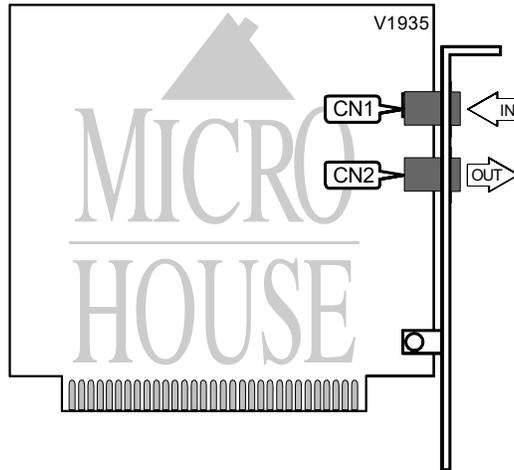


U.S. ROBOTICS, INC. SPORTSTER WINMODEM 28.8

Card Type	Fax, Modem (asynchronous)
Chip Set	U.S. Robotics
Maximum Data Rate	28.8Kbps
Maximum Fax Rate	14.4Kbps
Data Bus	8-bit ISA
Fax Class	Class I & II
Data Modulation Protocol	Bell 103/212A ITU-T V.21, V.22, V.22bis, V.23, V.25, V.32, V.32bis, V.34
Fax Modulation Protocol	ITU-T V.17, V.21CH2, V.27ter, V.29
Error Correction/Compression	MNP5, V.42, V.42bis



CONNECTIONS				
Function	Label	Function	Label	
Line in	CN1	Line out	CN2	

Proprietary AT Command Set

ANSWER	
Type:	Immediate
Format:	AT [cmds] A
Description:	Enables manual answer mode, the modem goes off-hook; pressing any key will abort.

ABORT	
Type:	Immediate
Format:	Any key
Description:	Aborts answering/originating a call; modem hangs up.

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ANSWER SEQUENCE	
Type:	Configuration
Format:	AT [cmds] Bn [cmds]
Description:	Selects the answer sequence the modem will use
Command	Function
í B0	ITU-T answer sequence enabled
B1	U.S.(Bell) answer sequence enabled

ATTENTION	
Type:	Immediate
Format:	AT [cmds]
Description:	Tells the modem that a command follows or use alone to test OK result code

BIT-MAPPED REGISTER S13		
Format	AT [cmds] S13=n [cmds]	
Default:	0	
Range:	0-159	
Unit:	Bit-mapped	
Description:	Controls DTR reset, non-error-correcting mode buffer, DTR dialing, reset dialing, and disconnect.	
Bit	Value	Function
0	í 0	DTR normal
	1	Reset on low DTR
1	í 0	Non-error-correcting mode transmit buffer set to 1.5KB
	1	Non-error-correcting mode transmit buffer set to 128 bytes
2	í 0	Use backspace key for delete disabled
	1	Use backspace key for delete enabled
3	í 0	DTR dialing disabled
	1	DTR dialing enabled
4	í 0	Reset dialing disabled
	1	Reset dialing enabled, dials number at position 0 in NVRAM.
6, 5	í 00	Not used
7	í 0	Disconnect as normal
	1	Disconnect on escape code

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BIT-MAPPED REGISTER S15		
Format	AT [cmds] S15= <i>n</i> [cmds]	
Default:	0	
Range:	0-255	
Unit:	Bit-mapped	
Description:	Controls ARQ/MNP for V.22/22bis/32/32bis/32terbo, V.42 detection, MNP4 and 3, and MNP incompatibility.	
Bit	Value	Function
0	í 0	Error correction and data compression enabled for V.22
	1	Error correction and data compression disabled for V.22
1	í 0	Error correction and data compression enabled for V.22bis
	1	Error correction and data compression disabled for V.22bis
2	í 0	Error correction and data compression enabled for V.32/32bis/32terbo
	1	Error correction and data compression disabled for V.32/32bis/32terbo
7, 3	í 00	V.42 detection disabled
4	í 0	MNP 4 enabled
	1	MNP 4 disabled
5	í 0	MNP 3 enabled
	1	MNP 3 disabled
6	í 0	MNP normal
	1	MNP adjusted for non compliant modems

