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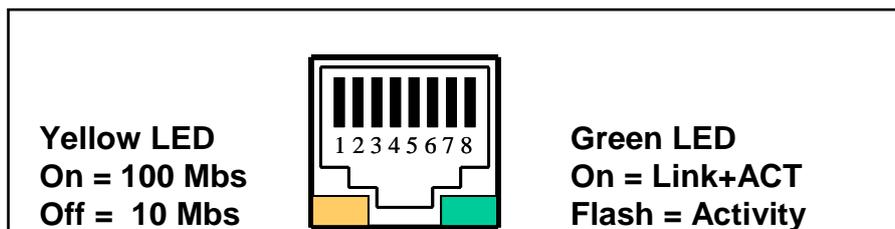
1. Introduction

1.1 WTIM4

The four (4)-channel Wireless Terminal Interface gateway Module(WTIM4) provides 4 GDC-400Bⁱ interfaces. DECT handsets can be used if GDC-400Bi is connected to the WTIM4 and the proper attendant programming is done. The WTIM4 contains a processor for IP to TDM and signaling conversion and DSP circuitry to provide trans-coding for each channel. GDC-400Bi(s) can be connected to the WTIM4 up to 600 meters from the gateway using 24 AWG twisted pair cabling. The WTIM4 includes the PHY and MAC for the 10/100 Base-T Ethernet interface as well as packet voice processing functions. The Ethernet port incorporates auto MDI, MDIX switching, therefore, both straight and cross cables can be used.

As shown in Figure 1, the front panel of the WTIM4 has:

- (1) Power jack for the AC/DC adapter supplied.
- (2) Power status LED.
- (3) Normal/Service switch – In Service mode, circuits in use are busied as they return to idle.
- (4) RJ-45 Female LAN connector with Speed and Link/Activity LEDs.



(5) Master/Slave selection switch, SW2

WTIM mode	SW2		Note
	SW2-1	SW2-2	
Maser	ON	ON	SW2 switch should be set before WTIM4/8 is powered on.
Slave 1	ON	OFF	
Slave 2	OFF	ON	

(6) Function switch, SW4

SW	On	Off	Description	Default
SW1-1	TBR6 test mode	Normal	Reserved for test	OFF
SW1-2	Enable Echo-can. (Enable mute Function when CRC error at 400B)	Disable Echo-can. (Disable mute Function when CRC error at 400B)	Echo-canceller control	ON
SW1-3	Nios-II(FPGA) Serial Mode	Mindspeed Serial mode	Serial selection	ON
SW1-4	All base reset	One base reset	S/W debugging	OFF

(7) Eight (8) WTIM4 status LEDs.

LED	Define	Label
1	When WTIM is connected with MFIM via LAN, LED1 is turned on.	LINK
2	Whenever WTIM receives/sends the message from/to MFIM, LED2 is toggled.	HBUS
3	Whenever WTIM receives/sends the message from/to BASE, LED3 is toggled.	E1
4	If WTIM is master, LED4 is always turn-on If WTIM is 1 st slave, LED4 is blink for 1 sec period If WTIM is 2 nd slave, LED4 is always turn-off	M/S
5	When Mindspeed CPU is normal, LED5 is toggled.	CP1
6	When Nios-II CPU is normal, LED6 is toggled.	CP2
7	Whenever WTIM4/8 receives/sends the message from/to other WTIMs, LED7 is toggled.	WBUS
8	When more than one DECT channel is used, LED8 is turned on.	USE

(8) DB-9 RS-232 connector.

(9) Reset Switch.

On the rear panel, the WTIM8 has:

- (1) Eight (4) RJ-45 female connectors.
- (2) Ground Lug.
- (3) Fifty (50)-pin back plane connector.
- (4) Two(2) WTIMⁱⁱ link connectors(24 pins)
 - OUT : connected to the next slave WTIMⁱⁱ with link cable
 - IN : connected to the previous WTIMⁱⁱ with link cable

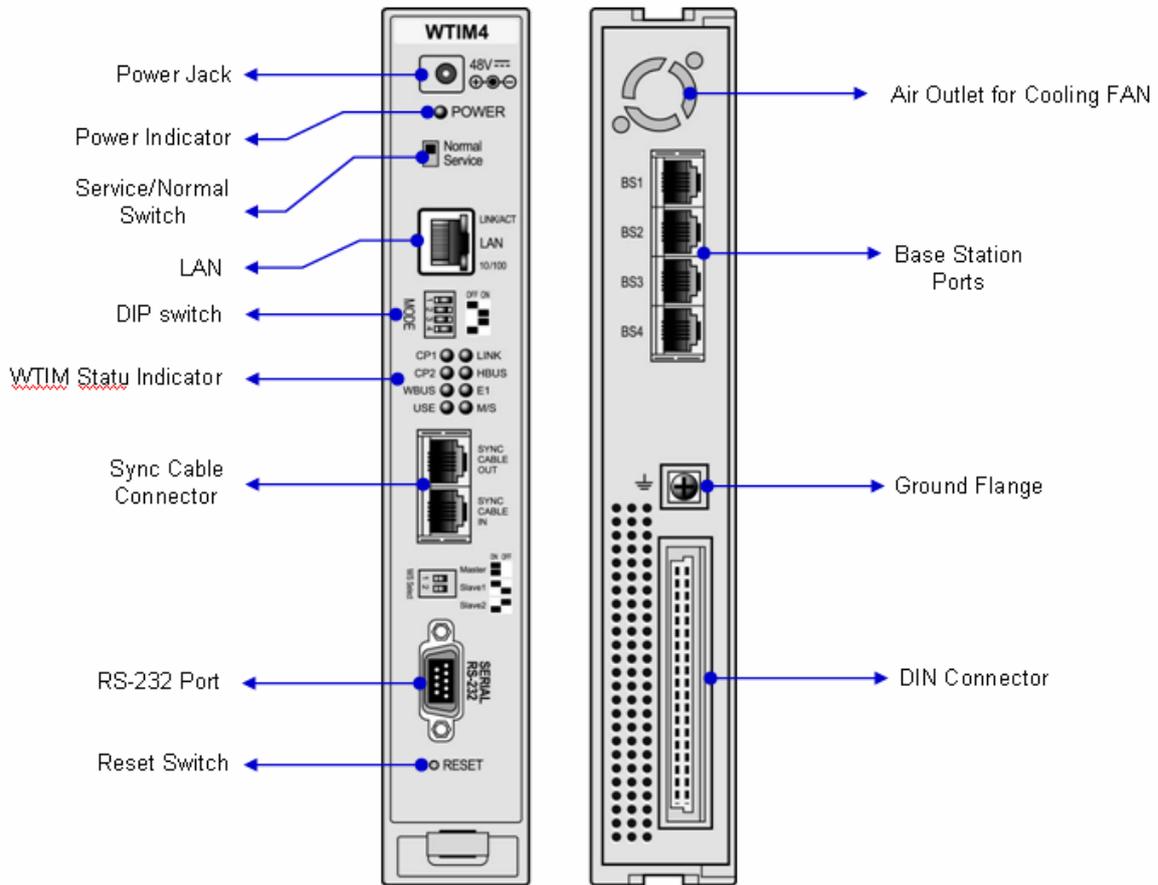


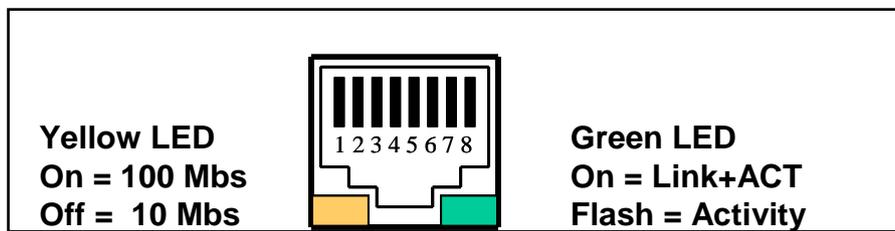
Figure 1. WTIM4 Front & Rear Panels

1.2 WTIM8

The eight (8)-channel Wireless Terminal Interface gateway Module(WTIM8) provides 8 GDC-400Bi interfaces. DECT handsets can be used if GDC-400Bi is connected to the WTIM8 and the proper attendant programming is done. The WTIM8 contains a processor for IP to TDM and signaling conversion and DSP circuitry to provide trans-coding for each channel. GDC-400Bi(s) can be connected to the WTIM8 up to 600 meters from the gateway using 24 AWG twisted pair cabling. The WTIM8 includes the PHY and MAC for the 10/100 Base-T Ethernet interface as well as packet voice processing functions. The Ethernet port incorporates auto MDI, MDIX switching, therefore, both straight and cross cables can be used.

As shown in Figure 2, the front panel of the WTIM8 has:

- (1) Power jack for the AC/DC adapter supplied.
- (2) Power status LED.
- (3) Normal/Service switch – In Service mode, circuits in use are busied as they return to idle.
- (4) RJ-45 Female LAN connector with Speed and Link/Activity LEDs.



- (5) Master/Slave selection switch, SW2

WTIM mode	SW2		Note
	SW2-1	SW2-2	
Maser	ON	ON	SW2 switch should be set before WTIM4/8 is powered on.
Slave 1	ON	OFF	
Slave 2	OFF	ON	

- (6) Function switch, SW4

SW	On	Off	Description	Default
SW1-1	TBR6 test mode	Normal	Reserved for test	OFF
SW1-2	Enable Echo-can. (Enable mute Function when CRC error at 400B)	Disable Echo-can. (Disable mute Function when CRC error at 400B)	Echo-canceller control	ON
SW1-3	NiosII(FPGA) Serial Mode	Mindspeed Serial mode	Serial selection	ON
SW1-4	All base reset	One base reset	S/W debugging	OFF

(7) Eight (8) WTIM8 status LEDs.

LED	Define	Label
1	When WTIM is connected with MFIM via LAN, LED1 is turned on.	LINK
2	Whenever WTIM receives/sends the message from/to MFIM, LED2 is toggled.	HBUS
3	Whenever WTIM receives/sends the message from/to BASE, LED3 is toggled.	E1
4	If WTIM is master, LED4 is always turn-on If WTIM is 1 st slave, LED4 is blink for 1 sec period If WTIM is 2 nd slave, LED4 is always turn-off	M/S
5	When Mindspeed CPU is normal, LED5 is toggled.	CP1
6	When Nios-II CPU is normal, LED6 is toggled.	CP2
7	Whenever WTIM4/8 receives/sends the message from/to other WTIM ⁱ 's, LED7 is toggled.	WBUS
8	When more than one DECT channel is used, LED8 is turned on.	USE

(8) DB-9 RS-232 connector.

