

Lucent Technologies
Bell Labs Innovations



TransTalk® 9000
Digital Wireless System

Model 117A4 Carrier
Installation Instructions

503-801-180
Comcode 108406158
February 1999
Issue 2



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Trademarks	MERLIN, MERLIN LEGEND, PARTNER, and TransTalk are registered trademarks of Lucent Technologies.
Warranty	Lucent Technologies provides a limited warranty for this product; see Appendix A.
Ordering Information	The order number for this book is 503-801-180. To order additional copies of this book, call 1 800 457-1235 or 317 322-6791.

Customer Support

In the continental U.S., call 1 800 628-2888 if you need assistance when installing the Model 117A4 Carrier to use your MDW 9031 Wireless Pocket Phone with a PARTNER, MERLIN, or MERLIN LEGEND system. Consultation charges may apply.

In the continental U.S., call 1 800 225-7585 if you need assistance when installing the Model 117A4 Carrier to use your MDW 9031/9031DCP Wireless Pocket Phone with a DEFINITY system, or contact the Lucent Customer Care Center at 1 800 241-2121. Consultation charges may apply.

For all other systems, follow the procedure you normally use to obtain support for your communications system.

Outside the continental U.S., contact your Lucent Technologies Representative or local Authorized Dealer.

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Model 117A4 Carrier Installation Instructions



Important Safety Instructions

This book contains instructions related to safety labels on the product:

WARNING:

WARNING indicates the presence of a hazard that can cause severe or fatal personal injury if the hazard is not avoided.

CAUTION:

CAUTION indicates the presence of a hazard that will or can cause minor personal injury or property damage if not avoided.

Basic Safety Precautions for Installation and Use

Always follow these basic safety precautions when installing or using this product to reduce risk of injury from fire or electric shock.

WARNING:

Installation of this equipment for In-Range Out of Building (IROB) conditions requires the use of protectors. Refer to the documentation provided with your communications system for more information.

CAUTION:

This equipment is for installation on Lucent Technologies PARTNER, PARTNER Plus, PARTNER II, PARTNER Advanced Communications System, MERLIN, MERLIN Plus, MERLIN II, MERLIN LEGEND, System 25, System 75, System 85, and DEFINITY communications systems only.

- Read and understand all instructions in this book before using this product.
- Observe all warnings and instructions marked on the product.
- Do not use the product near water or when you are wet. If the product comes in contact with any liquids, unplug the power cord and telephone line cords immediately. Do not plug the product back in until it has dried thoroughly.
- Never push objects of any kind into this product through housing slots, since the objects may touch hazardous voltage points or short out parts that could result in a risk of electric shock. Never spill liquid of any kind on the phone.
- If you suspect a gas leak, report it immediately, but use a phone away from the area in question. The phone's electrical contacts could generate a tiny spark. While unlikely, it is possible that this spark could ignite a heavy concentration of gas. This product is not approved for use in areas labeled by the Occupational

Safety and Health Administration (OSHA) as “explosive environments.” Only “Explosive Atmosphere Telephones” may be used in such hazardous environments.

- Unplug this product from wall outlets and telephone jacks before cleaning. Clean exposed parts with a soft, damp cloth. Do not use liquid or aerosol cleaners.
- Unplug this product from the wall outlet, remove the telephone line cord from the modular wall jack or communications system switch/control unit, and refer servicing to qualified service personnel under the following conditions:
 - ~ When the power cord or plug is damaged or frayed.
 - ~ If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions because improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal operation.
 - ~ If the product has been dropped and the housing has been damaged.
- Always unplug the power cord/AC adapter for the carrier or carriers from the wall outlet when:
 - ~ Removing a radio module
 - ~ Moving a radio module to a new slot in the carrier
 - ~ Installing a new radio module
 - ~ Connecting or disconnecting telephone line cords
 - ~ Adding a carrier

Additional Safety Instructions for Installation Personnel

- All wiring that connects to this equipment and becomes part of the building wiring must be a minimum of CLASS 2 or UL (Underwriters Laboratories) Listed Communications cable.
- Do not install telephone wiring during a lightning storm.
- Do not install telephone jacks in a wet location unless the jack is specifically designed for wet locations. Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
- Use caution when installing or modifying telephone lines.
- Install this product securely on a stable surface. Damage may result if the product falls.
- Never place this product near or over a radiator or heat register.
- Slots and openings in the housing and the back or bottom are provided for ventilation. To protect the housing from overheating, these openings must not be blocked or covered. Therefore, do not place the product on a bed, sofa, rug, or other similar surface. Also, do not place this product in an enclosed area unless proper ventilation is provided.

- Install this product in a protected location where no one can step on or trip over power cords and telephone line cords. Do not place objects on the cords that may cause damage or abrasion.
- Do not allow anything to rest on the power cord. Do not locate this product where the cord will be abused by persons walking on it. Do not overload wall outlets as this can result in the risk of fire or electric shock. Do not staple or otherwise attach the power cord to building surfaces.
- Use only the power supply (Comcode 847224227) shipped with the carrier.
- Use only the correct power source. If you are not sure of the power supply to your location, consult your local power company.
- This product uses a 3-prong plug. Such plugs are designed for your safety. Do not attempt to defeat this purpose. If your wall outlet will not accept the plug, the outlet should be replaced by an electrician.

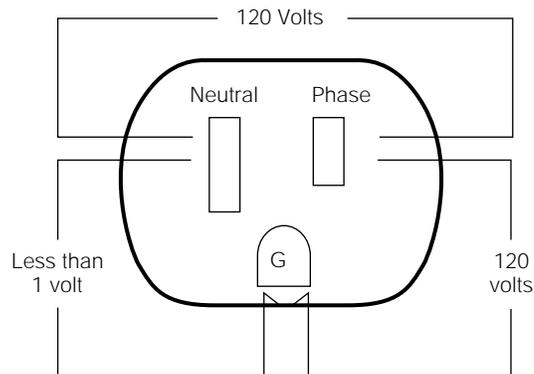
**WARNING:**

Failure to properly ground this product will result in a risk of electrical shock, which can cause serious personal injury. This product requires a 3-prong AC outlet for safe operation. You should have your outlet checked by a qualified electrician (see “AC Outlet Check” below) before connecting this equipment.

AC Outlet Check

Have a qualified electrician check all of the outlets into which the carriers as well as the communications system switch/control unit will be plugged. The electrician should check that the hot, neutral, and ground wires are properly connected to the outlet by using a circuit tester.

The outlet can also be tested using a voltmeter by taking the measurements as shown:



If the outlet does not meet the electrical specifications for grounded outlets, your Multi-Line Digital Wireless (MDW) telephone may not operate properly.

⚠ CAUTION:

If there is no current to the outlet or the voltages are not correct, the problem should be corrected by a qualified electrician.

Understanding Carriers

When you install more than one radio module in a single zone, you must mount the radio modules in a carrier, so that their signals will be synchronized. A carrier can hold up to six radio modules.

If you want to install more than six radio modules, you will need more than one carrier.

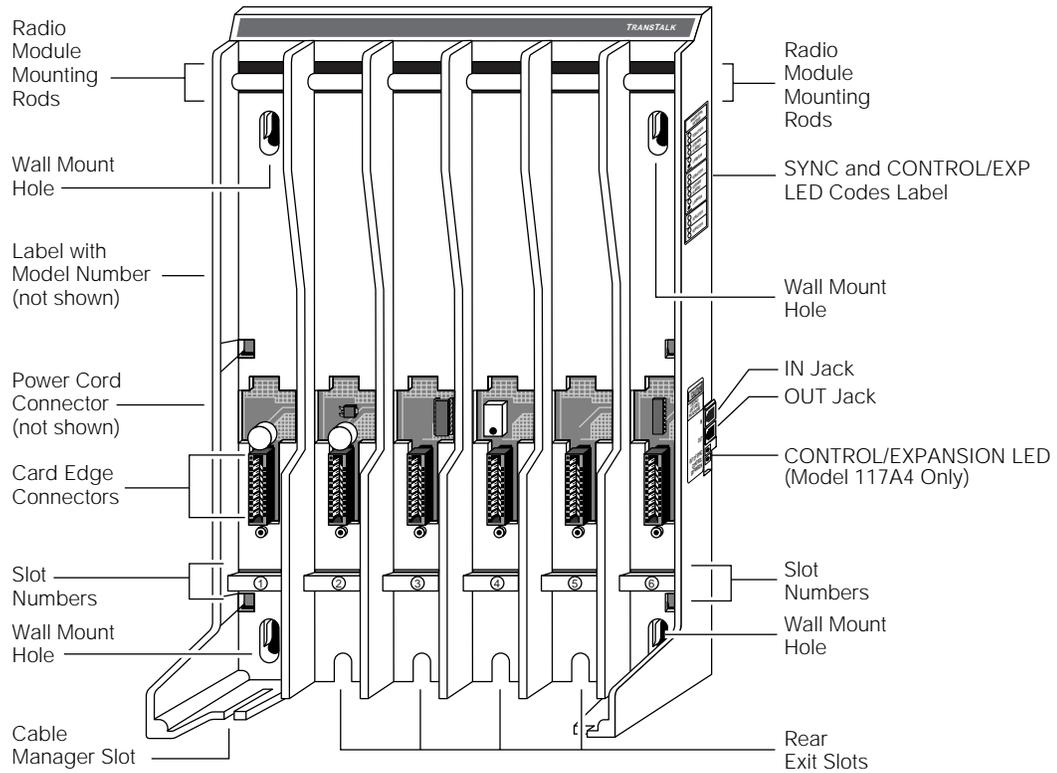
If any multiple-carrier installation, the leftmost carrier acts as the *control* carrier, and the remaining carriers act as *expansion* carriers, passing along the synchronization signal from the control carrier. Multiple carrier installations require that you use Model 117A3 or Model 117A4 carriers, or both.

