



# **DEFINITY Wireless Business System Installation and Test**

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Issue 6  
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# Contents

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<b>About This Book</b>	<b>vii</b>
■ Introduction	vii
■ Audience	vii
■ Important Safety Guidelines for Users	vii
Exposure to Radio Frequency Energy	viii
Cardiac Pacemakers	viii
Hearing Aid Compatibility	viii
■ Typographic Conventions	ix
■ Organization	ix
■ Related Information	x
■ Getting Help	x

---

<b>1</b>	<b>UTAM Disablement</b>	<b>1-1</b>
	■ Introduction	1-1

---

<b>2</b>	<b>Switch Administration</b>	<b>2-1</b>
	■ Introduction	2-1
	■ Procedure: Software Installation	2-1

---

<b>3</b>	<b>Hardware Installation</b>	<b>3-1</b>
	■ Introduction	3-1
	■ Safety Information	3-1
	Basic Instructions	3-1
	Additional Safety Instructions for Installation	3-4
	■ Environmental and Power Requirements	3-4
	Environment	3-4
	9601 WT Environment	3-5
	9630 Series WT Environment	3-5

---

# Contents

■ DWBS Components	3-6
■ Radio Controllers	3-9
Procedure: Installing Radio Controllers	3-11
■ Wireless Fixed Base	3-12
Power Options	3-13
Procedure: Installing the Wireless Fixed Base	3-18
■ Cell Antenna Unit	3-30
Procedure: Installing Indoor CAUs	3-30
Procedure: Installing 559D Dipole CAUs	3-32
Procedure: Installing 559B/C Outdoor CAUs	3-36
Fixed-Length Coax Interface	3-43
■ DWBS WTs	3-43
9601 WT	3-44
9630 Series WT	3-44
Procedure: Obtaining the IPEI	3-45

---

<b>4</b>	<b>DWBS Testing</b>	<b>4-1</b>
■	Introduction	4-1
■	Verifying Radio Component Configurations	4-1
■	Procedure: WT Firmware Download and Connection	4-2
	Determining if a Firmware Download is Required	4-2
	Initial Operations	4-4
	Establishing Connections	4-7
	Using Keys to Download WT Firmware	4-11
	WT Firmware Download Error Codes	4-12
■	Procedure: Performing Wireless Test Calls	4-15
■	Procedure: Verifying Operative Cell IDs	4-16

---

# Contents

---

<b>5</b>	<b>Commands</b>	<b>19</b>
	■ Introduction	19
	■ Command Structure	19
	■ Command List	20
<hr/>		
<b>A</b>	<b>DWBS Installation Checklist</b>	<b>A-1</b>
	■ Introduction	A-1
	■ Checklist	A-2
<hr/>		
<b>GL</b>	<b>Glossary</b>	<b>GL-1</b>
<hr/>		
<b>IN</b>	<b>Index</b>	<b>IN-1</b>

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# Contents

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# About This Book

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## Introduction

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*DEFINITY® Wireless Business System Installation and Test* provides both hardware and software background information and procedures for the installation and testing of the DEFINITY Wireless Business System (DWBS).

**⇒ NOTE:**

Before using this book, all planning and site-preparation steps must be completed. The technician's function is to install the hardware and load the software to bring up the system. For additional planning and site information, see the documents listed in the "Related Information" section in this chapter.

## Audience

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The primary audience for this book is the installation technician.

## Important Safety Guidelines for Users

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Observe these guidelines for safe and efficient operation of your DWBS 9601 Wireless Terminal (WT) or 9630 Series WT.

Your WT is a radio transmitter and receiver. When the battery is installed, the phone is on and it receives and sends out radio frequency (RF) energy. The phone operates in the frequency range of 1920 to 1930 MHz. Your handheld wireless telephone uses the digital Time Division Multiple Access (TDMA) mode. Power is transmitted in bursts at a 100 Hz pulsed repetition rate. The peak envelope transmit power is 100 mW or less.

## **Exposure to Radio Frequency Energy**

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The design of your wireless telephone complies with the latest safety levels of the Institute of Electrical and Electronic Engineers (IEEE) and the American National Standards Institute (ANSI) with respect to human exposure to RF energy. Of course, if you would like to limit RF exposure even further, you may choose to control the duration of your calls.

## **Cardiac Pacemakers**

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The Health Industry Manufacturers Association recommends that a minimum separation distance of six inches be maintained between a handheld wireless phone and a pacemaker to avoid potential interference with a pacemaker. These recommendations are consistent with the independent research by and recommendations of wireless technology research.

- *Always* keep the WT more than six inches from the pacemaker whenever the battery is in the WT.
- Do not carry the WT in a breast pocket.
- Use the ear opposite the pacemaker to minimize the potential for interference.
- If you have any reason to suspect that interference is taking place, take the battery out of your phone immediately.

## **Hearing Aid Compatibility**

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Most electronic equipment, such as equipment in hospitals, is shielded from RF energy. However, RF energy from wireless telephones may affect some electronic equipment.

Although the DWBS WT is compatible with inductively coupled hearing aids, you should consult your physician or hearing aid manufacturer to determine if your hearing aid is adequately shielded from external RF energy. The operation of inadequately shielded medical devices may be adversely affected when a portable wireless telephone is operating in close proximity.

## Typographic Conventions

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The following typographic conventions are used in this book to convey information consistently and quickly.

- *This typeface* is used for references to titles of other information and for emphasis within other typefaces.
- **This typeface** emphasizes key words to help clarify meaning in a sentence or to call attention to a distinction.
- The following note icon identifies additional information pertinent to the text preceding it.

 **NOTE:**

## Organization

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This book is organized as follows:

- **Chapter 1, “UTAM Disablement,”** discusses the general requirements and caveats for installing and moving the DWBS.
- **Chapter 2, “Switch Administration,”** deals with the administration of the DEFINITY Enterprise Communications Server and the Mobility Manager for system operation.
- **Chapter 3, “Hardware Installation,”** provides the technician with background and procedural information to install the hardware.
- **Chapter 4, “DWBS Testing,”** provides the installer with background and procedural information to ensure that the system is operational.
- **Chapter 5, “Commands,”** provides a list of DEFINITY ECS Release 9 and Mobility Manager commands associated with the installation of the system.
- **Appendix A, “DWBS Installation Checklist,”** provides a checklist for performing a DWBS installation. Page references to the appropriate background information are provided.

A glossary and an index are also included.

## **Related Information**

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This book serves as a user's guide for the installation and test of the DWBS. Additional books in the series are as follows:

- *DEFINITY Wireless Business System Maintenance*, 555-232-103
- *DEFINITY Wireless Business System 9630 Series Wireless Terminal Quick Reference*, 555-232-702
- *DEFINITY Wireless Business System 9630 Series Wireless Terminal User Guide*, 555-232-701

## **Getting Help**

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If you have any questions regarding the information in this book, call technical support at (800) 248-1234.

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## Introduction

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⇒ **NOTE:**

The rules of the Federal Communications Commission (FCC) apply only to the United States. In the US, do not activate the DWBS until you receive the installation package and UTAM clearance for the site from the DEFINITY Wireless Design Team (DWDT).

Systems in Canada follow the same UTAM disablement rules as in the US, as specified by Industry Canada (IC) and the Industry Advisory Group (IAG).

For disablement rules in other countries, contact the International Offer Manager.

The rules of the FCC and UTAM, Inc. (designated by the FCC as a frequency coordinator for the unlicensed band) mandate that any wireless system, including the DWBS, that operates in the 1910-1930 MHz band automatically disables itself if the system is moved from the initial premises where it is installed. (This means that Wireless Fixed Bases (WFBs) and Cell Antenna Units (CAUs) may be moved within a customer building, *but they may not be moved to another customer location.*) In keeping with this requirement, the DWBS automatically disables the radio transmission if the DEFINITY Enterprise Communications Server® (ECS) experiences a total loss of power. The radio transmission may be enabled only after the Avaya remote maintenance center is able to contact the DEFINITY ECS to confirm the system's location. This confirmation occurs within approximately 30 minutes after power is restored.

A power-up reset of the DEFINITY ECS generates a major power alarm, and the *DWBS will not operate until the location of the DEFINITY ECS can be verified by an authorized Avaya representative.* (However, a wired set would operate without this verification.) The radio transmission is activated only upon confirmation of the DEFINITY ECS location. Activation will occur automatically once the Avaya remote monitoring center receives the alarm and can reconnect with the DEFINITY ECS. The process normally occurs within 30 minutes of power-up. If the remote center cannot contact the switch, a technician must be dispatched to restore the wireless service.

## Introduction

This chapter provides the steps necessary to administer the DEFINITY ECS Release 9 Generic 3 for system operation.

DEFINITY ECS administration is done via Generic 3 switch commands and the Mobility Manager administration software. The Mobility Manager software comprises fields and commands specific to the system operation.

## Procedure: Software Installation

The following procedure explains how to install the DWBS software. Additional commands are available to change or delete information. See Chapter 5 for a list of DEFINITY ECS and Mobility Manager commands associated with DWBS installation.

1. (This step can be completed only with the permission of the regional Customer Service Associate [CSA] either remotely or on-site.) From the DEFINITY ECS management terminal (MT), log on as **init** and execute the **change system-parameters customer-options** command. Verify that the *G3 Version* field on page 1 of the Optional Features form contains **V5** or greater. The system will not operate on an earlier version. Page 1 of the form appears as follows:

```
display system-parameters customer-options Page 1 of 10

OPTIONAL FEATURES

G3 Version: V10
Location: 2
Maximum Ports: 1000
Maximum XMOBILE Stations: 25

Used Low High
15 0 0
13 0 0

IP PORT CAPACITIES

Maximum Administered IP Trunks: 100 36 0 0
Maximum Concurrently Registered IP Stations: 100 0 0 0
Maximum Administered Remote Office Trunks: 0 0 0 0
Maximum Concurrently Registered Remote Office Stations: 0 0 0 0
Maximum Concurrently Registered IP eCons: 0 0

Maximum Number of DSI Boards with Echo Cancellation: 0 0 0 0
Maximum VAL Boards: 1 0 0 0

(NOTE: You must logoff & login to effect the permission changes.)
```

**Figure 2-1. Optional Features Form (Page 1)**

2. Go to Page 4 of the form, which appears as follows:

```
display system parameters customer-options Page 4 of 10
                                     OPTIONAL FEATURES
Processor and System MSP? n           Tenant Partitioning? n
Private Networking? y                 Terminal Trans. Init. (TTI)? y
                                     Time of Day Routing? n
                                     Uniform Dialing Plan? y
Usage Allocation Enhancements? y     VAL Full 1-Hour Capacity? n
Remote Office? n
Restrict Call Forward Off Net? y     Wideband Switching? n
Secondary Data Module? y             Wireless? y
Station and Trunk MSP? n
Station as Virtual Extension? n
Survivable Remote Processor? n

(NOTE: You must logoff & login to effect the permission changes.)
```

---

**Figure 2-2. Optional Features Form (Page 4)**

3. Change the *Wireless* field value from **n** to **y**.
4. Submit the form.
5. Log off and then log on again to the DEFINITY ECS local or remote MT as **init**.
6. Execute the **change system-parameters wireless** command to generate the Wireless System-Parameters form. Two versions of the form are shown in the following figures:

```
change system-parameters wireless Page 1 of 1

WIRELESS-RELATED SYSTEM PARAMETERS
System Identification: 0100015-2176

Maximum Radio Controllers: 9           Master Port Network: 5
Maximum Wireless Terminals: 22        Radio Transmission? y
                                         UTAM Disablement? y

Allowable Carrier Frequencies (MHz)
1: 1920.625 y           5. 1925.625 y
2: 1921.875 y           6. 1926.875 y
3: 1923.125 y           7. 1928.125 y
4: 1924.375 y           8. 1929.375 y

Port Networks With Radio Controllers
1: y   6: n   11: n   16: n   21: n   26: n   31: n   36: n   41: n
2: y   7: n   12: n   17: n   22: n   27: n   32: n   37: n   42: n
3: y   8: n   13: n   18: n   23: n   28: n   33: n   38: n   43: n
4: n   9: n   14: n   19: n   24: n   29: n   34: n   39: n   44: n
5: n  10: n  15: n  20: n  25: n  30: n  35: n  40: n
```

**Figure 2-3. Wireless-Related System Parameters Form (G3r)**

```

change system-parameters wireless                               Page 1 of 1
                                                                WIRELESS-RELATED SYSTEM PARAMETERS
                                                                System Identification: 0100015-2176

Maximum Radio Controllers: 10                                Master Port Network: 1
Maximum Wireless Terminals: 200                             Radio Transmission: y
                                                                UTAM Disablement? y

Allowable Carrier Frequencies (MHz)
0: 1929.375 y          4: 1924.375 y
1: 1928.125 y          5: 1923.125 y
2: 1926.875 y          6: 1921.875 y
3: 1925.625 y          7: 1920.625 y

Port Networks With Radio Controllers
1: y
2: n
3: n
    
```

**Figure 2-4. Wireless-Related System Parameters Form (G3si/vs/Prologix™)**

7. Allow the administrable part of the *System Identification* field to remain at the default value of **2176**.

**NOTE:**

This field provides the system with an identifier that is broadcast regularly in its beacon or traffic-bearing channels. The system ID includes two parts: system-generated digits and administrable digits. The system-generated part is displayed as a read-only prefix to the administrable part.

If this field is changed, you must busy out, reset, and release all administered RCs before the change will be read into the RCs. The new system ID must be programmed into all new and existing handsets. It is not recommended that this field be changed.

This field will change if the wireless customer option is changed to **n** then **y** after the initial provisioning.

8. In the *Maximum Radio Controllers* field, enter the maximum number of RCs that may be administered in the system. This number is based on the UTAM clearance for the site from the DWDT, and it should match the number of RCs designated in the DWDT package. **UTAM clearance from the DWDT and the DWDT package are required for DWBS activation in the United States.** Valid values for the field are from **0** to **150** inclusive for G3r and from **0** to **50** inclusive for all other configurations.

**⇒ NOTE:**

The field determines the number of RCs that are added to the system via the **add radio-controller** command. The field does not limit the number of RC circuit packs that may be physically inserted into and recognized by the system.

9. Enter the maximum number of WTs that are in the system. This number is based on the order of rights-to-use (RTUs) per station. Valid values are from **0** to **1500** inclusive.

**⇒ NOTE:**

The number of administered WTs is included in the system-wide count of station and trunk ports administered in the *Maximum Ports* field within the Customer-Options form. The value in the *Maximum Wireless Terminals* field must always be less than or equal to the value in the *Maximum Ports* field.

10. Set the *Master Port Network* field to a number identifying a port network that contains an RC circuit pack. Values for a G3si system include **1**, **2**, and **3**. Values for a G3r system include **01** through **44**. The default value is a blank field.

**⇒ NOTE:**

This field is displayed only for DEFINITY ECS G3i and DEFINITY ECS G3r configurations.

11. Populate the *Radio Transmission* field, as desired. This field is used to control whether the radio subsystem is enabled. That is, whether the radios should transmit or not.

Default is **y**. This means that, as a default, the radios will transmit and function normally when the RCs, WFBs and CAUs are administered properly.

12. Populate the *UTAM Disablement* field, as desired. This field is used to control whether the UTAM disablement feature is active for a system (that is, whether the DWBS disables itself following a system power cycle).

Default is **y**. This means that, as a default, the radio subsystem is disabled following a power cycle of the system. Whenever a DWBS is power-cycled, the *Radio Transmission* field is set to **n**, and the radios are disabled. A save translations is done on the system, and a major alarm is activated for the

system over the Initialization and Administration System (INADS) line. INADS is set up to log into the DEFINITY ECS and set the *Radio Transmission* field to **y** to restore radio service.

Whenever the field is set to **n**, the radio subsystem is not disabled following a system power cycle. This means that, after a power cycle, the *Radio Transmission* field is not set to **n**, a save translations is not done, a major alarm is not generated, and a call into the DEFINITY ECS is not required to restore radio service. The radio subsystem continues to initialize and operate as normal.

On system upgrades, value **y** is the default for the field.

**⇒ NOTE:**

This field should be changed to **n** only whenever the DWBS resides in countries where the legal requirements for disablement do not apply.

13. In the *Allowable Carrier Frequencies* field, enable all frequencies by updating the specific field value to **y** unless otherwise directed by the DWDT.

**⇒ NOTE:**

The eight field options support the administration of the superset of carrier frequencies that are allowed for a system as determined by UTAM. (UTAM has been designated by the FCC as a frequency coordinator for the unlicensed band.) The allowable carrier frequencies administered in this field define the frequencies that can be administered in the Carrier-Frequencies form.

If this field is changed, you must busy out, reset, and release all administered RCs before the change will be read into the RCs.

14. Enable all port networks that will contain RC circuit packs by updating the specific field value to **y**.

**⇒ NOTE:**

RCs that are serving contiguous areas must be in the same port network.

During a power-up system reset, the *Radio Transmission* field is set to **n** and wireless capabilities are disabled until Avaya can verify that the system has not been moved. Refer to Chapter 1 of this document for details.

15. Change the Radio Controller Cluster ID assignment fields, as desired. One field exists for each potentially administered radio controller circuit pack on a system. For G3r, there are **150 ID** fields. For all other configurations, there are **50 ID** fields. These fields are initially populated by the system when a radio controller circuit pack is administered on the system using the **add radio** command. The *ID* field associated with an RC may be changed

to re-assign and/or reuse the downloadable Cluster ID associated with a radio controller circuit pack. The Cluster ID, also known as a Cell ID, is used by the switch to page a WT in a specific cell. The Cluster ID for an administered radio controller circuit pack is displayed on the **list configuration radio controller** command.

The *RC#* field is a system assigned ID that cannot be changed.

The *Location* field contains the circuit pack address **PPCSS** of an administered radio controller circuit pack. The field is populated and maintained by the system. It cannot be changed by the user.

The *ID* field contains the Cluster ID for an RC.

- a. On a new system, where there are no radio controllers administered, the default value for all *Location* and *ID* fields is blank.
- b. When a radio controller circuit pack is added to the system using the **add radio** command, the *ID* field for that RC contains a system assigned ID from **1-32**. This number can be verified using the **list configuration radio-controller all** command.
- c. To re-assign or reuse a Cluster *ID*, change the ID field for an RC. Valid values are **1-32**.

```
change system-parameters wireless Page 2 of 4
```

RADIO CONTROLLER CLUSTER ID ASSIGNMENTS								
RC#	Location	ID	RC#	Location	ID	RC#	Location	ID
1:	02C08	2	17:			33:		49:
2:	02C09	9	18:			34:	02C14	9
3:			19:			35:		51:
4:			20:			36:		52:
5:			21:			37:		53:
6:			22:			38:		54:
7:			23:			39:		55:
8:			24:			40:		56:
9:			25:			41:		57:
10:			26:			42:		58:
11:			27:			43:		59:
12:			28:			44:		60:
13:			29:			45:		61:
14:			30:			46:		62:
15:			31:			47:		63:
16:			32:			48:		64:

**Figure 2-5. Radio Controller Cluster ID Assignments**

**⇒ NOTE:**

Once an ID has been changed, **busyout**, **reset** and **release** must be done for each RC board whose ID has changed in order for it to get downloaded to the RC board.

16. Submit the completed form.
17. Execute the **change carrier-frequencies** command to administer the carrier frequencies.

