

FCC REQUIREMENTS FOR TELEPHONE-LINE EQUIPMENT

This device has been granted a registration number by the Federal Communications Commission (FCC), under Part 68 rules and regulations for direct connection to the telephone lines. In order to comply with these FCC rules, the following instructions must be carefully read and applicable portions followed completely. These instructions must be supplied to the consumer.

1. This equipment complies with Part 68 of the FCC rules. A label located on the outside surface of this equipment contains, among other information, the FCC registration number and ringer equivalence number (REN). If requested, this information must be provided to the telephone company.
2. As indicated below the suitable jack (USOC connecting arrangement) for this equipment is shown. If applicable, the facility interface codes (FIC) and service order codes (SOC) are shown.
3. The ringer equivalence number (REN) is used to determine the quantity of devices which may be connected to the telephone line. Excessive RENs

on the telephone line may result in the devices not ringing in response to an incoming call. In most, but not all areas, the sum of the RENs should not exceed five (5.0). To be certain of the number of devices that may be connected to the line, as determined by the total RENs, contact the telephone company to determine the maximum REN for the calling area.

4. If this equipment causes harm to the telephone network, the telephone company will notify you in advance. But if advance notice is not practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.
5. The telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the operation of the equipment. If this happens, the telephone company will provide advance notice in order for you to make necessary modifications in order to maintain uninterrupted service.
6. If trouble is experienced with this equipment, please contact the service center for repair and/or warranty information. If the trouble is causing harm to the telephone network, the telephone

company may request you to remove the equipment from the network until the problem is resolved. User repairs must not be made, and doing so will void the warranty.

7. This equipment cannot be used on coin service provided by the telephone company. Connection to party line service is subject to state tariffs. (Contact your state public utilities commission for information). If so required, this device is hearing-aid compatible (EAC).

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1. Specifications

Data Rate —	Up to 33.6 Kbps
Connectors —	(1) RJ-22F, (1) RJ-11F, (1) RJ-22M
Operation —	Full duplex
Operating Environment —	For indoor use only
Power —	External power adapter; Input: 110 VAC, 60 Hz, 9W; Output: 12 VDC, 200 mA
Size —	1.1"H x 2.9"W x 3.8"D (2.8 x 7.4 x 9.7 cm)
Weight —	7.2 oz. with batteries (204.1 g)

2. Introduction

2.1 Description

The Mobile Linc-Up lets you connect your modem, fax/modem, or fax machine to virtually any digital, PBX, multiline, or hotel telephone in seconds.

Simply remove the coiled handset cord from the telephone base, connect the Mobile Linc-Up to your telephone, then connect the handset (with coiled cord attached) and your communications device to the Mobile Linc-Up.

The Mobile Linc-Up is fully compatible with V.34 modems and can support connection rates up to 33,600 bps.

2.2 Features

- Provides an RJ-11 connection at the handset jack of the telephone.
- Converts the 4-wire handset jack to a 2-wire RJ-11 jack.
- Transforms the handset impedance to telephone line impedance, and vice versa.
- Operates at data rates up to 33.6 Kbps.

- Uses the Level switch to match the modem signal to the telephone being used. This four-position switch handles most telephones.
- Works with virtually all telephones that have a modular handset. The handset must be out of the cradle.

2.3 Package Contents

Make sure you have all of the following items, and that none of the items is damaged. If any items are missing or damaged, contact your supplier immediately.

- (1) Mobile Linc-Up with batteries (2 each) installed
- (1) User's manual
- (1) AC adapter

2.4 Preinstallation Guidelines

Before installing the Mobile Linc-Up, read these guidelines.

CONNECTION

Never connect the Mobile Linc-Up directly to an analog or digital telephone line (wall outlet).

DIALING

Configure your modem, fax/modem, or fax machine for Tone dialing.

SPEAKER PHONES

If the attached telephone has speakerphone capability, disable speakerphone operation. This mode deactivates the handset jack used to send and receive data.

