

Multi-Tech Wireless Modems Getting Started

General Introduction

This reference guide covers the process for activating the wireless CDMA and GSM modem and the steps for using some of the common AT commands for getting started and using your wireless modem.

Activation Introduction

Multi-Tech – A Certified National Activation Agent

Multi-Tech Systems, Inc. is a certified national **AT&T** and **Sprint** activation agent for AT&T and Sprint wireless. To obtain information about available data plans and to purchase and activate a wireless data account, contact Multi-Tech at 888-288-5470.

Pre-Configured Multi-Tech Products

Each Multi-Tech wireless modem is pre-configured to operate on an **AT&T** or **Sprint** or **Verizon** wireless network.

Activation Process Software

Use Windows HyperTerminal and the directions below to complete the activation process..

AT&T Account Setup and Activation

Follow these steps to set up a wireless account.

- Contact Multi-Tech to obtain an account.
- Provide your activation agent with the following:
 - * Your Federal Tax I.D.
 - * Each modem's 15-character IMEI number located on the modem's label.

Sprint Account Setup and Activation

Follow these steps to set up a wireless account:

- Contact Multi-Tech to obtain an account.
- Provide the activation agent with each modem's 8-character ESN number printed next to the bar code on the modem.
- Multi-Tech will give you three numbers for each modem. Record these numbers — they are needed in order to use your modem:
 - MDN – Your 10-digit phone number
 - MSID – Another 10-digit number
 - OTKSL – Your 6-digit lock code, also known as SPC (Service Programming Code)
- Activate the modem by entering the following sequence of AT commands:

| AT Command | Modem Response | Comment |
|---------------------------|----------------|----------------------------------------------|
| 1. AT+WSPC=1,xxxxxx<cr> | OK | “xxxxxx” is your programming code (your MSL) |
| 2. AT+WMDN=nnnnnnnnnn<cr> | OK | “nnnnnnnnnn” is your phone number (MDN) |
| 3. AT+WCMT=1<cr> | OK | Modem commits the changes to memory |

Note: If your MDN and MSID numbers are identical, then you can skip Steps 4, 5, and 6.

Wait for 10 seconds before issuing next command.

| | | |
|--------------------------------|----|-------------------------------------|
| 4. AT+WSPC=1,xxxxxx<cr> | OK | “xxxxxx” is your programming code |
| 5. AT+WIMI=31000ssssssssss<cr> | OK | “ssssssssss” is your MSID |
| 6. AT+WCMT=1<cr> | OK | Modem commits the changes to memory |

Wait for 10 seconds before issuing next command

| | | |
|-------------------|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7. AT+WIOTA=4<cr> | OK | This command clears previous IOTA attempts |
| 8. AT+WIOTA=1<cr> | ;+WOAP: “Preparing Data Services” OK | This command initiates over-the-air activation. You must have network reception for this step. This process takes about 3 minutes to complete. |

Modem Response

When complete, the modem will respond with: +WOAR:“Please Retry”

This response indicates that you should please retry, but you do not need to do so. Your modem should now be ready for use.

What to Do If You Do Not Receive the “Please Retry” Response

Turn the power off and then on. Repeat Steps 7 and 8

Verizon Account Setup and Activation

Follow these steps to set up a wireless account:

- Contact Verizon to obtain an account.
- Provide the Verizon agent with each modem's 8-character ESN number printed next to the bar code on the modem.
- Verizon will give you a 10-digit phone number for each modem (the MDN). Record this number — it is needed in order to use your modem.
- Once you have your Verizon account, activate the modem by entering the AT commands as follows:

| AT Command | Comment |
|------------------------|-------------------------------------------------------------------------------|
| AT+WSPC=1,000000<cr> | ;enter the programming code ;response from modem should be OK |
| AT+WMDN=nnnnnnnnnn<cr> | ;"nnnnnnnnnn" is your phone number (MDN) ;response from modem should be OK |
| AT+WCMT=1<cr> | ;modem commits the changes to memory ;response from modem should be OK |

Wait for 10 seconds before issuing next command

| | |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ATD*22899; <cr> | ;perform over-the-air provisioning ;response from modem +WOT1: "Programming in Process" +WOTS: "SPL unlocked" +WOTP: "PRL download OK" +WOTM: "MDM download OK" +WOTC: "Commit successful" +WOT2: "Programming Successful" |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Your modem should now be ready for use.