The Model 117A3 and Model 117A4 carriers are similar in general appearance, but the installation procedure for the two models differs somewhat. A label on the left side of the carrier identifies the carrier model number.

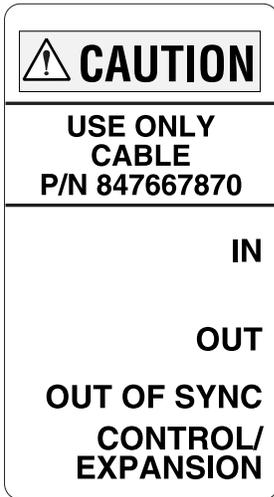
Note: The illustrations in this manual depict PARTNER® system hardware; your hardware may differ from these illustrations.

The Model 117A4 carrier differs from the 117A3 in that it does *not* require that Slot 6 contain a radio module in order to pass the signal from the control carrier to the next carrier. It also does not have Power and Control/Expansion DIP switches to set. The 117A4 automatically adjusts its power level and senses whether it is being used as a control or an expansion carrier.

As the following illustration shows, the 117A4 does have an additional LED located on the right side of the carrier, the **CONTROL/EXPANSION LED**, used for determining whether the cabling was installed correctly.



The following chart explains the label that identifies the jacks and LEDs on the 117A4 carrier.



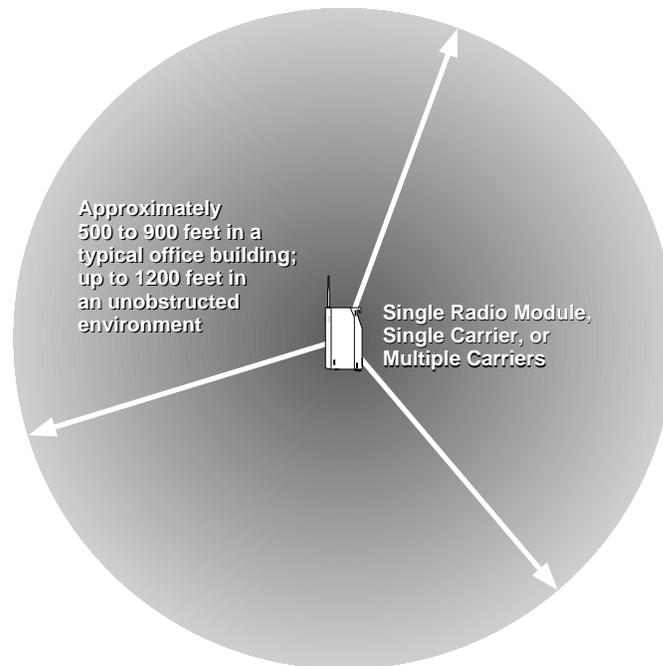
Label	Explanation
IN	Designates the modular jack that accepts the modular plug and cable from the preceding carrier to the left. If the jack is in use, this carrier is an “Expansion” carrier.
OUT	Designates the modular jack that accepts a modular plug and cable to connect this carrier to the next carrier to the right. This carrier can be either a “Control” carrier (if it is the leftmost carrier) or an “Expansion” carrier.
OUT OF SYNC	Designates the upper of two LEDs. If the LED is not lit, carrier is “in sync.” If the LED glows red, the carrier is out of synchronization. Call Customer Support as described on the inside front cover of this book.
CONTROL/EXPANSION	Designates the lower of two LEDs. The color of the LED indicates the carrier configuration: Control carrier = green LED Expansion carrier = amber LED The light pattern indicates whether the carrier is operational: Glowing steadily = no problem. Blinking = no radio module(s) in the carrier.

The label at the top of the right side of the carrier is provided to help you interpret the LED lights. The first three lines on this label refer to LEDs on the control carrier; the next three lines refer to the LEDs on each of the expansion carriers; and the last two lines apply to all carriers.

SYNC and CONTROL/EXP LED Codes		
	CONTROL MODE - <i>OK</i>	Key  Unlighted  Lighted, green  Lighted, red  Lighted, amber  Blinking, green  Blinking, amber
		
	CONTROL UNIT OUT OF SYNC	
	CONTROL MODE NO RMs	
 <i>Blinking</i>		
	EXPANSION MODE - <i>OK</i>	
		
	EXPANSION UNIT OUT OF SYNC	
	EXPANSION MODE NO RMs	
 <i>Blinking</i>		
	UNIT BAD	
		
	UNIT BAD	
		

Positioning Your Carrier(s)

Each carrier holds up to six radio modules. Each radio module and its corresponding handset operates within a single zone of coverage.



The range of your handset(s) depends on your particular operating environment. For indoor use, walls between the handset and the radio module will reduce the phone's range. Avoid concentrations of structural metal, such as steel and aluminum, and reinforced concrete.

The MDW telephones have a built-in testing feature that you can use before final installation to help determine proper placement of the radio module. To perform the tests, all you need is an electrical outlet for the radio module and a charged battery pack in the handset (you do not need a communications system switch/control unit).

Performance/Range Test in Wireless Test Mode

Using the signal-strength test and the voice-quality test together, you can determine:

- if the installation has been done correctly.
- if the handsets and bases are working properly.
- the range in which your MDW 9031/9031DCP Pocket Phone performs best at your site.

Close Up Test

At no more than 5–10 feet (1.5–3.1 m) from its radio module, use the following procedure:

- 1 Make sure the handset is turned off.
- 2 Press and hold the Select button (⏏) for three seconds.

- 3 While still holding , press .

The handset beeps twice, and the display shows the handset settings, indicating you are in Local Mode. (While in Local Mode, the MDW telephone can still receive notification of incoming calls.)

- 4 Press “W” () to enter Wireless Test Mode..

Note: In a multiple TransTalk installation, put all of the handsets in Wireless Test Mode at the same time. This allows you to observe if all handsets are working properly together.

WIRELESS TEST appears on the top line of the handset display. The handset beeps twice and vibrates, then you hear a simulated dial tone. This dial tone continues until you exit Wireless Test Mode. While in this mode, the MDW telephone *cannot* make or receive calls.

For all sets, do the following.

- 5 Press .

The display should show a **9** or **10** for signal strength (an occasional 8 is acceptable).

- 6 Press .

The display should show a **9** or **10** for voice quality (an occasional 8 is acceptable).

Note: If you are seeing numbers lower than 8-10 for either signal strength or voice quality while performing the Close Up Test, please refer to either the "Installing a Single Carrier" section, or "Installing Multiple Carriers" section in this manual. This will ensure that your installation meets all installation and environmental requirements.

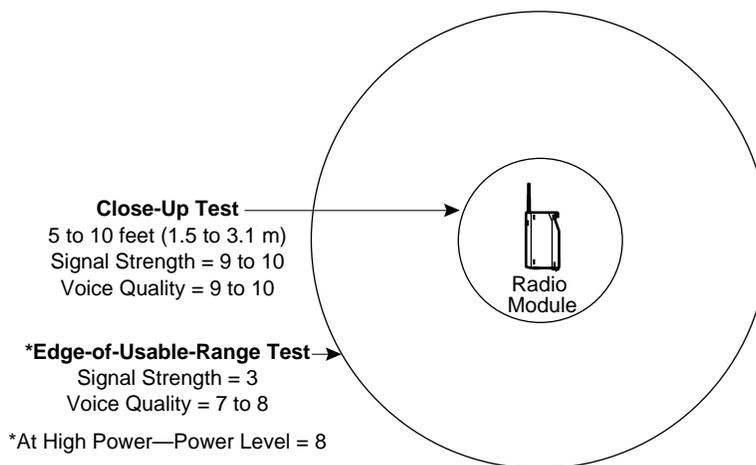
Edge of Range Test

- 1 Periodically check the signal strength and voice quality as you walk away from the radio module. Each time you press  or , you get a new reading.

When you see a signal strength of **3** at a power level of **8**, you are at the “edge of range” for the MDW telephone. The distance will vary depending on the environment, building structure, and other factors. The range in an average office building is 500–700 feet (152.5–213.5 m). If, however, dense walls intervene, the distance could be less.

- 2 With a signal strength of **3**, press  to check the voice quality. When the voice quality is **7** or **8**, the voice connection should be satisfactory. This is the edge of your usable range.

The following diagram illustrates this Performance/Range test.



General Positioning Rules

Failure to observe the following rules regarding location and use will result in poor performance of your MDW telephone.

- Position the carrier(s) in a central location, relative to the handset(s) usage area, leaving at least **6 feet (1.8 m)** between the carrier(s) and the communications system switch/control unit or other wired phones. If your switch/control unit is located in a remote location, you may have to run a telephone line cord from your switch/control unit to the centrally positioned radio module or carrier(s). The line cord maximum length is 1,000 feet (305 m) of 26-gauge cable.
- The carrier(s) should be placed high on the wall for optimum voice quality and range. Allow 6–12 inches (15.2–30.5 cm) of space between the top of the antenna on the radio modules and the ceiling.
- The carrier(s) should never be installed above a drop, suspended ceiling.
- The carrier(s) should not be within 3 feet (.9 m) of any large metal object, and should not have metal objects in the line of sight to the operating area of the handset.
- **The carrier(s) should not be within 6 feet (1.8 m) of equipment with microprocessors such as answering machines, personal computers, and fax machines; control units, communications system switches, or other phones (especially speakerphones); competing radio devices such as wireless bar-code scanners; electromagnetic equipment such as electric motors; or electrical main power feeds, junction boxes, circuit-breaker panels, fuse boxes, or 220-volt power lines.**
- The carrier(s) should *not* share the same power line as equipment with microprocessors such as answering machines, personal computers, and fax machines; or electromagnetic equipment such as electric motors.
- If your communications system uses an uninterruptible power supply, such as a backup generator, you may want to connect the radio module or carrier(s) to that power supply.