(9) Reset Switch.

On the rear panel, the WTIM8 has:

- (1) Eight (8) RJ-45 female connectors.
- (2) Ground Lug.
- (3) Fifty (50)-pin back plane connector.
- (4) Two(2) WTIMⁱⁱ link connectors(24 pins)
 - OUT : connected to the next slave WTIMⁱⁱ with link cable
 - IN : connected to the previous WTIMⁱⁱ with link cable

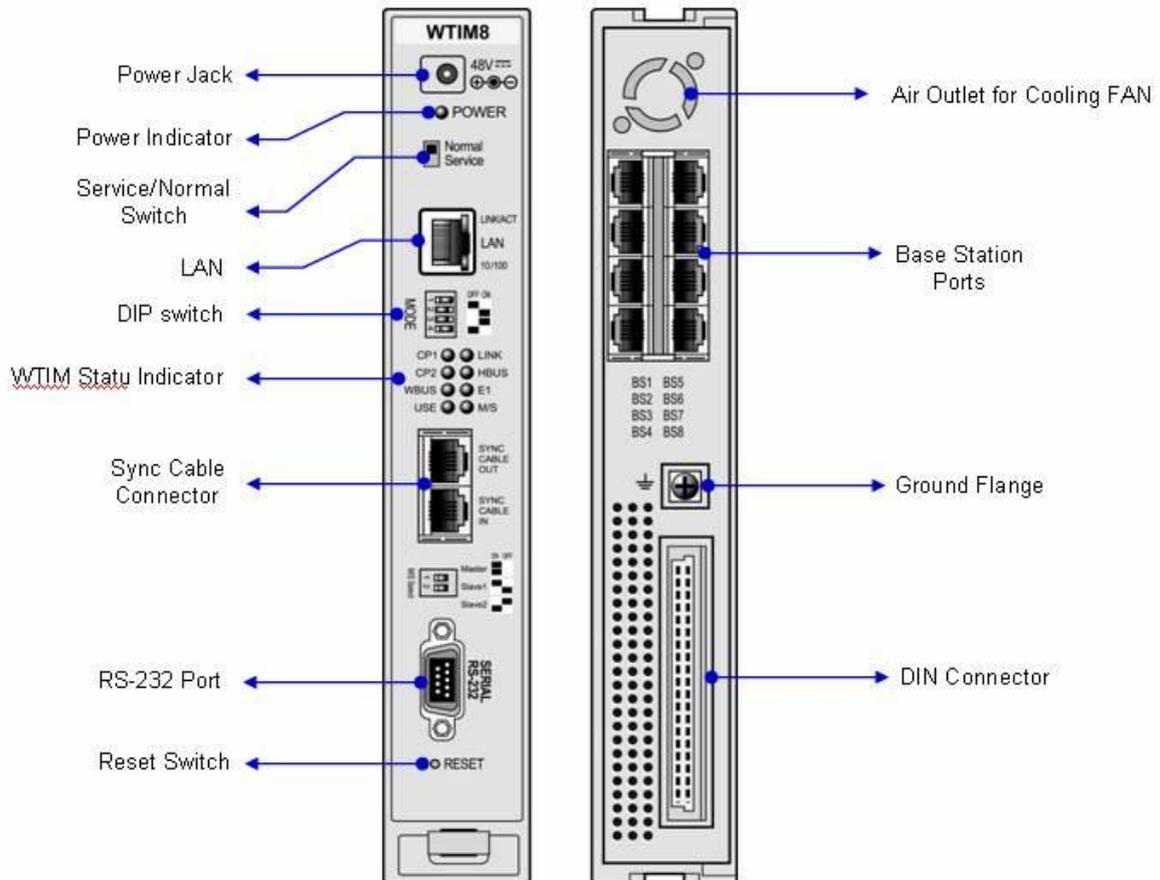


Figure 2 WTIM8 Front & Rear Panels

2. WTIMii installation

The WTIMii may be installed in any slot of the Main Cabinet, or may be installed anywhere in the Desk Mount Holder. The WTIMii provides a gateway between DECT handsets as like GDC-345H and GDC-400H and other iPECS appliances.

The WTIM4 can provides four (4) GDC-400B interfaces.
 The WTIM8 can provides eight (8) GDC-400B interfaces.

LEDs

In addition to the Power and LAN LEDs, the WTIMii has eight (8) status LEDs for each funtion(Refer to the LED definition for the detail).

Wiring Connectors

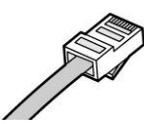
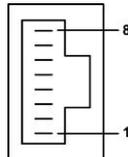
Before wiring any of the Modules, first connect the “” screw on the back of the Module to a known ground.

On the front of the WTIMii is the RJ 45 type “LAN” connector. This connector should be wired to the appropriate LAN points.

CAUTION

- Wire “LAN” to a 10/100 Base-T switch, a POE8 or SHUB8 can be used, to connect to the LAN.
Before connecting to the LAN X port of an SHUB8, the appropriate switch for DTE power must be in the “OFF” position.
- Tag or number wiring for maintenance.

Pin assignment

Connector	Pin Number	NO	SIGNAL NAME	FUNCTION
		1, 2, 7, 8	RESERVED	
		3	RX+(GND)	Receive Data
		4	TX-(+30V)	Transmit Data
		5	TX+(+30v)	Transmit Data
		6	RX-(GND)	Receive Data

The above table shows the pin assignment of each RJ45 on the rear panel of WTIMii.
 The pin number 3 and 6 of each base station port is connected to the circuit ground(GND) of WTIMii, and the pin number 4 and 5 is connected to the DC power(+30V) of WTIMii. So, the base station receives DC power from WTIMii when the base station is connected to the base station port.

Category 5 cable should be used to connect between WTIMii and GDC-400B.

It is not possible to connect between WTIMii and GDC-400B through the Main Cabinet back-plane.

- Wire using another CAT5 cable between each RJ-45 on rear panel of WTIMii and the termination point/MDF connected to GDC-400B with CAT5 cable
- Tag or number wiring for maintenance.

AC/DC/Adapter

Assure the AC/DC Adapter is plugged into a live AC outlet and the Module Power jack.

WTIM cascading

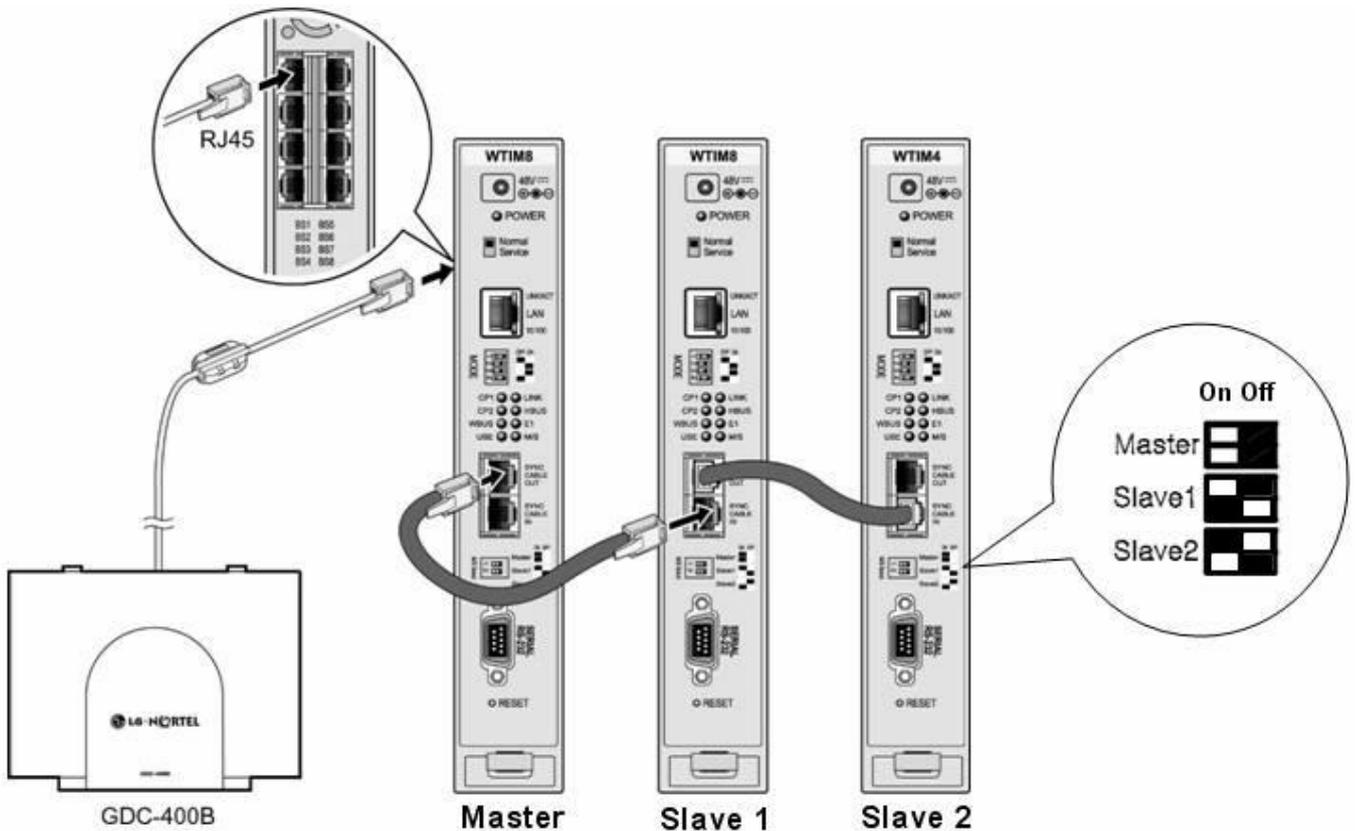
WTIMⁱⁱs should be connected with link cable one another to make it possible to handover between GDC-400Bs connected to each WTIMⁱⁱ. Cascading connection of up to **three (3)** WTIMⁱⁱs is possible irrespective of the kind of WTIMⁱⁱ.

Please follow the procedure for cascading WTIMs.