LEVEL SWITCH

Set the Level switch for the telephone you are using (see **Chapter 4**).

SPEAKER CONTROL AND VOLUME

The telephone handset is deactivated during dialing. If you use a modem or fax/modem, you can use the AT command (ATM1 for speaker off when carrier present) to enable the modem speaker and the AT command (ATL3 for high volume) to set its volume. You can then “listen in” on dialed calls to monitor their status. Refer to your modem manual for information.

3. Installation

3.1 Connecting the Mobile Linc-Up to a Phone

1. Remove the spiral handset cord from the handset jack on the telephone base unit and insert it into the Mobile Linc-Up jack labeled HAND SET. (See Figure 3-1.)
2. Insert the Mobile Linc-Up modular telephone cord (which is permanently attached at one end to the Mobile Linc-Up) into the handset jack on the telephone base unit.
3. Connect a modular telephone cord from your modem, fax/modem, or fax machine jack labeled “Telco,” “Line,” or “Wall” to the Mobile Linc-Up jack labeled DATA.
4. For AC adapter operation, connect the round end of the supplied AC adapter to the DC connector next to the DATA jack and the other end to an AC outlet.

NOTE

The Mobile Linc-Up will operate from either the supplied AC adapter or two 9v DC batteries.

5. Set the Level switch on the bottom of the Mobile Linc-Up to 3. For more information on the switch, refer to **Chapter 4**.

- Lift the telephone handset and listen for a dial tone. If you do not hear the dial tone, check your connections to make sure they match those shown in Figure 3-1.
- Return the handset to the cradle.

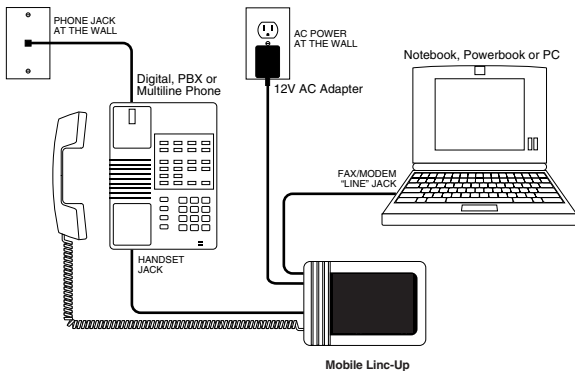


Figure 3-1. Installing the Mobile Linc-Up.

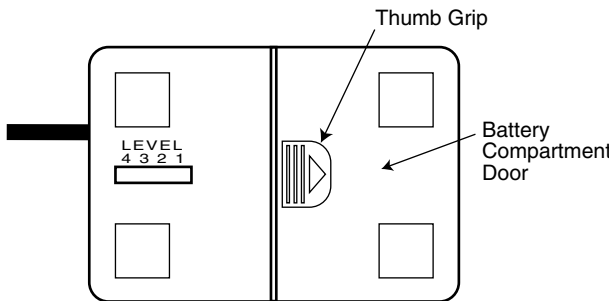
The Mobile Linc-Up is now connected to your telephone and ready to use.

3.2 Battery Replacement

The Mobile Linc-Up comes with two 9v DC batteries installed. These batteries are heavy-duty and will yield over 15 hours of modem or fax use. With alkaline batteries installed, the Mobile Linc-Up will provide approximately 40 hours of modem or fax use. The access door for the battery compartment is located on the bottom of the Mobile Linc-Up.

3.2.1 BATTERY REMOVAL

1. Using your thumb, press down on the battery compartment door thumb grip and push in the direction of the arrow. See the illustration below.



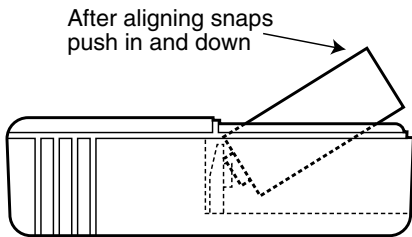
2. Set the battery compartment door aside.