BIT-MAPPED REGISTER S27		
Format	AT [cmds] S27= <i>n</i> [cmds]	
Default:	0	
Range:	0-191	
Unit:	Bit-mapped	
Description:	Controls V.21, V.32 encoding and modulation, V.42 answer tone and handshake, and 9600 result codes.	
Bit	Value	Function
0	í 0	V.21 disabled
	1	V.21 enabled
1	í 0	V.32 non-trellis coding disabled
	1	V.32 non-trellis coding enabled
2	í 0	V.32 modulation enabled
	1	V.32 modulation disabled
3	í 0	2100Hz answer tone enabled
	1	2100Hz answer tone disabled
4	í 0	V.23 fallback mode disabled
	1	V.23 fallback mode enabled
5	í 0	V.32bis enabled
	1	V.32bis disabled
6	í 0	Not used
7	í 0	Actual result codes displayed
	1	Force 9600 result codes

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BIT-MAPPED REGISTER S32

AT [cmds] S32=*n* [cmds]

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0-27

Controls call indicate, V.8, V.34, and 33.6Kbps support

Value	Function
0	Call indicate during V.34 operation disabled
1	Call indicate during V.34 operation enabled
í 0	V.8 during V.34 operation disabled
í 1	V.8 during V.34 operation enabled
í 0	Not used
í 0	V.34 enabled
1	V.34 disabled
í 0	33.6Kbps support enabled
1	33.6Kbps support disabled

BIT-MAPPED REGISTER S33

Format: AT [cmds] S33=*n* [cmds]

Default: 0

Range: 0-191

Description: Controls baud rate and shaping.

Note: For 28.8 models

Bit	Value	Function
0	í 0	2400 baud rate enabled
	1	2400 baud rate disabled
1	í 0	2743 baud rate enabled
	1	2743 baud rate disabled
2	í 0	2800 baud rate enabled
	1	2800 baud rate disabled
3	í 0	3000 baud rate enabled
	1	3000 baud rate disabled
4	í 0	3200 baud rate enabled
	1	3200 baud rate disabled
5	í 0	3429 baud rate enabled
	1	3429 baud rate disabled
6	í 0	Not used
7	í 0	Shaping enabled
	1	Shaping disabled

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BIT-MAPPED REGISTER S34		
Format:	AT [cmds] S34= <i>n</i> [cmds]	
Default:	0	
Range:	0-255	
Description:	Controls mapping, non-linear coding, TX level deviation, pre-emphasis, and pre-coding.	
Note:	For 28.8 models	
Bit	Value	Function
0	í 0	8S-2D map enabled
	1	8S-2D map disabled
1	í 0	16S-4D map enabled
	1	16S-4D map disabled
2	í 0	32S-2D map enabled
	1	32S-2D map disabled
3	í 0	64S-4D map enabled
	1	64S-4D map disabled
4	í 0	Non linear coding enabled
	1	Non linear coding disabled
5	í 0	TX level deviation enabled
	1	TX level deviation disabled
6	í 0	Pre-emphasis enabled
	1	Pre-emphasis disabled
7	í 0	Pre-coding enabled
	1	Pre-coding disabled

BREAK LENGTH	
Type:	Register
Format:	AT [cmds] S21= <i>n</i> [cmds]
Default:	10
Range:	Unidentified
Unit:	.01 second
Description:	Sets the length of error control mode breaks sent from DCE to DTE.

BREAK TYPE	
Type:	Configuration
Format:	AT [cmds] &Y <i>n</i> [cmds]
Description:	Configures action of break signal
Command	Function
&Y0	Empty buffer only
í &Y1	Empties buffer and break is sent immediately
&Y2	Do not empty buffer and break is sent immediately

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CARRIER DETECT (CD)	
Type:	Configuration
Format:	AT [cmds] &C <i>n</i> [cmds]
Description:	Controls the CD signal
Command	Function
&C0	Modem does not respond to CD signal
í &C1	CD signal normal

COMPRESSION	
Type:	Configuration
Format:	AT [cmds] &K <i>n</i> [cmds]
Description:	Selects data compression
Command	Function
&K0	Data compression disabled
í &K1	Auto enabled/disable data compression
&K2	Data compression enabled
&K3	MNP5 data compression disabled