- (1) Connect the link cable(s) with all WTIMs as shown below.
- (2) Power on all WTIMs.
- (3) Press the reset button of the master WTIM.

Note that hot plugging is not recommended when connecting between WTIMⁱⁱ with link cable.

The next figure shows how to connect WTIMⁱⁱs for cascading WTIMⁱⁱ.



• **Base Station (GDC-400B)**

The base station should be installed indoors and protected from surge because it is designed for indoor station.

Each base station provides similar coverage for a particular area call as a cell, and supports 4 simultaneous calls (4 traffic channels). However, since individual wireless terminals are not continuous in call, the system may support more than 4 wireless terminals

- **Wireless Terminal (GDC-33xH, 34xH, 400H)**

Maximum 254 wireless terminals (in iPECS-300/600), 72 wireless terminals (in iPECS-100) can be registered.

Base station Specifications

Item	Specification
Power feeding	+30V DC
Transmission Max Power	250mW
Access Method/Duplex	TDMA/TDD
Frequency Band	1,880 ~ 1,900MHz
Channel Spacing	1.728MHz
Modulation	GFSK
Data rate	1.152Mbps
Max. Base Station distance from the WTIM	600m (Recommended CAT5 cable or CAT3 cable)

Wireless Terminal Specifications

Item	Specification
Max. Transmission Power	250mW
Modulation Method	GFSK
Frequency Band	1,880MHz ~ 1,900MHz

3. Installation

- Site planning of base stations.
- Installation of the WTIM4/8.
- Installation of the base stations.
- Install the ferrite core and wiring.
- User subscription/de-subscription

3.1 Site planning of base station

The purpose of this part is to provide you with information and explain tasks that you should complete to ensure the best operation of the system. Read the following information before installing the unit.

CAUTION

The base station should be installed indoors and protected from surge because it is designed for indoor station.

3.1.1 CELL-COVERAGE REGION SURVEY

This part explains the measuring procedures to determine the cell-coverage region with the GDC-400H Cell Tool Mode. The temporal positions of Base Stations should be determined prior to this measurement according to the "Installation Manual". The position will be adjusted with the measurement result, if necessary. The GDC-400H supports CRS function from Software version 2.xxx and refer to the "GDC-400H User guide" for the detail functions.

3.1.2 Hunting the Positions of Base Stations Tentatively

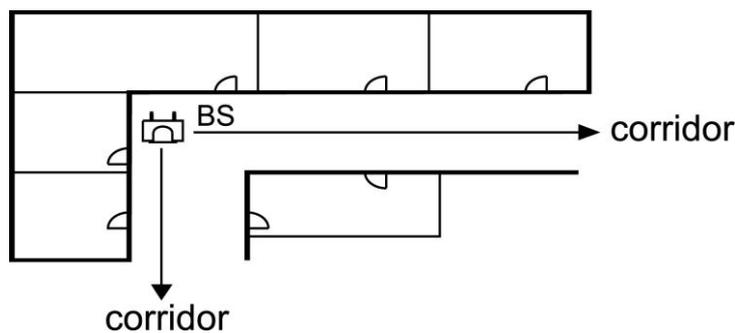
- 1) **Get the broadcasting range of a base station.** In a typical office environment, the radius of the cell supported by a base station is approximately 15 ~ 30 meters. If it is an open area inside of a building like a factory, the radius will be 20 ~ 50 meters. These figures, however, are truly dependent on the office characteristics (e.g. construction material of walls, existing of metallic objects, doors, windows, etc), and make sure get to know the broadcast range for each office characteristic.
- 2) **Get the plane drawings of the building.** First, understand the general constructing materials of the walls, doors, windows, or etc. The materials of the building are main factors of attenuation of the RF signals. Then, mark the position of the offices where the wireless handsets (GDC-345H and GDC-400H) will be used mainly, and mark the places where have high call demands. It means that these areas should be well covered by the base stations.
- 3) **Roughly determine the number of the base stations and the positions** according to the above tips.

General guidelines for installation (1)

- Place the base stations to **maximize direct line of sight..**
 - *Mount base stations as high as possible.*
- Place the base stations to minimize obstructions near antennas.
 - *Antennas on wall-mounted base stations should be parallel to the wall.*
- Do not place the base station near metal material.
- Centralize the base stations within the area that you intended to cover.
- In high traffic area, install another base stations required to meet the estimated traffic demand.
 - *There is no problem between base stations that are mounted near each other.*
- In multi-story building, it is desirable to plan coverage for each floor separately.
- Place base stations 1.8 meter above from the floor and 0.5 meter below the ceiling.

General guidelines for installation (2)

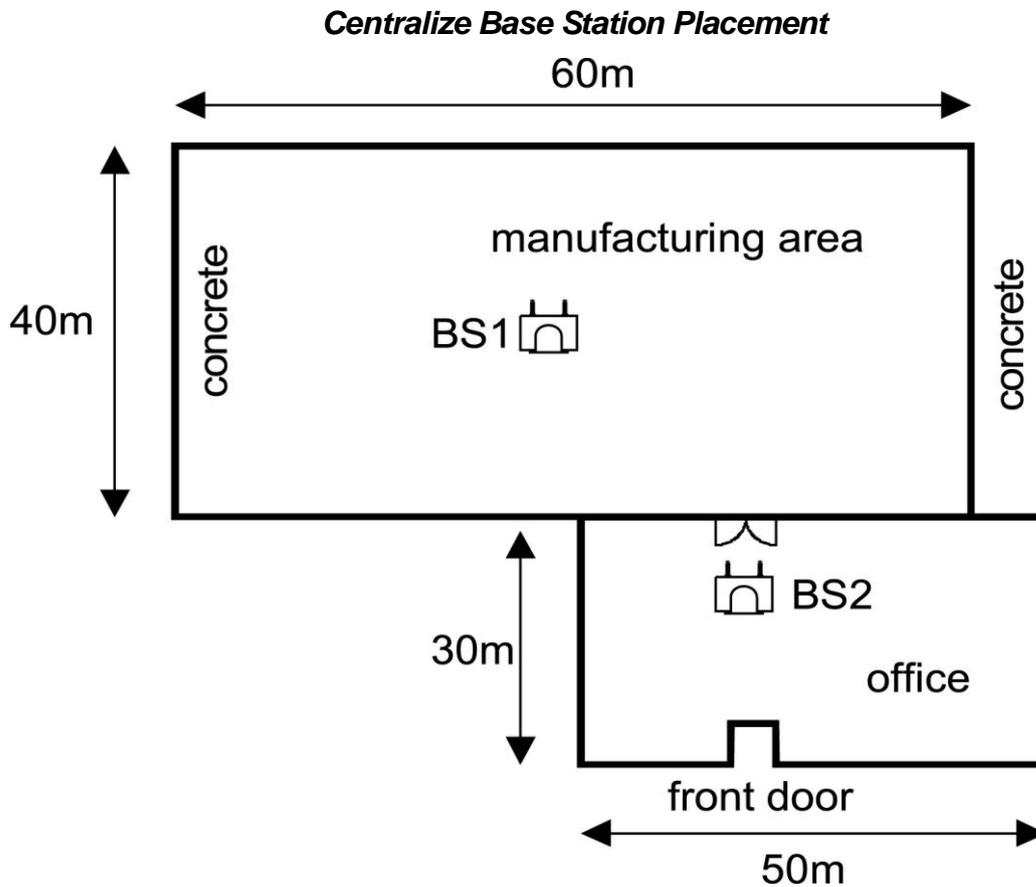
- Fading
 - Attenuation caused when a signal is reflected and receiving antenna receives multiple instances of the signal. Direct signal is always stronger than a reflected signal.
 - Base station is designed with two antennas and chose the best suited antenna (Antenna Diversity).
 - maximize the Line of sight to minimize the effect of signal fading.



Maximize Line of Sight

General guidelines for installation (3)

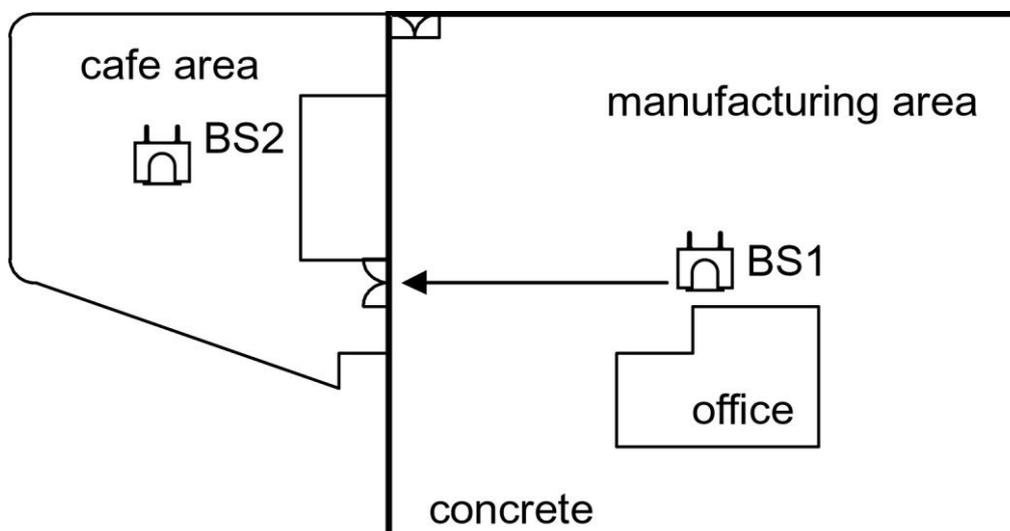
Example 1



General guidelines for installation (4)