**⇒ NOTE:**

All frequencies that are administered as **y** on the System-Parameters Wireless form are also defaulted to **y** on the Carrier-Frequencies form. This form must be changed only if the customer is not going to use a frequency that has been approved for use by the FCC.

If this field is changed, you must **busy out**, **reset**, and **release** all administered RCs before the change will be read into the RCs.

---

```
change carrier-frequencies Page 1 of 1
WIRELESS CARRIER FREQUENCIES

Customer Carrier Frequencies (MHz)
0: 1929.375  y
1: 1928.125  y
2: 1926.875  y
3: 1925.625  y
4: 1924.375  y
5: 1923.125  y
6: 1921.875  y
7: 1920.625  y
```

---

**Figure 2-6. Wireless Carrier Frequencies Form**

**⇒ NOTE:**

This form enables the user to limit the radio transmission to a subset of those carrier frequencies allowable for the DWBS. The form allows the user to limit radio transmissions without infringing upon any UTAM restrictions.

18. Submit the form.
19. If the hardware is present, install the RCs. (See Chapter 3, "Hardware Installation," for specific information before returning to this step.) If the hardware is not present, execute the **change circuit-packs** command for the port network in which the RC circuit pack will reside.

```

change circuit-packs                                     Page 2 of 5

                                CIRCUIT PACKS

      Cabinet: 1                                Carrier: B
Cabinet Layout: five-carrier                       Carrier Type: port

Slot Code  Sfx  Name                               Slot Code  Sfx  Name
00:                                               11: TN753   DID TRUNK
01: TN570   EXPANSION INTF                       12: TN789   RADIO CONTROLLER
02: TN763   C   AUXILIARY TRUNK                 13: TN577   PGATE BOARD
03: TN726   DATA LINE                          14: TN789   RADIO CONTROLLER
04: TN771   D   MAINTENANCE/TEST               15: TN789   RADIO CONTROLLER
05: TN753   DID TRUNK                           16:
06: TN767   DS1 INTERFACE                       17: TN767   DS1 INTERFACE
07: TN760   B   TIE TRUNK                      18: TN742   ANALOG LINE
08: TN464   F   DS1 INTERFACE                  19:
09:                                               20:
10: TN789   RADIO CONTROLLER

`#` indicates circuit pack conflict.

```

**Figure 2-7. Circuit Packs Form**

20. Enter **TN789** into the appropriate fields and submit the form.

**⇒ NOTE:**

Designating the TN789 RC circuit pack in lieu of actually installing it is known as “logically” administering the circuit pack. This enables the installation to continue without the hardware because the system verifies that these fields are populated. When the circuit pack arrives, it can simply be inserted into its previously designated slot.

21. Execute the **list configuration all** command to generate the System Configuration form, as follows:

```
list configuration all Page 1

                                SYSTEM CONFIGURATION

Board
Number  Board Type           Code      Vintage      Assigned Ports
                                     u=unassigned t=tti p=psa

01B01  EXPANSION INTRFC      TN570     000008
01B02  AUXILIARY TRUNK      TN763C    000005      u u u u
01B03  DATA LINE           TN726     000012      u u u u u u u u
01B04  MAINTENANCE/TEST    TN771D    000006      u 02 03 04
01B05  DID TRUNK            TN753     000016      01 u u u u u u u
01B06  DS1 INTERFACE        no board  u u u u u u u u
                                     u u u u u u u u
                                     u u u u u u u u

01B07  TIE TRUNK            TN760B    000006      u u u u
01B08  DS1 INTERFACE        TN464F    000006      01 02 03 04 05 06 07 08
                                     09 10 11 12 13 14 15 16
                                     17 18 19 20 21 22 23 24
                                     u u u u u u u u

01B10  RADIO CONTROLLER    no board  0A u
```

**Figure 2-8. System Configuration Form**

22. Verify that the **Radio Controller** value in the *Board Type* field is associated with the proper slots. If this is not the case, repeat Step 18.
23. For each RC circuit pack logically or physically inserted, execute the **add radio-controller *PPCSS*** command to generate the following screen.



**NOTE:**

*PPCSS* indicates the port network, carrier, and slot address where the circuit pack is located; for example, **01A01** comprises port network 1, carrier A, slot 01. See the “Radio Controller Circuit Pack Form Fields” table in this chapter for additional information.

```
change radio controller 1a05 Page 1 of 1
                                RADIO CONTROLLER CIRCUIT PACK      RC Location: 01A05

WFB A PARAMETERS
Internal Antenna? n
  WFB Location: 3A* - 1st floor aisle c2_____
    CAU  Conn? CAU Location
      1    y  Outside of room 1c203_____
      2    y  in boiler room by stairs_____
      3    n  Hall out side of room 1c225_____
      4    n  1st floor elevator lobby_____

WFB B PARAMETERS
Internal Antenna? n
  WFB Location: _____
    CAU  Conn? CAU Location
      1    n  _____
      2    n  _____
      3    n  _____
      4    n  _____
```

---

**Figure 2-9. Radio Controller Circuit Pack Form**

**Table 2-1. Radio Controller Circuit Pack Form Fields**

<b>Field Name</b>	<b>Explanation</b>
<i>RC Location</i>	This field displays the cabinet, carrier, and slot of the TN789 circuit pack. No input is required.
<i>WFB A Parameters</i>	
<i>WFB Location</i>	Enter the code for WFB A followed by a description of its physical location (for example, "3A-1st floor aisle"). The code for WFB A is provided on the floor plan.  This field must be administered if the internal antenna or at least one CAU on the WFB is administered as <b>y</b> .
<i>Internal Antenna</i>	Enter <b>n</b> , unless you have an internal antenna via a special order from Avaya.
<i>CAU Conn</i>	Enter <b>y</b> to designate that a particular CAU is connected to the WFB. The default is <b>n</b> .  <b>NOTE:</b> Once the CAU is administered and attached, be sure to busy out and release the WFB.
<i>CAU Location</i>	Enter a description of the physical location of the connected CAU (for example, "front aisle/hardware").  This field must be administered if the associated <i>CAU Conn</i> field is set to <b>y</b> .
<i>WFB B Parameters</i>	<b>NOTE:</b> Repeat the previous process for WFB B, if applicable.

24. If the DWBS has 9601 and/or 9630 Series WTs, administer them.

Native support is not provided for the 9630 Series WT. Except for the physical handset, the 9630 Series WT is identical to the 9601 and 9601+ WTs. The 9630 Series WT is administered as an alias of either the 9601 WT or 9601+ WT via the Alias Station form.

Whenever you want two call appearances, you should alias the 9630 Series WT to a 9601 WT. Whenever you want three call appearances, you should alias the 9630 Series WT to a 9601+ WT.

To access the Alias Station form, enter the **change alias station** command. An example of the form appears as follows.



25. Add all of the wireless stations to the system by executing the **add station** *<qualifier>* command to generate the following screens. The *<qualifier>* may be an unassigned extension or the word "next." Entering "next" will use the next available extension defined by the system dial plan.

```
add station next                                     Page 1 of 3
                                                    STATION
Extension: 50001                                     Lock Messages? n           BCC: 0
Type: 9601                                           Security Code: _____ TN: 1
Port: WT                                             Coverage Path 1: _____ COR: 1
Name: _____                                     Coverage Path 2: _____ COS: 1
                                                    Hunt-to Station: _____

STATION OPTIONS
  Display Module? y                                 Message Lamp Ext: 50001
  Display Language: english
    IPEI: _____
    Access Code: _____
    Home? y                                         MM Complex Data Ext: _____
```

---

**Figure 2-11. Station Form (Page 1 of 3)**

**Table 2-2. Station Form Fields (Page 1)**

<b>Field Name</b>	<b>Explanation</b>
<i>Extension</i>	Part of the input command used to access this form; display-only field.
<i>Lock Messages?</i>	Enter <b>y</b> to restrict other users from reading or canceling the DWBS handset messages or retrieving messages via Voice Message Retrieval; otherwise, enter <b>n</b> (default).
<i>Type</i>	Enter the <b>9601</b> or <b>9601+</b> string to designate the WT station type if you are administering one of these WT types. If you are administering a 9630 Series WT, be sure to alias it as discussed starting on <a href="#">page 2-13</a> and enter the alias set type here.  <b>NOTE:</b> The 9630 Series WT is aliased as a 9601 or 9601+ WT. Also, the <b>9601+</b> value requires at least Version 6 of the software.
<i>Security Code</i>	Enter the 4-digit security code required by users to retrieve messages via the Demand Print or Voice Messages Retrieval feature.
<i>TN</i>	Enter the tenant number for those customers using the Tenant Partitioning feature. The default is <b>1</b> .
<i>Port</i>	This is a display-only field when the set type is designated as <b>9601</b> , <b>9601+</b> or an alias of those types. No customer input is required.
<i>Coverage Path 1</i>	Enter a coverage path number ( <b>1</b> through <b>999</b> for G3si, <b>1</b> through <b>9999</b> for G3r) from a previously administered Call Coverage Path form.
<i>COR</i>	Enter the desired class of restriction (COR) number from <b>0</b> through <b>95</b> that reflects the desired restriction. Default is <b>1</b> .
<i>Name</i>	Enter the name of the person associated with this WT. A maximum of 30 characters can be used. Names are case- and space-insensitive.
<i>Coverage Path 2</i>	Enter a coverage path number ( <b>1</b> through <b>999</b> for G3si, <b>1</b> through <b>9999</b> for G3r) from a previously administered Call Coverage Path form.
<i>COS</i>	Enter the desired class of service (COS) number from <b>0</b> through <b>15</b> to designate allowed features. Default is <b>1</b> .
<i>Display Module</i>	Enter <b>y</b> to designate that the 9601 or 9630 Series WT has a display module. The default is <b>y</b> because the phone has a built-in display.
<i>Message Lamp Ext.</i>	The default is the current station's extension. Enter the assigned extension number to receive Message Waiting Lamp updates for the particular extension.  <b>NOTE:</b> If bridging is used, this field should be set to a bridging extension.

**Table 2-2. Station Form Fields (Page 1) (continued)**

Field Name	Explanation
<i>Display Language</i>	<p>Enter the language that should be displayed. The options are <b>English, French, Italian, Spanish</b>, and <b>user defined</b>. The default is <b>English</b>.</p> <p><b>NOTE:</b> Local phone functions are provided in English.</p>
<i>IPEI</i>	<p>Enter the 9-digit string obtained from the WT. The International Portable Equipment Identity (IPEI) is a unique number used to identify a WT for administration and through-the-air communication. Each phone has a unique IPEI assigned at the factory. This IPEI can be obtained via a soft key button sequence or from the label on the back of the phone. See the "Procedure: WT Key Sequence to Obtain the IPEI" section in Chapter 3 of this document. The IPEI that is entered on the Station form must match the IPEI that was assigned to the WT at the factory.</p>
<i>Access Code</i>	<p>Enter the 5-digit decimal security code assigned to the WT. The access code is assigned by the administrator and must be entered on the Station form. This is a customer-defined number that does not have to be unique among all phones. The administrator could conceivably use a single access code for all phones.</p>
<i>Home</i>	<p>Enter <b>y</b> if this is the primary location for WT use. Enter <b>n</b> if this is the secondary location for WT use. The default is <b>y</b>.</p>

```
add station next                                     Page 2 of 3
                                                    STATION
FEATURE OPTIONS
  LWC Reception: msa-spe   Auto Select Any Idle Appearance? n
  LWC Activation? y       Coverage Msg Retrieval? y
  CDR Privacy? n
  Redirect Notification? y   Data Restriction? n
  Per Button Ring Control? n   Idle Appearance Preference? n
  Bridged Call Alerting? n
  Active Station Ringing: single   Restrict Last Appearance? n
  H.320 Conversion? n
  Per Station CPN - Send Calling Number?
  Audible Message Waiting? n
  Display Client Redirection? n
  Select Last Used Appearance? n
```

---

**Figure 2-12. Station Form (Page 2 of 3)**

**Table 2-3. Station Form Fields (Page 2)**

<b>Field Name</b>	<b>Explanation</b>
<i>Leave Word Calling (LWC) Reception</i>	Enter <b>msa-spe</b> (default) if LWC messages are stored in the system or on the Messaging Server Adjunct or Switch Processor; or, enter <b>audix</b> if the messages are stored on the Audio Information Exchange System; otherwise, enter <b>none</b> .
<i>Auto Select Any Idle Appearance?</i>	Enter <b>n</b> (default) to prevent users from having this feature enabled. This field must be <b>y</b> whenever the WT has two brdg-appr buttons.
<i>LWC Activation?</i>	Enter <b>y</b> (default) to allow users to leave short LWC messages for this WT. If the system has the Hospitality features, enter <b>y</b> for WTs in the guest rooms if the DWBS WT designated to receive failed wake-up messages is programmed to receive LWC messages that indicate incomplete wake-up calls. Enter <b>y</b> if AUDIX was entered for LWC Reception.
<i>Coverage Msg Retrieval?</i>	Applies whenever the DWBS WT is marked for LWC Reception. Enter <b>y</b> (default) to allow a user in the DWBS WT's coverage path to retrieve LWC messages for this WT.
<i>CDR Privacy?</i>	Administrable option that allows digits in the called number field of an outgoing call to be blocked on a per-station basis. The number of blocked digits is administered system-wide in the <i>Privacy-Digits to Hide</i> field in the Feature-Related System-Parameters form. Enter <b>y</b> to enable the call privacy feature for each station. Default is <b>n</b> .
<i>Redirect Notification?</i>	Enter <b>y</b> (default) to give a half ring at this WT whenever calls to the WT are redirected (via Call Forwarding or Call Coverage). Enter <b>y</b> if AUDIX was entered for LWC Reception.
<i>Data Restriction?</i>	Enter <b>y</b> to prevent tones, such as Call Waiting tones, from interrupting this user's calls. Default is <b>n</b> . Data restriction provides permanent protection and cannot be changed by the DWBS user.  <b>NOTE:</b> It is recommended that the default value not be changed.
<i>Idle Appearance Preference?</i>	Enter <b>n</b> (default) to indicate which call appearance is selected when the user lifts the WT and there is an incoming call.
<i>Per Button Ring Control?</i>	Enter <b>n</b> (default) to prevent users from having Per Button Ring Control.
<i>Bridged Call Alerting?</i>	Enter <b>y</b> to allow incoming calls on bridged appearances of another WT's primary extension number, TEG calls, or PCOL calls. The default is <b>n</b> .  <b>NOTE:</b> The field should be set to <b>y</b> if bridged call appearances are being used.

**Table 2-3. Station Form Fields (Page 2) (continued)**

Field Name	Explanation
<i>Active Station Ringing?</i>	Set as appropriate. Values include <b>single</b> (default), <b>continuous</b> , and <b>active</b> .
<i>Restrict Last Appearance?</i>	Enter <b>y</b> to restrict the last idle call appearance for incoming priority calls and outgoing call originations. The default is <b>n</b> .
<i>Display Client Redirection?</i>	Enter <b>y</b> to display the client redirection. The default is <b>n</b> .
<i>Select Last Used Appearance?</i>	Enter <b>n</b> (default) to prevent the station from automatically selecting the last used appearance.

```

add station next                                     Page 3 of 3
                                                    STATION

SITE DATA
  Room:
  Info1:
  Info2:
  Floor:
  Building:                                     Set Color:

ABBREVIATED DIALING
  List1:                                     List2:                                     List3:

BUTTON ASSIGNMENTS
  1: call-appr
  2: call-appr

```

**Figure 2-13. Station Form (Page 3 of 3)**

**Table 2-4. Station Form Fields (Page 3)**

<b>Field Name</b>	<b>Explanation</b>
<i>Site Data</i>	
- Room	Enter up to 10 characters to identify where the WT's charging base is located or where the WT user's room is located.
- Info1	Enter up to five characters that will be useful for identification purposes.
- Info2	Enter up to five characters that will be useful for identification purposes.
-Floor	Enter up to 10 characters to identify the location of the owner of the particular WT.
-Building	Enter up to 10 characters to identify the location of the owner of the particular WT.
-Set Color	Enter <b>black</b> for the DWBS WT.
<i>Abbreviated Dialing</i>	
- List 1 - List 2 - List 3	Enter <b>p</b> for personal, <b>s</b> for system, <b>g</b> for group, or <b>e</b> for enhanced. A maximum of three Abbreviated Dialing lists can be accessed by the DWBS handset. If <b>p</b> or <b>g</b> is entered, a personal list number or a group number, respectively, is also required.
<i>Button Assignments</i>	
1. call-appr 2. call-appr 3. call-appr (9601+ only)	The listings in the left column are the only administrable types for buttons 1, 2, and 3 that are supported by the WT. The default is call-appr for buttons 1, 2, and 3.
1. brdg-appr 2. brdg-appr 3. brdg-appr (9601+ only)	The principal extension must be the same for all buttons. The <i>Auto Select Any Idle Appearance</i> field must be set to <b>y</b> . <b>NOTE:</b> The <i>Bridged Call Alerting</i> field should be set to <b>y</b> if this option is used.
1. abrdg-appr 2. call-appr 3. call-appr (9601+ only)	Any administered analog extension. <b>NOTE:</b> The <i>Bridged Call Alerting</i> field should be set to <b>y</b> if this option is used.

26. Submit the form.



**NOTE:**

Information regarding firmware download can be found in the DWBS Maintenance document.

## **Introduction**

---

This chapter provides the technician with the background and procedural information needed to install the DWBS hardware.

## **Safety Information**

---

Before installing the hardware components, the technician should understand the safety instructions in the DEFINITY ECS Release 7 Installation document.



### **WARNING:**

*Indicates the presence of a hazard that may cause severe or fatal personal injury if the hazard is not avoided.*



### **CAUTION:**

*Indicates the presence of a hazard that may cause minor personal injury or property damage if not avoided.*

## **Basic Instructions**

---

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



**WARNING:**

***Risk of Electric Shock.** Failure to ground this product properly will result in a risk of electrical shock, which can cause serious personal injury. Some components of this product use a 3-prong plug in continental US locations. 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 must be replaced by an electrician.*



**WARNING:**

*The rechargeable battery contains nickel and cadmium. Do not burn or puncture the battery. Like other batteries of this type, if it is burned or punctured, it could release toxic material that could cause injury. Do not dispose of it in household garbage. For information about recycling or proper disposal, consult your local solid waste (garbage) collection or disposal organization.*



**WARNING:**

*This unit is **not rated** for installation in air-handling spaces. This unit is for in-building applications only. In-range out-of-building (IROB) applications require that both primary protection and secondary protection are provided per the local electric code. Disconnect the WT line cord before you service the unit.*



**CAUTION:**

*This equipment is for installation on the Avaya DEFINITY ECS only. FCC Part 15 rules require that this equipment be installed and serviced only by specially trained Avaya personnel. Installation of this equipment is subject to notification and coordination with UTAM, Inc. Relocation of this equipment to another building or site must be coordinated through Avaya. Refer to Chapter 1 of this document for details.*

***UTAM clearance from the DWDT and the DWDT package are required for DWBS activation.***

- Read and understand all instructions in this section before using this product.
- Observe all warnings and instructions marked on the product.
- 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.
- 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 WT line cords immediately. Do not plug the product back in until it has dried thoroughly.