CONNECTION SPEED LOWER LIMIT	
Type:	Configuration
Format:	AT [cmds] &U <i>n</i> [cmds]
Description:	Sets minimum required connection speed
Note:	16.8 - 28.8bps for 28.8 models
Command	Function
í &U0	Disabled
&U1	300bps
&U2	1200bps
&U3	2400bps
&U4	4800bps
&U5	7200bps
&U6	9600bps
&U7	12Kbps
&U8	14.4Kbps
&U9	16.8Kbps
&U10	19.2Kbps
&U11	21.6Kbps
&U12	24Kbps
&U13	26.4Kbps
&U14	28.8Kbps

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CONNECTION SPEED UPPER LIMIT	
Type:	Configuration
Format:	AT [cmds] &N <i>n</i> [cmds]
Description:	Sets maximum required connection speed, modem will hang up if it cannot connect.
Note:	16.8 - 28.8bps for 28.8 models
Command	Function
<i>i</i> &N0	Variable
&N1	300bps
&N2	1200bps
&N3	2400bps
&N4	4800bps
&N5	7200bps
&N6	9600bps
&N7	12Kbps
&N8	14.4Kbps
&N9	16.8Kbps
&N10	19.2Kbps
&N11	21.6Kbps
&N12	24Kbps
&N13	26.4Kbps
&N14	28.8Kbps

DATA SET READY (DSR)	
Type:	Configuration
Format:	AT [cmds] &S <i>n</i> [cmds]
Description:	Selects DSR options
Command	Function
<i>i</i> &S0	DSR forced high
&S1	DSR controlled by modem

DATA TERMINAL READY (DTR)	
Type:	Configuration
Format:	AT [cmds] &D <i>n</i> [cmds]
Description:	Selects modem response to DTR
Command	Function
&D0	Modem does not respond to DTR
&D1	Modem goes to command mode after DTR toggles
<i>i</i> &D2	Modem uses DTR as normal

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DIAL	
Type:	Immediate
Format:	AT [cmds] D<#> [cmds]
Example:	ATDT 443-3388,,,1111;
Description:	Dials telephone number according to any modifiers included in the string
Note:	Any combination of modifiers can be used to produce the desired dial functions in sequence.
Command	Function
i P	Pulse dialing enabled
T	Tone dialing enabled
,	Dialing paused for 2 seconds to a maximum amount of time specified in S8 register
;	Modem returned to command state after dialing. Can only be placed at the end of the dial command.
"	Dials letters that follow, ATDT"GOMICRO
!	Flash function initiated
/	125 ms delay before proceeding with dial string
W	Dialing resumed following dial tone detection of second dial tone
@	Wait for quiet answer, then proceeds to execute the rest of the dial string.
R	Answer mode enabled; originate mode disabled following handshake initiation.
# and *	Extended touch tone pad tones

DIAL - LAST NUMBER	
Type:	Immediate
Format:	AT [cmds] DL [cmds]
Description:	Re-dial last number dialed

DIAL - STORED NUMBER	
Type:	Immediate
Format:	AT [cmds] DS <i>n</i> [cmds]
Description:	Dial stored number from memory location <i>n</i>

DISCONNECT BUFFER DELAY	
Type:	Register
Format	AT [cmds] S38= <i>n</i> [cmds]
Default:	0
Range:	Unidentified
Unit:	1 second
Description:	Sets maximum duration allowed during buffered data calls for modem to perform clearing functions after losing carrier-signal or receiving a clear call signal from the remote modem and before initiating hang-up process. A value of 0 will allow the modem to hanging-up after DTR drops.