- Install carrier(s) within 15 feet (5 m) of either side of, and within 6 to 8 feet (1.8 to 2.4 m) above, a properly grounded 3-prong electrical outlet that is not controlled by an on/off switch.
- **Choose a location where handset users will not approach the carrier(s) within a radius of 6 feet (1.8 m) for 1 or 2 carriers or 10 feet (3 m) for 3 carriers.**
- When installing multiple carriers:
 - ~ Install multiple carriers 1 foot (0.3 m) optimally to 4 feet (1.2 m) apart.
 - ~ Install multiple carriers on the same horizontal axis (do not install one carrier higher or lower than another).
 - ~ Install the control carrier as the leftmost carrier, using only the expansion cables provided.

**CAUTION:**

Carrier(s) cannot be installed outdoors

Go to **one** of the following:

- If installing a **single carrier**, go to “**Installing a Single Carrier.**”
- If installing **multiple carriers**, go to “**Installing Multiple Carriers.**”

Installing a Single Carrier

Be sure you have read “Understanding Carriers.” Then go to **one** of the following:

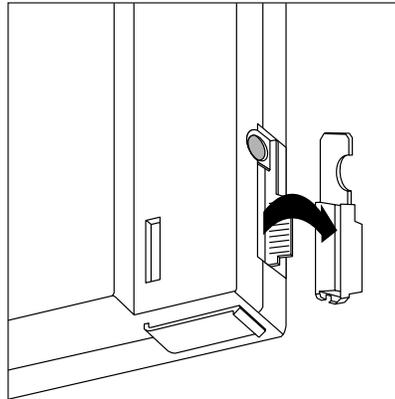
- “Installing a Single Carrier on a Shelf or Desk” or
- “Installing a Single Carrier on a Wall”

Installing a Single Carrier on a Shelf or Desk

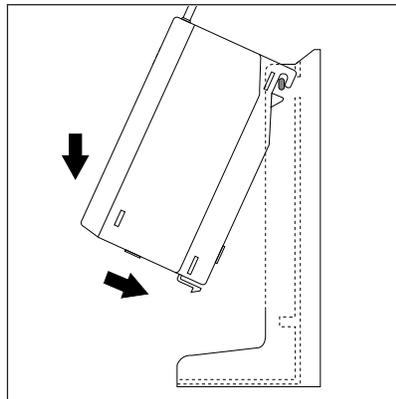
- **You will not receive optimum performance if unit is placed on a desk or low shelf**
- **Install as high as possible, leaving 6–12 inches (15.2–30.5 cm) between antennas and ceiling if on high shelf**
- **Never install or remove a radio module from a carrier that is plugged into a wall outlet (hot insertion)**

- 1 Be sure you have determined the optimal placement for your carrier using the Performance/Range test and the positioning guidelines described in “Positioning Your Carrier(s).”

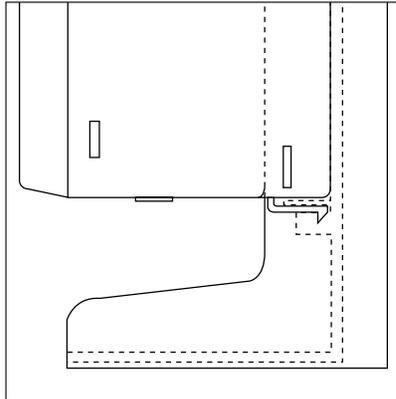
- 2 Check to make sure the carrier's power cord is unplugged from the wall outlet before continuing.
- 3 Remove the plastic cap covering each radio module's card edge before installing the radio modules in the carrier.



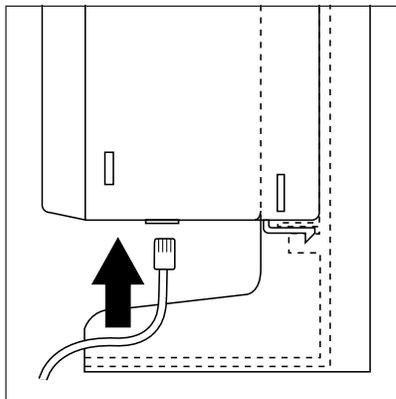
- 4 Starting from the leftmost slot (#1), insert each radio module into the carrier by hooking it onto the radio module mounting rod. Slowly swing the radio module's card edge into the card edge connector on the back of the carrier.



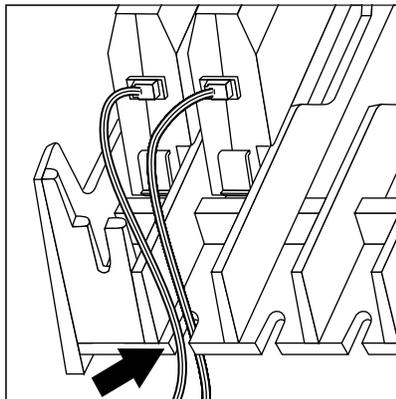
- 5 When the card edge is fully seated, a snap lock on the bottom of the radio module will engage.



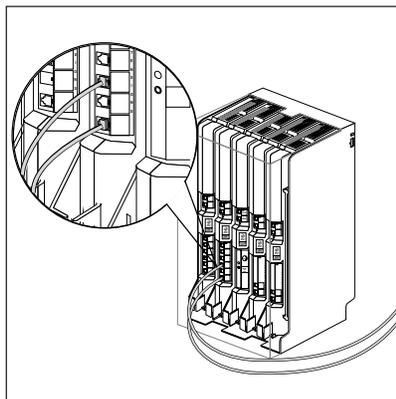
- 6 Insert a telephone line cord into the bottom of each radio module.



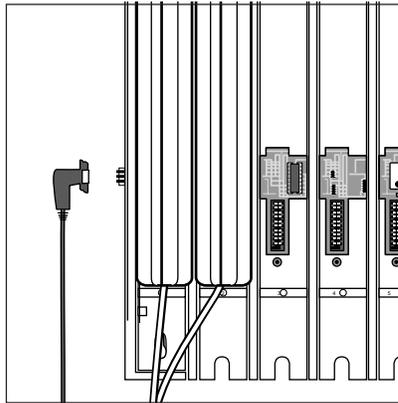
- Slide the telephone line cords through the rear exit slots on the bottom of the carrier. Cords originating from Modules 1 and 6 can share exit slots with cords from Modules 2 and 5 respectively.



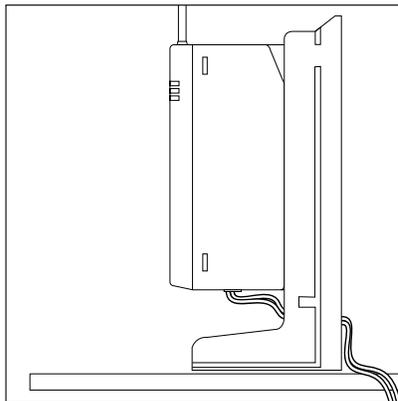
- Insert the free end of the telephone line cord into the appropriate extension jack or terminal/station connector on your communications system switch/control unit (refer to your communications system manual for the proper location).



- 9 Insert the carrier's AC adapter cord into the left side of the carrier.



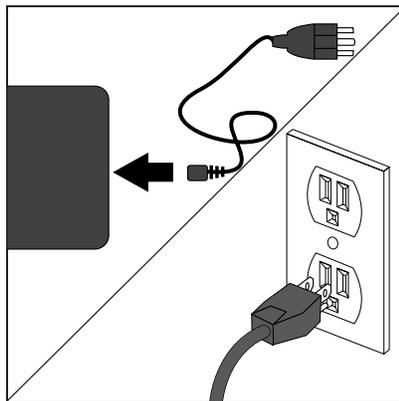
- 10 Place the carrier on its feet towards the back of the shelf or desk, making sure it is in a stable position. Be sure the telephone line cords come out the rear exit slots in the back of the unit. Arrange the power cord and telephone line cords beneath the shelf or desk so no one can step on them or trip over them.



- 11 Insert the carrier's power cord into the AC adapter, then plug the power cord into a properly grounded 3-prong wall outlet that is not controlled by an on/off switch.
If appropriate, you can wall-mount the AC adapter using its attached wall-mounting bracket.

⚠ CAUTION:

Never connect or disconnect telephone line cords, or insert or remove radio modules, while the carrier is plugged into the wall outlet.



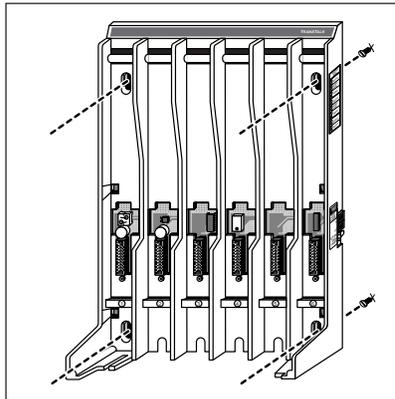
- 12 Now go to "Single Carrier Installation Self Test" (page 22).

Installing a Single Carrier on a Wall

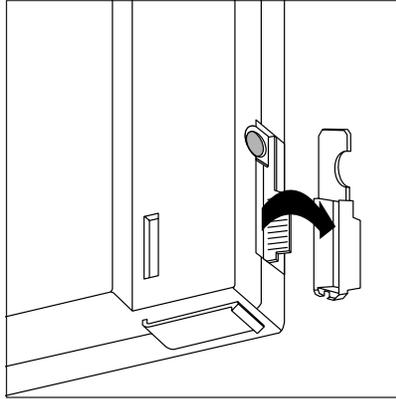
- **Install high on wall, leaving 6–12 inches (15.2–30.5 cm) between antennas and ceiling**
- **Never install or remove a radio module from a carrier that is plugged into a wall outlet (hot insertion)**

- 1 Be sure you have determined the optimal placement for your carrier using the Performance/Range test and the positioning guidelines described in “Positioning Your Carrier(s).”
- 2 Check to make sure the carrier’s power cord is unplugged from the wall outlet before continuing.
- 3 Place the carrier against the wall. Choose a location backed by a wooden stud (if unavailable, use toggle bolts instead of the supplied wood screws). Hold the carrier straight; use a level if needed. Using a nail or pencil, mark screw locations through the four wall-mount holes.