- If you suspect a gas leak, report it immediately, but use a WT away from the area in question. The WT'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 identified by the Occupational Safety and Health Administration (OSHA) as explosive environments. Only *Explosive Atmosphere WTs* may be used in such hazardous environments.
- Install this product securely on a stable surface. Damage may result if the product falls.
- Use only the correct power source. If you are not sure of the power supply to your location, consult your local power company.
- Use only the Model #DV-9500 power supply shipped with this product for the charging cradle.
- The CAU must be installed with the coaxial cable provided (comcode 847565132). DO NOT cut or modify the cable. Loop any excess cable in the ceiling.



**NOTE:**

**Do not kink or crush the coaxial cable.**

- Install this product in a protected location where no one can step on or trip over power cords and WT line cords. Do not place objects on the cords that may cause damage or abrasion.
- Whenever possible, install -48v power supplies in the switch room or wiring closets.
- Do not allow anything to rest on the power cord. Do not locate this product where the cord will be damaged by persons walking on it. Do not overload wall outlets; this can result in fire or electric shock. Do not staple or otherwise attach the power cord to building surfaces.
- Slots and openings in the WFB and CAU are provided for ventilation. To protect the housing from overheating, these openings must not be blocked or covered. Also, do not place this product in an enclosed area unless proper ventilation is provided.
- 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 WT.
- Never place this product near or over a radiator or heat register.
- Use only the type of battery pack shipped with this product.

- Unplug this product from the wall outlet 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.
- Painting either the CAU or the WFB may interfere with the transmission of the radio signal and will void the warranty.

### **Additional Safety Instructions for Installation**

Additional safety instructions for installation include the following:

- Install the product to meet all environment and electrical requirements listed in this document.
- Do not install DWBS wiring during a lightning storm.
- All wiring that connects to this equipment and becomes part of the building wiring must be a minimum of CLASS 2 or U.L. Listed Communications cable.

## **Environmental and Power Requirements**

The DWBS consists of a series of components that offer a wide variety of physical and environmental specifications. These items include the RC, WFB, CAU, WT, and battery chargers, as well as any building wiring required to install the system.

### **Environment**

The following environmental requirements are in effect:

- **Radio Controller Environment.** The RC circuit pack operates in all applicable DEFINITY ECS cabinets over the full range of temperature and humidity specifications for the DEFINITY ECS, as follows:
  - 40 ° F to 120 ° F
  - 10% to 95% relative humidity at 84 ° F
  - 10% to 45% relative humidity at 110 ° F
- **WFB and CAU Environment.** The WFB and indoor CAU operate in typical indoor locations without environmental control, as follows:

— 0 to 120 ° F, 0% to 95% humidity

The outdoor CAU operates under the following conditions:

— -20 to 50 ° C, 0% to 95% humidity

- **Battery Charger.** The battery charger operates in typical indoor locations without environmental control, as follows:

— 32 ° F to 120 ° F, 0% to 95% humidity

### **9601 WT Environment**

---

The 9601 WT operates in typical indoor locations without environmental control, as follows:

32 ° F to 120 ° F, 0% to 95% humidity

The 9601 WT display operates in typical indoor locations without environmental control, as follows:

55 ° F to 95 ° F, 5% to 95% humidity

The storage temperature range for the 9601 WT is:

-22 ° F to +150 ° F, 0% to 95% humidity

#### **⇒ NOTE:**

However, batteries for the WT can be stored only in the range of -22 ° F to +122 ° F. Therefore, outside this range, the WT must be stored without the battery.

### **9630 Series WT Environment**

---

Use the 9630 Series WT and the charger within the 32° F to 122° F (0° C to 50° C) temperature range.

Store the 9630 Series WT and the charger within the -22° F to 150° F (-30° C to 65° C) temperature range.

## DWBS Components

The following table lists the DWBS components along with the appropriate apparatus code and comcode for each component.

**Table 3-1. DWBS Components and Related Information**

Description	Apparatus Code	Comcode
10 meg Flash Card L-15	card flash 10 meg	108-478-405
16 meg simms chip	16 meg DRAM chip	407-701-747
48v power supply	1151A1 (without battery backup)	107-212-952
48v power supply	1151A1 (new)	108-212-952
48v power supply	1151A2 (with battery backup)	108-212-960
48v power supply	MSP-1 (MD)	107-915-514
9630 Series WT and battery		108-272-477
9630 Series WT (textured)		
Battery charger with power supply	50A battery charger	108-386-921
Battery charger with power supply (for CALA)	50B battery charger	108-398-074
Battery pack (textured)	4B-003 battery pack	108-272-485
CAU bracket ----- Model 1 ----- Model 2 ----- Model 3		
CAU outdoor	559B circuit module 559C circuit module	108-313-677
Dipole CAU (DCAU) indoor	559D circuit module	108-339-003
Coaxial cable (100-foot nominal)	coaxial cable Rg59	847-565-132
Control unit (WFB) with internal antenna	119A1 control unit (special order)	108-038-100
Control unit (WFB) without internal antenna	119A control unit	107-582-405
Download cable (RC to WT)	902A cable	108-369-315

**Table 3-1. DWBS Components and Related Information (continued)**

<b>Description</b>	<b>Apparatus Code</b>	<b>Comcode</b>
Dust covers for RS-232 on WT	dust covers (5)	847-732-419
Leather carrying case	carrying case	407-833-052
Secondary protector	146E	407-568-161

**WARNING:**

*CAUs should be positioned before positioning WFBs. The movement of WFBs is not critical to radio coverage when CAUs are used.*

Prior to installation, the technician will receive an installation map of the site that shows the location of all WFBs and CAUs. This plan must be followed as closely as possible to ensure proper radio coverage. Any deviations from the map must be reported to the DWDT. Such changes will alter coverage. The wiring and labeling of CAUs must be done in accordance with the design package from the DWDT.

Figure 3-1 provides the basic installation layout and the relationship between the DEFINITY ECS, WFBs, CAUs, and the WTs.

**NOTE:**

Various components in the figure are identified according to the format **PPCSSw $c$** , where **PP** represents the port network, **C** represents the carrier, **SS** represents the slot, **w** represents the WFB (**A** or **B**), and **c** represents the CAU (**1**, **2**, **3**, or **4**). For example, **01A08A2** represents port network **01**, carrier **A**, slot **08**, WFB **A**, and CAU **2**.

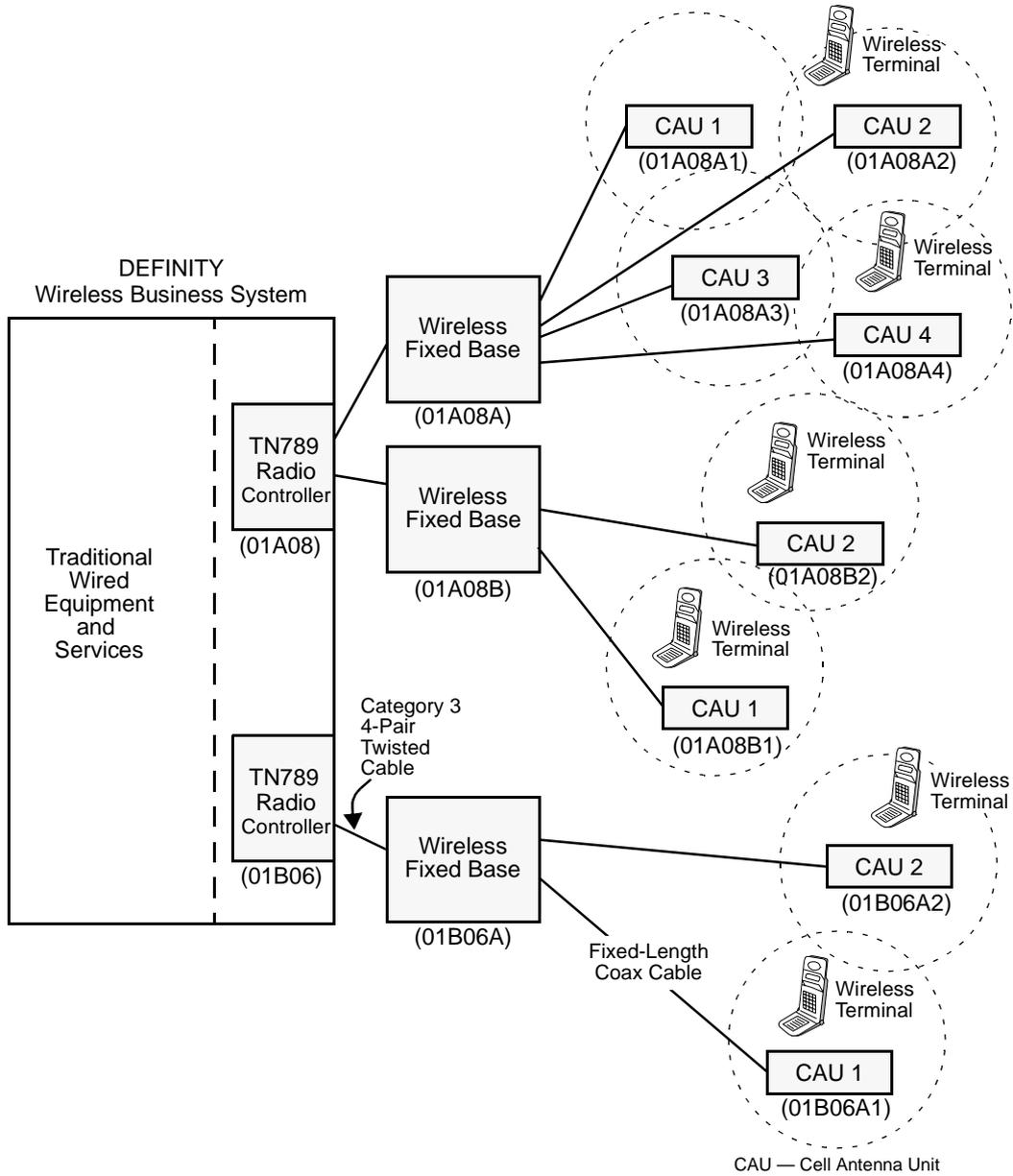


Figure 3-1. DWBS Installation Layout

## **Radio Controllers**

---

RCs are circuit packs that fit into DEFINITY ECS cabinet slots. Each RC connects and controls up to two WFBs. RCs provide the interface between the DEFINITY ECS and the network of WFBs. RCs are connected to the WFBs via a Category 3 or higher inside wiring cable using standard 4-pair wire.

See the following table for the TN789 RC pin configuration.

**Table 3-2. TN789 RC Circuit Pack Pin Configuration**

<b>Color</b>	<b>PIN</b>	<b>Lead Name</b>	<b>Function</b>
W-BL	26		
BL-W	1		
W-O	27	URTIPA	WFB-A
O-W	2	URRNGA	WFB-A
W-G	28	UTTIPA	WFB-A
G-W	3	UTRNGA	WFB-A
W-BR	29		
BR-W	4		
W-S	30	URTIPB	WFB-B
S-W	5	URRNGB	WFB-B
R-BL	31	UTTIPB	WFB-B
BL-R	6	UTRNGB	WFB-B
R-O	32		
O-R	7		
R-G	33		
G-R	8		
R-BR	34		
BR-R	9		
R-S	35		
S-R	10		
BK-BL	36		
BL-BK	11		
BK-O	37		
O-BK	12		
BK-G	38		
G-BK	13		
BK-BR	39	STXT.0 <i>Future Use</i>	SYNC 0 OUTPUT
BR-BK	14	STXR.0 <i>Future Use</i>	SYNC 0 OUTPUT
BK-S	40	SPXT.0 <i>Future Use</i>	SYNC 0 INPUT
S-BK	15	SPXR.0 <i>Future Use</i>	SYNC 0 INPUT
Y-BL	41		

**Table 3-2. TN789 RC Circuit Pack Pin Configuration (continued)**

BL-Y	16		
Y-O	42	SPXT.1 <i>Future Use</i>	SYNC 1 INPUT
O-Y	17	SPXR.1 <i>Future Use</i>	SYNC 1 INPUT
Y-G	43	SPXT.1 <i>Future Use</i>	SYNC 1 OUTPUT
G-Y	18	STXR.1 <i>Future Use</i>	SYNC 1 OUTPUT
Y-BR	44		
BR-Y	19		
Y-S	45		
S-Y	20		
V-BL	46		
BL-V	21		
V-O	47	PORT 1 RECEIVE DATA INPUT	902A Download Cable
O-V	22	GROUND	902A Download Cable
V-G	48	NO CONNECT	902A Download Cable
G-V	23	PORT 1 DATA SET READY INPUT	902A Download Cable
V-BR	49	PORT 1 DATA TERMINAL READY	902A Download Cable
BR-V	24	PORT 1 SEND DATA OUTPUT	902A Download Cable
V-S	50		
S-V	25		

### **Procedure: Installing Radio Controllers**

This procedure provides the technician with the necessary steps to install the RC circuit pack(s).

1. Unwrap the circuit board from its packing and insert it into the designated slot.

#### **⇒ NOTE:**

The RC is a standard port circuit pack that can be located in any available universal port slot of a millions of instructions per second (MIPS)- or Reduced Instruction Set Computers (RISC)-based DEFINITY ECS. All RCs must be located in the same port network covering contiguous areas to ensure a seamless handoff of active calls. For background information, please refer to the DEFINITY ECS Installation document.

2. Connect the 25-pair cable to the corresponding plug on the backplane. See the “Procedure: Installing the Wireless Fixed Base” and “Inside Wiring Cable” sections later in this chapter for details regarding cable and power configurations.

## **Wireless Fixed Base**

---

The WFB is a radio base station. The WFB provides the radio functions necessary to transform the following:

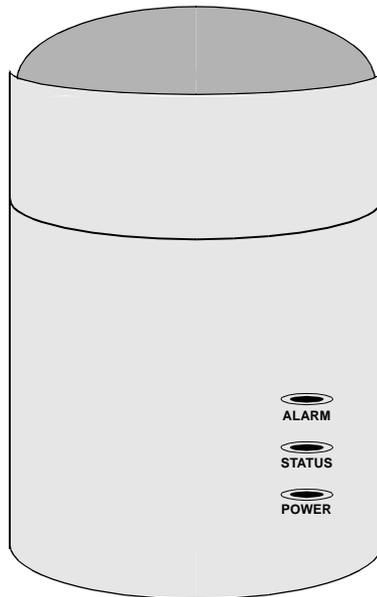
- Incoming calls from the DEFINITY ECS into radio signals for transmission through the air to the appropriate WTs
- Incoming radio signals from the WTs into signals for transmission to the DEFINITY ECS

Each WFB is connected to the following:

- RC via a Category 3 twisted-pair using an Avaya proprietary interface
- One to four CAUs via a fixed-length coaxial cable with an Avaya proprietary interface. The fixed-length coaxial cable of a designated length is provided and installed by Avaya only.

A WFB can support a maximum of four (remote) attached CAUs. As an alternative, a WFB can support an internal antenna via special order. The number of simultaneous calls that can be supported by a WFB with multiple CAUs is 12 minus the number of idle CAUs. In other words, for the WFB to carry 12 calls, each CAU must carry at least one of the calls. However, in high-traffic areas, a WFB is usually connected to just one CAU, which can carry 12 simultaneous calls.

WFBs must be located throughout the interior of a premise in a manner that ensures appropriate radio coverage. Placement of each WFB and CAU, as with all other components, is based on the information provided by the Installation Map. The following figure provides an illustration of the WFB.



---

**Figure 3-2. Wireless Fixed Base**

## **Power Options**

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To operate with CAUs, WFBs in a DWBS require -48 volt (v) accessory power. The -48 v power is provided over twisted pair to the WFB on the fourth pair (white-brown, brown-white; pins 7 and 8) of the RJ45 connector. The power supply must be within 397 feet of the WFB if a single pair is used for accessory power. *The power supply must be connected to an outlet that is not controlled by a switch.* Power cord locks should be considered. Usually, the power supplies are unplugged.

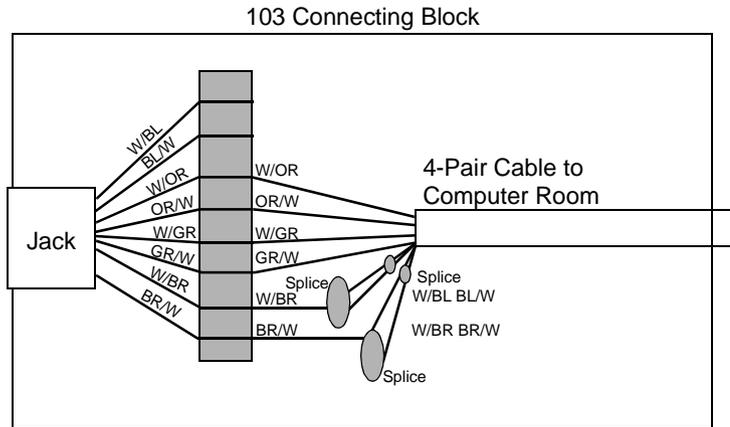
Centralize power supplies as practical to allow for testing and isolating problems. Use either a battery backup of the supplies or supplies with battery backup for customers that have battery backup from the DEFINITY ECS.

Be sure to put a power supply at each of the following locations and in the order presented:

1. **Equipment room.** (This is fine as long as the WFBs are within 397 cable feet of the room.)
2. **Wiring closet.** (This is fine as long as the WFBs are within 397 cable feet of the wiring closet.)
3. **Near the WFB.** (This should be done only whenever you cannot put the power supply into a closet or an equipment room.)

In cases where the WFB can be placed within 795 feet of the equipment room or the wiring closet, the cable pairs can be doubled to gain the additional distance. Cable doubling is shown in the following three figures. Footage is based on 26 AWG.





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**Figure 3-4. 103 Connecting Block**

From the transformer DW8A cord jumper, connect the W/BR (ground) pair to the W/BL-BL/W pair of the 4-pair cable to the WFB. Also, connect the BR/W (-48V) pair to the W/BR-BR/W pair of the 4-pair cable to the WFB. Doubling up the pairs extends the power from the power supply to the WFB to 795 ft.