Example 2

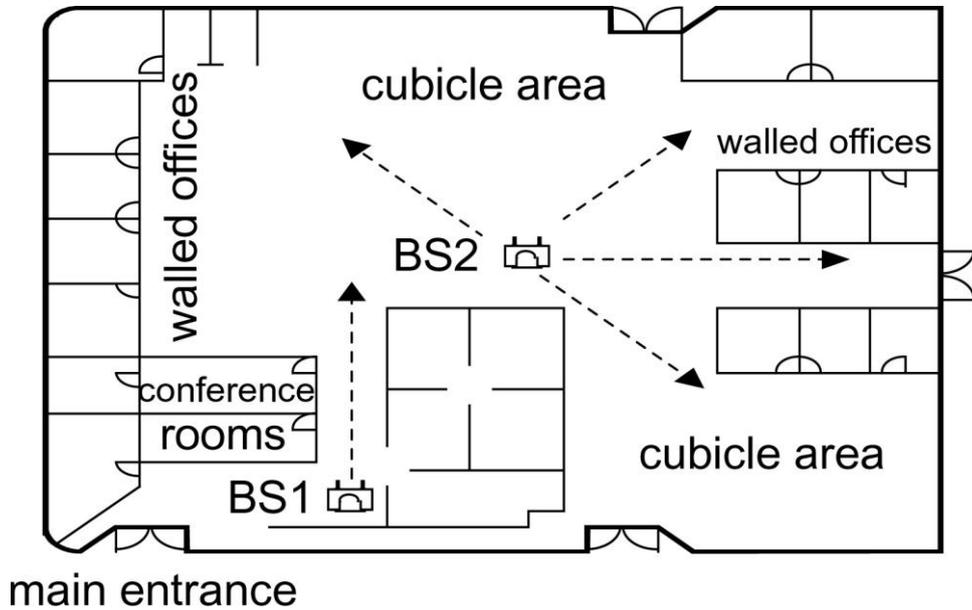
Base Station Aligned with Corridor to Adjoining Area



General guidelines for installation (5)

Example 3

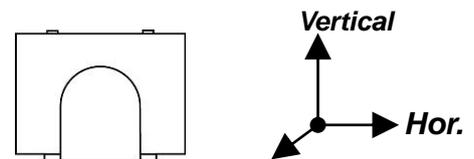
Maximizing Line of Site



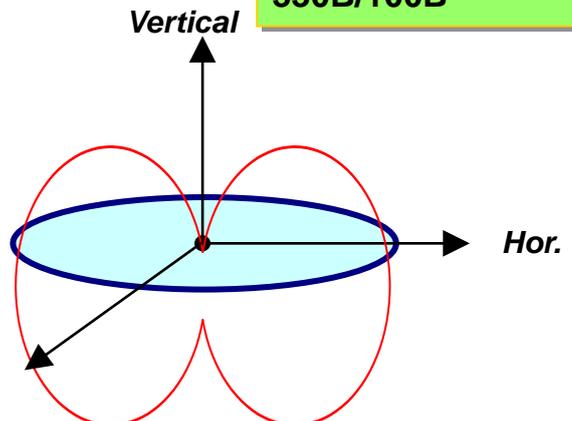
General guidelines for installation (6)

Consider the Office Environment

- Broadcast range is dependent on the office environment
- Line of sight : 300 metres in radius
- In Hall : 40 ~ 70 metres
- In building : 25 ~ 40 metres
- Consider high traffic area and the number of wireless terminal users.



Antenna Field Pattern of GDC-330B/100B



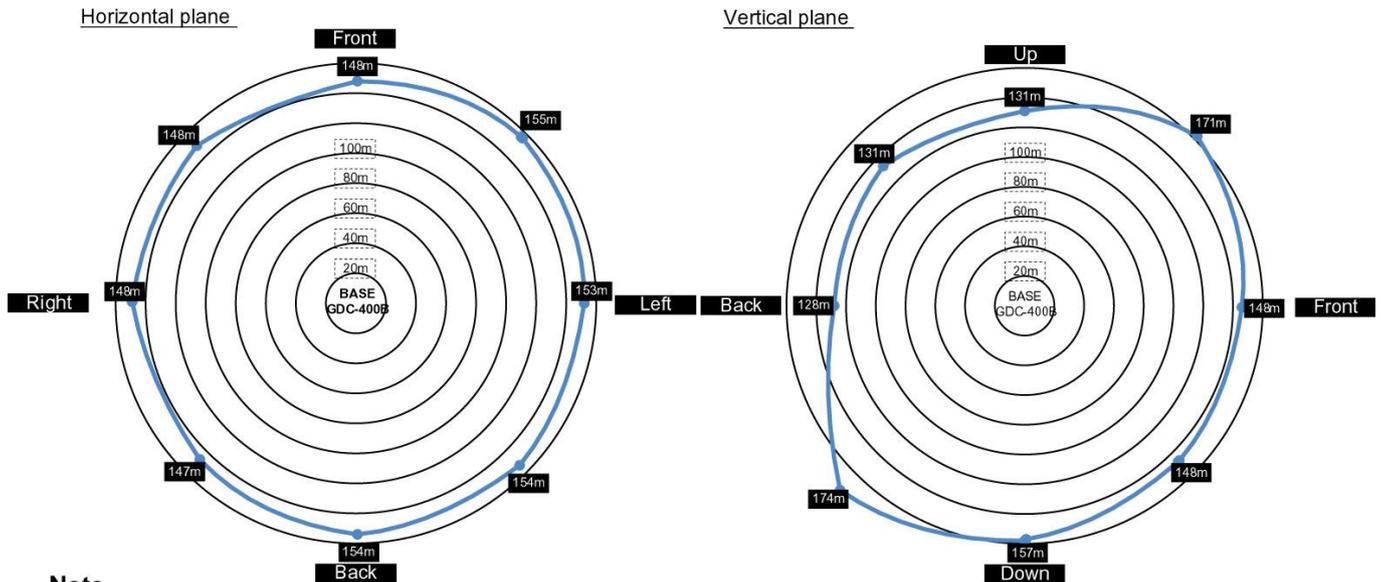
Consider the Antenna Field Pattern

- note any large metal objects

Note : At lower part of antenna , Antenna Field is bigger than at upper part.

General guidelines for installation (7)

GDC-400B Beam Pattern



Note

Each radiation distance was measured at about -65dBm point with the base rotated at the 45 degree interval.

Installation(1)

Preparation

- * Use a fully charged battery for GDC-345H or GDC-400H.
- * Get the plane drawing of the building.

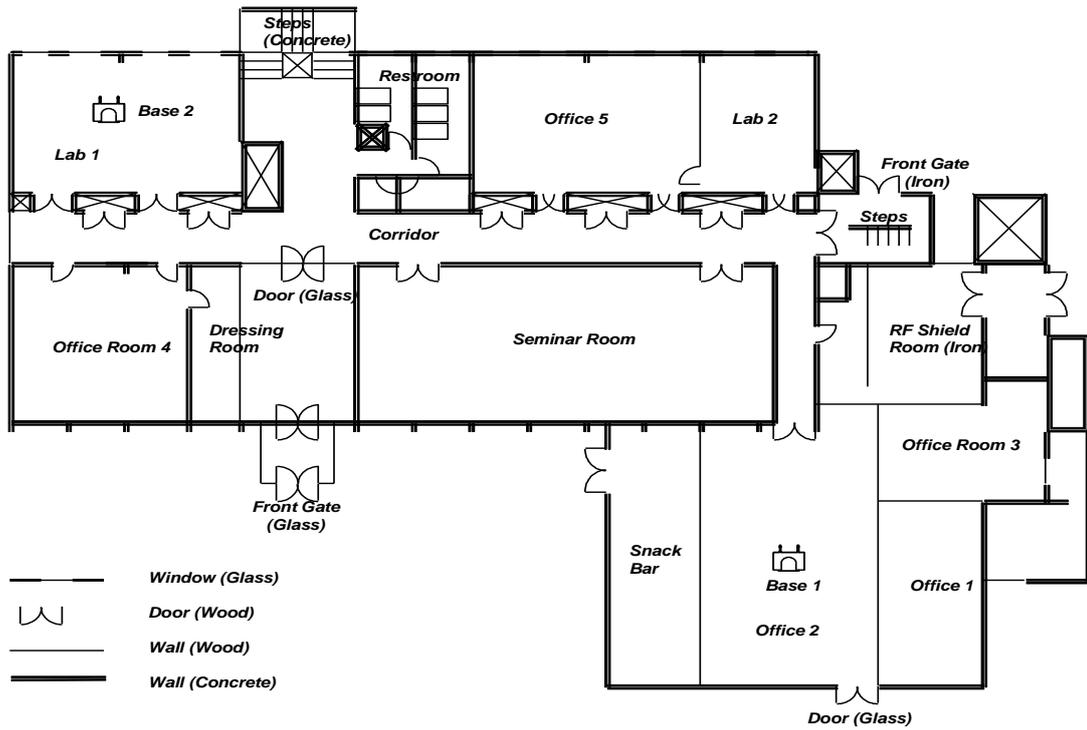
- Step 1. Hunting the Position of Base Stations

- 1) Consider the broadcasting range of a base station.
- 2) Check building material and thickness.
- 3) Roughly determine the number of the base stations and the positions.

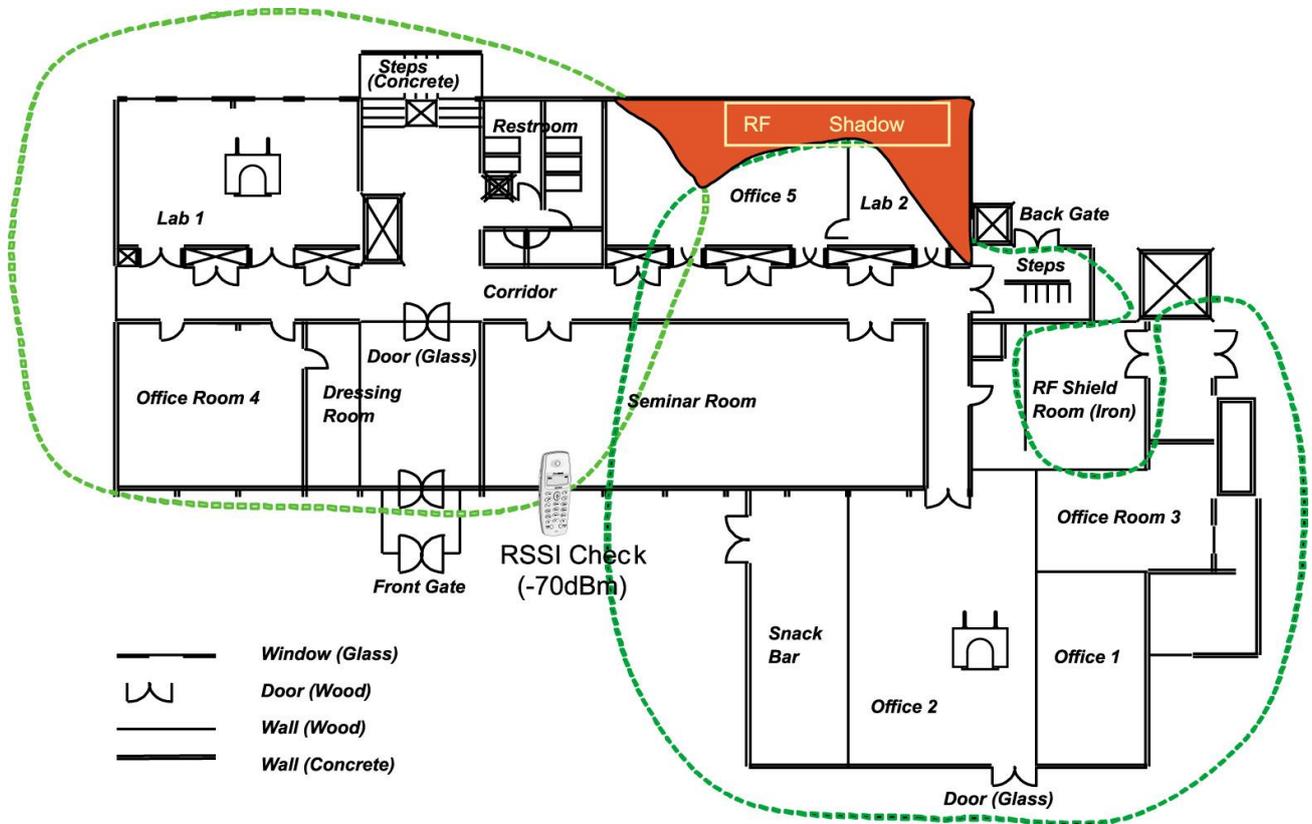
- Step 2. Drawing the Cell-Coverage Region Map

