



COMPARISON OF STANDARD AT COMMANDS AND RESULT CODES TO THE SILICON LABS Si2400 EMBEDDED MODEM

Introduction

The comparison tables below should accelerate the design cycle for engineers who are familiar with the standard AT command set and result codes. Several vendor's AT commands and result codes were compared and those which were common to most vendors were included in the list. Some features unique to the Si2400 have also been included. Table 1

compares the AT command set, and Table 2 compares the result codes.

Note that although some AT commands may not have an Si2400 equivalent AT command, some may be implemented on the Si2400 using S-register and DSP low-level controls.

Table 1. AT Command Comparison

Standard	Si2400 Equivalent	Description
+++	+++ (ATS14.5 must equal 1)	Escape from data mode to command mode.
A/	—	Repeat last command (no <CR>).
ATA	ATA	Answer incoming call.
ATB0	ATS07=02	Initiate calls using ITU-T V.22 at 1200 bps.
ATB1	ATS07=00	Initiate calls using Bell 212A at 1200 bps.
ATB2	ATS07=24	Enable ITU-T V.23 at 75 bps TX/1200 bps RX.
ATB3	ATS07=14	Enable ITU-T V.23 at 1200 bps TX/75 bps RX.
—	ATS07=20	Initiate calls using V.23 at 75 bps TX/600 bps RX.
—	ATS07=10	Initiate calls using V.23 at 600 bps TX/75 bps RX.
—	ATS07=06	Initiate calls using V.22bis at 2400 bps
ATB15	ATS07=03	Initiate calls using ITU-T V.21 at 300 bps
ATB16	ATS07=01	Initiate calls using Bell 103 at 300 bps
ATD	ATD (Si2400 must have ATDT or ATDP)	Dial phone number n.
Dial Modifiers (the following modifiers should be added to the ATD command)		
T	T	Tone dial.
P	P	Pulse dial.
0-9, *, #, ABCD	0-9, *, #, ABCD	The telephone number must be dialed.
,	,	Pause for two seconds.
;	;	Return to command mode after dialing.
/	/	Pause for 125 ms.
"	—	Dial the letters that follow.
@	—	Wait for silence for five seconds.
\$	—	Wait for bong.

Table 1. AT Command Comparison (Continued)

Standard	Si2400 Equivalent	Description
!	—	Flash (go on hook briefly).
Sn	—	Dial stored number.
J	—	MNP10 link negotiation.
L	—	Redial last number.
^	—	Disable calling tone.
R	Contact factory for details	Originate call in answer mode.
W	—	Wait for second dial tone.
ATE0	ATE0	Commands are not echoed.
ATL2	ATSF4.3:0=5	Medium speaker volume.
ATL3	ATSF4.3:0=0	Highest speaker volume.
ATM0	ATM0	Speaker always off.
ATM1	ATM1	Speaker on until carrier detected.
ATM2	ATM2	Speaker always on.
ATM3	ATM3	Speaker on only while answering.
ATO0	ATO	Return to data mode from command mode, only if online.
ATO1	—	Return on-line and initiate retrain.
ATQ0	ATS14.7=0	Modem returns result codes.
ATQ1	ATS14.7=1	Modem gives no result codes.
ATQ2	—	Modem returns result codes when originating a call, but does not return result codes when answering a call.
ATSn=x	ATSn=x (n and x are hex values between 00 and FF rather than decimal)	Sets register n to the value x.
ATSn?	ATSn?	Reads the value of register n.
AT\$	—	Display a list of S-registers.
ATSr.b=n	—	Set bit b of register r to n.
ATVn	—	Result codes in numerical or verbose form.
ATWn	—	Connect messages formatting.
ATYn	—	Long space disconnect.
ATZ0	ATZ	Restore stored profile 0.
ATZ1	—	Restore stored profile 1.
AT&Cn	—	Hardware carrier detect signal.
AT&Dn	—	Data terminal ready settings.
AT&Fn	—	Restore factory settings.
AT&G0	ATS15.5:4=0	Disable guard tone.

Table 1. AT Command Comparison (Continued)

Standard	Si2400 Equivalent	Description
AT&G1	ATS15.5:4=2	Selects 550 Hz guard tone.
AT&G2	ATS15.5:4=1	Selects 1800 Hz guard tone.
AT&Kn	(CTS flow control is used)	Flow control.
AT&P0	ATS06=25S05=17	61/39 ratio at 10 pps.
AT&P1	ATS06=28S05=14	67/33 ratio at 10 pps.
AT&P2	ATS06=0CS05=12	39/61 ratio at 20 pps.
AT&P3	ATS06=0BS05=13	33/67 ratio at 20 pps.
AT&Rn	—	CTS/RTS option.
AT&Sn	—	DSR override.
AT&T0	—	Terminates test.
AT&T1	—	Initiates local analog loopback.
AT&T2	—	Returns ERROR.
AT&T3	ATSE4.5:4=2	Initiates local digital loopback.
AT&T4	—	Enables digital loopback acknowledgment for remote request.
AT&T5	—	Disables digital loopback acknowledgment for remote request.
AT&T6	—	Requests a remote digital loopback without self test.
AT&T7	—	Requests a remote digital loopback with self test.
AT&T8	—	Initiates local analog loopback with self test.
AT&Wn	—	Store current configuration.
AT&Xn	—	Select synchronous clock source.
AT&Zn	—	Store telephone number.
AT%En	—	LQM and Auto-retrain or FB/FF.
AT%Cn	—	Enable/Disable data compression.
ATS0	ATS00	Sets number of rings required before auto-answer.
ATS1	—	Ring count.
ATS2	ATS0F	Escape code character.
ATS3	—	Carriage return character.
ATS4	—	Linefeed character.
ATS5	—	Backspace character.
ATS6	ATS02, ATS01	Wait time for dial tone/wait to dial.
ATS7	ATS39	Wait for carrier after dial.
ATS8	—	Pause time for comma dial modifier.
ATS9	ATS37	Carrier detect response time.

Table 1. AT Command Comparison (Continued)

Standard	Si2400 Equivalent	Description
ATS10	ATS03	Lost carrier to hang-up delay.
ATS11	ATS04	Duration and spacing of dialed tones.
ATS12	ATS10 (On Si2400, this is the delay between the third + and when it goes into command mode if AT<CR> is not sent)	Escape code guard time.
ATS13-17	—	Reserved.
ATS18	—	Modem test timer.
ATS19-24	—	Reserved.
ATS25	—	DTR detection.
ATS26	—	RTS-to-CTS Delay interval.
ATS27.3	ATS33.1	Disable answer tone.
ATS27-28	—	Reserved.
ATS29	ATS1E	V.21 answer tone duration.
ATS30-37	—	Reserved.
ATS38	—	Delay before forced hang-up.
Note: The rest of the ATSn commands are vendor specific.		

Table 2. Result Code Comparison

Result Codes	Si2400 Equivalent	Description
OK	O	Modem OK response.
CONNECT	c	Connect.
RING	R	Incoming ring signal detected.
NO CARRIER	N	No carrier detected.
ERROR	-	Error in format.
CONNECT 1200	d	Connect 1200 bps (when programmed as V.22bis modem).
NO DIALTONE	n	No dial tone detected.
BUSY	b	Busy tone detected.
NO ANSWER	—	No answer (only when @ is used).
CONNECT 2400	c	Connect.
RINGING	r	Ringback detected.
CONNECT 600/75	v	Connect (V.23 Only).
CONNECT 75/600	v	Connect (V.23 Only).
CONNECT 1200/75	v	Connect (V.23 Only).
CONNECT 75/1200	v	Connect (V.23 Only).



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