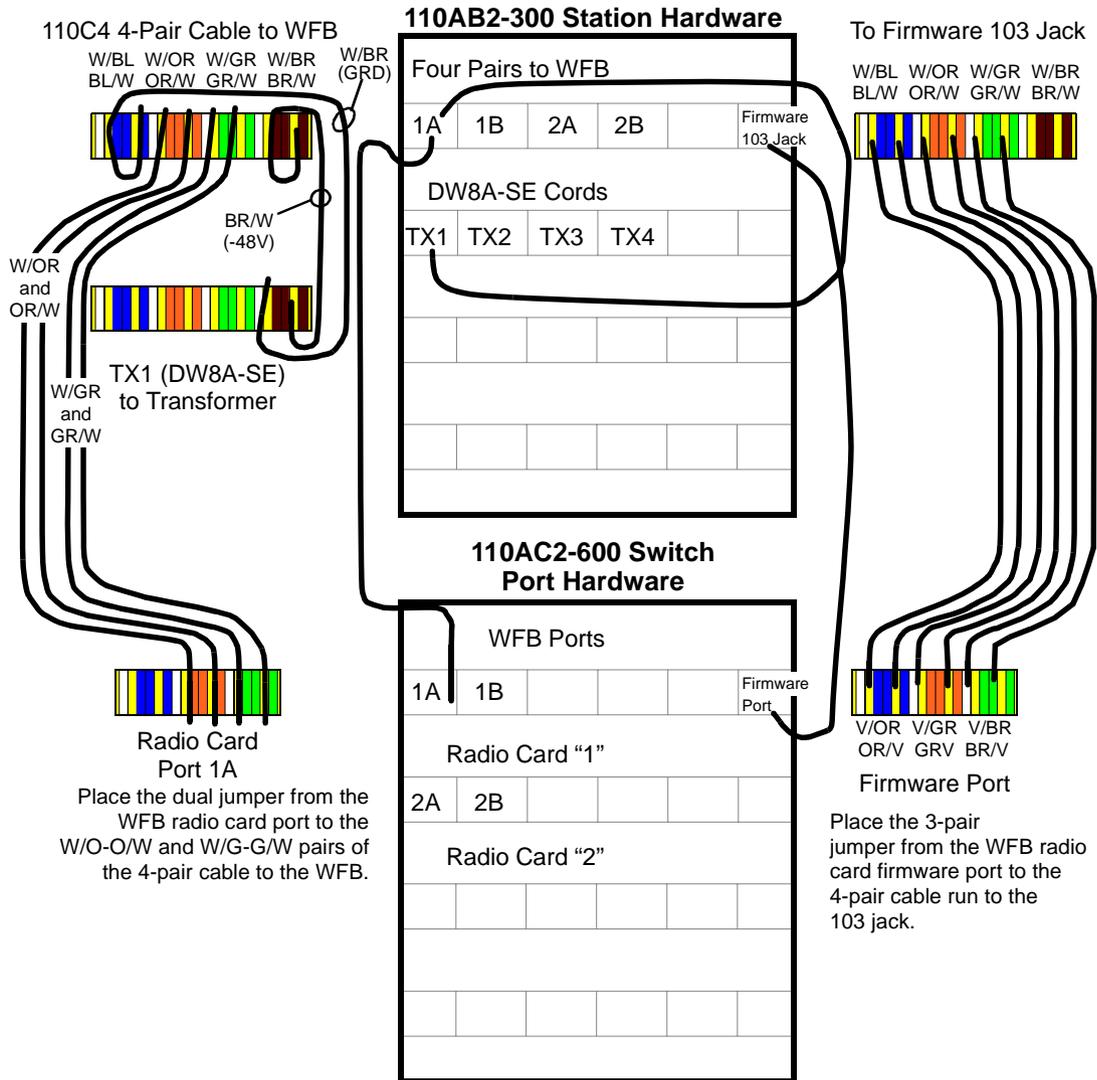


Figure 3-5. Cross-Connects for WFBs

## **Procedure: Installing the Wireless Fixed Base**

The following procedure provides the steps necessary to install the WFB.

**⇒ NOTE:**

Be sure to install the CAUs first and then wire back to the appropriate WFBs.

Please read the entire procedure before installing the WFB. In some configurations, it may be advisable to change the order of the steps based on the particular building. Refer to Figure 3-10 for an illustration of representative wiring for the Category 3 4-pair twisted interface.

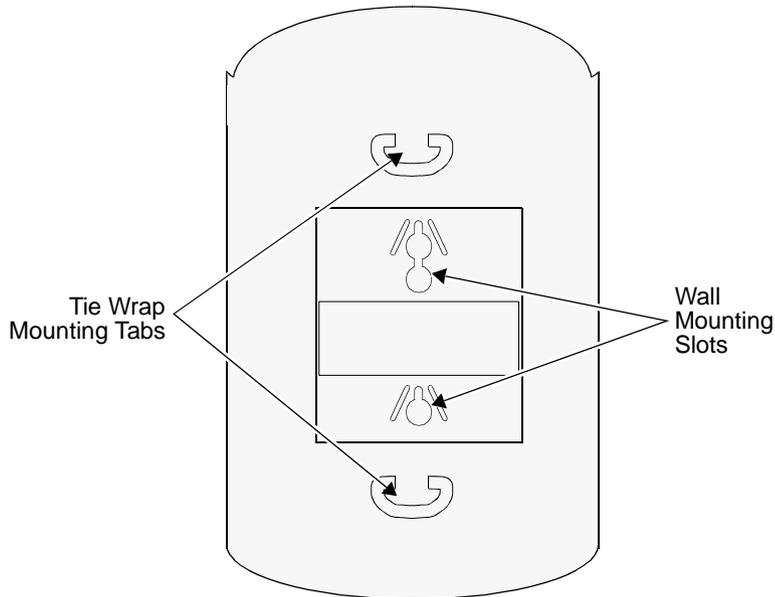
**⚠ WARNING:**

*WFBs cannot be installed in a return air plenum. Twisted pair and coaxial cables can only be installed in a return air plenum if they are rated as CL2P or better (as described in Article 725 of the National Electrical Code). The coaxial cable provided (comcode 847565132) is rated for installation in air handling spaces.*

There are two methods for mounting WFBs. Use the following table to find the specific steps based on the particular configuration.

<b>If...</b>	<b>Then...</b>
the WFB is to be mounted using tie wraps	go to Step 1
the WFB is to be installed using the mounting plate	go to Step 4

1. Unpack the WFB.
2. Obtain tie wraps.
3. Loop the wraps around the tabs on the underside of the WFB (see the following illustration). Wrap the tie wraps around the tabs and the object to which it will be affixed, and tighten; then go to Step 8.



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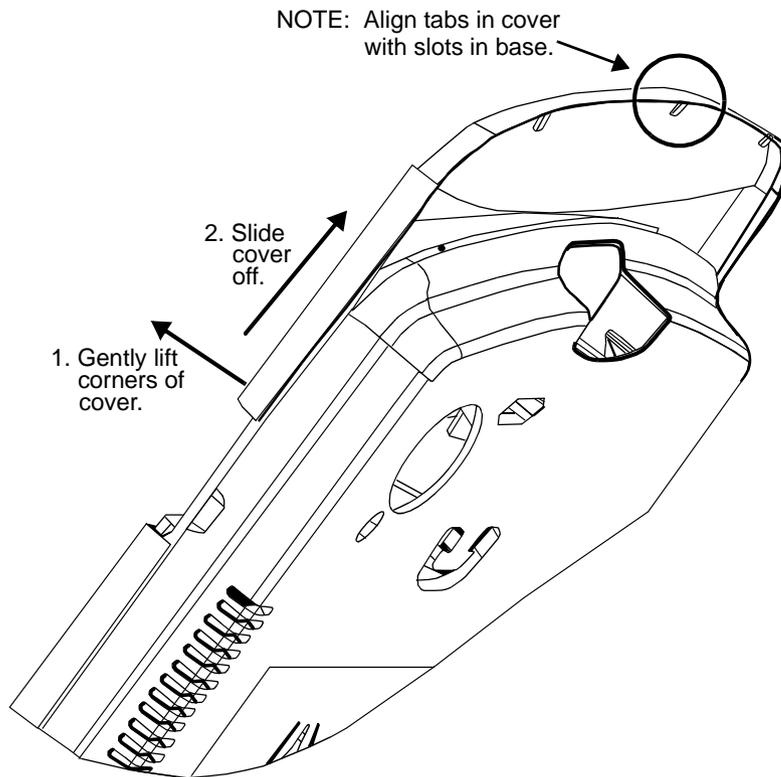
**Figure 3-6. Mounting Points of the WFB**

4. Unpack the WFB.
5. The WFB can be mounted on a wall or similar structure by using a standard telephone mounting plate. The mounting plate and screws must be obtained separately because they are not part of the WFB installation package.
6. Using a screwdriver, attach the mounting plate at the location designated in the installation map (shown in the previous figure).

**⇒ NOTE:**

WFBs with an internal antenna or CAUs must not be mounted within one meter of one another to conform to the FCC Part 15 Rules. If a WFB does not have an internal antenna, it can be placed next to a WFB or a CAU.

7. Slide the WFB onto the mounting plate.
8. Remove the cover of the WFB. The cover is located above the logo on the upper portion of the WFB, and it is held in place by tabs on the sides of the unit. By lifting both corner tabs, you can slide off the cover. See the next figure.



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**Figure 3-7. Removing the WFB Cover**

**⇒ NOTE:**

If the WFB is mounted vertically on a wall or column, ensure that the Avaya logo is facing upright.

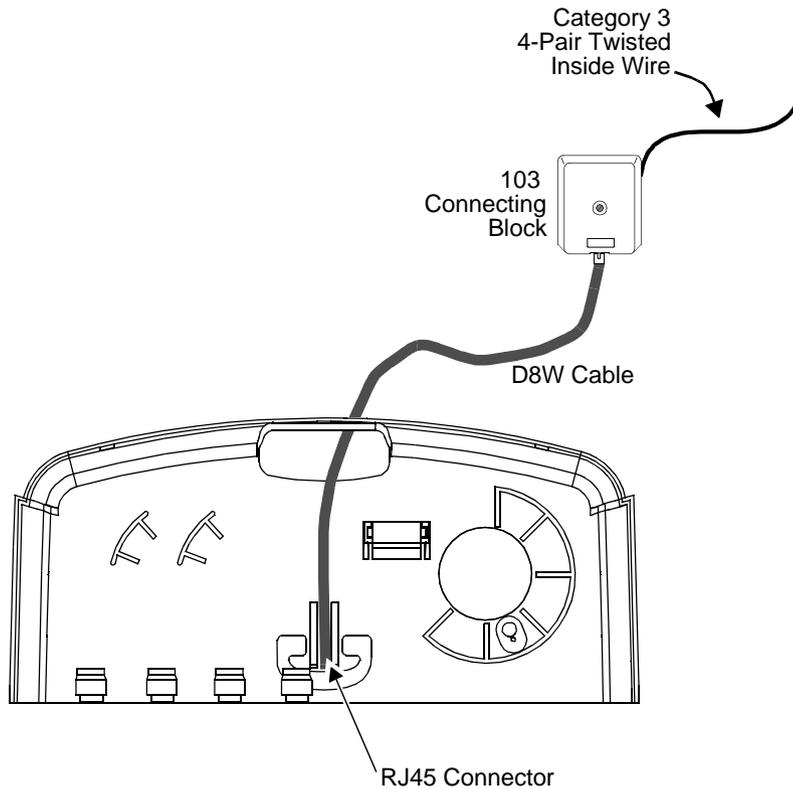
9. Connect the D8W cable to the RJ45 connector in the WFB as shown in the following figure. **Use a digital port tester to ensure proper wiring.** (Refer to the “Conditions Indicated by the Digital Port Tester LA85” table later in this chapter.)

**⚠ WARNING:**

*Handle the cable with care to minimize the possibility of damage to the cable’s interior components or the connecting contacts.*

**⇒ NOTE:**

The RJ45 is a modular telephone connector.



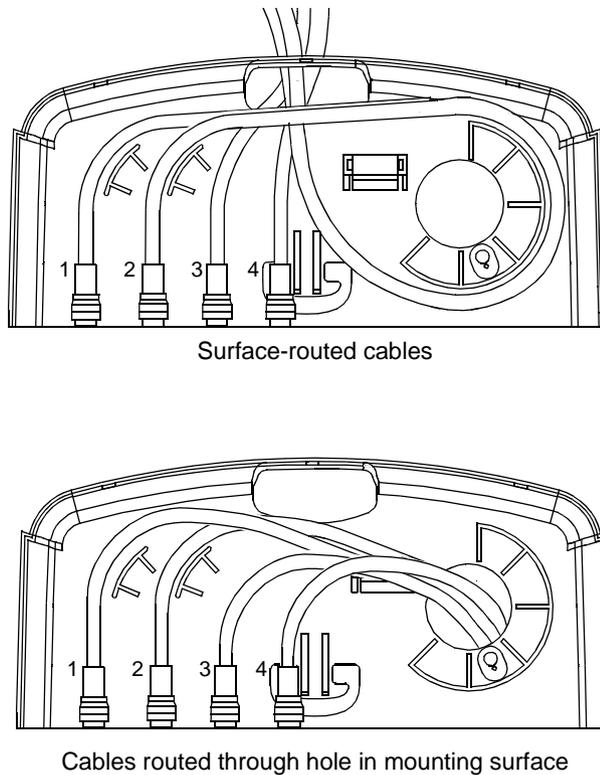
**Figure 3-8. Communication and Power WFB Connection**

10. If the WFB does not support an external CAU, return the cover to the WFB to complete the installation. If the WFB supports any external CAUs, proceed to the next step.
11. Attach the fixed-length coax cables to the specified connector. Route the cable inside the WFB as shown in the next figure. Slide the cover back on. Make the connector finger-tight only. (Using tools damages the WFB.)

**⚠ WARNING:**

*These cables must be threaded through a small area. It is important to handle the cables with as much care as possible to avoid damage.*

***Also, do not cut the coaxial cable once it is connected to an active WFB. This could short and subsequently damage WFB ports.***



**Figure 3-9. Internal Fixed-Length Coaxial Connections From WFB to CAUs**

Providing power to various DWBS components is straightforward for the WT and CAU. The WT is battery-powered. The CAU obtains its power through the coaxial cable coming from a WFB.

The RC supplies phantom power to the WFB (over the transmit/receive pairs) if no CAUs are used by the WFB and if the maximum Category 3 4-pair twisted cable length does not exceed 1500 feet for 24 American Wire Gauge (AWG), or 1000 feet for 26 AWG.

The WFB requires an auxiliary power supply if the phantom power requirements are exceeded.

**⇒ NOTE:**

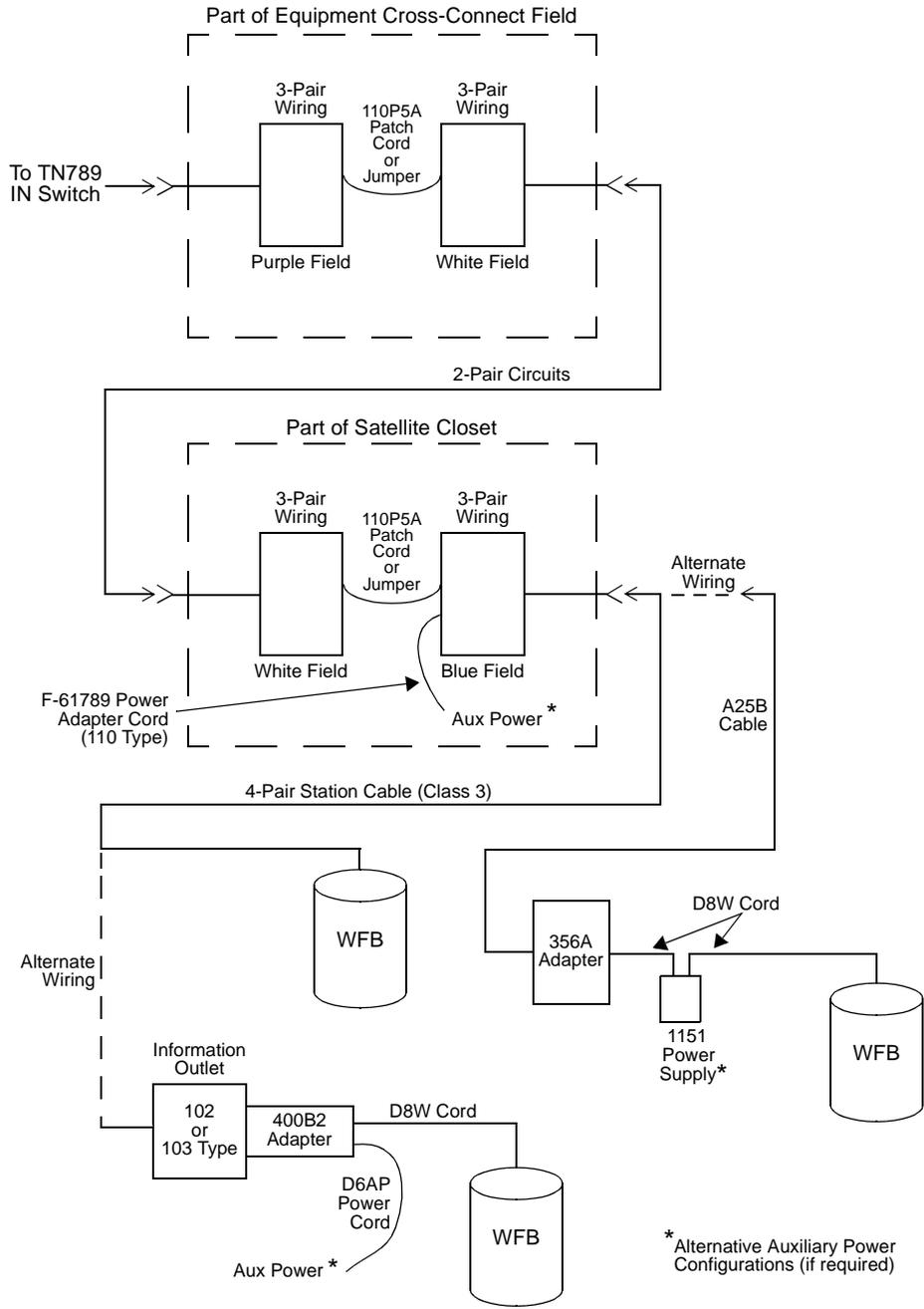
A bulk power supply can also be used.

The auxiliary power supply to the WFB should use unshielded twisted pair cable. The cable length should not exceed 631 feet for 24 AWG or 397 feet for 26 AWG. See the “Representative Wiring of the Category 3 4-Pair Twisted Interface” figure later in this chapter.

Power and cabling are consistent with current DEFINITY ECS wiring. See the DEFINITY ECS Installation and Test document for specific information describing typical adjunct powering configurations.

### **Inside Wiring Cable**

The Category 3 or greater inside wiring cable connecting the RC with the WFB is wired identically to the DEFINITY ECS digital telephones. (Refer to the “RC Circuit Pack TN789 Pin Configuration” table earlier in this chapter.) This interface follows standard 2-pair distribution practices and is typically wired from the distribution closet with Category 3 4-pair twisted cable. Cable pairs 2 and 3 are used for receive and transmit, respectively. Pair 4 is used for auxiliary power. The following figure provides representative building wiring. See the DEFINITY ECS Installation and Test document for additional information.



**Figure 3-10. Representative Wiring for the Category 3 4-Pair Twisted Interface**

Twisted pair can be verified via a digital port tester, as discussed in the next section.

### **Port Tester LA85**

Port Tester LA85 (comcode 105138424) is the standard digital port tester for testing DWBS wiring. To use this port tester, ensure that the D8W cord at the WFB is inserted into the *other* jack of the port tester and that the RC is translated and on line.

The following table lists the various conditions that the digital port tester can indicate along with the corresponding lamp indicators for adjunct power and the light-emitting diodes (LEDs).

**NOTE:**

The LEDs stay lit for several seconds, cycle off, and are then relit.