3. Insert your index finger between the two batteries (toward the end of the battery) and lift the end of the battery up and out of the compartment. Then remove the other battery the same way.

3.2.2 BATTERY INSTALLATION

The Mobile Linc-Up connectors have two different snaps associated with each battery. One is a male snap (plug), and the other is a female snap (receptacle).

1. Grip the battery near the end opposite the battery's connectors.
2. Align the battery's male snap with the Mobile Linc-Up's female snap and the battery's female snap with the Mobile Linc-Up's male snap, holding the battery at approximately a 45° angle. See the illustration on the next page.



3. Push the battery toward the Mobile Linc-Up's snaps and down at the same time. The battery will snap in place.
4. Insert the other battery, repeating steps 1 through 3.
5. Install and close the battery compartment door, setting the door on the housing and sliding the door toward the Mobile Linc-Up's Level switch.

NOTE

The battery's back end will rub on the Mobile Linc-Up's housing while being inserted.

If the battery does not seem to want to be seated in the battery compartment, make sure that the battery's male snap is aligned with the Mobile Linc-Up's female snap and vice versa.

4. Level Switch

The Level switch is located on the bottom of your Mobile Linc-Up (see Figure 4-1). This switch lets you set the signal level from your modem or fax to the telephone.

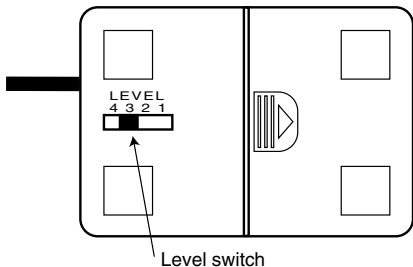


Figure 4-1. The Level Switch.

The Level switch can be set in any of four settings. The setting you use depends on the signal level used by the telephone to which your Mobile Linc-Up is connected.

Setting 2 is the highest level. Use this setting if you connect your Mobile Linc-Up to a telephone that has a carbon microphone. Older residential telephones and some hotel telephones use carbon microphones.

Setting 4 is the lowest level. Setting 3 is the most common position; it is used for electronic telephones.

If you set the Level switch too high, you will hear feedback such as a buzz or loud squeal through the modem speaker when your modem is off-hook. If you hear feedback, set the Level switch to the next lower setting—using the sequence 2, 3, 1, 4—until the feedback disappears.

For example, if the Level switch is set to 2 and you hear feedback, set it to 3. If you still hear feedback, set it to 1. If feedback continues, set it to 4.

Table 4-1 shows the Level switch settings to use for various telephone models. If the telephone you want to use does not appear in Table 4-1, set the level as described in the previous section. If feedback occurs for all four levels, contact your supplier.

A “Yes” in the Autodial column indicates that autodialing is supported with that telephone model.

If your telephone does not allow autodialing, you can still communicate by dialing with the keypad on your telephone. Refer to **Chapter 5** for information on manual dialing.

The number in the “See Note” column refers to a note at the end of the table.

Table 4-1. Level Switch Settings

Manufacturer	Model	Switch Setting	Autodial	See Note
Ameritech	None Specified	1	Yes	1
AT&T®	Definity	3 or 4	Yes	
	Definity G3I	3	No	
	Destiny	3	—	2
	Dimension	2 or 3	—	2
	G2	4	Yes	
	Horizon®	2	Yes	
	ISDN	3	No	1
	Infinity	3	Yes	
	Legend	3	No	8
	Merlin®	3	Yes	
	Merlin II	3	—	2
	Partner	3	Yes	
	Spirit	3	Yes	1
	System 25	3	Yes	3 & 4
System 75	3	Yes	3 & 4	
System 85	3	Yes	3 & 4	

