

COMPARISON OF STANDARD AT COMMANDS AND RESULT CODES TO THE SILICON LABS Si2401 EMBEDDED MODEM

1. 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 Si2401 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 Si2401 equivalent AT command, some may be implemented on the Si2401 using S-register and DSP low-level controls.

Table 1. AT Command Comparison

| Standard | Si2401 Equivalent | Description |
|--|-------------------------------------|--|
| +++ | +++ | 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 (Si2401 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. |

Table 1. AT Command Comparison (Continued)

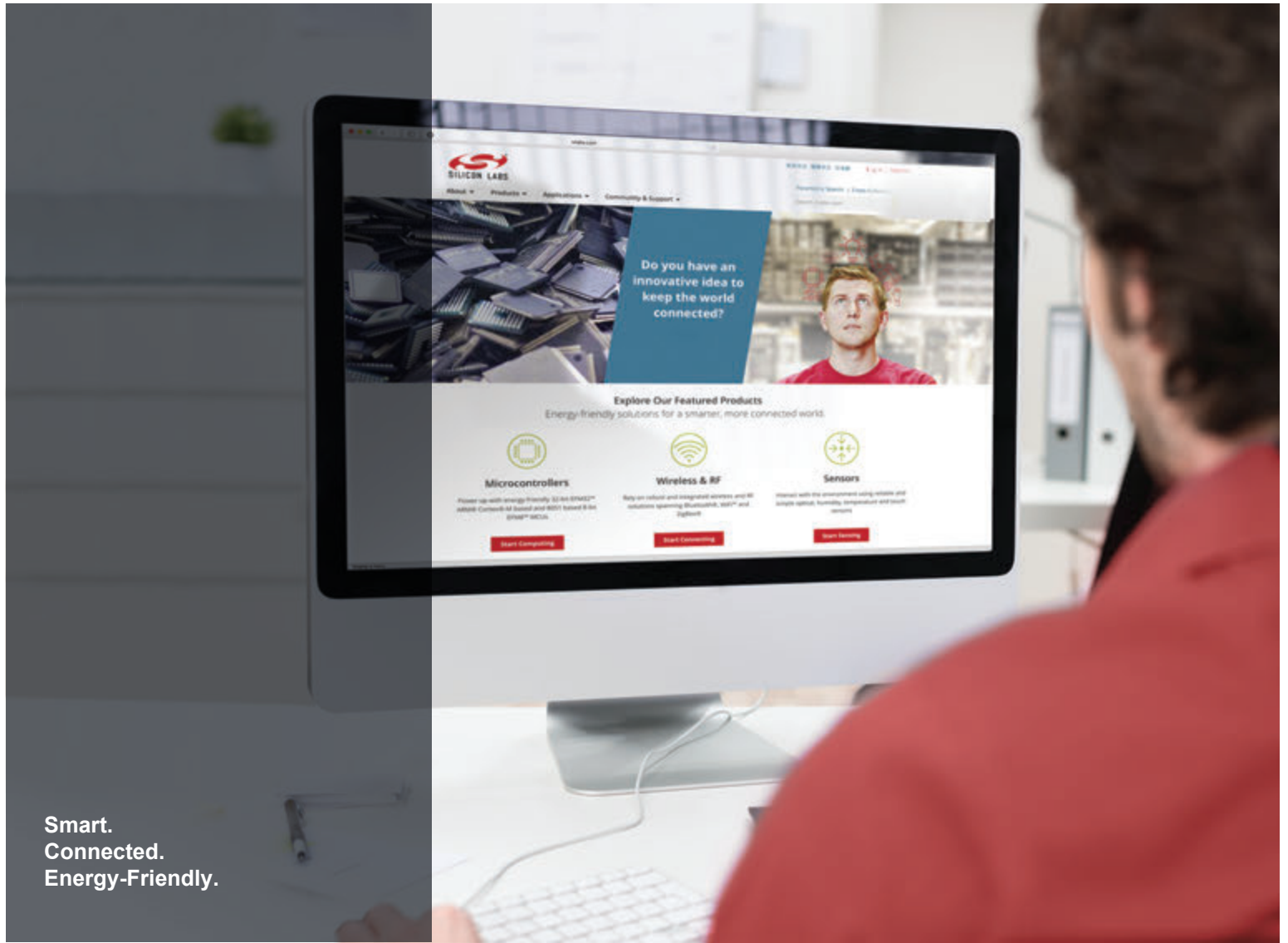
| Standard | Si2401 Equivalent | Description |
|----------|---|--|
| / | / | Pause for 125 ms. |
| " | — | Dial the letters that follow. |
| @ | — | Wait for silence for five seconds. |
| \$ | — | Wait for bong. |
| ! | Contact factory for details | Flash (go on hook briefly). |
| R | Contact factory for details | Originate call in answer mode. |
| W | Contact factory for details | Wait for second dial tone. |
| ATE0 | ATE0 | Commands are not echoed. |
| ATL2 | SF4[3:0] = 5* | Medium speaker volume. |
| ATL3 | SF4[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. |
| 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. |
| ATZ0 | ATZ | Restore stored profile 0. |
| AT&Cn | SOC[7] = 1* | Hardware carrier detect signal. |
| AT&G0 | S15[5:4] = 0* | Disable guard tone. |
| AT&G1 | S15[5:4] = 2* | Selects 550 Hz guard tone. |
| AT&G2 | S15[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. |

Table 1. AT Command Comparison (Continued)

| Standard | Si2401 Equivalent | Description |
|--|-------------------|---|
| AT&P3 | ATS06=0BS05 = 13 | 33/67 ratio at 20 pps. |
| AT&Rn | — | CTS/RTS option. |
| AT&T3 | SE4[5:4] = 2* | Initiates local digital loopback. |
| S0 | S00 | Sets number of rings required before auto-answer. |
| S1 | SCC | Ring count. |
| S2 | S0F | Escape code character. |
| S3 | — | Carriage return character. |
| S4 | — | Linefeed character. |
| S5 | — | Backspace character. |
| S6 | S02, S01 | Wait time for dial tone/wait to dial. |
| S7 | S39 | Wait for carrier after dial. |
| S8 | — | Pause time for comma dial modifier. |
| S9 | S37 | Carrier detect response time. |
| S10 | S03 | Lost carrier to hang-up delay. |
| S11 | S04 | Duration and spacing of dialed tones. |
| S12 | S10 | Escape code guard time. |
| S27[3] | S33[1] | Disable answer tone. |
| S29 | S1E | V.21 answer tone duration. |
| <p>*Note: The notation, Sxx[n:m] denotes a bit field. The command should not be entered as shown. For example, ATS00[2:0] = 7 is entered as ATS00 = 07 if and only if ATS00[7:3] = 0.</p> | | |

Table 2. Result Code Comparison

| Result Codes | Si2401 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 | c | Connect (V.23 Only). |
| CONNECT 1200/75 | v | Connect (V.23 Only). |
| CONNECT 75/1200 | c | Connect (V.23 Only). |



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Silicon Laboratories Inc.
400 West Cesar Chavez
Austin, TX 78701
USA

<http://www.silabs.com>