- 1) Mark testing positions on the plane drawing.
- 2) Check the other DECT system power off near the building to install.
- 3) Give a system ID of the GDC-345H or GDC-400H and set the GDC-345H or GDC-400H to Cell tool.
- 4) Start the base station installation from most complicate position of the base candidate position.
- 5) RSSI checking for a traffic channel.
- 6) Repeat the step 8) in all of the selected positions for the base station.
- 7) Plot limit line(Nominal Value : -70dBm) for it.
- 8) Adjust test position which you marked on the plane drawing.
- 9) Install base station at another candidate position and repeat step 8) to 11).
- 10) Check shadow area on plan drawing.
- 11) Adjusting the Cell-Coverage Regions.
- 12) Consider traffic 5 calls per cell add to plan.

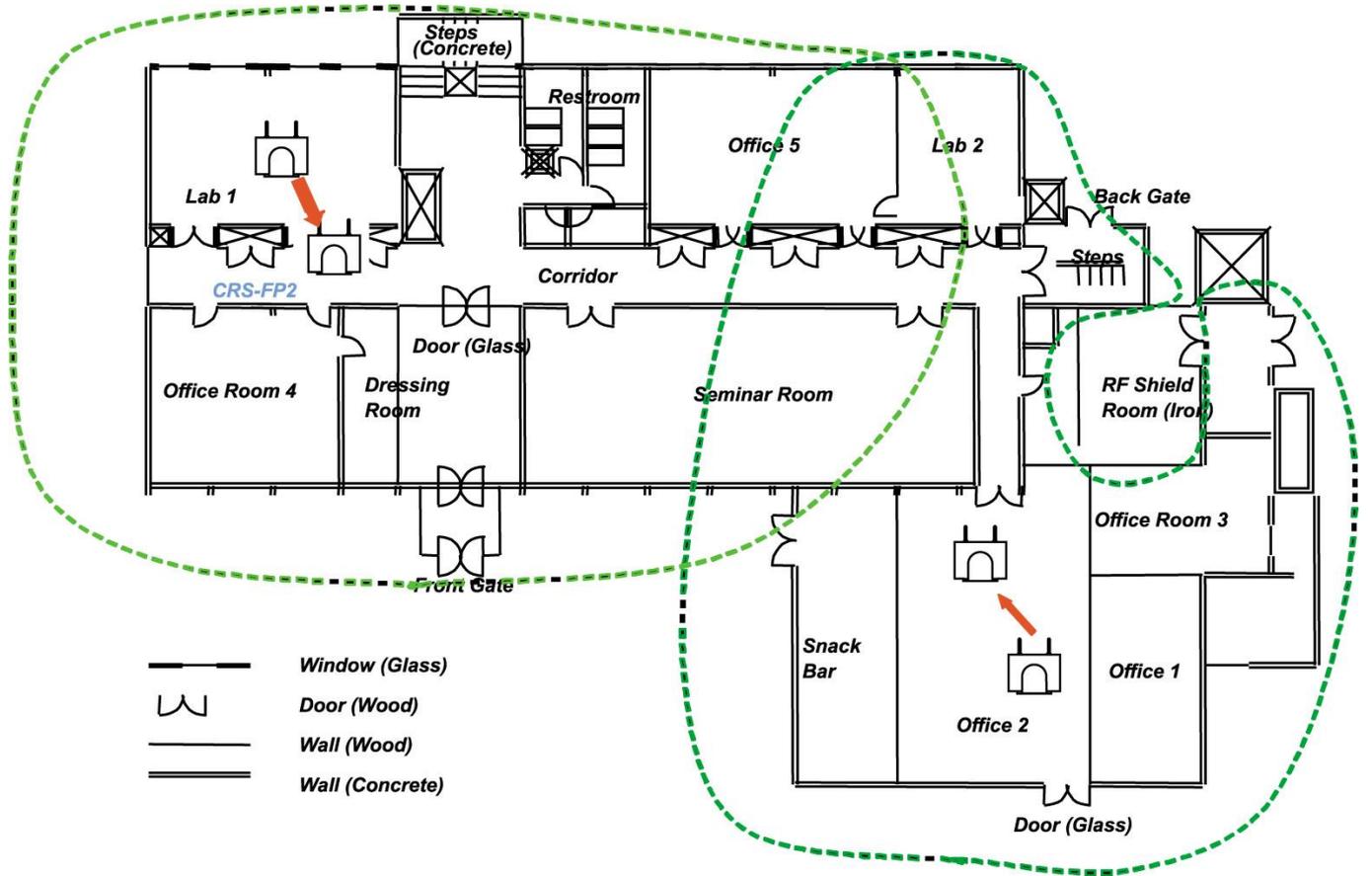
Temporal Positions of the Base Stations



Cell Boundary Map for Base 1 & Base 2



Adjusting the positions of the Base 1 & Base 2

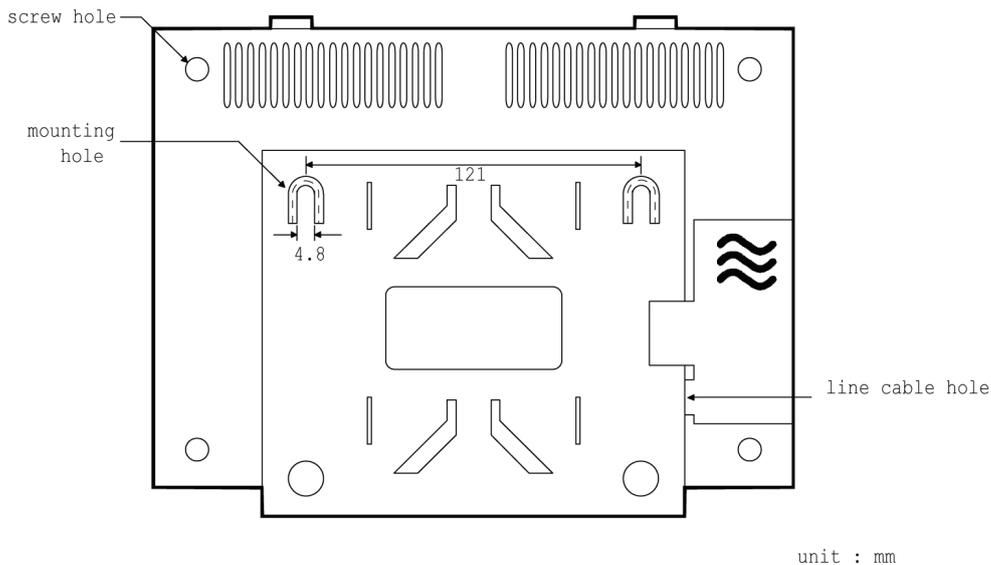


3.2 Base Station Installation

There are two ways in installing the base station:

Mounting Base Station - 1

The weight of a base station is light as approx. 460g, so it can be mounted on a masonry or dry-wall surface, wooden wall, or partition wall. The distance between mounting holes is 121mm as shown below. The base station is mounted with 1 1/2 inch or longer screws. Drill pilot holes in the two locations, insert the screws and tighten leaving about 3mm gap between the wall and screw head. Mount the base station on the screws and tighten the screws securely.



Detail mounting hole

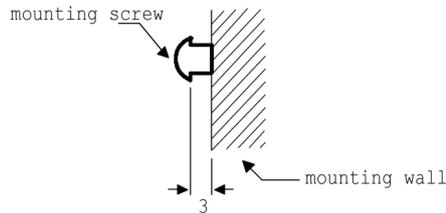
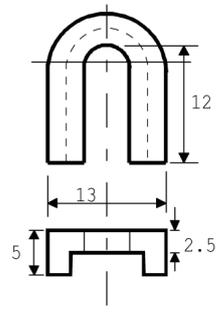


Figure The back side of the GDC-400B

Before mounting base station permanently, you should determine locations that provide the best coverage. The wall mounting procedure of a base station is as follows:

1. Drill two 3.5mm holes in a fixed wall. To properly position the holes, you can use mounting template that is the last sheet of this manual and copy it if necessary.
2. Insert anchors into the drilled holes. Then insert screws in the anchors, leaving a 3mm gap between the wall and screw head.
3. Mount the base station eyelets on the screws.

Mounting Base Station - 2 (Using Wedge)

Installing the Base Station using the wedge,

1. Determine at first the location on wall where the wedge prepared for mounting the base station is to be fixed.
2. The wedge should be settled by using two screws on the wall with mounting template.
3. And insert the base station pulling down into the wedge.