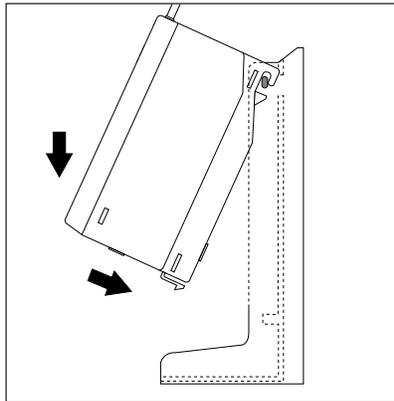
Start the screws, leaving the screw heads protruding approximately ½" (12 mm) from the wall. Place the carrier assembly over the screws, then slide it downward to lock it into place. Tighten the screws.



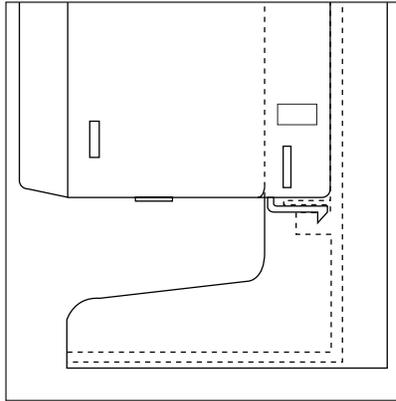
- 4 Remove the plastic cap covering each radio module's card edge before inserting the radio modules into the carrier.



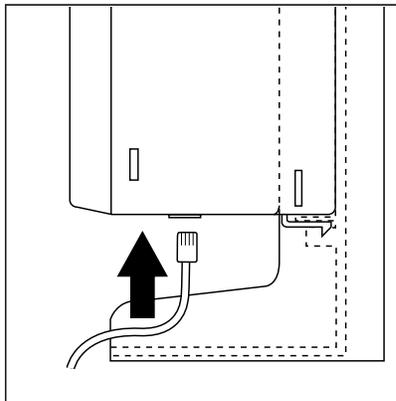
- 5 Starting from the leftmost slot (#1), insert each radio module into the carrier by hooking it onto the radio module mounting rod. Slowly swing the radio module's card edge into the card edge connector on the back of the carrier.



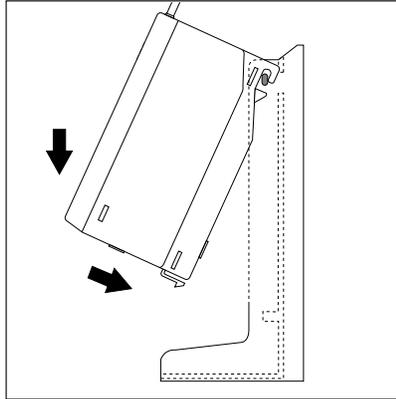
- 6 When the card edge is fully seated, a snap lock on the bottom of the radio module will engage.



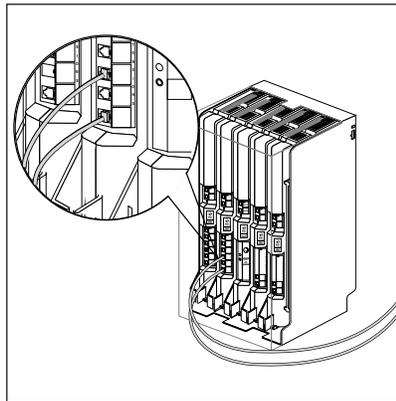
- 7 Insert a telephone line cord into the bottom of each radio module.



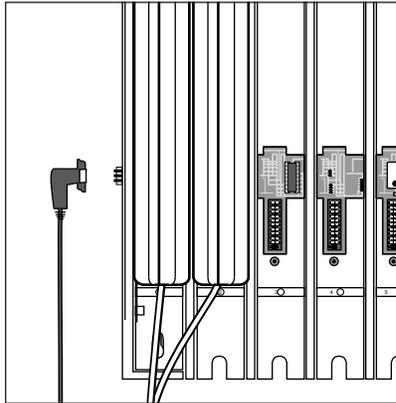
- 8 Slide the telephone line cords through the cable manager slot on the left front of the carrier.



- 9 Insert the free end of each telephone line cord into the appropriate extension jack or terminal/station connector on your communications system switch/control unit (refer to your communications system manual for the proper location).



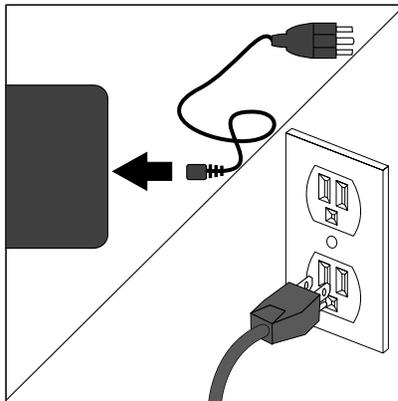
- 10 Plug the carrier's AC adapter cord into the left side of the carrier.



- 11 Insert the carrier's power cord into the AC adapter, then plug the power cord into a properly grounded 3-prong wall outlet that is not controlled by an on/off switch. If appropriate, you can wall-mount the AC adapter using its attached wall-mounting bracket.

⚠ CAUTION:

Never connect or disconnect telephone line cords, or insert or remove radio modules, while the carrier is plugged into the wall outlet.

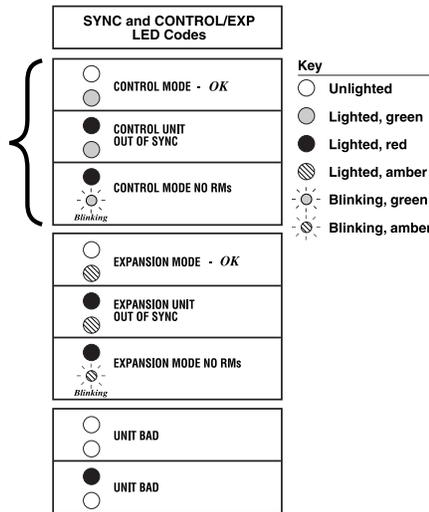


- 12 Now go to "Single Carrier Installation Self Test" (page 22).

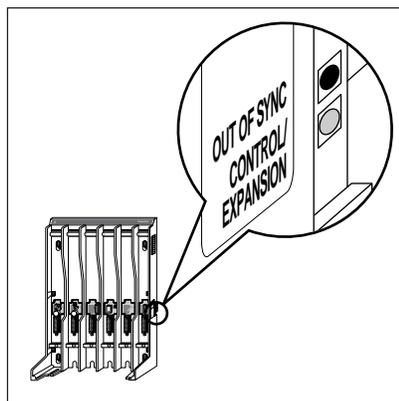
Single Carrier Installation Self Test

- 1 A single carrier must always function as a control carrier. Wait a few seconds, then check the LED(s) on the right side of the Model 117A4 carrier.

Compare the **OUT OF SYNC** and **CONTROL/EXPANSION** LEDs against the top three lines on the “SYNC and CONTROL/EXP LED Codes” label.

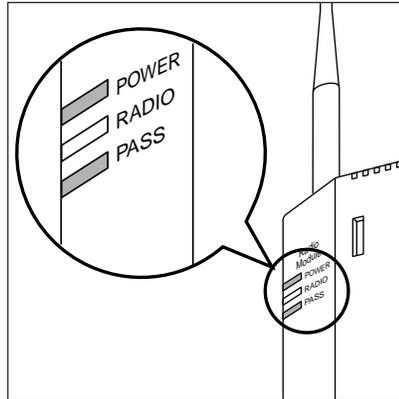


- 2 If the **OUT OF SYNC** LED is lit, power down, wait at least 15 seconds, and then repower the carrier. If the LED is still lit, call for Customer Support as described on the inside cover of this book.



- 3 Verify that the carrier’s **CONTROL/EXPANSION** LED is lit and that its color is green. This is correct for a single-carrier installation.

- 4 Verify the **POWER** and **PASS** LEDs on each radio module are lit. If a radio module's **PASS** LED does not light, power down the carrier and the module, wait 15 seconds, and repower the module and then the carrier.



Note: The **RADIO** LED also may light upon installation; however, since the **RADIO** LED has no significance during installation, ignore its operation.

The **RADIO** LED indicates a connection between the handset and the radio module; it lights when the handset is being used as long as the battery pack in the handset is charged.

Installing Multiple Carriers

- Install each carrier high on wall, leaving 6–12 inches (15.2–30.5 cm) between antennas and ceiling
- Install each carrier 1 foot (0.3 m) optimal to 4 feet (1.2 m) from its neighboring carrier
- Never install or remove a radio module from a carrier that is plugged into a wall outlet (hot insertion)

Multiple carrier installation involves several stages:

- Mounting the carriers on the wall and cabling them
- Installing a single radio module in each carrier
- Installing the remaining radio modules

The most efficient method for installing carriers and their radio modules is to perform self tests after each stage of the installation. This enables you to spot any problems at an early stage, and avoid the necessity for deinstalling the components in order to solve problems.

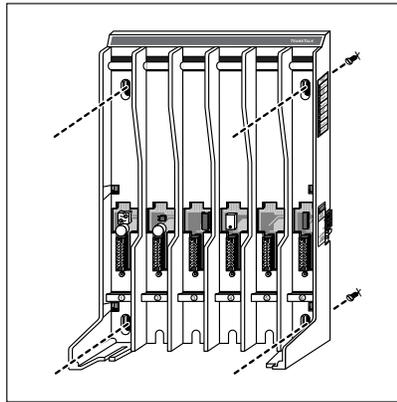
Mounting and Cabling Multiple Carriers

Be sure you have determined the optimal placement for your carrier using the Performance/Range test and the positioning guidelines described in “Positioning Your Carrier(s).”