**Table 3-3. Conditions Indicated by the Digital Port Tester LA85**

Condition	Lamp Indicators					
	Adjunct Power	LED 1	LED 2	LED 3	LED 4	LED 5
<b>Normal</b>	<b>green</b>	<b>green</b>	<b>green</b>	<b>green</b>	<b>green</b>	<b>off</b>
Power reverse	red	off	off	off	off	off
Power open	off	off	off	off	off	off
Receiver tip/ring reverse	green	green	green	green	green	off
Transmit tip/ring reverse	green	green	green	green	green	off
Transpose transmit and receive	green	red	red	red	red	off
One-half pair off	green	green	red	green	off	off
Open tip of receive	green	green	green	green	off	off
Open ring of receive	green	green	green	green	green	off
Open tip of transmit	green	green	off	green	green	off
Open ring of transmit	green	off	green	green	green	off
Short on tip/ring of transmit	green	green	green	green	green	off
Short on tip/ring of receive	green	green	green	green	green	off

**NOTE:** Reversing tip/ring of transmit/receive does not affect service on Version 17 of the RC. Error Code 4000 (ABORT) occurs on a transmit or receive for all WFB tests whenever testing with a short across a transmit or receive pairs.

## Testing Wiring Without a Digital Port Tester

If you do not have a digital port tester, you can partially test the wiring at the equipment room wiring block. To this purpose, complete one of the following procedures:

1. Set the meter at 200v direct current (DC), and measure receive to transmit. A measurement of -48v indicates a normal reading; a measurement of +48v indicates that the power is reversed. If the reading is normal, go to the next step.

### NOTE:

A reading of +5v indicates that the RC is busied out.

2. Busy out the RC, back it out, and then test for continuity. Measure the receive tip and ring; then measure the transmit tip and ring. If receive is 0.5 ohms greater than transmit, the pairs are polled properly.

## Measuring Auxiliary Power

You cannot measure power at the WFB from the equipment room. To measure this, go to the WFB and measure punchings 7 and 8 at the 103 connector block. Consider the white/brown pair going to the WFB.

## IROB WFBs

An in-range out-of-building (IROB) WFB requires that you extend the Category 3 twisted pair cable between buildings on a customer's campus or premises. To do so, follow these guidelines.

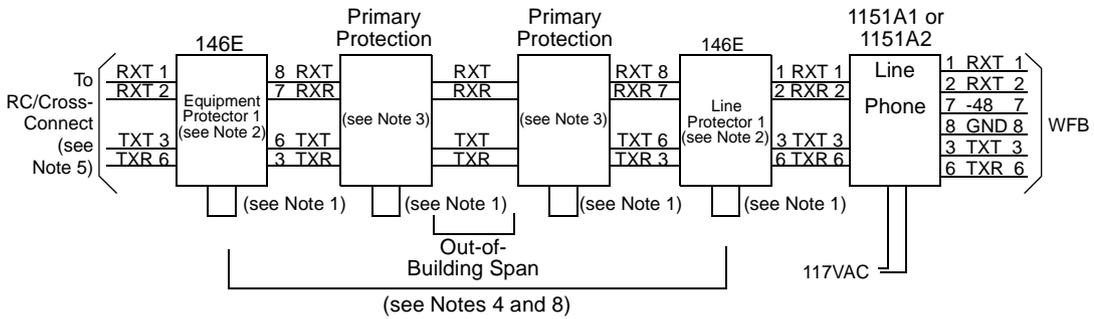
- If the local electrical code in the area of the customer's premises allows out-of-building, in-conduit telephone cable to be installed *without protection*, the technician can install the cabling *without any protection*.
- If the local electrical code for the customer's premises *requires protection* on out-of-building, in-conduit telephone cable, the cabling must be installed with *both primary and secondary protection*.

*Primary protection* is defined as carbon blocks, gas tube protection, or a combination of both as prescribed by the local electrical code in the customer's area.

*Secondary protection* is defined as a 146E IROB protection device. Two devices per circuit are required, one in each building. A circuit is the connection between one WFB and one port of the RC.

These devices must be ordered and provisioned locally by the wiring team. The local wiring team will be consulted to determine the local or national electrical code cable protection rules that apply at their customer's premises.

- The 48-volt power supply **must** be located in the same building as the WFB. The 48-volt power cannot be sent over the out-of-building span.



- NOTES:**
1. Both primary protectors and the 146E secondary protector must be connected to building ground in accordance with local and state fire/building codes. In no case should a wire smaller than 14 AWG be used.
  2. Use Protector-1 of the 146E secondary protector. Protector-2 cannot be used.
  3. Choice of primary protector is determined by local safety codes and procedures.
  4. 146E must be used on both ends of the line; otherwise, an incorrect line reversal will make the link uncooperative.
  5. The TN789 RC terminal assignments are provided in Table 3-4.
  6. TXT and TXR should be assigned as a pair; likewise, RXT and RXR should be assigned as a pair.
  7. 1151A1 (without battery backup) and 1151A2 (with battery backup) must be in the same building as the WFB.
  8. Ordering information for the 48V power supply and the secondary protector is provided in Table 3-5.

**Figure 3-11. DWBS Lightning Protection for IROB WFB.**

**Table 3-4. RC Terminal Assignments for an IROB WFB**

WFB	Function	Backplane	50-Pin Connector	Modular Jack
A	Transmit Tip	104 (UTIPA)	28	3
	Transmit Ring	004 (UTRNGA)	03	6
	Receive Tip	103 (URTIPA)	27	1
	Receive Ring	003 (URRNGA)	02	2
B	Transmit Tip	107 (UTTIPB)	31	3
	Transmit Ring	007 (URRNGB)	06	6
	Receive Tip	106 (URTIPB)	30	1
	Receive Ring	006 (URRNGB)	05	2

**Table 3-5. RJ-45 Lead Designations**

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<b>Color</b>	<b>RJ-45 Pin</b>
W-BL	4
BL-W	5
W-O	1
O-W	2
W-G	3
G-w	6
W-BR	7
BR-W	8

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## Cell Antenna Unit

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**⇒ NOTE:**

Be sure to install the CAUs first and then wire back to the appropriate WFBs.

The CAU is an optional remote antenna that connects to a WFB to expand the coverage area. A maximum of four CAUs can be connected to a single WFB. Each CAU can be located as far as 100 cable feet from its associated WFB. Each CAU is connected to and powered by a WFB via an Avaya proprietary interface. Placement of the CAUs is based on the information provided by the installation map.

Indoor and outdoor CAUs are available. Indoor CAUs include the basic “indoor” CAU and the 559D Dipole CAU (DCAU). ***It is recommended that you use the 559D DCAU for new indoor installations. Also, if an “indoor” CAU is already in place, replace it with a 559D DCAU.***

Outdoor CAUs include the 559B Outdoor CAU and the 559C Outdoor CAU. ***It is recommended that you use the 559C Outdoor CAU for new outdoor installations. Also, if a 559B Outdoor CAU is already in place, replace it with a 559C Outdoor CAU.***

### Procedure: Installing Indoor CAUs

---

The following procedure provides the steps necessary to install an indoor CAU.

There are two methods for mounting CAU(s). Use the following table to find the specific steps based on the particular configuration.

**⇒ NOTE:**

CAUs must not be mounted within one meter of one another to conform to the FCC Part 15 Rules.

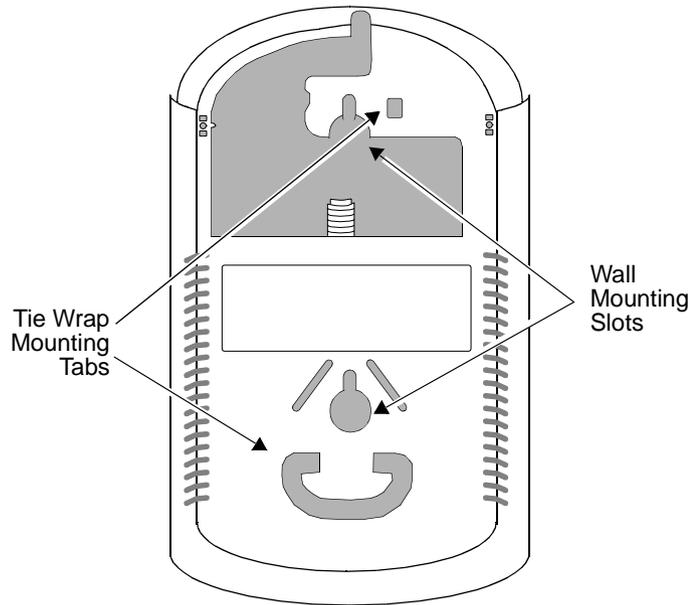


**WARNING:**

*CAUs cannot be installed in a return air plenum. The coaxial cable provided (comcode 847565132) is rated for installation in air-handling spaces.*

If...	Then...
the CAU is to be mounted using tie wraps	go to Step 1
the CAU is to be installed using the mounting plate	go to Step 4
the CAU is to be installed indoors using the mounting brackets	go to the "Mounting the Indoor CAU Brackets" section
the CAU is to be installed outdoors using the mounting brackets	go to the "Mounting the Outdoor CAU Brackets" section

1. Unpack the CAU and obtain tie wrap.
2. Connect (twist) the fixed-length coaxial cable originating from the appropriate WFB.
3. Loop the wrap around the tabs on the underside of the CAU (see the next illustration).



---

**Figure 3-12. Mounting Tabs and Slots on the CAU**

Wrap the tie wrap around the tabs and the object to which it will be affixed, and tighten.

4. Unpack the CAU and obtain a standard telephone mounting plate and screws.
5. Using a screwdriver, attach the mounting plate at the location designated in the installation map.
6. Connect (twist) the fixed-length coaxial cable originating from the appropriate WFB. Make the connector finger-tight only. (Using tools damages the CAU.)
7. Slide the CAU onto the mounting plate as illustrated in the previous figure.

### **Procedure: Installing 559D Dipole CAUs**

The following sections discuss how to install the 559D DCAU and its components.

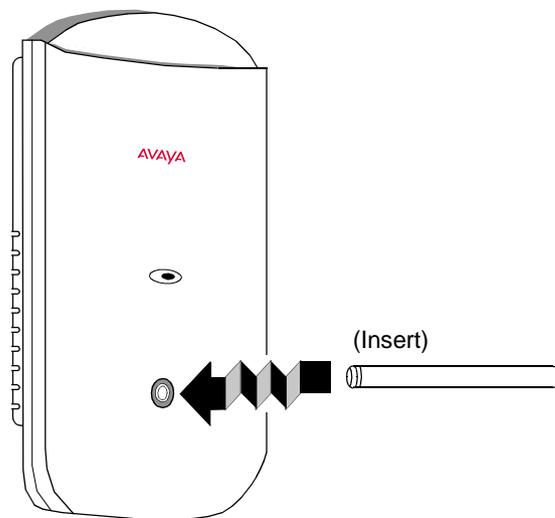
### Fastening the Antenna for the 559D Dipole CAU

Fasten the antenna for the 559D Dipole CAU to the CAU as follows:

1. Place the threaded end of the antenna onto the connector on the lower third of the CAU.
2. Rotate the antenna clockwise until the antenna is finger-tight.

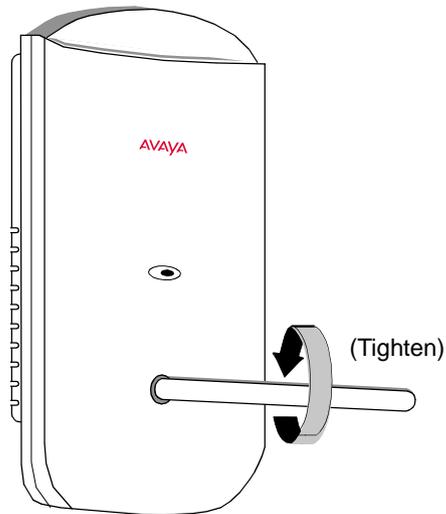
The following figures illustrate the preceding procedure.

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**Figure 3-13. Inserting the Antenna for the 559D Dipole CAU**



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**Figure 3-14. Tightening the Antenna for the 559D Dipole CAU**

### Installing a Brand New 559D DCAU

Mount a brand new 559D DCAU to the ceiling as shown in the following figure.



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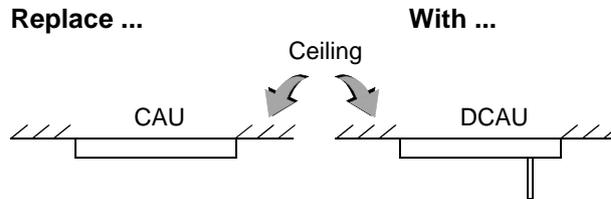
**Figure 3-15. Ceiling-Mounting a Brand New 559D DCAU**

### Replacing a Ceiling-Mounted CAU with a 559D DCAU

To replace an indoor CAU that is mounted flush on a ceiling and facing down toward the floor, do the following:

1. Remove the indoor CAU.
2. Mount the DCAU in the same position as the removed CAU. Ensure that the dipole is pointing toward the floor.

The following figure shows how to replace an indoor CAU that is mounted flush on a ceiling and facing down toward the floor.

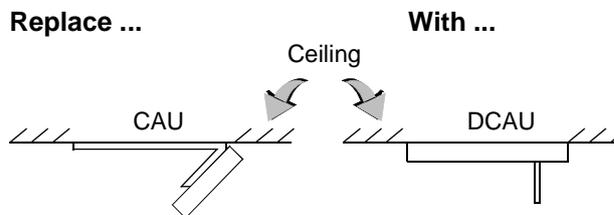


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**Figure 3-16. Replacing a Ceiling-Mounted Internal CAU with a 559D DCAU**

To replace an indoor CAU that is mounted flush on a ceiling and *aimed in a certain direction*, follow the preceding instructions. The DCAU should continue to point to the floor.

The following figure shows how to replace an indoor CAU that is mounted on a bracket on a ceiling and aimed in a certain direction.



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**Figure 3-17. Replacing a Bracket- and Ceiling-Mounted Internal CAU Aimed in a Particular Direction with a 559D DCAU**

### Replacing a Wall-Mounted CAU with a 559D DCAU

The 559D DCAU cannot be wall-mounted. Therefore, to replace a wall-mounted CAU with a 559D DCAU, do the following:

1. Find another CAU that is ceiling-mounted.
2. Replace the ceiling-mounted CAU with a 559D DCAU according to the instructions in the previous section.
3. Replace the damaged wall-mounted CAU with the CAU that you just removed from the ceiling.

## **Procedure: Installing 559B/C Outdoor CAUs**

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The following figure shows a 559C Outdoor CAU.

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**Figure 3-18. 559C Outdoor CAU**

To install a 559B or 559C Outdoor CAU, do the following:

**⚠ WARNING:**

*The installation of outdoor CAUs for the DWBS must conform to the local electrical code for grounding.*

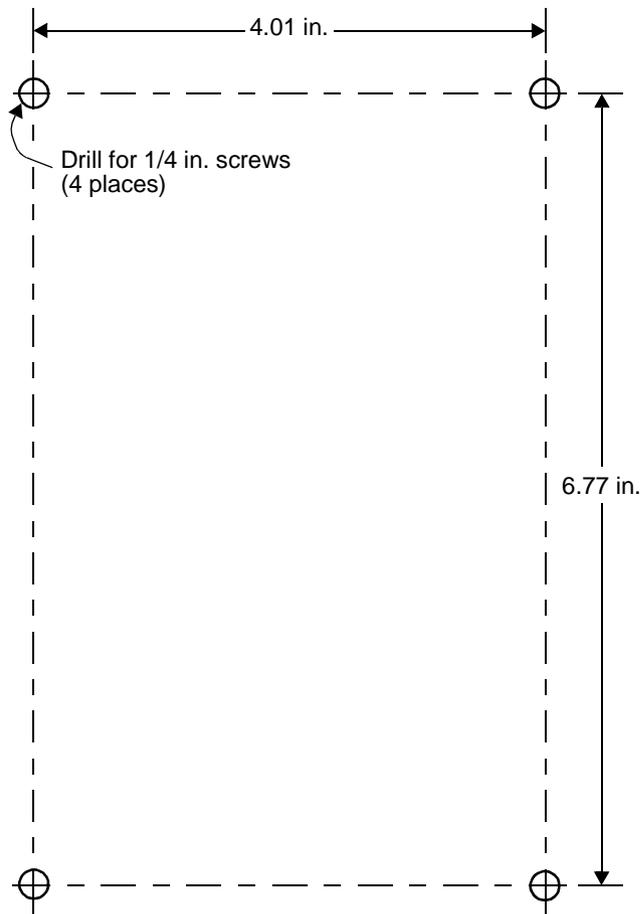
1. Mount the outdoor CAU in the location specified by the installation map. Specifically, do the following:

**⇒ NOTE:**

Ensure that you mount the CAU *vertically*.

- a. Verify that there is a flat, structurally sound mounting surface at the specified location. If such a surface is not available, the customer must provide one.

- b. Using the mounting template shown in the following figure, drill appropriate holes for 1/4 in. screws. Pan head sheet metal screws with dimensions 1/4 in. by 1 1/4 in. are included with the unit. Masonry anchors or other mounting hardware must be provided locally.



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**Figure 3-19. Mounting Template for Outdoor CAUs**

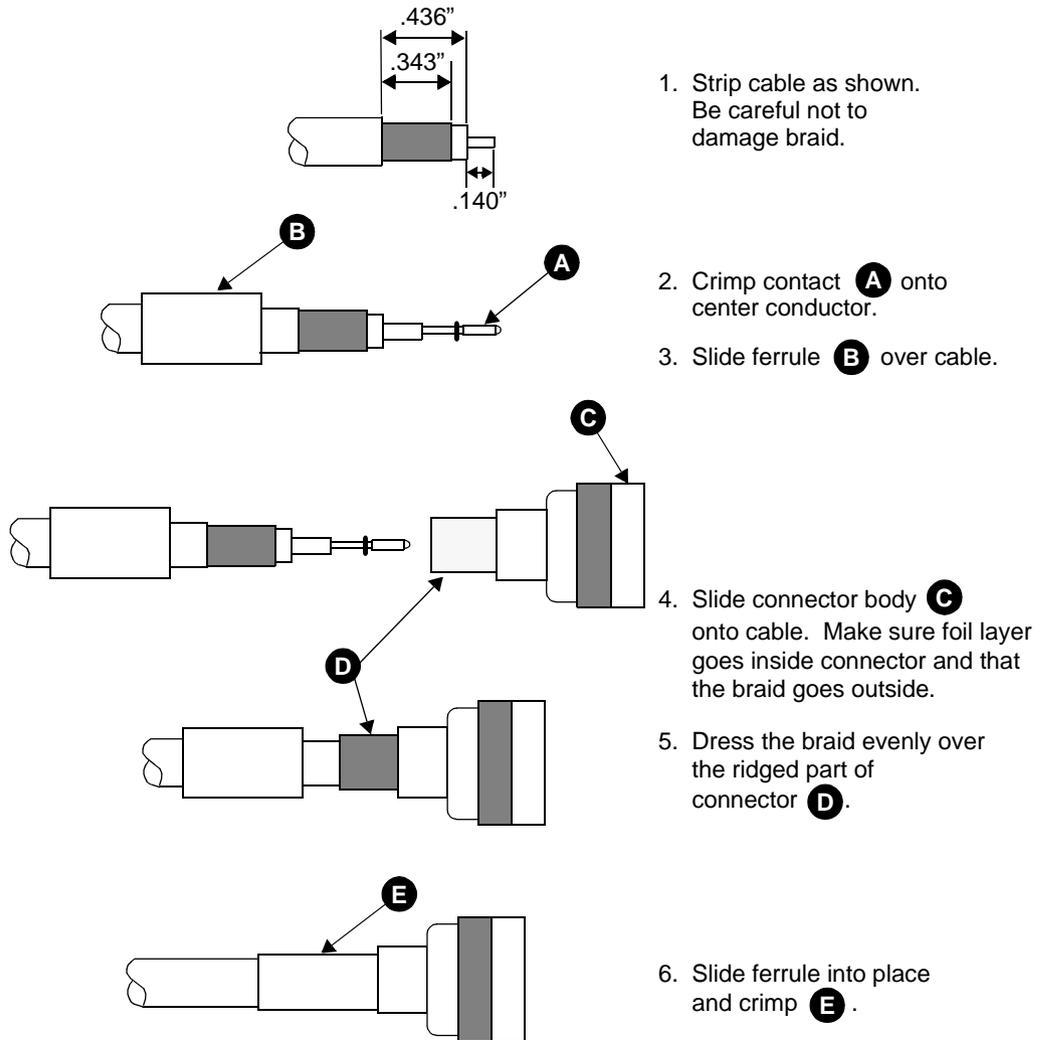
- c. Orient the outdoor CAU so that when you are looking at the unit, the fixed-length coax connector is pointing downward and the antenna is pointing toward the upper right. Screw the outdoor CAU into place.
2. Locate an opening in the wall for coax cable passage. Drill a 1/4 in. hole through the wall, if required.