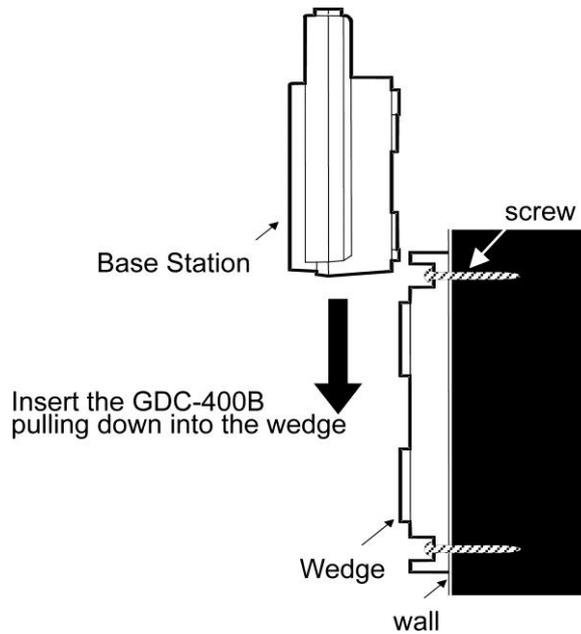


Figure The side of the GDC-400B

Before mounting base station permanently, you should determine a suitable location providing the best coverage. Use the last sheet of this manual for mounting template to drill pilot holes in the wall. Base stations may be mounted on wall or desktop up to 600m away from the WTIM4/8 using a dedicated CAT5 cable. They are remotely powered (DC 30 volts) by the WTIM4/8. The number of base stations used in a system depends on the area to be covered and the traffic density. The typical in-house coverage is a 40m radius. In practice the cell size may vary between 10 meters indoor in worst cases situation and up to 200m outdoor in free space.

LED indications

GDC-400B

LED	Meaning	Normal State
LED 1	Normal operation of FPGA (U14). FPGA controls the base station including Master/Slave BMC	Blinking (Red)
LED 2	Normal operation of Master BMC (U8). Master BMC controls the slot 0-5 of DECT frame	Steady(5sec) _ON and OFF (Red)
LED 3	Normal operation of Slave BMC (U9). Slave BMC controls the slot 6-11 of DECT frame	Steady(5sec) _ON and OFF (Red)
LED 4	PWR_ON	Steady _ON (Red)

Traffic Guidelines**GDC-400B**

Each base station supports 4 simultaneous calls, but because all users are not simultaneously in call statistically, a base station can support a greater number of wireless terminal users in practice.

Number of Cell (Base station)	Number of maximum Simultaneous Wireless Conversation
1	4
2	8
3	12
4	16
:	:
:	:
23	92
24	96

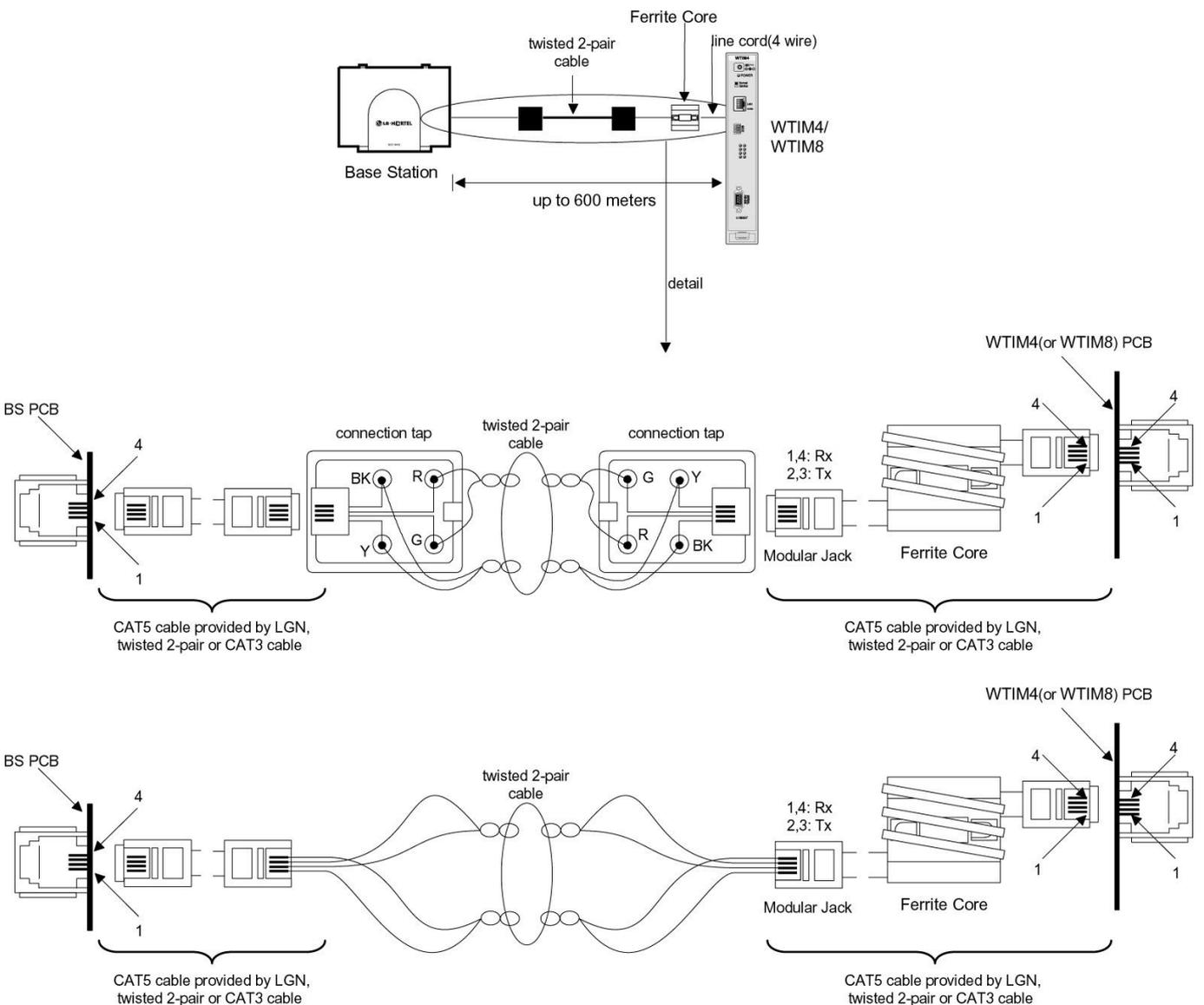
3.2.1 Installation of the Ferrite core and wiring

Ferrite core is provided in the package of Base station for EMI. Ferrite core should be installed when WTIM4/8 is installed in the key telephone system. One Ferrite core in the package of base station is for line cord between base station and each port of WTIM4/8.

GDC-400B

Connecting Base(GDC-400B only) with WTIM4/8

- 1,4 pin of RJ 11 are HDB3-coded 2.048Mbps RX Signal (WTIM4/8 <-- Base, GND level).
- 2,3 pin of RJ 11 are HDB3-coded 2.048Mbps TX Signal (WTIM4/8 --> Base, +30V level).



3.3 User subscription/description

A. System ID

Description

System ID is given to the attached the wireless GAP terminal for identification. System ID, which is PARK(Potable Access Rights Key), is written on WTIM.

PARK: 31100013411741

Authentication Code as well as system ID can be entered at attendant station or Web-admin, before you begin to subscribe wireless terminal (GAP) to the system.

Operation

✧ In case of confirming system ID

1) At attendant station

[Trans/Pgm]

 + 0 # + Flex. Button 4

- ① If you press the [Trans/Pgm] button, [Trans/Pgm] LED will flash(60 IPM Flash) and [On/Off] LED will be turned on. Then you can enter then user program mode.
- ② Press ' 0, # '.
- ③ Press Flexible Button 4.
- ④ Current PARK code will be displayed in LCD.

✧ In case of entering system ID

1) At attendant station

[Trans/Pgm]

 + 0 # + Flex. Button 6 + System ID(PARK) + [Hold/Save]

CAUTION

Normally you should not change the system ID. If you should change it, please contact LG-Nortel or local dealer in your country.

- ① If you press the [Trans/Pgm] button, [Trans/Pgm] LED will flash(60 IPM Flash) and [On/Off] LED will be turned on. Then you can enter then user program mode.
- ② Press ' 0, # '.
- ③ Press Flexible Button 6.
- ④ Enter the system ID(PARK code).
- ⑤ After entering the PARK code, press [Hold/Save] button. Then you can hear confirm tone.

The key sequence of the PARK : LLP_____PC

LL : Two digits decimal representation of PARK length (Bit count)

P_____P : 11 octal digits representation of PARK

C : Check digit (It is calculated as the sum of each digit in the input stream multiplied by its position in the input stream, modulo 11; if the result is 10, this is represented by the “*”).

Conditions

- (1) You must program for system ID when you install the system.
- (2) If you program system ID, all data that were related to wireless features will be erased.

B. Authentication Code

Description

Authentication Code is entered at attendant station or Web-admin before you begin to subscribe wireless terminal (GAP) to the system.

Operation

✧ In case of confirming AC code

1) At attendant station

[Trans/Pgm] + 0 # + Flex. Button 3

- ① If you press the [Trans/Pgm] button, [Trans/Pgm] LED will flash(60 IPM Flash) and [On/Off] LED will be turned on. Then you can enter then user program mode.
- ② Press ' 0, # '.
- ③ Press Flexible Button 3.
- ④ Current AC code will be displayed in LCD.

✧ In case of entering AC code

1) At attendant station

[Trans/Pgm] + 0 # + Flex. Button 3 + AC Code(Max 8 Digits) + [Hold/Save]

The key sequence of the AC code : D_____D

D_____D : Up to 8 digits decimal representation.

- ① If you press the [Trans/Pgm] button, [Trans/Pgm] LED will flash(60 IPM Flash) and [On/Off] LED will be turned on. Then you can enter then user program mode.
- ② Press ' 0, # '.
- ③ Press Flexible Button 3.
- ④ Enter the AC code.
- ⑤ If you press the [Hold/Pgm] button, you will be heard confirm tone.

Condition

- (1) AC code is must be programmed for user subscription.
- (2) AC code must be programmed one time after system was installed. If you change AC code under system operation, it may not operate properly.
(Ex : Subscribed terminal may not receive the incoming call or not make an outgoing call)
- (3) If PARK value is changed, you must enter the AC code again.

C. User Subscription

Description

This procedure is for subscribing the wireless terminal to the system.