Table 4-1 (continued). Level Switch Settings

Manufacturer	Model	Switch Setting	Autodial	See Note
Comdial	Digitech	3	Yes	
	Executech	3	Yes	
	Impact	3	Yes	
David Systems	None Specified	3	—	2
Eagle®	None Specified	2	Yes	
Ericcson	MD110	3	Yes	
Executone	Encore CX	3	No	8
	IDS	3	No	8
	Model 228	See Note	No	8 & 9
	Model 432	See Note	No	8 & 9
	Key Systems	2 or 3	Yes	
Fujitsu®	Focus 196	See Note	No	5
	Others	1 or 4	Yes	
GAI-Tronics	Cohort	3	No	8
Harris®	Lanier	3	Yes	
Hitachi	Digital Model 200	1	—	2
	HCX-5000	1	—	2
Intecom	IBX System	3	No	8
Intertel	Hitech/1232	1	Yes	4
	MPK-2	1	—	2
	Axxess	3	No	8

Table 4-1 (continued). Level Switch Settings

Manufacturer	Model	Switch Setting	Autodial	See Note
Intertel (continued)	Others	1	Yes	
Isoetec	Key systems Digital PBX	3 1 or 4	Yes —	1 & 2
ITT	None Specified	2	—	2
Iwatsu	Omega Omega III Omega IV	2 2 or 3 1 or 4	Yes Yes Yes	4
Kokyo Co.	Kanda	1	Yes	
Lanier	EKT - 220 (Electronic Key)	2	Yes	
Lexar	Telex	See Note	No	6 & 8
Macrotel	None Specified	4	Yes	1
Mitel	Superset SX-200	2 or 3 3	No No	8 1 & 8
NEC	Determ II Determ III Determ V Electra Freedom Mark II Others	1 or 4 1 or 4 1 2 or 3 1 1 1	Yes — Yes No Yes Yes Yes	1 2 8
Nitsuko	Onyx	3	—	1 & 2

Table 4-1 (continued). Level Switch Settings

Manufacturer	Model	Switch Setting	Autodial	See Note
Northcom	Premier (NC-1648)	3	Yes	
Northern Telecom®	Advantage	3	Yes	7
	Focus	2	No	8
	Logic One	3	No	8
	Meridian SL1&SL100	3	No	8
	Meridian 100	3	No	8
	Meridian 1	3	No	8
	Norstar	3	Yes	
	DR5 or DID	3	Yes	
	Unity	2 or 3	Yes	
	Vantage	3	—	2
Panasonic®	KXT2375	3	Yes	
	DBS	2 or 3	Yes	
	Others	3	Yes	
Phillips	Sopho Executive	1 or 4	—	2 & 6
Premier	Digital	1 or 4	Yes	7
Rolm	Model 120	1 or 4	No	8
	Model 240	1 or 4	No	8
	Model 400	1 or 4	No	8
	Model 600	1 or 4	No	8
	Others	1 or 4	No	8
Siemens®	Dyad	See Note	No	6 & 8

Table 4-1 (continued). Level Switch Settings

Manufacturer	Model	Switch Setting	Autodial	See Note
Siemens (continued)	Dyad Jr.	See Note	No	6 & 8
	HCM-600	3	—	1 & 2
	HCM-200	3	—	1 & 2
	Hicom Digital	1	—	1 & 2
	Saturn Digit 260	See Note	—	5
Southwestern Bell	Freedom Phone—Older	3	Yes	
	Freedom Phone—Newer	1 or 4	Yes	1
SRX	Vision Phone	2	—	2
Tadiran	EKT 221	See Note	Yes	9
	Emerald	4	—	2 & 9
	Coral I and II	4	—	2 & 9
	Others	See Note	Yes	9
Telrad	Model 816	4	Yes	
	Model 2464	4	Yes	
	Symphony	4	No	8
	Digital (818)	4	No	8
	Others	4	—	2
TIE	Business Comm	2	—	2
	Datastar	2	Yes	
	DCX	2	Yes	