If you are installing with 117A3 carriers, see your MDW telephone *Installation and Use* manual for the proper Power and Control/Expansion DIP switch settings.

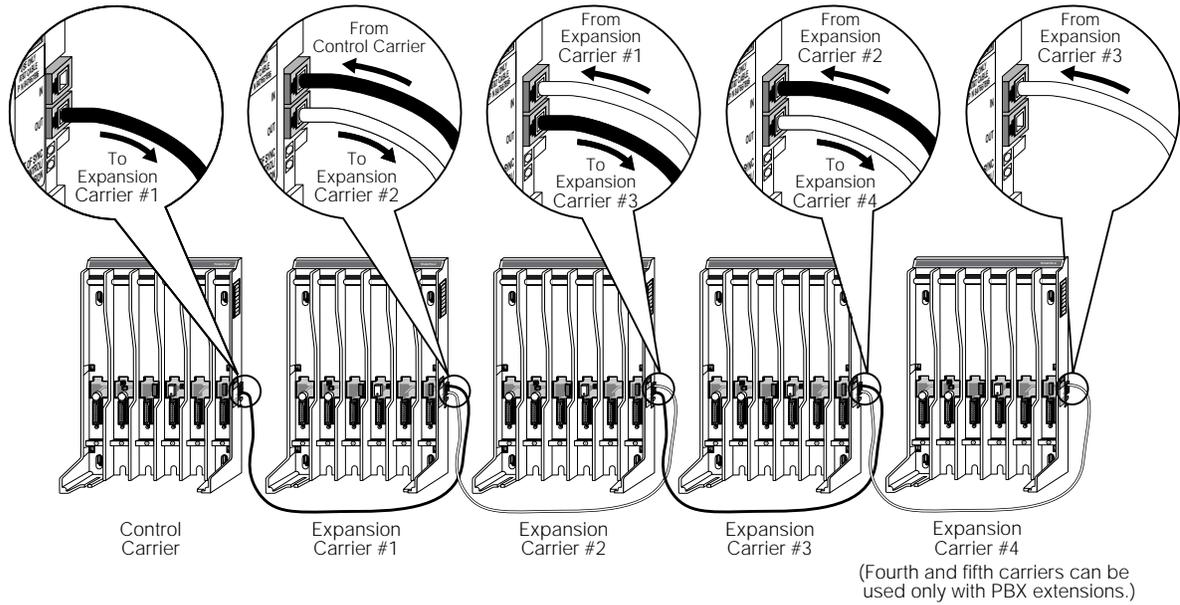
- 1 Check to make sure the carrier’s power cord is unplugged from the wall outlet before continuing.
- 2 Choose a location backed by a wooden stud for the carrier (if unavailable, use toggle bolts instead of the supplied wood screws).

Note: *The leftmost carrier must be the control carrier; all of the others are expansion carriers.*

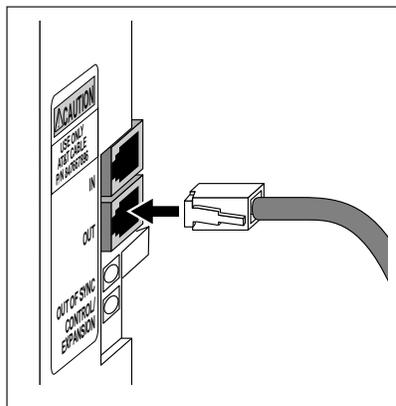


- 3 Place the carrier against the wall, leaving enough room to the right for additional carrier(s) if applicable. Hold the carrier straight; use a level if needed. Using a nail or pencil, mark screw locations through the four wall-mount holes. Start the screws, leaving the screw heads protruding approximately ½" (12 mm) from the wall. Repeat Steps 1 through 3 for each carrier, leaving 1 foot (0.3 m) optimally to 4 feet (1.2 m) between carriers.
- 4 Place the carrier over the screws, then slide it downward to lock it into place. Be sure that the leftmost carrier is the control carrier. Tighten the screws. Repeat for each carrier.

Using the **expansion cable** provided with each carrier, you can link up to five carriers.

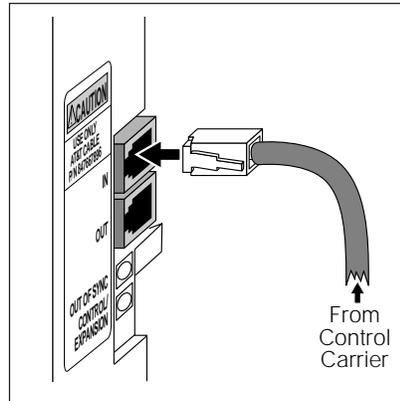


5 Connect an expansion cable to the OUT jack of the control carrier.

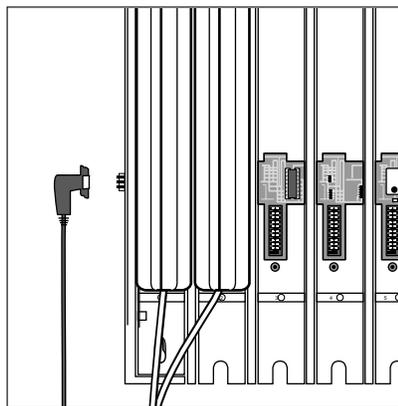


- 6 Insert the free end of the expansion cable into the IN jack of the expansion carrier immediately to the right of the control carrier.

Note: Although installing an expansion cable into the wrong IN or OUT jack will not harm either carrier, doing so causes all handsets to work improperly and the **OUT OF SYNC** LED to light.

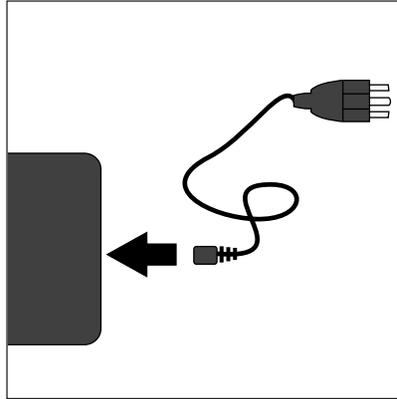


- 7 If you have a second expansion carrier:
 - a Connect an expansion cable to the OUT jack of expansion carrier #1.
 - b Insert the free end of the expansion cable into the IN jack of expansion carrier #2.If you have a third expansion carrier, see the cabling illustration on [page 34](#) for a four-carrier setup.
- 8 Plug an AC adapter cord into the left side of each carrier.

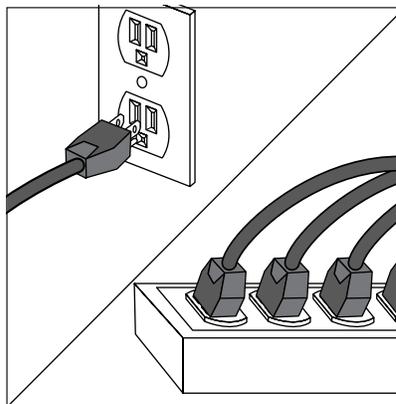


9 Insert each carrier's power cord into its AC adapter.

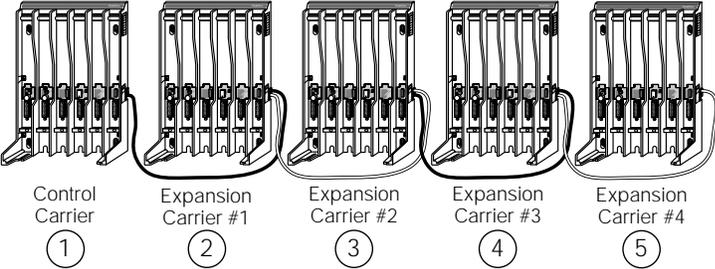
If appropriate, you can wall-mount each AC adapter using its attached wall-mounting bracket.

**10** Plug each carrier's power cord into one of the following power sources that is not controlled by an on/off switch.

- ~ Surge-suppressor strip.
- ~ Properly grounded 3-prong wall outlets. (See "Wall outlets" in the following chart for the order in which to power up the carriers.)



Power the carriers as follows:

If the carriers are plugged into...	Then...
One surge suppressor strip	Power the strip <i>Result:</i> All carriers will turn on simultaneously.
Wall outlets	Plug in the power for the Carriers in this order: 

⚠ CAUTION:

Never connect or disconnect expansion cables or telephone line cords, or insert or remove radio modules, while the carrier is plugged into the wall outlet.

11 Now go to "Multiple Carrier Mounting and Cabling Self Test" (page 28).

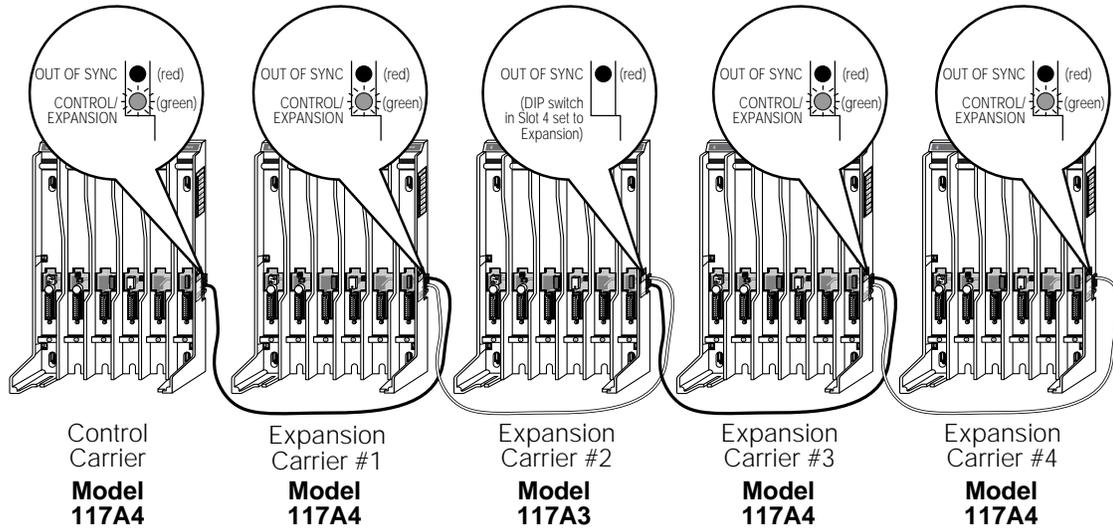
Multiple Carrier Mounting and Cabling Self Test