3. Locate and mount the grounding block on the outside of the building near the cable opening.
4. Connect one end of a No. 10 copper ground wire to the lug on the grounding block. Route the wire as straight as possible to an appropriate building ground (See the previous “Warning.”) Connect the other end of the ground wire to the building ground using an approved method. (See the previous “Warning.”)
5. Connect the coax cable assembly (comcode 847565132) to the outdoor CAU. Dress the cable down the side of the building to the grounding block. Attach the cable to the building as required. Be sure to avoid crushing or otherwise distorting the cable. Make the connector finger-tight only. Using tools damages the WFB.
6. Cut the coax cable at the grounding block, and ensure that you leave enough material to form a drip loop. This is the only cable cut permitted. **Do not cut the coaxial cable once it is connected to an active WFB. This could short and subsequently damage WFB ports.** (See the following “Note.”)
7. Connect the remaining cable to the WFB, and route the cut end through the previously prepared cable passage.

 **NOTE:**

The DWBS is designed to use the supplied 100 foot coax cable to interconnect the WFB and the CAU. Using either shorter or longer cables degrades system performance and violates FCC regulations. Once the cable is cut in Step 6, do not shorten either portion of the cable by cutting the cable again. Also, do not mix and match cable pieces from other outdoor CAUs. If 100 feet of coax cable is insufficient to interconnect the outdoor CAU and WFB, the WFB should be moved closer. If this is not possible, the outdoor CAU must be relocated with guidance from the WiSE Engineering team.

8. Strip the ends of the coax cable, and install the coax connectors as shown and explained in the following figure. Use only the TNC connectors provided with the outdoor CAU. These connectors are specifically designed for use with the supplied cable. Appropriate coax stripping and connector crimp tools are identified in the following tables.



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**Figure 3-20. Cable Assembly for Outdoor CAUs**

**Table 3-6. Coaxial Wire Strippers**

Manufacturer	Model
Xcelite	3CSK-BRI
Ideal	45-521

**NOTES:** The models identified in the previous table are identical. The stripper is available from Techni-Tool® (1-610-941-2400) as Part #618ST020.

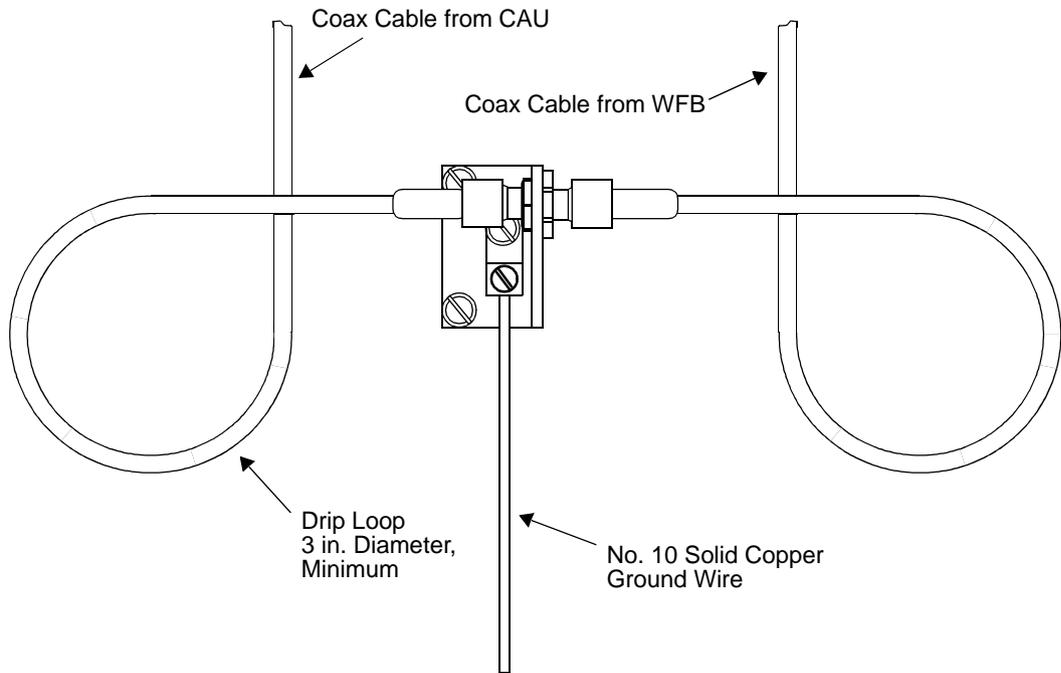
**Table 3-7. Coaxial Connector Crimp Tools**

Manufacturer	Model	Replacement Die
Ideal	Crimpmaster® #30-483(a)	#30-578(b)
Xcelite	Maxi-Crimper #MAC8259(a)	#D8259(b)
	ErgoCrimp Plus #ECP000 (Crimp Tool Frame Only)(c)	#D104(d)

**NOTES:** The Crimpmaster and Maxi-Crimper tools are identical. Order either tool. The following items are available from Techni-Tool (1-610-941-2400) per the identified part numbers:

- (a) — 462ST506 (Frame Only)
- (b) — 462ST578 (Crimp Die)
- (c) — 272ST100 (Frame Only)
- (d) — 272AC104 (Crimp Die)

9. Form the drip loop in each cable end. Connect each cable end to the grounding block as shown in the following figure. The outdoor CAU may be attached to either side of the connector on the grounding block.



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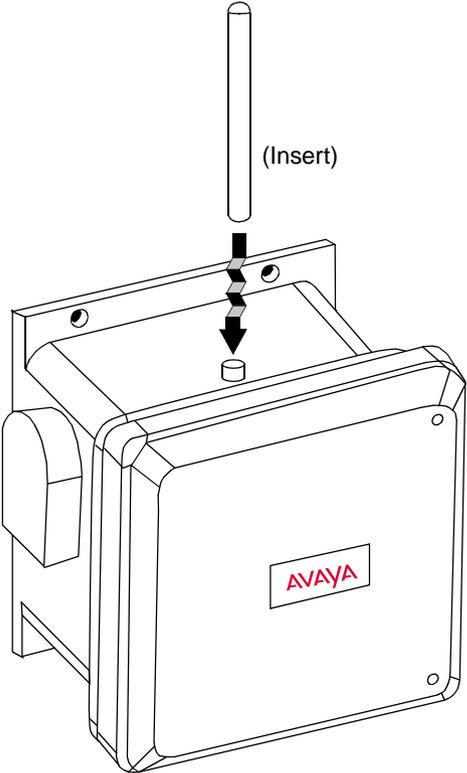
**Figure 3-21. Grounding Block Connections for Outdoor CAUs**

**Fastening the Antenna for the 559C Outdoor CAU**

Fasten the antenna for the 559C Outdoor CAU to the CAU as follows:

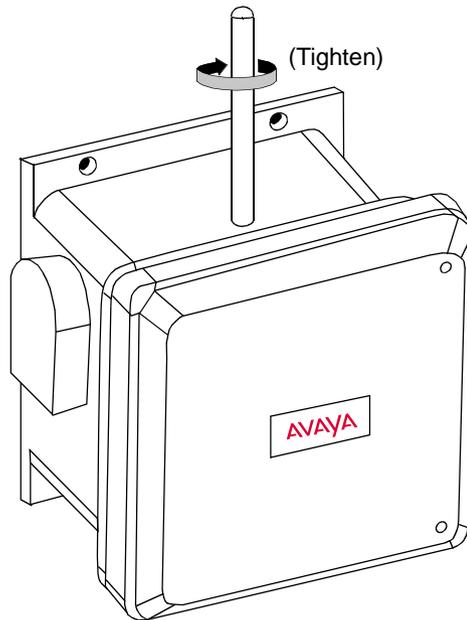
1. Place the threaded end of the antenna onto the threaded bushing on top of the CAU.
2. Rotate the threaded antenna clockwise until the antenna is hand-tight.

The following figures illustrate the preceding procedure.



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**Figure 3-22. Inserting the Antenna for the 559C Outdoor CAU**



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**Figure 3-23. Tightening the Antenna for the 559C Outdoor CAU**

### **Fixed-Length Coax Interface**

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This interface is physically implemented with a 110 foot long, custom coaxial cable assembly (comcode 847565132) that interconnects the WFB and CAU. This interface provides both RF signaling and DC power to and from the CAU.

Fixed-length coaxial cable is plenum-rated and can therefore be placed inside the plenum above the ceiling.

**⚠ CAUTION:**

***DO NOT** cut or modify this cable to length. Any excess cable should be spooled up in the ceiling or where convenient.*

### **DWBS WTs**

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Two DWBS WTs are available. These WTs are discussed in the following sections.

## **9601 WT**

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The 9601 WT is a pocket-size portable phone that provides multiple call appearances, a liquid crystal display (LCD) that supports business communication needs, an array of soft and hard keys designed to enable access to the many features of the DEFINITY ECS, and a 12-button dial pad. To provide freedom of mobility, the WT is not physically connected by a cord to the DEFINITY ECS or any other DWBS component. Instead, the WT is wireless and communicates via a radio link to a WFB network, which in turn connects to the DEFINITY ECS.

## **9630 Series WT**

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The 9630 Series WT is a pocket-size, portable phone that provides wireless mobility as well as access to full business features and many DEFINITY ECS features.

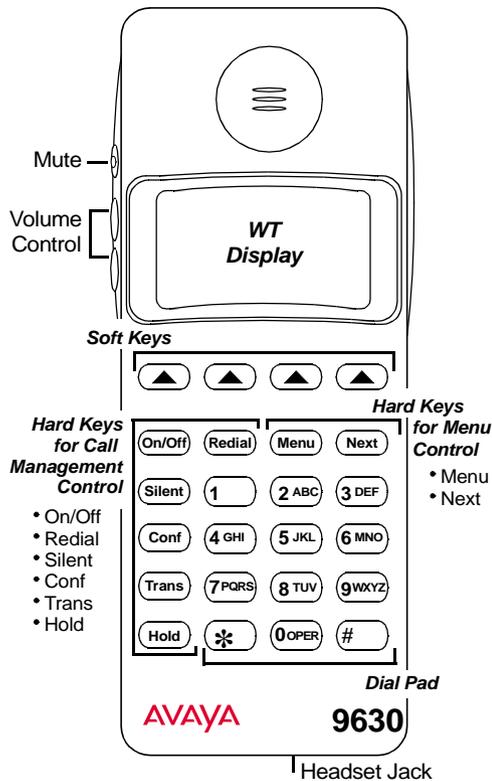
The industrial design of the 9630 Series WT is identical to that of the TransTalk<sup>®</sup> 9031 Pocket Phone (including no flip). The functionality of the 9630 Series WT is similar to that of the DWBS 9601 WT. The 9630 Series WT is intended for the following markets: manufacturing, distribution, retail, and non-office personnel in healthcare and other markets.

The WT provides multiple call appearances and a five-line by 16-character LCD that supports your business communication needs. The top line of the display is reserved for displaying icons indicating the following: message waiting, signal strength, lock, vibrator, battery, silent, mute, and next. The other four lines are reserved for alphanumeric characters.

The 9630 Series WT contains the following hard keys (buttons) on the front: On/Off, Redial, Menu, Next, "Silent," Conf, Trans, and Hold; it also contains a Mute button on the side. In addition, the WT contains a dial pad and four soft key buttons.

The 9630 Series WT is not physically connected by a cord to the DEFINITY ECS or any other DWBS component. Instead, the WT is wireless and communicates via a radio link to a network of Wireless Fixed Bases (WFBs), which in turn connect the WT to the DEFINITY ECS. The 9630 Series WT is designed to be compatible with future releases of the DWBS.

For a complete description of the 9630 Series WT and its functions, refer to the *DEFINITY Wireless Business System 9630 Series Wireless Terminal User's Guide*, 555-232-701.



**Figure 3-24. 9630 Series WT**

### **Procedure: Obtaining the IPEI**

This procedure provides the steps to display the IPEI of the WT and enter the access code for the WTs. This procedure is required for all new and replacement WTs.

For the 9631 WT, do the following:

1. With the WT powered up, press **Menu** .
2. At the next display, press **Next** four times.
3. At the following display, press the **more** soft key; the IPEI is displayed.

 **NOTE:**

If the IPEI that is displayed electronically and the IPEI from the back of the WT (with battery removed) do not match, administer the electronically displayed version on the WT station form.

4. Enter the IPEI into the Station form. To access the form, enter the **add station** or **change station** command.
5. Reseat the battery. The WT should display icons and be ready for use.

 **NOTE:**

Instructions for checking and downloading WT firmware are included in the next chapter.

## Introduction

---

This section provides you with the background and procedural information needed to ensure that the installed DWBS is operational.

The tests in this section are in the nature of acceptance tests. The assumption is that the system will perform as expected after the installation. If problems occur, or if more extensive tests are required, please refer to the DWBS Maintenance document.

## Verifying Radio Component Configurations

---

You must verify that the configurations of the DWBS radio components have the latest firmware. To do this, issue the commands in the following table:

<b>Issue the ... command</b>	<b>To check ...</b>
<b>list configuration firmware</b>	firmware version stored in the mass storage system (MSS)
<b>list configuration radio all</b>	hardware vintage and firmware versions of the RCs and WFBs
<b>list configuration wt</b>	hardware vintage, firmware version, and last access rights of the WTs

If you do not have the latest firmware for one or more of the components identified in the previous table, do the following:

1. Contact the Initialization and Administration System (INADS) center for the appropriate firmware download.
2. Perform a firmware upgrade for the appropriate component(s) by following the directions in the next section (for the WT) or in the DWBS Maintenance document (for the other DWBS components).

## **Procedure: WT Firmware Download and Connection**

---

The firmware for the 9601 or 9630 Series WT is updated via the download cable connected to the TN789 RC circuit pack that is administered as a download server. For the 9601 WT, a 9600 baud RS232 connection is used; for the 9630 Series WT, a 38400 baud RS232 connection is used. The download cable must be within 50 feet of the RC circuit pack. For longer distances, range-extension devices are required.

## **Determining if a Firmware Download is Required**

---

The following procedure is required for all new, existing, or replacement WTs.

1. From the DEFINITY ECS management terminal (MT), enter the **status wt-upgrade** command (for firmware that is stored in the RC). This command brings up the Status of Wireless Terminal Firmware Upgrade form. An example of the form appears as follows:

status wt-upgrade						Page 1
STATUS OF WIRELESS TERMINAL FIRMWARE UPGRADE						
Server Location	Server Enabled?	WT Firmware in Server	Firmware Version	WT Connected?	WT IPEI	State of Operation
01C18	Yes	9601	0.5.7	No	000000000	Idle
01C10	Yes	9601	8.4.6	No	0011179eb	Idle

**Figure 4-1. Status of Wireless Terminal Firmware Upgrade Form**

2. Record the firmware version for the WT (if present).
3. For the 9601 WT:
  - a. Ensure that the WT is powered up. Then determine the WT firmware version by pressing **Menu**.
  - b. Press **Next**.
  - c. Press the **Info** soft key (middle up arrow).
  - d. Press **Prev**.

For the 9630 Series WT:

  - a. Press **Menu**.
  - b. Press **Next** four times.
  - c. Press the **More** soft key (first up arrow).
  - d. Press **Next**.
4. Compare the firmware reported in the WT with the firmware stored in either the mass storage on the switch or the RC. If the firmware in mass storage or the RC is older than or the same as the firmware in the WT, the procedure is completed. If the firmware in mass storage or the RC is newer than the firmware in the WT, a firmware download is required; therefore, proceed to the next section.

 **NOTE:**

Enter the **list configuration wt** command to obtain the firmware version for all the pocket phones in the system. Refer to the value in the column headed by *Firmware Version* to obtain the appropriate firmware version. For the 9601 WT, the firmware version is 7.0.0 or later; for the 9630 Series WT, the firmware version is 7.0.0 or earlier. **The corresponding value in the column headed by *Name* may or may not be correct.**

## **Initial Operations**

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Complete the following initial operations.

1. Ensure that the firmware file is transferred from the INADS center to the DEFINITY MSS or to the appropriate RCs. For the DWBS firmware package download, contact the INADS center at 1-800 248-1111.
2. Determine if the Radio Controller has the current version of the WT firmware and if it is enabled as a download server by entering the **status wt-upgrade** command.
3. Compare the firmware version on either the MSS, which is obtained via the **list configuration firmware-versions** command, with the output of the **status wt-upgrade** command. The **list configuration firmware-versions** command brings up the Firmware Versions form. Two examples of the form follow:

```
list configuration firmware-versions Page 1
```

FIRMWARE VERSIONS			
Name	Version	Size	Checksum
TN789 RC 8.1	8.1.4	37000	FAA9
WFB v17	0.0.17	8000	4E89
WT 9601 3CA	8.4.6	2F830	A45B

---

**Figure 4-2. Firmware Versions Form (9601 WT)**

```
list configuration firmware-versions Page 1
```

FIRMWARE VERSIONS			
Name	Version	Size	Checksum
TN789 RC 8.1	8.1.0	37000	6629
WFB v17	0.0.17	8000	4E89
WT 9630 3CA	0.5.5	2C6E0	1CC9

**Figure 4-3. Firmware Versions Form (9630 Series WT)**

4. If the firmware is newer on the MSS, or if the enabled server is set to “No,” enter the **enable wt-upgrade type [9601 or 9631] [PPCSS] [all]** command. This command takes 3.5 minutes per RC. The RC is taken out of service while the file is being transferred.



**NOTE:**

Do not issue the **enable wt-upgrade all** command if your DWBS has both 9601 WTs and 9630 Series WTs and if it has multiple RCs. Instead, issue the appropriate **enable wt-upgrade PPCSS** command for each RC individually.