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DTR CHANGE THRESHOLD	
Type:	Register
Format:	AT [cmds] S25= <i>n</i> [cmds]
Default:	20
Range:	Unidentified
Unit:	.01 second
Description:	Sets maximum time a change in the DTR signal will be ignored

ECHO	
Type:	Configuration
Format:	AT [cmds] <i>En</i> [cmds]
Description:	Controls echo function; display keyboard commands when enabled.
Command	Function
E0	Echo function disabled
í E1	Echo function enabled

ECHO - ON-LINE	
Type:	Configuration
Format:	AT [cmds] <i>Fn</i> [cmds]
Description:	Selects whether data sent while in data mode are echoed
Command	Function
F0	Local echo enabled
í F1	Local echo disabled

ERROR CORRECTION MODE (ARQ)	
Type:	Configuration
Format:	AT [cmds] & <i>Mn</i> [cmds]
Description:	Selects active error correction protocols
Command	Function
&M0	Normal mode only
í &M4	Auto-detect mode
&M5	ARQ mode only

ESCAPE SEQUENCE	
Type:	Immediate
Format:	+++AT [cmds] <CR>
Description:	Initiates the escape sequence and returns the modem to the on-line command state if it receives three escape characters set in S2 within the time allotted by S12.
Note:	Do not precede this command with AT.

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EXTENDED RESULT CODES	
Type:	Configuration
Format:	AT [cmds] &An [cmds]
Description:	Selects extended result codes
Command	Function
&A0	Extended result codes disabled
&A1	ARQ result codes enabled
&A2	ARQ result codes enabled and V.32 result code added
í &A3	Error control and compression result codes enabled

FACTORY DEFAULT PROFILE	
Type:	Configuration
Format:	AT [cmds] &Fn [cmds]
Description:	Loads values in active profile to values found in the default profile, which are READ-ONLY.
Command	Function
&F0	Generic template
í &F1	Hardware flow control template
&F2	Software flow control template

FLOW CONTROL CHARACTER - XOFF	
Type:	Register
Format:	AT [cmds] S23=n [cmds]
Default:	19
Range:	0-127
Unit:	ASCII
Description:	Sets the character used to represent XOFF.

FLOW CONTROL CHARACTER - XON	
Type:	Register
Format:	AT [cmds] S22=n [cmds]
Default:	17
Range:	0-127
Unit:	ASCII
Description:	Sets the character used to represent XON.

FLOW CONTROL PASSTHROUGH	
Type:	Configuration
Format:	AT [cmds] &ln [cmds]
Description:	Allows modem to act on, then transmit XON/XOFF characters.
Command	Function
í &I0	Software flow control disabled
&I1	XON/XOFF pass-through enabled
&I2	XON/XOFF pass-through disabled

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FLOW CONTROL TYPE - RECEIVE DATA	
Type:	Configuration
Format:	AT [cmds] &Rn [cmds]
Description:	Controls receive data hardware flow control and RTS signals
Command	Function
&R1	Modem ignores RTS
í &R2	Received data to DTE when RTS is on

FLOW CONTROL TYPE - TRANSMIT DATA	
Type:	Configuration
Format:	AT [cmds] &Hn [cmds]
Description:	Sets type of flow control used by modem
Command	Function
&H0	Flow control disabled
í &H1	CTS/RTS flow control enabled
&H2	XON/XOFF flow control enabled
&H3	CTS/RTS and XON/XOFF flow control enabled

GUARD TONE	
Type:	Configuration
Format:	AT [cmds] &Gn [cmds]
Description:	Commands the modem to transmit a guard tone
Note:	Used primarily for international data transmission
Command	Function
í &G0	Guard tone disabled
&G1	550Hz guard tone enabled
&G2	1800Hz guard tone enabled

HELP SCREEN - CONTROLS	
Type:	Immediate
Format:	<Ctrl> C, K or S
Description:	Cancel or starts/restarts help screens
Command	Function
<Ctrl> C	Display of help screen canceled
<Ctrl> K	Display of help screen canceled
<Ctrl> S	Starts/restarts help screens

HOOK CONTROL	
Type:	Immediate
Format:	AT [cmds] Hn [cmds]
Description:	Selects whether the modem is on-hook or off-hook
Command	Function
H0	Modem commanded to go on-hook (hang-up)
H1	Modem commanded to go off-hook (pick-up)

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INACTIVITY TIMER	
Type:	Register
Format:	AT [cmds] S19= <i>n</i> [cmds]
Default:	0
Range:	Unidentified
Unit:	1 minute
Description:	Sets the length of time that the modem does not receive information before it disconnects.