Contacting Multi-Tech Systems, Inc.

If you have any questions or problems, contact Multi-Tech Systems, Inc. Technical Support at 800-972-2439 or 763-717-5863.

AT Commands to Use to Get Started

Query Your Modem's Operation

1. Check the signal quality.

Type **AT+CSQ**

The modem responds with the received signal strength (rssi).

2. Check the identity of the modem.

Use the **ATI** command (Note: The AT is followed by the capital letter i)

- Type **ATI0** (Note: The command ends in a zero)
The manufacturing data displays. For example, Wavcom Modem 800 1900
- Type **ATI3**
The software version displays. For example, S/W VER: xxxxx
- Type **ATI6**
The capability data displays. For example, +CGSM, +CIS707, ...

3. Check the network registration and roaming status.

Type **AT+CREG?**

The modem will respond in one of the following ways:

- +CREG: 0,0 (this tells you that the modem is not registered on any network)
- +CREG: 0,1 (this tells you that the modem is registered on the home network)
- +CREG: 0,5 (this tells you the modem is registered on a network but it is roaming)

Establishing a Circuit-Switched Data (CSD) Connection

A Circuit-Switched Data Connection makes the wireless modem work like a regular analog modem. You must have CSD service in order to make a CSD call.

- 1.** Using HyperTerminal, you can establish a CSD connection by entering the following command:

ATD<phone number>

Notes:

- The phone number you are calling is entered between the brackets. For example, <8585551212>
 - This command tells the modem to dial the desired phone number. If you are dialing to another modem, the modem should answer and a connection between the two modems will be established.
- 2.** To disconnect, use the following commands:
- +++** Wait about two seconds to see an OK response. Then type:
- ATH**

Note: +++ is the escape sequence and **ATH** is the Hang-up command.

Sending, Reading, Storing, Deleting Short Alphanumeric Messages (known as Short Message Services {SMS})

1. Send a short message to a specified number.
Type **AT+CMGS="8585551212" <press Enter>**
Then type your message: **Please call me soon. <press ctrl Z>**
The modem may respond with **+CMGS:<mr> OK**

2. Write a message to memory. You can store a message to send it at a later date.
Type **AT+CMGW="8585551212" <press Enter>**
Type the message. **<press ctrl Z>**
The modem may respond with **+CMGW: 4 OK** (The message is stored in the index as message 4.)

3. Send a message from storage.
Type **AT+CMSS=4,"8585551212" <press Enter>**
The modem may respond with **+CMSS: 1 OK** (The transmission is successful. One SMS message is sent.)

4. View a list of stored messages.
Type **AT+CMGL=x <press Enter>**
For **x**, substitute one of the following:
 - "UREAD"** Show all unread messages.
 - "READ"** Show all read messages.
 - "USENT"** Show all unsent messages.
 - "SENT"** Show all sent messages.
 - "ALL"** Show all d messages.
 The modem will respond **AT+CMGL: 1,"REC UNREAD","8585551212",1...**
The modem will continue until all UNREAD messages, numbers, and index number are listed.

5. Read a stored message.
Type **AT+CMGR=1 <press Enter>**
The modem may respond with **+CMGR: "REC READ", "8585551212",**
Note: The **1** stands for the number of the location to be read. The total number of locations depends on the amount of memory in your modem.

6. Delete a stored message.
Type **AT+CMGD=x,n <press Enter>**
For **n**, substitute one of the following:
 - 0** Delete message at location <include the index number>
 - 1** Delete all READ messages.
 - 2** Delete all READ and SENT messages.
 - 3** Delete all READ, SENT, and UNSENT messages.
 - 4** Delete ALL messages.
 The modem will respond **OK**.
Note: The **x** stands index or location. The **n** stands for the type of messages.

