><u>3</u> Interpret XON (IRA 1/1) and XOFF (IRA 1/3) characters on circuit 103 as flow control. If the DPH is in <i>Data Mode</i> state, pass XON and XOFF to the BMI.</p> <p>DTE_by_MT Flow Control <DTE_by_MT></p> <p><u>0</u> Disable local flow control.</p> <p><u>1</u> Issue flow-control characters, XON (IRA 1/1) and XOFF (IRA 1/3), on circuit 104.</p> <p><u>2</u> Use circuit 106 (Ready for Sending) for flow control.</p>
+IFC?	+IFC: IFC1, IFC2	
+IFC=?	+IFC: (0-3),(0-2)	

2.60 AT+ILRR Data-Port Local Rate Reporting

+ILRR enables or disables reporting of the MT data-port rate. Rate reporting will be disabled.

Command	Response	Values
+ILRR=[<value>]		<u>0</u> Disable reporting of data-port rate. Do not issue +ILRR result codes.
+ILRR?	+ILRR: 0	
+ILRR=?	+ILRR: (0)	

2.61 AT+IPR Fixed DTE Rate

+IPR specifies the data-port rate. DSC will automatically detect data rate.

Command	Response	Values
+IPR=[<value>]		<u>0</u> Automatically detect data rate (autobauding).
+IPR?	+IPR: 0	
+IPR=?	+IPR: (0,300,1200,2400, 4800,9600, 19200,38400, 57600,115200)	The MT will list its supported autobaud rates.

2.62 AT+MR Modulation Reporting

+MR enables or disables reporting of modulation carrier and rate.

Command	Response	Values
+MR=[<value>]		<p>0 Disable modulation reporting. Do not issue +MCR and +MRR result codes.</p> <p>1 Enable modulation reporting. Issue +MCR and +MRR result codes.</p>
+MR?	+MR: <value>	
+MR=?	+MR: (0,1)	

2.63 AT+MS Modulation Selection

+MS selects modulation, enables or disables automatic negotiation, and sets the minimum and maximum data rates.

Command	Response	Values
+MS=[<carrier>], [<automode>], [<min_rate>], [<max_rate>]		<p>ITU-T Standard Modulations <carrier></p> <p>B103: Bell 103</p> <p>B212: Bell 212A</p> <p>V21: V.21</p> <p>V22: V.22</p> <p>V22B: V.22 <i>bis</i></p> <p>V32: V.32</p> <p>V32B: V.32 <i>bis</i></p> <p>V34: V.34</p> <p>Automatic Modulation Negotiation <automode></p> <p>0 Disable automode.</p> <p>1 Enable automode. Use V.8, V.32 <i>bis</i> Annex A, or V.34, as applicable.</p> <p>Minimum Rate and Maximum Rate <min_rate> <max_rate></p> <p>0 Determine <min_rate> and <max_rate> based on the modulation means selected by <carrier> and <automode>.</p> <p>50: 50 bit/s</p> <p>300: 300 bit/s</p> <p>600: 600 bit/s</p> <p>1200: 1200 bit/s</p> <p>2400: 2400 bit/s</p> <p>4800: 4800 bit/s</p> <p>7200: 7200 bit/s</p> <p>9600: 9600 bit/s</p> <p>12000: 12000 bit/s</p>

		14400: 14400 bit/s 16800: 16800 bit/s 19200: 19200 bit/s 21600: 21600 bit/s 24000: 24000 bit/s 26400: 26400 bit/s 28800: 28800 bit/s 31200: 31200 bit/s 33600: 33600 bit/s Default Values <min_rate>: minimum supported by <carrier> and <automode>. <max_rate>: maximum supported by <carrier>.
+MS?	+MS: <carrier>, <automode>, <min_rate>, <max_rate>	
+MS=?	+MS: (B103,B212, V18,V21,V.22, V22B,V32, V32B,V34), (0,1), (0,50-33600), (0,50-33600)	The BMI DCE shall list its supported modulation rates.

2.64 AT+WS46 Wireless Stack

+WS46 selects the wireless network and protocols to be used by the mobile termination.

Command	Response	Values
+WS46=<value>		<u>14</u> Select operation according to this standard.
+WS46?	14	
+WS=?	(14)	The MT will list its supported wireless stacks.

2.65 AT<DC1> XON

<DC1> resumes data flow. It is a bi-directional general command that appears inband within user data.

Command
<DC1>

2.66 AT<DC3> XOFF

<DC3> halts data flow. It is a bi-directional general command that appears inband within user data.

Command
<DC3>

3 Terms and Abbreviations

Term or Abbreviation	Description
<BS>	Backspace (IRA character)
<CR>	Carriage Return (IRA character)
<DC1>	Device Control 1 (IRA character), commonly used as XON
<DC3>	Device Control 3 (IRA character), commonly used as XOFF
	Delete (IRA character)
<DLE>	Data Link Escape (IRA character)
<LF>	Line Feed (IRA character)
<NUL>	Null (IRA character)
ADS	Asynchronous Data Service
AT	Prefix for user-network commands
BER	Bit Error Rate
BMI	Base Station, Mobile Switching Center, Interworking Function
CCITT	The International Telegraph and Telephone Consultative Committee (now known as ITU-T)
CSI	Called-Subscriber Identification
DADS	Direct Asynchronous Data Service
DC	Datagram Control
DCE	Data Communication Equipment Data Circuit-Terminating Equipment
DIS	Digital Identification Signal
DPH	Data-Port Handler
DSC	Data-Service Control
DTC	Digital Traffic Channel
DTE	Data Terminal Equipment
ESN	Electronic Serial Number
IRA	International Reference Alphabet
ITU-T	International Telecommunication Union – Telecommunication Standardization Sector
JPEG	Joint Picture Experts Group
LLO	Logical Link 0
MSB	Most-Significant Bit
MT	Mobile Termination
NSF	Non-Standard Facilities
NSS	Non-Standard Setup
P0	V.42 <i>bis</i> compression request
P1	V.42 <i>bis</i> number of code words
P2	V.42 <i>bis</i> maximum string length
PSTN	Public Switched Telephone Network
RLP1	Radio Link Protocol 1
RSSI	Received Signal Strength Indication
STU-III	Secure Telephone Unit – Third Generation
TDMA	Time Division Multiple Access
TIA	Telecommunications Industry Association
TSI	Transmitting Subscriber Identification

UDP	User Datagram Protocol
V.24	ITU-T recommendation for data circuits
WER	Word Error Rate
XOFF	Transmit Off (<DC3>)
XON	Transmit On (<DC1>)

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