LIST AMPERSAND COMMANDS	
Type:	Immediate
Format:	AT [cmds] &\$ [cmds]
Description:	Displays ampersand (&) commands

LIST DIAL COMMANDS	
Type:	Immediate
Format:	AT [cmds] D\$ [cmds]
Description:	Displays dial commands

LIST S-REGISTERS	
Type:	Immediate
Format:	AT [cmds] S\$ [cmds]
Description:	Displays the S-registers

LOCK SERIAL PORT	
Type:	Configuration
Format:	AT [cmds] &B <i>n</i> [cmds]
Description:	Not used. Modem follows COM port speed if it changes, even while on-line.

ON-LINE	
Type:	Immediate
Format:	AT [cmds] On [cmds]
Description:	Controls on-line command (data transmission) mode options.
Note:	The O command must be placed at the end of the command string.
Command	Function
O0	On-line command mode with no retraining enabled
O1	On-line command mode with retraining enabled

ON-LINE HELP	
Type:	Immediate
Format:	AT [cmds] \$ [cmds]
Description:	On-line help; displays basic command list

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POWER-UP/HARD RESET CONFIGURATIONS	
Type:	Configuration
Format:	AT [cmds] Yn [cmds]
Description:	On power-up modem uses default profiles
Command	Function
í Y0	Use default setting 0 saved in non-volatile RAM
Y1	Use default setting 1 saved in non-volatile RAM
Y2	Generic template
Y3	Hardware flow control template
Y4	Software flow control template

PULSE DIALING	
Type:	Configuration
Format:	AT [cmds] P [cmds]
Description:	Enables pulse dialing
Note:	This command can be duplicated with the P modifier in the D (Dial) command.

PULSE DIALING RATIO	
Type:	Configuration
Format:	AT [cmds] &Pn [cmds]
Description:	Selects pulse dial make/break ratio
Command	Function
í &P0	39/61ms at 10pps (North America)
&P1	33/67ms at 10pps (Europe)

REPEAT COMMAND STRING	
Type:	Configuration
Format:	AT [cmds] A> [cmds]
Description:	Causes modem to repeat command string until a keyboard key is pressed

REPEAT PREVIOUS COMMAND	
Type:	Immediate
Format:	A/
Description:	Repeats previous command, mainly used for re-dial
Note:	Do not precede this command with AT, or follow it with <CR>.

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REPORT INFORMATION	
Type:	Immediate
Format:	AT [cmds] In [cmds]
Description:	Displays information requested
Command	Function
I0	Reports 4-digit product code
I1	Reports DSP code checksum
I2	Reports RAM test
I3	Reports product type
I4	Reports current command settings
I5	Reports NVRAM settings
I6	Reports link diagnostics
I7	Reports product configuration
I10	VxD configuration

RESULT CODES	
Type:	Configuration
Format:	AT [cmds] Qn [cmds]
Description:	Enables modem to send result codes to the DTE
Command	Function
í Q0	Result code sending enabled
Q1	Result code sending disabled
Q2	Result code sending enabled while in originate mode

RESULT CODE FORMAT	
Type:	Configuration
Format:	AT [cmds] Vn [cmds]
Description:	Selects word or numeric format for information-text and result codes
Command	Function
V0	Numeric format enabled
í V1	Verbose (word) format enabled

SELECT CALL PROGRESS RESULT CODES	
Type:	Configuration
Format:	AT [cmds] Xn [cmds]
Description:	Enables selection of tone detection and associated result code format options
Command	Function
X0	Busy and dial tone detection disabled; result codes 0-4 enabled.
X1	Busy and dial tone detection disabled; result codes 0-5, 10-155 enabled.
X2	Busy tone detection disabled, dial tone detection enabled; result codes 0-6, 10-155 enabled; also adaptive dialing, wait for second dial tone, and fast dialing enabled.
X3	Busy tone detection enabled, dial tone detection disabled; result codes 0-5, 7-155 enabled; also adaptive dialing, and wait for answer enabled.
X4	Busy and dial tone detection enabled; result codes 0-155 enabled; also adaptive dialing, wait for second dial tone, wait for answer, and fast dialing enabled.
Note: Valid numeric result codes; 0-8, 10, 13, 18, 20, 21, 25, 43, 85, 91, 99, 103, 107, 151, and 155.	