Table 4-1 (continued). Level Switch Settings

Manufacturer	Model	Switch Setting	Autodial	See Note
TIE (continued)	Meritore	2	Yes	
	Onyx	3	Yes	
	TC22	2	Yes	
	EX2260	2	Yes	
	Ultracom CX	2	—	2
	Keyset 9	2	—	2
Toshiba®	EKT 2000 series	2	Yes	
	EKT 3000 series	2	—	2
	EKT 6000 series	3 or 4	Yes	
	Perception	3	No	8
	Strata (Key system)	2	—	1 & 2
	Strata (Digital)	1 or 3	—	1 & 2
Trillium	103 series	2 or 3	Yes	
	Panther	2 or 3	—	1 & 2
Talkto 616	Talkto 616	2	—	1 & 2
	Vodavi	Electronic Key System	See Note	Yes
Walker	Marathon	1 or 4	Yes	
	Poet	1	Yes	1

NOTE

1. The Mobile Linc-Up may require a custom factory setting for this phone set.
2. Not enough data was available to determine whether the phone system will support autodialing with the Mobile Linc-Up.
3. The Mobile Linc-Up will not support autodial on Model 7300 telephones.
4. You may have to dial an outside access number, such as 9, on the telephone before autodialing.
5. This telephone has nonstandard handset wiring and is not compatible with the Mobile Linc-Up.
6. The Mobile Linc-Up requires the use of a special adapter cable set. This phone has non-standard handset wiring.
7. When the phone is autodialing, you must dial a number on the keypad of the telephone set to maintain the line.
8. These phone systems may be able to be programmed to obtain a direct trunk access to enable autodialing. Contact your supplier for additional information.
9. The Mobile Linc-Up requires a custom factory setting to work on these phones. Contact your supplier for more information.

5. Sending Data and Faxes

You can send data and faxes by either automatically dialing (autodialing) a telephone number or manually dialing the number.

5.1 Autodialing Data and Fax Calls

To autodial calls, the telephone or your phone system connected to the Mobile Linc-Up must support autodialing. For a list of telephones that support autodialing, see **Chapter 3**.

NOTE

If the Mobile Linc-Up is connected to a digital telephone that does not support autodialing, use the manual dialing procedure in Section 5.2.

1. Prepare your modem, fax/modem, or fax machine for sending. See your modem's manual to find out how to set it up for autodialing.
2. Lift the telephone handset and listen for a dial tone. Leave the handset out of the cradle. *Do not* hang it up, or you will terminate the call.
3. To make a connection using a modem or fax/modem, press the **Enter** key on your computer.

Or, to make a connection using a fax machine, press its **Start** button.

4. Perform the data or fax transfer. When you finish, return the handset to the cradle.
5. To hang up a modem or fax/modem, use your software's call-termination feature, or type **ATH0** and press **Enter** from direct connect mode.

Or, to hang up the fax machine, press its **Stop** button.

The telephone handset is electronically disconnected when the modem goes off-hook. You must hang up your modem to restore use of your telephone handset.

Some fax software takes a few moments to prepare a document before dialing. This delay may cause a dial-tone timeout on many telephones.

To avoid the dial-tone timeout, either convert the document to fax format before you prepare to send it, or do not lift the handset from the telephone cradle until the software indicates that it is ready to dial.

5.2 Dialing Data Calls Manually

If the digital telephone connected to your Mobile Linc-Up does not support autodialing, use this procedure to dial data calls manually.

1. Prepare your computer to autodial a call.
See your modem manual for instructions.
2. If your modem is configured to wait for a dial tone before dialing, reconfigure the Dial command **ATDT** to:

ATX3DT *number*

where

- **X3** tells your modem to dial without waiting for a dial tone.
- **DT** specifies touchtone dialing.
- *number* is the remote modem's telephone number.

If you cannot edit the Dial command line, add **X3** to the modem initialization command string.