1 Wait a few seconds after powering up the carriers, then verify that the red **OUT OF SYNC** LEDs on all carriers are lit. This is normal when no radio modules have yet been installed. The **CONTROL/EXPANSION** LEDs (Model 117A4 only) should also be lit and blinking:

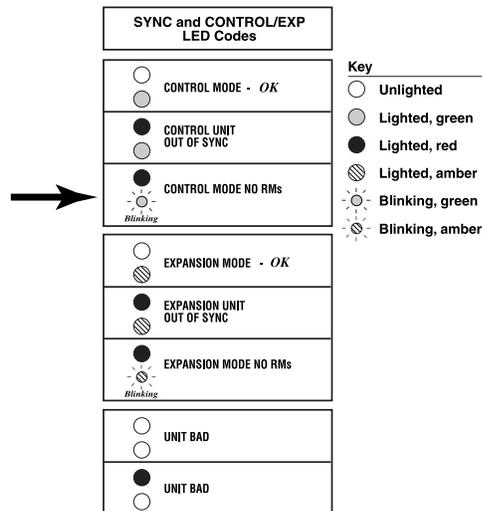
- ~ Model 117A4 control carrier = Green blinking
- ~ Model 117A4 expansion carrier(s) = Green blinking

A Model 117A3 carrier has no **CONTROL/EXPANSION** LED, but the DIP switch in Slot 4 of the carrier must be set correctly to either Control or Expansion.

The following illustration shows the correct LED status for a four-carrier installation with no radio modules installed yet. This example installation has three 117A4 carriers—one acting as the control carrier and the other two acting as expansion carriers—and one 117A3 carrier acting as an expansion carrier.



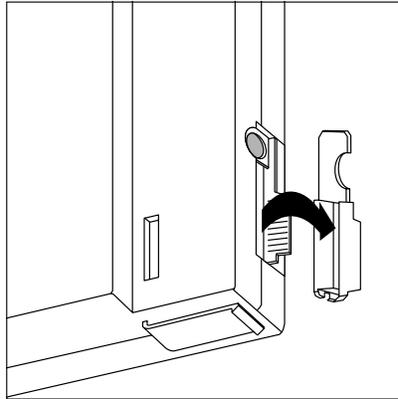
- At this stage of your installation, the LEDs displayed should match the third of the SYNC and CONTROL/EXP LED Codes label, depending on whether the carrier is the control or an expansion carrier.



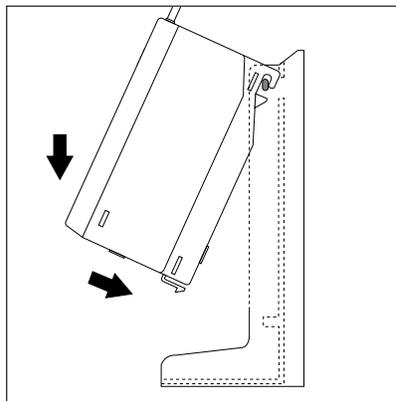
- If the LEDs on your installation do not reflect this pattern, there is probably a mistake in the cabling. Power down the carriers and check that you have followed Steps 6 through 8 in "Mounting and Cabling Multiple Carriers" correctly.
- If your LEDs match the pattern in the illustration, you can feel confident that your carriers are cabled correctly.
- Now go on to "Installing a Single Radio Module in Each Carrier" (page 30).

Installing a Single Radio Module in Each Carrier

- 1 Power down the carriers.
- 2 Remove the plastic cap covering each radio module's card edge before inserting the radio modules into the carriers.



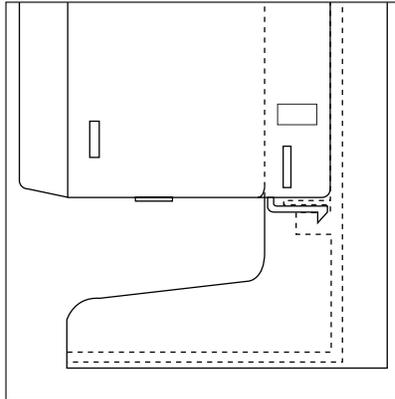
- 3 Working from left to right, insert a radio module into the first slot (Slot 1) of each carrier; hook each radio module onto the mounting rod. Slowly swing the radio module's card edge into the card edge connector on the back of the carrier. (Exception: use Slot 6 instead of Slot 1 for a Model 117A3 control carrier.)



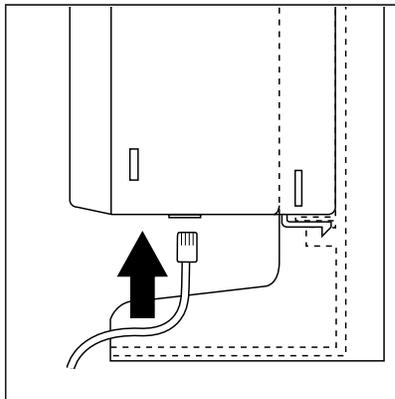
Note: Slot 6 of a Model 117A3 control carrier must always contain a radio module to pass the synchronization signal to the next carrier.

A Model 117A4 carrier does not require Slot 6 to be filled.

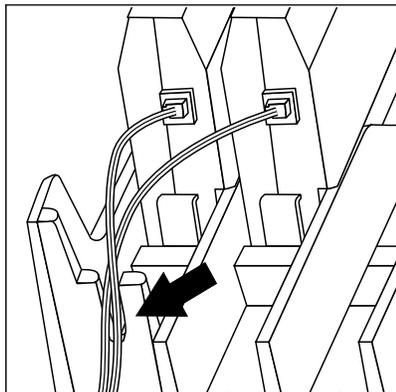
- 4 When the card edge is fully seated, a snap lock on the bottom of the radio module will engage.



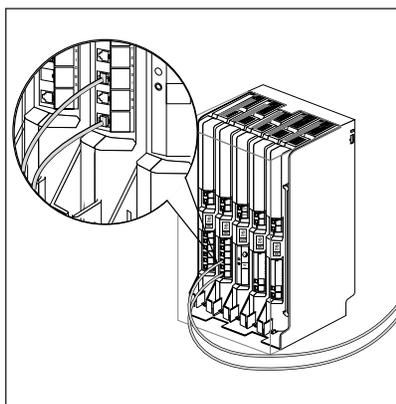
- 5 Insert a telephone line cord into the bottom of each radio module.



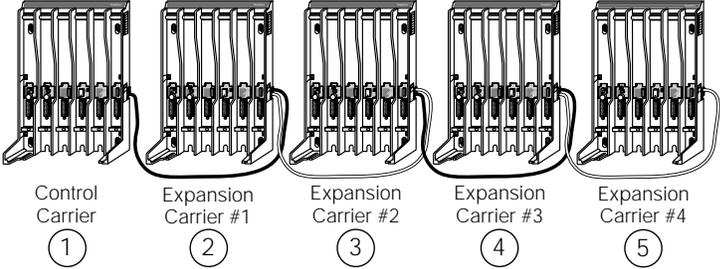
- 6 Slide the telephone line cords through the cable manager slot on the left front of each carrier.



- 7 Insert the free end of the telephone line cord into the appropriate extension jack or terminal/station connector on your communications system switch/control unit (refer to your communications system manual for the proper location).



8 Power the carriers as follows:

If the carriers are plugged into...	Then...
One surge suppressor strip	Power the strip <i>Result:</i> All carriers will turn on simultaneously.
Wall outlets	Plug in the power for the Carriers in this order: 

⚠ CAUTION:

Never connect or disconnect expansion cables or telephone line cords, or insert or remove radio modules, while the carrier is plugged into the wall outlet.

Keep in mind that a Model 117A3 control carrier must have a module in Slot 6 in order to synchronize correctly with the remaining carrier(s).

9 Now go on to "Installation Self Test with a Single Radio Module in Each Carrier" (page 34).

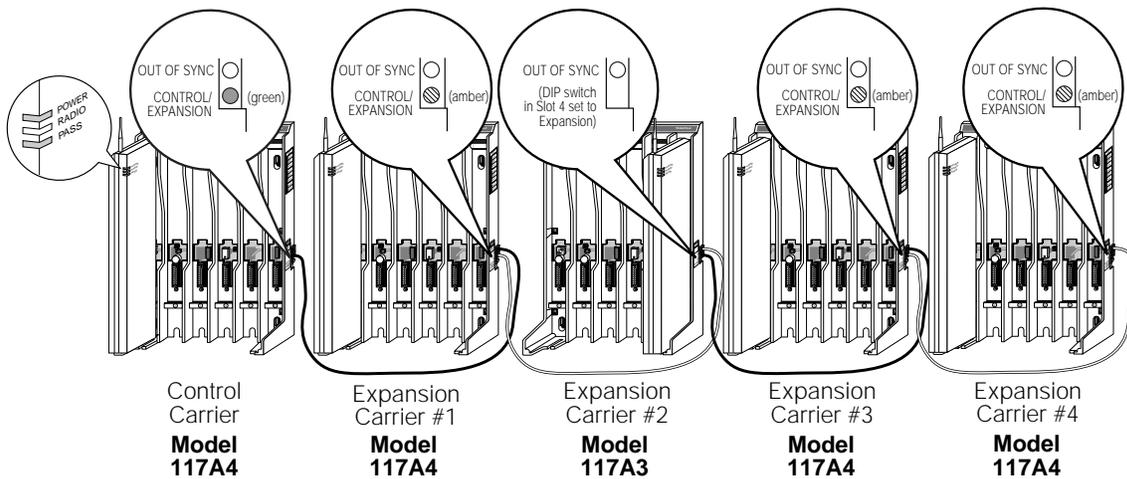
Installation Self Test with a Single Radio Module in Each Carrier

- 1 Wait a few seconds after powering the carriers, then verify that the carriers' **OUT OF SYNC** LEDs are not lit.
- 2 The following illustration shows the correct LED lights for a five-carrier installation with one radio module installed in each carrier. This example installation has four 117A4 carriers—one acting as the control carrier and the other three acting as expansion carriers—and one 117A3 carrier acting as an expansion carrier.