Examples of Short Messages

Example 1: Receive a Short Message

| | |
|----------------------------------------------------------------|--------------------------------------------------------------------|
| AT+CNMI=2,1,1,1,0 | SMS-DELIVERs are stored in NV, SMS-STATUS-REPORTs are routed to TE |
| OK | |
| +CMTI:"MT",0 | New message received. Message store in "MT" memory at index 0. |
| AT+CNMI=2,2,1,1,0 | SMS-DELIVERs are routed to TE |
| +CMT:"8585551212","02/05/17,10 :43 :07",129,1,2,0,"5550000",17 | Received message. |
| Test SMS Message | |
| AT+CNMA | Acknowledge the received message to the network. |
| OK | |

Example 2: Send a Short Message

| | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| AT+CNMI=2,1,1,1,0 | SMS-DELIVERs are stored in NV, SMS-STATUS-REPORTs are routed to TE |
| OK | |
| AT+CMGS="8585551212" | Send a SMS-SUBMIT to mobile phone Product sends a 4 characters sequence: 0x0D 0x0A 0x3E 0x20 |
| This is the first text line | Edit first line and press carriage return (<CR>, 0x0D) |
| This is the last text line | Edit last line and send message by pressing <ctrl-Z> (0x1A) |
| +CMGS: 1 | Success: message reference 1 is returned from the SMS Service Center |
| +CDS:2,1,"8582431439",129,"02/05/17,10:14:17","02/05/17,10:14:27",32768 | |
| Success: report of successful message delivery received. Time of sending of the message and receiving of the acknowledgment from the SMS Service Center is reported, along with the status code. | |

Example 3: Read Short Messages

| | |
|------------------------------------------------------------------------|-------------------------------------------------------------|
| AT+CPMS="MT" | Set Mobile Terminated as preferred memory storage |
| OK | |
| +CPMS:2,10,1,10 | Currently there are 2 MT messages and 1 MO messages stored. |
| AT+CMGL="ALL" | List all stored messages |
| OK | |
| +CMGL:0,"REC READ","8585551111",1,2,15 | Test message #1 |
| +CMGL:1,"REC UNREAD","8585552222",1,2,15 | Test message #2 |
| +CMGL:0,"STO UNSENT","8585551212",1,2,24 | Test message to be sent. |
| AT+CMGR | |
| =1 Read the first message in currently selected memory | |
| OK storage (previously set by AT+CPMS). | |
| +CMGR:"REC UNREAD","8585552222","02/05/15,15:54:04",1,2,0,"5550000",15 | Test message #2 |

Connecting to the Internet

Note: Modem drivers must be installed to connect to the Internet. See your product manual for instructions.

Connecting CDMA Wireless Modems to the Internet

After the modem has been activated, you can establish an Internet connection through a Windows dial-up session.

1. Go to **Dial-Up Networking** or **Network Connection** depending upon your Windows system and create a new dial-up connection.
2. When prompted for a phone number, enter the following phone number: **#777**
3. When prompted for a user name and password, you can leave these fields blank.
4. After the connection has been made, you can start your Internet session by double-clicking the icon and clicking on **Dial** or **Connect**.

Connecting GSM Modems to the Internet

After you have inserted the SIM card and the modem is ready for use, you can establish an Internet connection through a Windows dial-up session.

1. Go to HyperTerminal and issue the command that enters the Access Point Name (APN) into the modem:
AT+CGDCONT=1,"IP", "<APN>"

Note: The APN is provided by your wireless provider.

2. Exit HyperTerminal.
3. Establish an Internet connection through the Windows Dial-up method using the following phone number:
991#**
4. You should not have to enter a user name and password unless your wireless provider requires it.
5. After the connection has been made, you can start your Internet session by double-clicking the icon and clicking on **Dial** or **Connect**.