3. Lift the telephone handset and listen for a dial tone. Leave the handset out of the cradle. *Do not* hang it up, or you will terminate the call.
4. Perform one of the following steps:
 - If your modem does not look for a dial tone or if you added **X3**, use the telephone keypad to dial the remote modem's telephone number. Then press **Enter** on your computer keyboard.

- If your modem looks for a dial tone and your communication software prevents you from editing the Dial command line or initialization string, press **Enter** on your computer keyboard. Immediately after the modem finishes dialing, use the telephone keypad to dial the Host number.

Either step should allow your modem to connect with the remote modem.

To operate properly, your modem must go off-hook in originate mode—even though you manually dialed the remote modem's telephone number.

5. Perform the data transfer. When you finish, return the handset to the cradle.

To hang up, use your communication software's call-termination feature, or type **ATH0** and press **Enter** from direct connect mode.

The telephone handset is electronically disconnected when the modem goes off-hook. You must hang up your modem to restore use of your telephone handset.

5.3 Dialing Fax Calls Manually

If the digital telephone connected to your Mobile Linc-Up does not support autodialing, use the following procedure to dial fax calls manually.

If your fax software supports a manual fax feature, you can use that procedure instead of the following to dial fax calls manually.

1. Prepare your fax/modem or fax machine for sending.
2. Lift the telephone handset and listen for a dial tone. Leave the handset out of the cradle. *Do not* hang it up, or you will terminate the call.
3. Press the **Enter** key on your computer keyboard if you are using a fax/modem.
Or, press the **Start** button on your fax machine.
4. Use the telephone keypad to dial the remote fax telephone number.
5. When you finish, return the handset to the cradle.
6. To hang up a fax/modem, use your software's call-termination feature, or type **ATH0** and press **Enter** from direct connect mode.

Or, to hang up a fax machine, press its **Stop** button.

The telephone handset is electronically disconnected when the fax/modem goes off-hook. You must hang up your fax/modem to restore use of your telephone handset.

Some fax software takes a few moments to prepare a document before dialing. This delay may cause a dial-tone timeout on many telephones.

To avoid the dial-tone timeout, either convert the document to fax format before you prepare to send it, or do not lift the handset from the telephone cradle until the software indicates that it is ready to dial.

6. Receiving Data and Faxes

6.1 Receiving a Data File

When someone calls you to send a data file, use the following procedure to answer the call and receive the file.

1. If you will be using your communication software's manual answer or manual receive command to answer the call, skip to step 2.

Otherwise, place your modem into direct connect (local terminal) mode. The manual that came with your communication software should explain this procedure.

2. When the telephone rings, lift the telephone handset from the cradle. Leave the handset out of the cradle. *Do not* hang it up, or you will terminate the call.
3. Use your communication software's manual answer or manual receive command to answer the call.

Or, from direct connect mode, type **ATA** and press **Enter** to have your modem answer the call.

4. At the end of the data transfer, return the handset to the cradle.

5. To hang up, use your communication software's call-termination feature, or type **ATH0** and press **Enter** from direct connect mode.

The telephone handset is electronically disconnected when the modem goes off-hook. You must hang up your modem to restore use of your telephone handset.

6.2 Receiving a Fax Document

When someone calls you to send a fax document, use the following procedure to answer the call and receive the document.

1. When the telephone rings, lift the telephone handset from the cradle. Leave the handset out of the cradle. *Do not* hang it up, or you will terminate the call.
2. To use a fax/modem, use your fax software's manual answer or manual receive command to answer the call.

Or, to use a fax machine, press its **Start** button on the fax machine.

3. After you receive the document, return the handset to the cradle.
4. To hang up a fax/modem, use your fax software's call-termination feature.

Or, to hang up a fax machine, press its **Stop** button.

7. Operating Tips

To make sure you get the most out of your Mobile Linc-Up, read the operating tips in this chapter.

7.1 Powering the Mobile Linc-Up

The Mobile Linc-Up must have batteries or AC power to operate in Data Mode.

Use only the AC adapter supplied with the Mobile Linc-Up. Do not use an adapter for a different device.