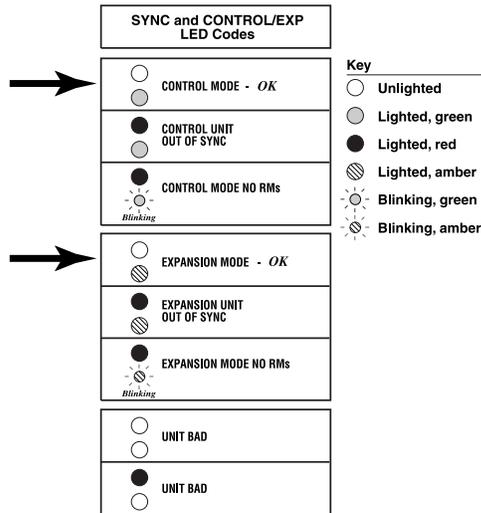
When the correct installation procedures are followed and one radio module is present in each carrier, the red **OUT OF SYNC** LEDs will not be lit on any carrier, no matter which model. The other LEDs will be lit as follows:

- ~ Model 117A4 control carrier **CONTROL/EXPANSION** LED = Green
- ~ Three Model 117A4 expansion carriers **CONTROL/EXPANSION** LED = Amber
- ~ The radio modules' **PASS** and **POWER** LEDs = Green

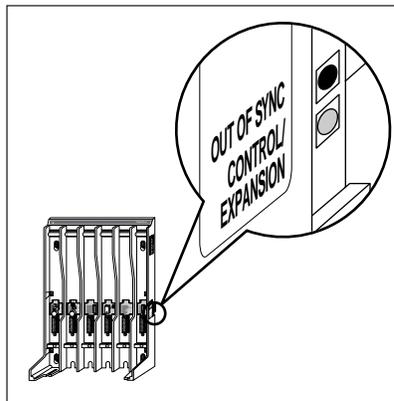
The Model 117A3 expansion carrier has no **CONTROL/EXPANSION** LED, but the DIP switch in Slot 4 of the carrier is set to Expansion.



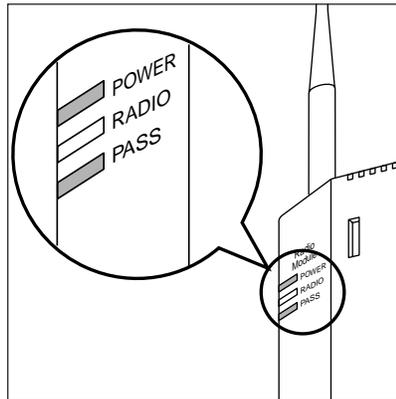
- At this stage of your installation, the LEDs displayed should match the first or fourth lines of the SYNC and CONTROL/EXP LED Codes label.



- If an **OUT OF SYNC** LED is lit, power down, wait at least 15 seconds, and then reprogram the carriers in order from left to right, as described in Step 8 in “Installing a Single Radio Module in Each Carrier.” If the LED is still lit, call Customer Support as described on the inside front cover of this book.



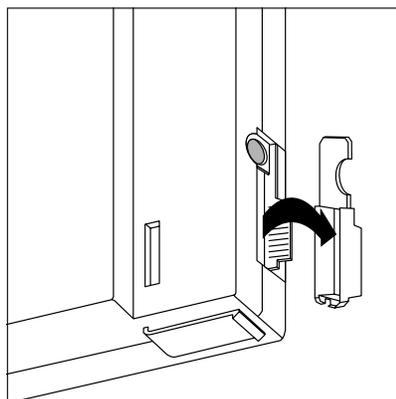
- 5 The **PASS** and **POWER** LEDs on all radio modules should be lit and green. If a radio module's **PASS** LED is not lit:
 - a Power down the carriers.
 - b Unplug from the wall outlet the power cord/AC adapter of the radio module that did not light.
 - c Wait 15 seconds.
 - d Plug in the radio module's power cord again.
 - e Repower the carriers again, following the proper left-to-right order.



- 6 If your LEDs match the pattern in the illustration in Step 2, you can feel confident that the carriers are cabled correctly and that the installed radio modules are all functional.
- 7 Now go on to "Installing the Remaining Radio Modules" (page 36).

Installing the Remaining Radio Modules

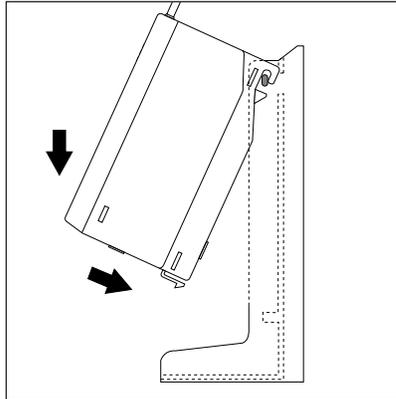
- 1 Power down the carriers.
- 2 Remove the plastic cap covering each radio module's card edge before inserting the radio modules into the carriers.



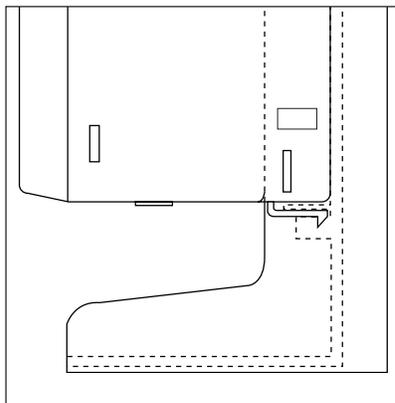
- Beginning with the first empty slot and working from left to right, insert a radio module into each slot of the control carrier. Hook each radio module onto a mounting rod. Slowly swing the radio module's card edge into the card edge connector on the back of the carrier.

Note: Slot 6 of a Model 117A3 control carrier must always contain a radio module to pass the synchronization signal to the next carrier.

A Model 117A4 carrier does not require Slot 6 to be filled.



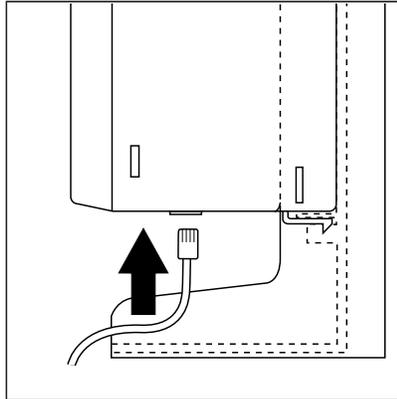
- When the card edge is fully seated, a snap lock on the bottom of the radio module will engage.



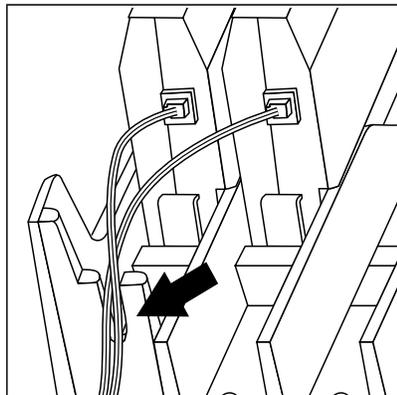
- Repeat Steps 3 and 4 for each expansion carrier, until each radio module is inserted into a carrier.

Note: Fill all six slots of the current carrier before inserting radio modules into the next carrier.

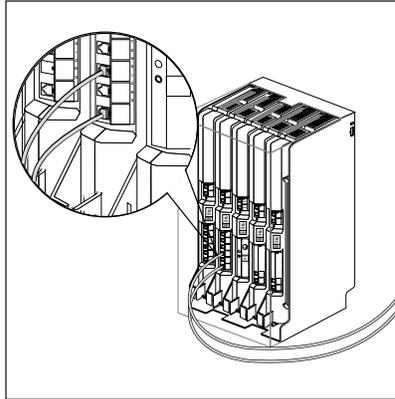
- 6 Insert a telephone line cord into the bottom of each radio module.



- 7 Slide the telephone line cords through the cable manager slot on the left front of the carrier.



- 8 Insert the free end of each telephone line cord into the appropriate extension jack or terminal/station connector on your communications system switch/control unit (refer to your communications system manual for the proper location).



- 9 Power the carriers as follows:

If the carriers are plugged into...	Then...
One surge suppressor strip	Power the strip <i>Result:</i> All carriers will turn on simultaneously.
Wall outlets	Plug in the power for the Carriers in this order:

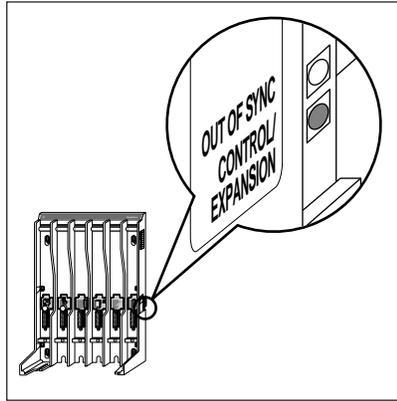
⚠ CAUTION:

Never connect or disconnect expansion cables or telephone line cords, or insert or remove radio modules, while the carrier is plugged into the wall outlet.