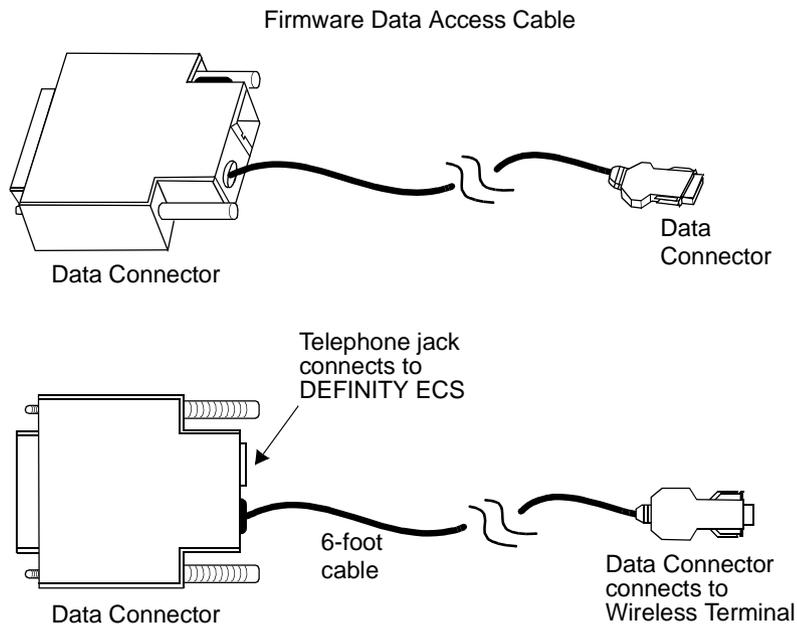
## Establishing Connections

At the wall field, connect the following leads from the 25-pair RC cable to a 103 connector block.

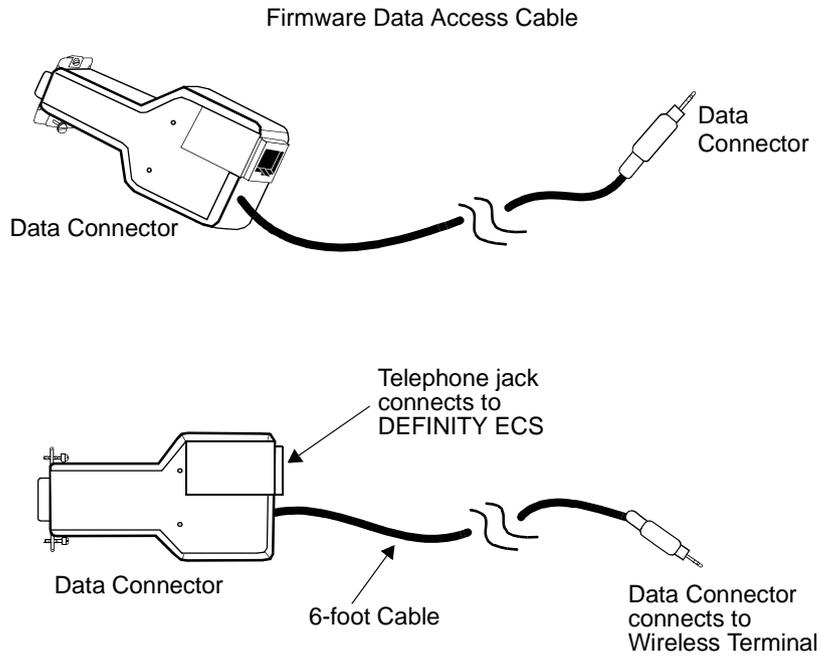
**Table 4-1. RC Cable Connections**

Wall Field RC Cable		103 Connector Block Punching	
V-O	47	W-BL	1
O-V	22	BL-W	2
V-G	48	W-O	3
G-V	23	O-W	4
V-BR	49	W-G	5
BR-V	24	G-W	6

Thereafter, insert a D8W (four-pair mounting cord) from the 103 connector block to the WT download cable. Finally, for the 9601, plug the 902A download cable into the WT side jack. For the 9630 Series WT, plug the RC-To-WT download cable into the bottom of the handset. Refer to the following figures.

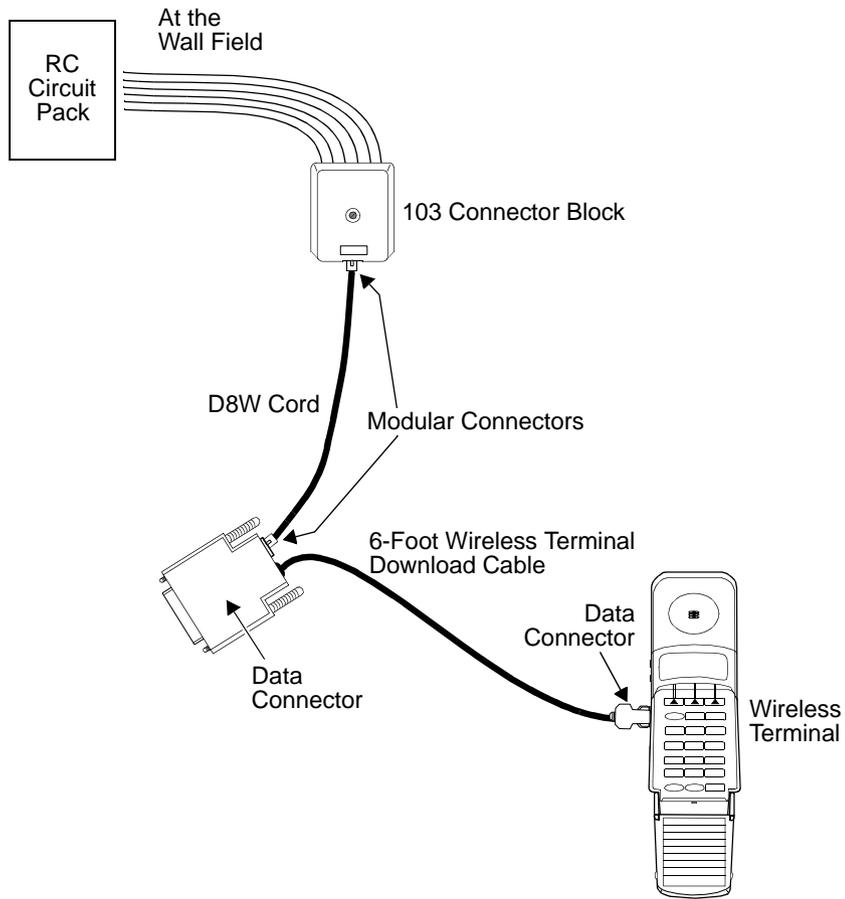


**Figure 4-4. Firmware Data Access 902A Download Cable (Comcode 107583965)**



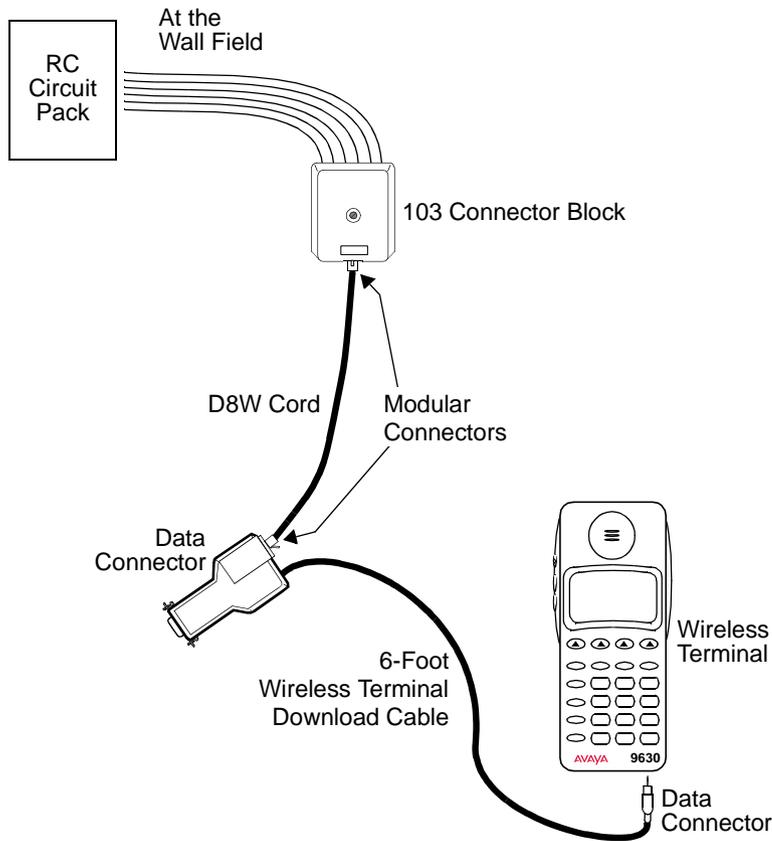
---

**Figure 4-5. Firmware Data Access RC-to-WT Download Cable (Comcode 107583965)**



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**Figure 4-6. Connections for WT Firmware Download (9601 WT)**



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**Figure 4-7. Connections for WT Firmware Download (9630 Series WT)**



**NOTE:**

Refer to the “TN789 RC Circuit Pack Pin Configuration” table in the previous chapter for details on RC pin connections with the 902A download cable.

## Using Keys to Download WT Firmware

---

To perform a WT firmware download by using keys, activate the appropriate keys according to the following directions.

For a 9601 WT, do the following:

1. Insert the download cable from the RC into the side of the WT.
2. Press **Menu** .
3. Press **Next** .
4. Press the **Info** soft key.
5. Press **Prev** .
6. Press the center soft key (not labeled) twice.
7. Press **Next** .
8. Press **Next** again.
9. Press the **FW** soft key.
10. Press the **FromRC** soft key.
11. For “Erase Flash,” select **Yes**. Once you do this, “Loading.....” appears on the screen. As the load progresses, a series of stars (\*\*\*\*) builds across the screen. When the loading is completed, the WT beeps and resets.
12. Remove the cable.

For a 9630 Series WT, do the following:

1. Insert the download cable from the RC into the bottom of the WT.
2. Press **Menu** .
3. Press **Next** four times.
4. Press the **More** soft key twice.
5. Press the **FW** soft key twice.
6. Press the **From RC** soft key. Once you do this, “Loading.....” appears on the screen. As the load progresses, a series of stars (\*\*\*\*) builds across the screen. When the loading is completed, the WT beeps and resets.

### NOTE:

If the firmware version on the RC is older than the firmware on the WT, the following question appears: “RC FW Older Than Load Old FW?” Press the accompanying **Yes** or **No** soft key, as appropriate.

7. Remove the cable.

At this point, the WT should display icons and is ready for use.

**⇒ NOTE:**  
**DO NOT USE THE disable wt-upgrade COMMAND.**

## **WT Firmware Download Error Codes**

The following table provides a list of error codes related to WT firmware download for the 9601 WT and 9630 Series WT. A low severity error code indicates that the WT will automatically restart the firmware download process after a short delay. A high severity error code terminates the firmware download process; in such a case, the user may have to intervene to restart the firmware download process.

**⇒ NOTE:**  
 All errors starting with “89” originate from the RC. All other errors originate from either the 9601 WT or 9630 Series WT.

**Table 4-2. WT Download Error Codes**

<b>Error Code</b>	<b>Severity</b>	<b>Description/Recommendation</b>
0x01	Low	Checksum in the received message does not match the calculated checksum of the message.  For the 9601 WT, restart the download process. For the 9630 Series WT, the download automatically restarts; therefore, no user intervention is required.
0x02	Low	WT received an unknown message from the RC.  For the 9601 WT, restart the download process. For the 9630 Series WT, the download automatically restarts; therefore, no user intervention is required.
0x8b	Low	WT timed out waiting for the protocol message from the RC.  This error code is not supported for the 9601 WT. For the 9630 Series WT, the download automatically restarts; therefore, no user intervention is required.
0x81	Low	Illegal boot code state in the download process.  For the 9601 WT, restart the download process. For the 9630 Series WT, the download automatically restarts; therefore, no user intervention is required.

**Table 4-2. WT Download Error Codes (continued)**

<b>Error Code</b>	<b>Severity</b>	<b>Description/Recommendation</b>
0x82	Low	WT timed out waiting for the program data from the RC.  For the 9601 WT, restart the download process. For the 9630 Series WT, the download automatically restarts; therefore, no user intervention is required.
0x83	High	Download cable is not connected.  Connect the download cable between the RC and the WT, and restart the download process. If the cable is connected and the error continues to occur, use another download cable.
0x84	High	Error while programming flash device.  Restart the download process. If the error continues to occur, try a fully charged battery.
0x85XX	High	Flash memory erase error; reason XX.  Restart the download process. If the error continues to occur, try a fully charged battery.
0x86	Low	WT timed out waiting for RC "info" message.  For the 9601 WT, restart the download process. For the 9630 Series WT, the download automatically restarts; therefore, no user intervention is required.
0x87	High	RC wants to communicate at a bad baud rate.  Restart the download process.
0x88	High	RC wants to send a file in an unsupported format.  Restart the download process.
0x891	High	The connected RC circuit pack is not enabled or assigned as a server and is therefore disabled from allowing WT upgrades.  Check the Feature-Related System Parameters form at the bottom of page 2 for the RC circuit pack. If the circuit pack is not listed, issue the <b>change system feature</b> command and add it to the list. Then issue the <b>enable wt-upgrade [PPCSS]</b> command.

**Table 4-2. WT Download Error Codes (continued)**

<b>Error Code</b>	<b>Severity</b>	<b>Description/Recommendation</b>
0x892	High	RC is busy receiving a WT package from the MSS.  Wait for the download from the MSS to complete. This should take about five minutes.
0x893	High	The RC flash does not contain a WT file to use for an upgrade.  Check the Feature-Related System Parameters form at the bottom of page 2 for the RC circuit pack. If the circuit pack is not listed, issue the <b>change system feature</b> command and add it to the list. Then issue the <b>enable wt-upgrade [PPCSS]</b> command.
0x894	High	The RC flash contains firmware for a different model WT.  Download the correct firmware package. Then check the Feature-Related System Parameters form at the bottom of page 2 for the RC circuit pack. If the circuit pack is not listed, issue the <b>change system feature</b> command and add it to the list. Then issue the <b>enable wt-upgrade [PPCSS]</b> command.
0x895	High	The RC flash does not recognize the type of WT that is connected.  The RC downloads only 9601 WTs and 9630 Series WTs.
0x897	High	RC was requested to download a 9601 WT; however, the RC has only the 9630 Series WT firmware download package to send.  Download the 9601 WT package to the RC.
0x898	High	RC was requested to download a 9630 Series WT; however, the RC has only the 9601 WT firmware download package to send.  Download the 9630 Series WT package to the RC.

**NOTE:** The 9630 Series WT boot code firmware provides the automatic restart of the download process with low severity errors. The download process is attempted three times if the problem continues to occur. Thereafter, the error is declared as a high severity error, and user intervention is required.

## Procedure: Performing Wireless Test Calls

---

The following procedure verifies that calls of good voice quality can be originated and received throughout the coverage area(s).

 **NOTE:**

See the appropriate DWBS WT guide if you need more detail regarding the WT's operation.

1. Using the installation map as your guide, enter the coverage area(s), and place a call to another WT.
  - a. For the 9601 WT, to make the call, press **Call** , wait for dial tone, and dial the number of a wired telephone.

For the 9630 Series WT, to make the call, press the **On/Off** button, wait for dial tone, and dial the number of a wired telephone.

- b. When your call is connected, begin your "test" conversation.
  - c. Start walking through the entire coverage area(s) and listen for significant degradation in voice quality (such as static or interference) that is strong enough to disrupt the call. If there are problems, note the following:
    - Location where the problem(s) begin
    - Precise description of the problem(s)
    - Approximate boundaries of the problem(s), if applicable
    - Signal strength reading where the disruption is greatest (see the following step for the key sequence)
2. Move into the area of greatest interference and obtain a signal strength reading for the WT.

For the 9601 WT, do so as follows:

- a. Press **Menu** .
- b. Press **Next** .
- c. Press the **Info**  soft key.
- d. Press **Next** to display the signal strength.

 **NOTE:**

The signal strength reading from the 9601 WT is not dynamic. You must press **Prev** and **Next** to obtain a signal strength reading. Remember to take precise notes of the signal strength and any other problems that you may encounter.

For the 9630 Series WT, do so as follows:

- a. Press **Menu** .
  - b. Press **Next** four times.
  - c. Press the **More** soft key.
3. Upon completing your walk-through, if you have encountered any problems, refer to the DWBS Maintenance document for further investigation.

## Procedure: Verifying Operative Cell IDs

---

This procedure verifies that all the cells in the wireless configuration are “up” and providing coverage.

 **NOTE:**

Cell IDs for the 9630 Series WTs update *dynamically*. Therefore, the following procedure is not required for 9630 Series WTs.

1. Move the 9601 WT battery away from its set position slightly; then reinsert it.
2. For a 9601 WT, using the installation map as a guide, step into the first cell to be checked, and position yourself close to the CAU (or to the WFB, if no CAUs are present) for the particular cell. Obtain the cell ID by executing the following key sequence on the 9601 WT:
  - a. Press **Menu** .
  - b. Press **Next** .
  - c. Press the **Info**  soft key.
  - d. Press **Next** to display the cell ID.
3. Confirm that the cell ID is displayed. If the cell ID is displayed, repeat Step 1 for all the cells in the configuration. If there is no cell ID displayed, use the following table:

If...	Then...
Unit is a CAU	Go to Step 3
Unit is a WFB	Go to Step 4

4. Confirm that the CAU's green power indicator is illuminated.

<b>If...</b>	<b>Then...</b>
Power indicator is illuminated	Power is normal.
Power indicator is not illuminated	Check the cable connection between the WFB and the CAU. If the connection is good but the problem still persists, check the power (green) indicator on this CAU's connected WFB. If the WFB shows no power, check the power supply to the WFB (see Chapter 3 of this document for power and cabling details). Restoring power to the WFB will more than likely solve the problem. If the problem persists, the CAU may need to be replaced. If the indicator is illuminated, repeat Step 1 of this procedure to obtain the cell ID.
Flashing green appears	CAU has not initialized.

5. Confirm that the WFB's green power indicator is illuminated.

<b>If...</b>	<b>Then...</b>
Power indicator is illuminated	Power is OK.
Power indicator is not illuminated	Check the connection between the power supply and the WFB. (See Chapter 3 of this document for power and cabling details.) If the problem persists, the WFB may need to be replaced. Refer to the DWBS Maintenance document for additional information. Repeat Step 1 of this procedure to obtain the cell ID only after the problem has been resolved.

Once the preceding procedures are completed, the DWBS is considered up and running.

## **Introduction**

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This chapter provides supplemental Mobility Manager and DEFINITY ECS command information that may be helpful to the installer.

## **Command Structure**

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An administration or maintenance command is made up of multiple words that instruct the system to perform a specific task. The command is made up of *action*, *object*, and *qualifier* words (depending on the command type).

The action word is the first word entered on the command line and specifies the operation to be performed (for example, “add,” “change,” and “remove”). The object word is the second phrase entered on the command line and specifies the particular object on which to perform the operation. Lastly, the qualifier can be one or more key words or digits used to identify further or complete the object.

## Command List

The following table provides a summary of the commands used for the installation, administration, and maintenance of the DWBS.