Operation

1) Attendant station

[Trans/Pgm] + 0 # + Flex. Button 1 + Station Number + Phone Type + [Hold/Save]

- ① If you press the [Trans/Pgm] button, [Trans/Pgm] LED will flash(60 IPM Flash) and [On/Off] LED will be turned on. Then you can enter then user program mode.
- ② Press ' 0, # '.
- ③ Press Flexible Button 1.
- ④ Enter the station number you want to assign.
- ⑤ Enter the phone type (LGN GAP : 1, Non-LG GAP : 2, GDC-34x and GDC-400H: 3).
- ⑥ Press [Hold/Save] button and confirmation tone is heard.
- ⑦ If succeeded, the attendant station will display " SUBSCRIBED: SUCCESS" on the LCD display.
- ⑧ **If failed(ether at attendant or at wireless terminal), repeat ③ ~ ⑥ steps of the attendant.**

2) At the wireless terminal(GDC-33xH)

[Function] + 0 + PARK code + [Redial] + AC code + [Redial] + FT No. + [Function]

- ① Press [Function(↔)] button.
- ② Press 0.
- ③ Enter system ID(PARK).
- ④ Press [Redial (☉)] button.
- ⑤ Enter AC code.
- ⑥ Press [Redial (☉)] button.
- ⑦ '1','2','3','4' or '_' are displayed on the LCD. A number means FT number that it is not occupied yet. The under-bar means the wireless terminal is already subscribed to the system. Therefore, the number of '_' means the number of subscribed system. If 4 under-bar are displayed on the LCD, that means no subscription is allowed any more. Enter FT number by pressing numeric key if any number exists. After selecting, it is possible to re-select FT number by pressing [Flash(R)] button to cancel selection.
- ⑧ Press [Function(↔)] button.
- ⑨ Success or failure of the subscription is notified with confirmation tone to the attendant and the wireless terminal.
- ⑩ If succeeded, the wireless terminal goes to an idle state and its station number is displayed.
- ⑪ If failed, repeat ③~⑥ steps of the attendant and ①~⑧ steps of wireless terminal.

The key sequence of the PARK : LLP_____PC

LL : Two digits decimal representation of PARK length (Bit count)

P_____P : 11 octal digits representation of PARK

C : Check digit (It is calculated as the sum of each digit in the input stream multiplied by its Position in the input stream, modulo 11; if the result is 10, this is represented by the "**".)

The key sequence of the AC code : D_____D

D_____D : AC value : Up to 8 digits decimal representation.

FTID : 1 ~ 4

3) At the wireless terminal (GDC-34xH : Auto subscription is provided only)

[MEMU/UP/DOWN] + 5 1 + select Base No + [OK] + AC code + [OK]

+ Display **SEARCHING** + Display **PARK**(last 12Digit) + [OK]

- ① Press **MENU** (**UP** or **DOWN**) button.
- ② Press **5** .
- ③ Press **1** .
- ④ Select base number (1~4) using **UP** or **DOWN** button and press **OK** button.
- ⑤ Enter AC code (up to 8 digits decimal representation) and press **OK** button
- ⑥ The wireless terminal tries to search for the register system and '**SEARCHING**' is displayed on the LCD. After searching the register system, **PARK(last 12digits)** value is displayed on the LCD.
- ⑦ If the **PARK** value displayed is right, press **OK** button. If the **PARK** value displayed isn't right press **UP** or **DOWN** button. And then the wireless terminal retries to search for the register system and '**SEARCHING**' is displayed again.
- ⑧ Success or failure of the subscription is notified with confirmation tone to the attendant and the wireless terminal.
- ⑨ If succeeded in subscription, the wireless terminal goes to an idle state and its station number is displayed.
- ⑩ If failed, repeat ③~⑥ steps of the attendant and ①~⑦ steps of wireless terminal.

4) At the wireless terminal (GDC-400H : Auto subscription is provided only)

[MEMU] Phone Register Subscription + select empty Base No + [OK]
 + Display **SEARCHING** + + Display **PARK** + [OK] + AC code + [OK]

- ① Press **MENU** button.
- ② Select **Phone Register** menu.
- ③ Select **Subscription** menu.
- ④ Select empty base number (1~4) using **UP** or **DOWN** button and press **OK** button.
- ⑤ The wireless terminal tries to search for the register system and '**SEARCHING...X**' is displayed on the LCD. After searching the register system, **PARK** value is displayed on the LCD.
- ⑥ If the **PARK** value displayed is right, press **OK** button. If the **PARK** value displayed isn't right press **No** button. And then the wireless terminal retries to search for the register system and '**SEARCHING...X**' is displayed again.
- ⑦ Enter AC code (up to 8 digits decimal representation) and press **OK** button.
- ⑧ Success or failure of the subscription is notified with confirmation tone to the attendant and the wireless terminal.
- ⑨ If succeeded in subscription, the wireless terminal goes to an idle state and its station number is displayed.
- ⑩ If failed, repeat ③~⑥ steps of the attendant and ①~⑦ steps of wireless terminal.

Condition

- 1) Wireless terminal must be subscribed to system for normal service.
- 2) The subscription is supported at the attendant or web-admin.
- 3) Another wireless terminal can be subscribed after one subscribing procedure.
- 4) If attendant want to subscribe wireless terminal that was subscribed already, it will be heard error tone.

D. User Desubscription I

Description

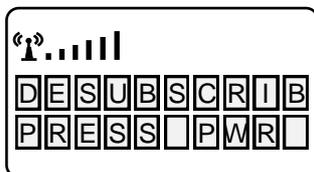
This procedure makes a wireless terminal loose access right to the system. To de-subscribe the wireless terminal, it should be in an idle state.

Operation

1) Attendant station

[Trans/Pgm] + 0 # + Flex. Button 2 + Station Number + [Hold/Save]

- ① If you press the [Trans/Pgm] button, [Trans/Pgm] LED will flash(60 IPM Flash) and [On/Off] LED will be turned on. Then you can enter then user program mode.
- ② Press ' 0, # '.
- ③ Press Flexible Button 2.
- ④ Enter the station number.
- ⑤ Press [Hold/Save] button and confirmation tone is heard.
- ⑥ Success or failure of the subscription is notified with confirmation tone to the attendant and the wireless terminal.
- ⑦ In case of the GDC-33xH, If succeeded in de-subscription, the below LCD message will be displayed. Power-off the wireless terminal



- ⑧ In case of the GDC-34xH, If succeeded in de-subscription, GDC-34xH tries to synchronize to next registered system. If there isn't next registered system, GDC-34xH displays "UNREGISTERED" on LCD.
- ⑨ In case of the GDC-400H, If succeeded in de-subscription, GDC-400H tries to synchronize to next registered system. If there isn't next registered system, GDC-400H displays "Not Subscribed" on LCD.

Condition

- 1) The de-subscription is supported at the attendant or web-admin.
- 2) Attendant can de-subscribe wireless terminals those were subscribed already.(If attendant try to de-subscribe un-subscribed wireless terminal, it will be heard error tone.
- 3) The de-subscribing procedure is supported only when wireless terminal is at the idle state.

* **Note:** If you want to do de-subscribe procedure at wireless terminal and attendant station independently, follow the procedure that described below.

E. User Desubscription II

Description

If you want to do de-subscribe procedure at wireless terminal and attendant station independently, follow

the procedure that described below.

Operation

1) At attendant station

✧ To erase all data those were subscribed.

[Trans/Pgm] + 0 # + Flex. Button 7 + Password(147*) + [Hold/Save]

- ① Press the [Trans/Pgm] button, [Trans/Pgm] LED will flash(60 IPM Flash) and [On/Off] LED will be turned on. Then you can enter then user program mode.
- ② Press ' 0, # '.
- ③ Press flexible button 7.
- ④ Enter password.
- ⑤ Press [Hold/Save], you will be heard confirmation tone.

✧ To erase a special wireless terminal

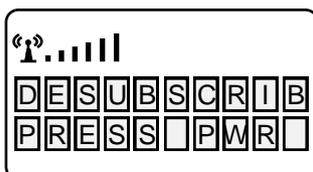
[Trans/Pgm] + 0 # + Flex. Button 8 + Station Number + [Hold/Save]

- ① Press the [Trans/Pgm] button, [Trans/Pgm] LED will flash(60 IPM Flash) and [On/Off] LED will be turned on. Then you can enter then user program mode.
- ② Press ' 0, # '.
- ③ Press flexible 8.
- ④ Dial station number that you want to de-subscribe.
- ⑤ Press [Hold/Save], you will be heard confirmation tone.

2) At the wireless terminal (GDC-33xH)

[Function] + 9 + 0000 + [Function] + Select Park number + [Function]

- ① Press [Function(↔)] button.
- ② Press 9.
- ③ Enter User PIN number "0000".
- ④ Press [Function(↔)] button.
- ⑤ Select PARK number with UP(▲), DOWN(▼) key.
- ⑥ Press [Function(↔)] button.
- ⑦ If the below LCD message is displayed. Power-off the wireless terminal.



3) At the wireless terminal (GDC-34xH)

[MENU(UP or DOWN)] + 5 + 2 + PIN Code + [OK] +▲ or ▼ (To select FP#) + [OK]

- ① Press **MENU**(UP or DOWN) button.

- ② Press **5**. (Or set '>' mark to '5 System' by pressing **UP(▲)** button or **DOWN(▼)** button and press **OK** button).
- ③ Press **2**. (Or set '>' mark to '5 UnRegister' by pressing **UP(▲)** button or **DOWN(▼)** button and press **OK** button).
- ④ Enter PIN code(0,0,0,0) *If a user has changed PIN code before, the changed one should be entered.*
- ⑤ Press **OK** button.
- ⑥ If necessary, press **UP(▲)** button or **DOWN(▼)** button to select FT number which is desubscribed. If the desubscribed FT number is displayed on the second line of LCD, stop pressing **UP(▲)** button or **DOWN(▼)** button.
- ⑦ Press **OK** button.

4) At the wireless terminal (GDC-400H)

[MEMU]	Phone Register	Subscription	+ select Base No +
R/C for longer than 1 second		[OK]	

- ① Press **MENU** button.
- ② Select Phone Register menu.
- ③ Select Subscription menu.
- ④ Select base number to delete locally.
- ⑤ Press **R/C** button for longer 1 second.
- ⑥ Press **OK** button to confirm.

* **Note:**

- ① GDC-34xH tries to synchronize to next registered system.
- ② If there isn't next registered system, handset displays "UNREGISTERED" on LCD.

F. DECT Registration in Web

The DECT features are supported in Menu - DECT Registration (PGM 0#) of Web-Admin.