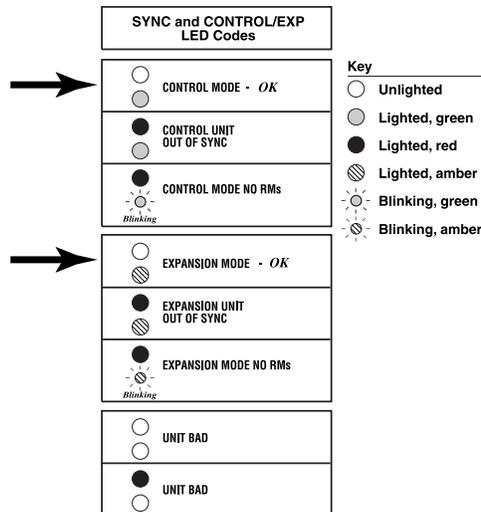
- 10 Now go to "Installation Self Test for Remaining Radio Modules" (page 40).

Installation Self Test for Remaining Radio Modules

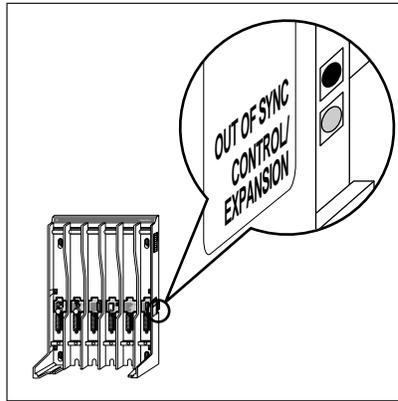
- 1 Wait a few seconds after powering the carriers, then verify that the carriers' **OUT OF SYNC** LEDs are not lit.



- 2 At this stage of your installation, the LEDs displayed should again match the first or fourth lines of the SYNC and CONTROL/EXP LED Codes label, depending on whether the carrier is the control or an expansion carrier. (Keep in mind that a Model 117A3 carrier does not have a **CONTROL/EXPANSION LED**.)

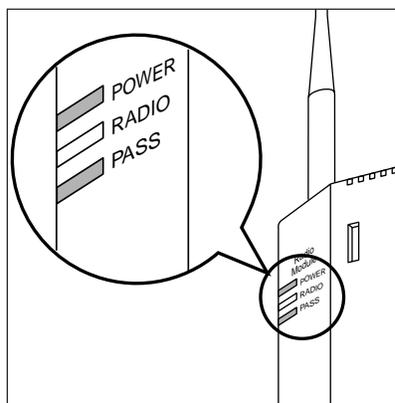


- 3 If an **OUT OF SYNC** LED is lit, power down, wait at least 15 seconds, and then repower the carriers in order from left to right, as described in Step 9 in “Installing the Remaining Radio Modules.” If the LED is still lit, call Customer Support as described on the inside front cover of this book.



- 4 The **PASS** and **POWER** LEDs on all radio modules should be lit and green, indicating that all of the radio modules are functional. If a radio module's **PASS** LED is not lit:
- Power down the carriers.
 - Unplug from the wall outlet the power cord/AC adapter of the radio module that did not light.
 - Wait 15 seconds.
 - Plug in the radio module's power cord again.
 - Repower the carriers again, following the proper left-to-right order.

If the LED is still not lit, call Customer Support as described on the inside front cover of this book.



A Warranty and Repair Information



Lucent Technologies Limited Warranty and Limitation of Liability

Lucent Technologies warrants to you, the customer, that your wireless telephone system will be in good working order on the date Lucent Technologies or its Authorized Dealer delivers or installs the system, whichever is later (“Warranty Date”). If you notify Lucent Technologies or its Authorized Dealer within one year of the Warranty Date that your system is not in good working order, Lucent Technologies will without charge to you repair or replace, at its option, the system components that are not in good working order. Repair or replacement parts may be new or refurbished and will be provided on an exchange basis. If Lucent Technologies determines that your system cannot be repaired or replaced, Lucent Technologies will remove the system and, at your option, refund the purchase price of your system or apply the purchase price towards the purchase of another Lucent Technologies system.

If you purchased your system directly from Lucent Technologies, Lucent Technologies will perform warranty repair in accordance with the terms and conditions of the specific type of Lucent Technologies maintenance coverage you selected. A written explanation of Lucent Technologies’s types of maintenance coverage may be obtained from Lucent Technologies by calling 1 800 247-7000 (in the continental U.S. only). If you purchased your system from an Lucent Technologies Authorized Dealer, contact your dealer for the details of the maintenance plan applicable to your system.

This Lucent Technologies limited warranty covers damage to the system caused by power surges. Unless otherwise expressly agreed to in a written agreement signed by Lucent Technologies, Lucent Technologies will not be responsible under this limited warranty for damages resulting from:

- Failure to follow Lucent Technologies’s installation, operation, or maintenance instructions;
- Unauthorized system modification, movement, or alteration;
- Unauthorized use of common carrier communication services accessed through the system;
- Abuse, misuse, or negligent acts or omissions of the customer and persons under the customer’s control; or
- Acts of third parties and acts of God. LUCENT TECHNOLOGIES’S OBLIGATION TO REPAIR, REPLACE, OR REFUND, AS SET FORTH ABOVE, IS YOUR EXCLUSIVE REMEDY.

EXCEPT AS SPECIFICALLY SET FORTH ABOVE, Lucent Technologies, ITS AFFILIATES, SUPPLIERS, AND DEALERS MAKE NO WARRANTIES, EXPRESS OR IMPLIED, AND SPECIFICALLY DISCLAIM ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

Limitation of Liability

Except as provided below, the liability of Lucent Technologies and its affiliates and suppliers for any claims, losses, damages, or expenses from any cause whatsoever (including acts or omissions of third parties), regardless of the form of action, whether in contract, tort, or otherwise, shall not exceed the lesser of: (1) the direct damages proven; or (2) the repair cost, replacement cost, license fee, annual rental charge, or purchase price, as the case may be, of the equipment that directly gives rise to the claim. Except as provided below, Lucent Technologies and its affiliates and suppliers shall not be liable for any incidental, special, reliance, consequential, or indirect loss or damage incurred in connection with the equipment. As used in this paragraph, consequential damages include, but are not limited to, the following: lost profits, lost revenues, and losses arising out of unauthorized use (or charges for such use) of common carrier telecommunications services or facilities accessed through or connected to the equipment. For personal injury caused by Lucent Technologies's negligence, Lucent Technologies's liability shall be limited to proven damages to person. No action or proceeding against Lucent Technologies or its affiliates or suppliers may be commenced more than twenty-four (24) months after the cause of action accrues. THIS PARAGRAPH SHALL SURVIVE FAILURE OF AN EXCLUSIVE REMEDY.

Repair Information

Outside the continental U.S., contact your Lucent Technologies Representative or local Authorized Dealer for warranty and repair information applicable to your system.

In-Warranty Repairs

If you purchased or leased your system directly from Lucent Technologies, Lucent Technologies will repair it free of charge during the one-year warranty period. Simply call for customer support as instructed on the inside front cover of this book.

Business-Day service is standard during the warranty period. Business-Day service is performed during normal business hours. (Around-the-Clock service is not available for phones.)

If you purchased or leased your system through a Lucent Technologies Authorized Dealer, contact your dealer for repairs.

Post-Warranty Repairs

If you purchased the system from Lucent Technologies and you have a post-warranty service contract, Lucent Technologies service is provided under the terms of that contract.

To significantly reduce unexpected repair costs after the warranty period, you can purchase a post-warranty service contract from Lucent Technologies. If you do not have a contract, Lucent Technologies service is provided on a time-and-materials basis by calling for customer support as instructed on the inside front cover of this book. A contract provides to you, within the applicable coverage period and response times, service calls with no charge for parts and labor on covered repairs. To order a post-warranty service contract, call 1 800 247-7000 (in the continental U.S. only).

If you leased your system from Lucent Technologies, Business-Day service is included in your lease.

If you purchased or leased your system through a Lucent Technologies Authorized Dealer, contact your dealer for repairs.

B Regulatory Information



This appendix contains information about the Federal Communications Commission and Industry Canada.

FCC Part 15 Rules

The Lucent Technologies MDW telephone products have been tested and have been found to comply with *FCC Part 15 Rules*. These specifications are designed to provide reasonable protection against harmful interference in a commercial or residential installation. This wireless telephone product generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If the telephone does cause harmful interference to radio or television reception, which can be determined by turning the telephone off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Where it can be done safely, reorient the receiving television or radio antenna.
- To the extent possible, relocate the television, radio, or other receiver with respect to the telephone.
- Plug the telephone into an electrical outlet that is not on the same circuit as one used by the radio or television.

IC RSS-210 Compliance

This device complies with RSS-210 of Industry Canada. Operation is subject to the following two conditions:

- 1 This device may not cause interference.
- 2 This device must accept any interference including interference that may cause undesirable operation of the device.

The user is cautioned that modifications to this telephone, not expressly approved by Lucent Technologies, could void the user's authority to operate the equipment.

C Specifications



General			
Model:	117A4 Carrier		
Dimensions and Weights:	Carrier	14.0"(L) x 2.5"(H) x 9.0"(W) 35.56 x 6.35 x 22.86 cm	3.00 lbs 1.36 kgs
	Carrier w/6 RMs	14.0"(L) x 2.5"(H) x 9.0"(W) 35.56 x 6.35 x 22.86 cm	12.00 lbs 5.44 kgs
	Power Supply	5.13"(L) x 1.6"(H) x 1.6"(W) 13.03 x 4.06 x 4.06 cm	1.70 lbs 0.77 kgs
Operating Temperature	Temperature range:	4.4° C (40° F) to 40° C (104° F)	
	Relative Humidity:	15% to 95%	
Electrical Specifications: (Power)	Carrier w/6 RMs	24.0 watts	
	Power supply	30.0 watts (9V)	
Electrical Requirements	<ul style="list-style-type: none"> • 105–130VAC, 50–60 Hz, 3-prong outlet separate ground, separately fused at 15 amps. • Outlet must not be controlled by an on/off switch • Grounding to comply with Underwriters Laboratories (UL) 1459 		