**Table 5-1. DWBS Commands**

Action	Object	Qualifier	Purpose
-- download	firmware	<i>tape</i>	Transfer a file containing RC, WFB, or WT firmware from the INADS center to the MSS of the customer's switch.
-- list configuration		<i>all</i>	View circuit packs in the system, along with their associated location, code, vintage, and assigned ports.
--change --display	alias station		Alias a station (WT)
-- list configuration	board	<i>PPCSS</i>	View identified circuit pack.
-- list	bridged-extension	<i>principal extension</i>	List all stations where the principal appears as a bridged call appearance.
-- status	card-mem		Display the format of the flash card.
-- change -- display	carrier-frequencies		Administer or view customer-administrable carrier frequencies.
-- change -- display	circuit-packs	<i>cabinet number</i>	Administer or view the existing circuit pack data. Also, administer the RC circuit pack logically.
-- upgrade	firmware radio controller	<i>PPCSS</i> <i>all</i> <i>schedule</i>	Upgrade the firmware for one or more RCs.
-- upgrade	firmware WFB	<i>PPCSS</i> <i>all</i> <i>schedule</i>	Upgrade the firmware for one or more WFBs.
-- list configuration	firmware-versions		Display the firmware version, size, and checksum of DWBS components.
-- add -- change -- list configuration -- remove -- status	radio-controller	<i>PPCSS</i> <i>all</i> <i>override</i> <i>schedule</i>	Administer or identify parameters associated with or upgrade the firmware of one or more RCs (TN789).

Table 5-1. DWBS Commands (*continued*)

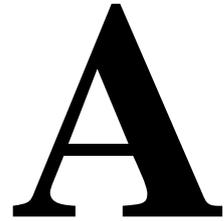
Action	Object	Qualifier	Purpose
-- test	radio-sync	<i>all port-network</i>	Access or display the inter-port network radio synchronization plan.
-- add -- change -- display -- remove	station	<i>extension</i>	Administer or view a station on the system.
-- list -- status -- test	station	<i>extension port &lt;wt&gt; type &lt;9601&gt;</i>	List all stations that conform to the port or type search criteria.
-- change -- display	system-parameters	<i>customer-options</i>	Administer or view optional feature administration.
-- change -- display	system-parameters	<i>features</i>	Administer or view the radio card download servers.
-- change -- display	system-parameters	<i>wireless</i>	Administer or view system-wide wireless data.
-- test	WFB	<i>PPCSS all override schedule</i>	Test one or more WFBs.
-- enable -- disable -- list configuration	WT-stations	<i>extension</i>	Enable or disable the WT. Display the hardware and firmware of one or all WTs in the system along with the last time access rights were invoked.
-- enable* -- disable** -- status***	wt-upgrade	<i>PPCSS all type</i>	*Transfer WT firmware file from the MSS to the designated RCs. **Deactivate the communications port on the RCs previously enabled for WT download. ***Display the status of the RCs designated to be download servers for a WT firmware upgrade.

**NOTE:** The *schedule* qualifier is valid only when the system printer is connected and administered. See your system administrator.



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# DWBS Installation Checklist



---

## **Introduction**

This appendix contains a checklist for performing a DWBS installation.

## Checklist

The following table is a checklist of tasks for completing a DWBS installation. Where appropriate, references to the corresponding pages for a description of the tasks indicated are also provided. Unless otherwise indicated, the page references are for the DWBS Installation document.

**Table A-1. Checklist of Tasks and Corresponding Description Page References for Completing a DWBS Installation**

<b>Task: Have you...</b>	<b>Page</b>	<b>Yes/No</b>
Wired the CAUs according to the SDSC installation plan?	3-30	
Wired the WFBs according to the SDSC installation plan?	3-20	
Installed and wired the power supplies for each WFB that has an attached CAU?	3-21	
Verified that the DC power leads for WFB are “doubled up?”	3-13	
Placed the TN789 circuit packs into the appropriate slots?	3-11	
Terminated WFBs 1A and 1B to ports 1 and 2 of the first TN789 circuit pack?	3-10	
Terminated WFBs 2A and 2B to ports 1 and 2 of the second TN789 circuit pack?	3-10	
Terminated all remaining WFBs properly?	3-10	
Installed the WT download cable?	4-7	
Upgraded the switch software to V5 or greater?	2-1	
Enabled wireless capabilities via the Optional Features form by entering the <b>change system-parameters customer-options</b> command? (Remember to log off and log on again.)	2-2	
Enabled wireless capabilities via the Wireless-Related System-Parameters form by entering the <b>change system-parameters wireless</b> command?	2-3	
Administered the Carrier-Frequencies form?	2-9	
Administered RC download permissions via page 2 of the Features-Related System-Parameters form by entering the <b>change system-parameters features</b> command?	8-9 (Maintenance)	

**Table A-1. Checklist of Tasks and Corresponding Description Page References for Completing a DWBS Installation (continued)**

Task: Have you...	Page	Yes/No
Administered the circuit packs via the <b>add radio controller ppcss</b> command?	2-11	
Determined if new firmware is required? If so, called the INADS Center for a firmware download?	4-2; also, 8-1 (Maintenance)	
If required, verified that INADS will do the following: <ul style="list-style-type: none"> <li data-bbox="225 542 836 604">■ Upgrade the RCs via the <b>upgrade firmware radio-controller all</b> command?</li> <li data-bbox="225 624 836 685">■ Upgrade the WFBs via the <b>upgrade firmware WFB all</b> command?</li> <li data-bbox="225 705 836 767">■ Enable the RC circuit pack for a WT upgrade via the <b>enable wt-upgrade ppcss</b> command?</li> </ul>	8-10 (Maintenance) 8-10 (Maintenance) 4-6	
Confirmed the correct WT firmware version via the <b>status wt-upgrade</b> command?	8-10 (Maintenance)	
Confirmed the correct RC and WFB firmware version via the <b>list configuration radio all</b> command?	4-1	
Upgraded the WT firmware?	4-2	
Added the appropriate access code into the WT via the MENU, Next, Info, "Enter AC" key sequence?		
Administered IPEIs from the back of the WT via the Station form or the soft key button sequence?	2-17	
Verified that each WT has icons and can make and receive calls?		
Verified WT upgrades via the <b>list configuration wt</b> command?	4-1	
Verified RC and WFB upgrades via the <b>list configuration radio command</b> ?	4-1	
Walked the coverage area to confirm satisfactory service, and called the SDSC if there are problems?		



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# Glossary

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## A

### **access rights**

Air interface procedure that assigns a Temporary Portable User Identifier (TPUI) and its extension number to the WT. The WT initiates this procedure each time it enters a system. A successful completion of the procedure includes an implicit Location Registration.

### **Auto-Reconnect**

Feature that enables a calling party to reconnect to a called party if the latter walks out of the coverage area and then back into the coverage area within 60 seconds.

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## B

### **Bridging**

Feature that allows both the WT and the wired phone to ring at the same time.

---

## C

**CAU.** See **Cell Antenna Unit.**

### **cell**

Radio coverage area of a CAU or WFB with an internal antenna cluster. Also, cells supported by all the WFBs connected to one RC.

### **Cell Antenna Unit (CAU)**

Optional remote antenna that connects to a Wireless Fixed Base. It contains a transmit power amplifier, transmit/receive switch, low-noise receive amplifier, and antenna.

### **cluster**

All the cells associated with an RC.

---

## D

### **Deep Sleep Mode**

Mode assumed by the WT whenever the WT repeatedly tries to access the system and fails to do so due to out-of-range conditions. This mode allows the WT to conserve battery power.

### **DEFINITY Management Terminal**

Data terminal used for the administration and maintenance of the DEFINITY system.

---

## E

**ECS.** See **Enterprise Communications Server**

**Emerging Technologies Band**

20 MHz of unlicensed spectrum for Personal Communication Service (PCS) in North America. The band is isochronous (1920-1930 MHz) with eight channels of 1.25 MHz bandwidth per channel primarily for voice, and asynchronous (1910-1930 MHz) primarily for data.

**Enterprise Communications Server**

Private Branch Exchange (PBX) developed by Lucent Technologies.

**Estimator**

Tool within the WiSE Expert Design System that is used to gather information about the customer site. This tool is used to provide an initial price quote and to configure the DWBS.

---

## F

**FCC.** See **Federal Communications Commission**

**FDMA.** See **Frequency Division Multiple Access**

**Federal Communications Commission (FCC)**

Government agency within the US that is responsible for assigning and regulating the radio spectrum so that it can be shared by many users without unacceptable interference.

**fixed part**

Part of the DWBS radio infrastructure that is not portable. This includes the Radio Controllers, Wireless Fixed Bases, and Cell Antenna Units.

**Frequency Division Multiple Access (FDMA)**

Radio access method for which each call uses a different carrier frequency. FDMA allows one conversation per radio.

---

## H

**hard keys**

Dedicated buttons on the WT that are labeled for particular functions (for example, making calls).

**hardware vintage**

Numbering scheme for identifying the components and physical design of a DWBS part, such as a circuit pack.

---

## I

### I2

Category 3 4-Pair Twisted interface between a Radio Controller and a Wireless Fixed Base.

### I3

Coax cable interface between a Wireless Fixed Base and a Cell Antenna Unit.

### **Initialization and Administration System (INADS)**

Services support system for PBX administration and maintenance.

### **International Portable Equipment Identity (IPEI)**

Unique number used to identify a WT for administration and through-the-air communication. This number is sent by the WT to the fixed part during the access rights procedure.

### **International Portable User Identity (IPUI)**

Number sent by the fixed part to a WT during the access rights procedure. Also, this number is sent by the WT to the fixed part during the location registration procedure.

---

## L

### **local features**

Features that are supported by the WT (for example, Silent Mode).

### **local tones**

Tones produced locally in the WT. Includes the following tones: ringer, warning, error, error beep, confirmation, and key click.

### **Location Registration**

Through-the-air procedure used by the WT to inform the fixed part that it has moved to a new cluster. If the WT is active on a call, Location Registration is implied whenever there is an inter-RC or connection handover.

---

## M

### **Mobility Manager (MM)**

Software added to the DEFINITY system to control and track WTs as they change location within the DWBS coverage area. The Mobility Manager directs all control and voice information to the appropriate Radio Controller for each WT. It is also responsible for the maintenance and administration of the DWBS and WTs.

---

## P

### **pre-origination dialing**

Dialing that occurs before dial tone is granted.

### **portable part**

Part of the DWBS radio infrastructure that is portable (most notably, the WTs).

### **post-origination dialing**

Dialing that occurs after dial tone is granted.

### **Predictor**

Tool within the WiSE Expert Design System that uses site information as input to determine the optimal placement of the antennas within the DWBS.

---

## R

### **Radio Controller (RC)**

Circuit pack that provides the interface between the DEFINITY system and the radio subsystem. It controls one or more Wireless Fixed Bases.

### **Radio Propagation Measurement Tool (RPMT)**

Tool within the WiSE Expert Design System that is used to provide basic radio measurements. The RPMT looks like a WT and, once it is administered, it can also initiate and receive phone calls. The RPMT can supplement the Predictor, serve as a troubleshooting device, and be used at site surveys.

**RC.** See **Radio Controller**

**RPMT.** See **Radio Propagation Measurement Tool**

---

## S

### **Sales and Design Support Center**

Organization that designs DWBS installations via the Predictor tool.

**SDSC.** See **Sales and Design Support Center**

### **soft keys**

Buttons with labels that appear on an associated display and for which labels and functions can change dynamically as the user performs functions and makes selections.

---

## T

**TDMA.** See **Time Division Multiple Access**

**Terminal Portable User Identifier (TPUI)**

Number returned by the fixed part to the WT during the Location Registration procedure.

**Time Division Multiple Access (TDMA)**

Radio access method for which each call uses a different time slot. TDMA permits multiple conversations per radio.

**TPUI.** See **Terminal Portable User Identifier**

---

## U

**UTAM**

Group charged by the FCC to coordinate the relocation of microwave incumbents out of the unlicensed spectrum (1910-1930 MHz) and to coordinate the deployment of unlicensed devices and systems in that spectrum.

---

## W

**Wireless Fixed Base (WFB)**

Component that houses the fixed radio hardware. It provides the radio functions to transmit digitally to the WTs and to receive digital signals from the WTs. A WFB can support a maximum of four external Cell Antenna Units.



# Index

## Numerics

- 559C Outdoor CAUs, fastening antenna for, [3-41](#)
- 559D DCAUs
  - fastening antenna for, [3-33](#)
  - installing brand new, [3-34](#)
  - replacing
    - ceiling-mounted CAUs with, [3-34](#)
    - wall-mounted CAUs with, [3-35](#)
- 9601 Wireless Terminal
  - description, [3-44](#)
  - entering access codes via, [3-45](#)
  - obtaining IPEI via, [3-45](#)
  - power for, [3-22](#)
  - updating firmware for, [4-2](#)
- 9630 Series Wireless Terminal
  - description, [3-44](#)
  - environment, [3-5](#)
  - storage temperatures, [3-5](#)
  - updating firmware for, [4-2](#)

## A

- administering
  - carrier frequencies, [2-9](#)
  - frequencies, [2-7](#)
  - port networks containing RCs, [2-7](#)
  - Radio Controllers, [2-6](#)
- American Wire Gauge, [3-22](#)
- antenna, fastening for
  - 559C Outdoor CAU, [3-41](#)
  - 559D Dipole CAU, [3-33](#)

## B

- batteries
  - contents, [3-2](#)
  - handling, [3-2](#)
  - precautions, [3-2](#)
  - recycling and disposing, [3-2](#)

## C

- cabling, power and interface, [3-22](#)
- carrier frequencies, administering, [2-9](#)

- Cell Antenna Units
  - cable requirements, [3-3](#)
  - coaxial connections to WFBs, [3-22](#)
  - connection to WFBs, [3-30](#)
  - description, [3-30](#)
  - distance
    - between, [3-30](#)
    - from WFBs, [3-30](#)
  - installing
    - 559B Outdoor, [3-36](#)
    - 559D DCAU, [3-32](#)
    - indoor, [3-30](#)
  - maintaining openings for, [3-3](#)
  - power for, [3-22](#)
  - powering, [3-30](#)
  - vis-a-vis return air plenum, [3-31](#)
- commands
  - add radio-controller, [2-6](#), [2-11](#), [20](#)
  - add station, [2-15](#), [21](#)
  - change alias station, [20](#)
  - change carrier-frequencies, [2-9](#), [20](#)
  - change circuit-packs, [2-10](#), [20](#)
  - change radio-controller, [20](#)
  - change station, [21](#)
  - change system-parameters customer-options, [2-1](#), [21](#)
  - change system-parameters features, [21](#)
  - change system-parameters wireless, [2-3](#), [21](#)
  - disable WT-stations, [21](#)
  - display alias station, [20](#)
  - display carrier-frequencies, [20](#)
  - display circuit packs, [20](#)
  - display station, [21](#)
  - display system-parameters customer-options, [21](#)
  - display system-parameters features, [21](#)
  - display system-parameters wireless, [21](#)
  - enable WT-stations, [21](#)
  - list bridged-extension, [20](#)
  - list configuration all, [2-10](#), [20](#)
  - list configuration board, [20](#)
  - list configuration firmware-versions, [20](#)
  - list configuration radio-controller, [20](#)
  - list configuration WT-stations, [21](#)
  - remove radio-controller, [20](#)
  - remove station, [21](#)
  - status card-mem, [20](#)
  - status radio-controller, [20](#)
  - test radio-sync, [21](#)
  - test WFB, [21](#)
  - upgrade firmware, [20](#)
  - wireless business system administration, [20](#)
- components
  - Cell Antenna Unit, [3-30](#)
  - Wireless Fixed Base, [3-12](#)

---

## D

- DEFINITY ECS, administering, [2-1](#)
  - digital port tester, [3-20](#), [3-25](#)
  - download cable, [4-2](#)
  - DWBS
    - components, [3-6](#)
    - environmental and power requirements for, [3-4](#)
    - installation layout, [3-8](#)
    - self-disablement, [1-1](#)
    - testing, [4-1](#)
  - DWBS hardware
    - cases for unplugging, [3-2](#), [3-4](#)
    - cleaning, [3-2](#)
    - installing in protected locations, [3-3](#)
    - preventing electrical shock from, [3-2](#)
    - ventilation, [3-3](#)
    - water hazard vis-a-vis, [3-2](#)
- 

## E

- electric shock, preventing, [3-2](#)
  - equipment, relocating, [3-2](#)
- 

## F

- FCC Part 15 rules, [3-2](#)
  - fixed-length coax interfaces, [3-43](#)
  - frequencies, administering, [2-7](#)
- 

## G

- gas leaks, [3-3](#)
- 

## I

- indoor CAUs, installing, [3-30](#)
  - inside wiring cable, [3-23](#)
  - installation map, [3-7](#)
  - installing
    - 559B outdoor CAUs, [3-36](#)
    - 559D Dipole CAUs, [3-32](#)
    - indoor CAUs, [3-30](#)
- 

---

## M

- Mobility Manager, [2-1](#)
  - mounting
    - WFBs, [3-18](#)
- 

## O

- Occupational Safety and Health Administration, [3-3](#)
  - Optional Features form, [2-2](#), [2-3](#)
  - outdoor CAUs
    - cable assembly for, [3-39](#)
    - installing 559B, [3-36](#)
- 

## P

- phantom power, [3-22](#)
  - power cords, positioning, [3-3](#)
  - power, using
    - auxiliary, [3-22](#)
    - phantom, [3-22](#)
  - procedures
    - installing
      - CAUs, [3-30](#)
      - DWBS software, [2-1](#)
      - Radio Controllers, [3-11](#)
      - Wireless Fixed Bases, [3-18](#)
    - obtaining IPEI via 9601 WT, [3-45](#)
    - performing wireless test calls, [4-15](#)
    - pocket phone firmware download and connection, [4-2](#)
    - verifying operative cell IDs, [4-16](#)
    - wireless test calls, [4-15](#)
- 

## R

- radio component configurations, verifying, [4-1](#)
  - Radio Controller Circuit Pack form, [2-12](#)
  - Radio Controllers
    - administered as download server, [4-2](#)
    - administering, [2-6](#)
    - cable connections for, [4-7](#)
    - description, [3-9](#)
    - location in DEFINITY ECS slots, [3-11](#)
    - logically administering, [2-10](#)
  - radio transmission
    - disabling, [1-1](#)
    - enabling, [1-1](#)
    - limiting via carrier frequencies, [2-9](#)
  - RJ45 connector, [3-20](#)
-

---

## S

- safety
    - additional instructions for installation, [3-4](#)
    - basic instructions, [3-1](#)
    - hardware information, [3-1](#)
  - shock, electric, [3-2](#)
  - soft key sequence, [3-45](#)
  - Station form, [2-15](#), [2-18](#), [2-20](#)
  - System Configuration form, [2-11](#)
- 

## U

- UTAM, [1-1](#), [2-7](#), [3-2](#)
- 

## W

- Wireless Carrier Frequencies form, [2-9](#)
- Wireless Fixed Bases
  - auxiliary power for, [3-22](#)
  - coaxial connections to CAUs, [3-22](#)
  - connections, [3-12](#)
  - description, [3-12](#)
  - distance between, [3-19](#)
  - installing, [3-18](#)
  - locating, [3-12](#)
  - maintaining openings for, [3-3](#)
  - mounting, [3-18](#)
  - number of simultaneous calls supported by with multiple CAUs, [3-12](#)
  - painting, [3-4](#)
  - power for, [3-22](#)
  - vis-a-vis return air plenum, [3-18](#)
- Wireless System Parameters form, [2-5](#), [2-8](#)
- wireless test calls, performing, [4-15](#)