7.2 Level Switch

Make sure the Level switch is set properly. Otherwise, you will hear buzzing or squelching feedback through the modem speaker when the modem is off-hook, which will adversely affect transmission and reception. For information on using this switch, refer to **Chapter 4**.

7.3 Tone Dialing

Make sure your modem, fax/modem, or fax machine is configured for Tone (DTMF) dialing. The Mobile Linc-Up will not work with pulse (rotary) dialing.

The manual that came with your modem, fax/modem, or fax machine should describe this procedure.

7.4 V.34/V.FAST Connections

Although the Mobile Linc-Up is V.34/V.FAST compatible, not everyone can get consistent connections at 33,600 or 28,800 bps. In fact, V.34 connections at 26,400, 24,000, and 21,600 are common.

To obtain 33,600- or 28,800-bps connections, the remote modem or fax/modem must support V.34/V.FAST, and the telephone-line quality must be pristine along the entire length of the line.

7.5 Speakerphones

Make sure the telephone handset is removed from the cradle until you finish exchanging data. Hang up your modem or fax/modem to reactivate the handset.

If the telephone has a speaker, the speaker must be turned off. Speakerphone operation disables the telephone handset jack that the Mobile Linc-Up uses to transmit and receive data. The handset must be removed from its cradle.

7.6 Princess and Trimline Telephones

The Mobile Linc-Up will not operate with “Princess” or “Trimline®” telephones, which have the keypad in the handset. The electronics with which the Mobile Linc-Up interacts are not accessible in these telephones.

7.7 Hanging Up the Modem

The Mobile Linc-Up disconnects the telephone handset when your modem or fax/modem is “on-line.” After data transactions or when autodialing voice calls, use your communications software to hang up your modem so that the handset is reactivated.

You can either use the call-termination feature in your communication software, or type **ATH0** and press **Enter** from direct connect mode. The manual that came with your software should describe how to hang up the modem.

If you are using contact-management software, you may need to push a key on the computer keyboard to disconnect the modem or fax/modem after the number is dialed.

7.8 “No Dial Tone” Error Message

If you receive a “No Dial Tone” error message, include the Hayes® command **ATX1** or **ATX3** in your modem Dial command. These commands tell your modem or fax/modem to dial without first listening for a dial tone.

Some telephone systems (such as Rolm®) do not use the standard dial tone, and your modem or fax/modem may not recognize the nonstandard tone as a dial tone.

This command is also useful when the system being used will not accept autodialing (refer to **Chapter 5**). Table 4-1 lists some telephones that do and do not support autodialing.

7.9 Autodialing

Some telephone systems will not support autodialing (the ability to have the modem/fax dial the number of the system you are trying to connect with). You can perform a simple test to find out if the phone system the Mobile Linc-Up is connected to will support autodialing. The test is accurate for about 95% of the phone systems and is only viable in the United States. The test is referred to as the dial-tone timeout test (DTT) and is performed as follows:

1. Lift the telephone handset from the cradle. Access an outside line; this may involve dialing a prefix such as a “9” on the telephone.
2. Listen to the dial tone until it times out. The dial tone should time out within 15 seconds.
3. After expiration of the dial tone, one of the following should be heard:
 - a) Recorded Operator message: This message will usually be “If you’d like to make a call, please hang up and try again...”
 - b) Error Tone: The error tone may sound like a fast busy signal, an alternating high/low tone or dead silence.

If the result of the DTT is the recorded operator message, there is a 95% probability that the phone system will support autodialing with the Mobile Linc-Up. If the result of the DTT is an error tone, there is a 95% probability that the phone system will not support autodialing with the Mobile Linc-Up unless the phone system is programmed for direct trunk access.

Approximately 65% of the phone systems that require the dialing of a prefix such as a “9,” or some other number to dial out of the building, will require the prefix to be dialed manually (using the keypad of the phone) prior to having the modem/fax dialing the rest of the number.