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SOFT RESET	
Type:	Immediate
Format:	AT [cmds] Zn [cmds]
Description:	Restores modem profiles previously saved in non-volatile RAM
Command	Function
Z0	Restore setting used by ATY command
Z1	Restore setting 0
Z2	Restore setting 1
Z3	Restore factory setting 0 (AT&F0)
Z4	Restore factory setting 1 (AT&F1)
Z5	Restore factory setting 2 (AT&F2)

SPEAKER MODE	
Type:	Configuration
Format:	AT [cmds] Mn [cmds]
Description:	Selects various speaker options
Command	Function
M0	Speaker disabled
í M1	Speaker enabled until carrier signal detected
M2	Speaker enabled
M3	Speaker enabled following dialing, then disabled after carrier signal detected.

SPEAKER VOLUME	
Type:	Configuration
Format:	AT [cmds] Ln [cmds]
Description:	Controls speaker volume
Command	Function
L0	Low volume setting
L1	Low volume setting
í L2	Medium volume setting
L3	Highest volume setting

STATUS-REGISTER	
Type:	Configuration
Format:	Read: AT [cmds] Sn? [cmds] Write: AT [cmds] Sn=x [cmds]
Description:	Writes to or reads from a specified register
Note:	See the section on S-registers for detailed listing of commonly used S-registers.
Command	Function
Sn.b=x	Write to register bit b using values 0 (off) and 1 (on) for x

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STORE ACTIVE PROFILE	
Type:	Configuration
Format:	AT [cmds] &Wn [cmds]
Description:	Writes the values for the active profile into the non-volatile RAM templates
Command	Function
&W0	Write the active profile to stored profile 0
&W1	Write the active profile to stored profile 1

STORE TELEPHONE NUMBER	
Type:	Configuration
Format:	AT [cmds] &Zn=x
Description:	Writes selected telephone numbers into the non-volatile memory at location <i>n</i>
Note:	The characters described in the D command are valid for use in the &Z command.
Command	Function
&Zn=L	Writes last executed dial string into the non-volatile memory at location <i>n</i>
&Zn?	Displays phone number from non-volatile memory at location <i>n</i>

TEST MODES	
Type:	Configuration
Format:	AT [cmds] &Tn [cmds]
Description:	Controls loopback tests, analog, digital, remote digital, and self tests.
Command	Function
&T0	Testing disabled
&T1	Local analog loopback enabled
&T3	Local digital loopback enabled
&T4	Remote digital loopback enabled
i &T5	Remote digital loopback prohibited
&T6	Remote digital loopback initiated
&T7	Remote digital loopback w/ self-test and error detector in progress
&T8	Local analog loopback w/ self-test and error detector in progress

TEST TIMER	
Type:	Register
Format	AT [cmds] S18= <i>n</i> [cmds]
Default:	0
Range:	0-255
Unit:	1 second
Description:	Sets the maximum duration for modem tests
Note:	S18=0 disables the timer and allows an indefinite duration.

TONE DIALING	
Type:	Configuration
Format:	AT [cmds] T [cmds]
Description:	Enables tone dialing mode
Note:	This command can be duplicated with the T modifier in the D (Dial) command.

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TONE DIALING TEST	
Type:	Register
Format:	AT [cmds] S16= <i>n</i> [cmds]
Description:	Selects the tone dialing test
Command	Function
í S16=0	Tone dialing test disabled
S16=2	Tone dialing test enabled

V.21 - ANSWER MODE FALLBACK TIMER	
Type:	Register
Format:	AT [cmds] S29= <i>n</i> [cmds]
Default:	20
Range:	Unidentified
Unit:	.1 second
Description:	Sets the length of time for V.21 answer mode fallback

V.32 HANDSHAKE TIME	
Type:	Register
Format:	AT [cmds] S28= <i>n</i> [cmds]
Default:	8
Range:	0-255
Unit:	.1 second
Description:	Sets length of V.32 handshake
Value	Meaning
0	V.32 answer tones disabled
255	V.32 at 9600 enabled, all other connections disabled.