The screenshot shows the IPECS web administration interface. The left sidebar contains a navigation menu with options like 'System ID & Numbering Plans', 'Station Data', 'Board Based Data', 'CO Line Data', 'System Data', 'Station Group Data', 'ISDN Line Data', 'Tables Data', 'Networking Data', 'RSGM Data', 'Tnet Data', 'Zone Data', 'Device Login', 'DECT Data', 'DECT Registration(PGM#)', 'DECT Attributes(P491)', and 'Initialization'. The 'DECT Registration(PGM#)' option is selected. The main content area is titled '[DECT (De)Subscribe]' and contains a table with the following data:

Attribute	Value	Button	Comment
Park Code	31100013403503	Save	
AC Code	2580	Save	
DECT Subscribe enable	110	Send	subscribe enable
Desired Station Phone Type	3 (34x/40x)	Send	
DECT Subscribe All Data Erase Password		Send	

3.4 RSSI Monitoring

This function helps that the dealer can install base stations without CRS instrument. The RSSI (Received Signal Strength Indicator) level of a base station to which the wireless terminal is locked is displayed as "dBm" value on the LCD (The limit is -70dbm.). This value is updated periodically.

This function operates when the handset is subscribed.

1) GDC-33xH

- ① Press FUNCTION (→) button.
- ② Press .
- ③ To enter Technician menu, press PIN code ('L','G','G','A','P' = '5','4','4','2','7')
- ④ Press FUNCTION (→) button.
- ⑤ Technician Main Menu is displayed on the LCD.
- ⑥ Press  (Or set '<' mark to '4 ShowRSS' to press UP(▲) button or DOWN(▼) button and press FUNCTION(→) button.)
- ⑦ (The RSSI value is displayed on the LCD and the value is updated periodically.)
- ⑧ Press FLASH button to return to Main Menu.

2) GDC-345H(from software version 2.xxx)

- ① Press **MENU**(UP or DOWN) button.
- ② Press .

- ③ Enter PIN code ('L','G','G','A','P' = '5','4','4','2','7')
- ④ Press **OK** button.
- ⑤ Press **0** button.
- ⑥ Press **UP(▲)** button or **DOWN(▼)** button to change CELL TOOL mode to 'YES" and press **OK** button.
- ⑦ Press **FLASH** button to view RSSI value that is updated periodically.

3) GDC-400H

- ① Press **MENU** button.
- ② Press * button.
- ③ Enter PIN code ('L','G','G','A','P' = '5','4','4','2','7')
- ④ Press **OK** button.
- ⑤ Select **Cell Tool Mode** menu.
- ⑥ Select "Yes" using **LEF/RIGHT** button and press **OK** button.
- ⑦ Press **END** button to view RSSI value that is updated periodically.

3.5 Upgrade of WTIM4/8 and GDC-400B Software Image

Description

This procedure is for Upgrading of WTIM4/8 and GDC-400B software image to use x-modem.

Operation

- WTIM4/8 Image Upgrade

Step1) Confirm cap of CON3 in WTIM4/8 (cap isn't offer basically)

(if connection state, means factory mode. if not means current (upgrade) mode

To upgrade, must remove cap)

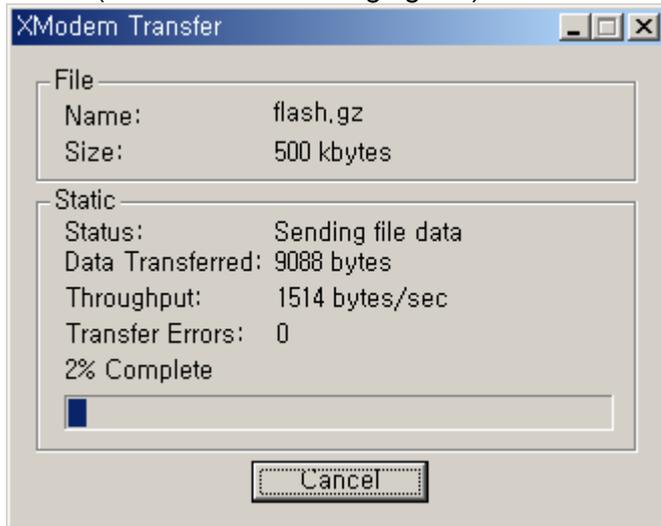
Step2) Operate PC monitor program and enter u-boot state.

(monitor environment : baudrate is 38400, Date bits is 8, Parity is none, Flow control is not use)

Step3) Enter "run upgrade" command as followed.

```
U-Boot 1.1.4 (Jun 10 2006 - 16:24:08)
CPU   : Nios-II
SYSID : 5e60b2a7, Tue Feb 14 07:51:18 2006
BOARD : WTIBE
Init LIU - chip rev:0x01
Manufacturer: AMD (Spansion)
Chip: AM29LV16DB
Hit Ctrl-C or Ctrl-Break to stop autoboot: 0
WTIBE# run upgrade
```

Step4) Select “transfer>send Xmodem” menu in monitor program and open “flash.qz” file
(confirm the following figure)



Step5) if Transfer procedure is completed (100%), copy to flash memory and boot start automatically

```

U-Boot 1.1.4 (Jun 10 2006 - 16:24:08)

CPU   : Nios-II
SYSID : 5e60b2a7, Tue Feb 14 07:51:18 2006
BOARD : WTIBE
Init LIU - chip rev:0x01
Manufacturer: AMD (Spansion)
Chip: AM29LV16DB
Hit Ctrl-C or Ctrl-Break to stop autoboot: 0
WTIBE# run upgrade
## Ready for binary (xmodem) download to 0x00B00000 at 38400 bps...
OFFSET : 00b00000
CCCCCCCC## Total Size      = 0x0007d300 = 512768 Bytes
SODIFF -- addr : 00b00000
## Start Addr      = 0x00B00000
## Decompress image : dst=0x00900000,dstlen=0x00200000,src=0x00b00000,lenp=0x0007d300
Un-Protected 2 sectors

**
Erased 2 sectors
Copy to Flash...
AMD Flash Copy: 0x00960000 => 0x00260000 size:0x00020000
Progress:100%done
Un-Protected 11 sectors

*****
Erased 11 sectors
Copy to Flash...
AMD Flash Copy: 0x00A30000 => 0x00330000 size:0x000B0000
Progress:100%done
Un-Protected 2 sectors

**
Erased 2 sectors
Copy to Flash...
AMD Flash Copy: 0x00AE0000 => 0x003E0000 size:0x00010000
Progress:100%done
Saving Environment to Flash...
Un-Protected 1 sectors
Erasing Flash...

*
Erased 1 sectors
Writing to Flash...
AMD Flash Copy: 0x00FB0008 => 0x00204000 size:0x00002000
Progress:100%done
Protected 1 sectors

U-Boot 1.1.4 (Jun 10 2006 - 16:24:08)

CPU   : Nios-II
SYSID : 5e60b2a7, Tue Feb 14 07:51:18 2006
BOARD : WTIBE
Init LIU - chip rev:0x01
Manufacturer: AMD (Spansion)
Chip: AM29LV16DB
Hit Ctrl-C or Ctrl-Break to stop autoboot: 2

```

* If you have some error of upgrade procedure, can return factory mode to connect CON3

Operation**- GDC-400B Image Upgrade**

Step1) Confirm completion of WTIM4/8 Image upgrading (refer above steps)

Step2) Enter u-boot state.

Step3) Enter “run basedown” command as followed.

```

=====
| WTIBE S/W Running (for DECT Fixed Part) |
=====

U-Boot 1.1.4 (Jun 10 2006 - 16:24:08)

CPU   : Nios-II
SYSID : 5e60b2a7, Tue Feb 14 07:51:18 2006
BOARD : WTIBE
Init LIU - chip rev:0x01
Manufacturer: AMD (Spansion)
Chip: AM29LV16DB
*** Warning - bad CRC, using default environment

Hit Ctrl-C or Ctrl-Break to stop autoboot: 0
WTIBE#
WTIBE#
WTIBE#
WTIBE#
WTIBE# run basedown

```

Step4) If download is success, can see followed figure
 (Attention!! each physical base has two bmc software
 “Link” means physical base, “Base” means bmc software)

ⁱ GDC-400B is a DECT base and classified as RFP(Remote Fixed Part) in DECT configuration.

ⁱⁱ The term ‘WTIM’ is used when the classification of WTIM4 and WTIM8 is not necessary in the manual.

WTIM install procedure

1. Turn off system power.
2. Connect link cable (Check which board is master, slave1 & slave2)
3. Turn on system power.
4. Clearly Reset master WTIM

NIOS in WTIM upgrade

1. Don't remove link cable
 2. Upgrade each WTIM
 3. Clearly Reset master WTIM
- To reset master is for confirming each WTIM recognize to cascade state by software and adapting new FPGA image (if FPGA needed to change)

3.6 Automatic Line Check Procedure

1. Install WTIBE(s) in the system and connect the base(s) to each port of WTIBE(s).
To check line status, all bases should already be connected to WTIBE(s).
2. Set all dip switch in WTIBE to ON state.
3. Power on the system. (Automatic Line Test Start)
4. During Test (5 minutes), All LED(1-8) blink (1sec LED On, 1sec LED Off).
5. After Test, LED show test result.

TESTING...	LED ON(1s) / OFF(1s)
OK	LED OFF
NOT OK	LED ON
BASE EJECT	LED ON(100ms) / OFF(100ms)

6. Also you can see the test state in realtime through WTIBE console

```

=====
* Welcome to LG-Nortel WTIBE Liu Test Program Ver 0.a *
=====
E1 Line Test Start !! 01minutes
During Test... 00:59
E1 Line Test End !!
Base eject [01]
Base eject [02]
Base eject [03]
Base eject [04]
Base eject [05]
LIU Error cnt1 : Link0=0000, Link1=6700, Link2=7229, Link3=8131
                  : Link4=8170, Link5=7475, Link6=0000, Link7=0000
LIU Error cnt2 : Link0=0000, Link1=9475, Link2=9646, Link3=4363
                  : Link4=2793, Link5=5563, Link6=0000, Link7=0000

```

- * Don't write any other things at WTIBE console during test.
- * It's meaningless to change dip switch during test (after changing dip switch, should be reset WTIBE).
- * If even 1 error happened, also display "NOT OK".
- * On line test (CTRL+U, ETST) still valid at this version.