

# INDIGO FWT 200

## User Manual



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## 1 Introduction

Thank you for purchasing CDMA Fixed Wireless Access (FWA). Please read this manual carefully before using the phone.

FWA uses CDMA2000 1X technology to provide you with both clear voice service and high-speed data service (up to 153.6kbps). In addition, FWA supports many other features, such as security, standard AT commands and extra AT commands set through serial interface provided by the product.

### 1.1 Contact Information

For questions or technical support regarding INDIGO FWT 200, please contact MAYBROOKE ENTERPRISES INC.

at:

Edificio Torre MMG, Piso 14, Calle 53E  
Urb. Marbella  
Panama City, PANAMA  
Apartado Postal 0831-01587  
Panama City - PANAMA  
Email maybrooke@ptycmd.com  
Tel +(507) 265 7691  
Fax +(507) 223-1467

### 1.2 FCC ID and FCC information

#### 1.2.1 FCC ID

FCC ID is UN3FWT-200E

#### 1.2.2 FCC information

This device complies with Part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference.

**NOTE:** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-- Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

### **1.3 Abbreviations and Acronyms**

DND	-	Do Not Disturb
FTW	-	Fixed Wireless Terminal
MMI	-	Man-Machine Interface
MO	-	Mobile Originated
MT	-	Mobile Terminated
RCL	-	Recent Call
R-UIM-		Removable User Identity Module
SMS	-	Short Message Service
SPK	-	Speaker
UTK	-	UIM Card Management Toolkit

## 2 Phone Overview

shows a bird view of CDMA FWA phone and Figure 2 depicts the keypad scheme of the phone.



Figure 1 CDMA FWA Phone

- |                |                     |
|----------------|---------------------|
| 1. LCD         | 10. LEFT/RIGHT key  |
| 2. Antenna     | 11. UP/DOWN keys    |
| 3. Contact key | 12. Speaker key     |
| 4. BACK key    | 13. Send/Redial key |
| 5. SMS key     | 14. R. CALLS key    |
| 6. Menu key    | 15. DND/MUTE key    |
| 7. CLEAR key   | 16. END key         |
| 8. SELECT key  | 17. Numerical Keys  |
| 9. OK key      |                     |



Figure 2 Key Pad Scheme



### 3 Basic Functions

The following table lists the basic functions CDMA FWA supports.

**Table 1 List of Basic Functions**

Functions	Remark
Voice Calls (MO/MT)	Support caller ID for incoming calls
Call Barring	Outgoing calls/Incoming calls
Phone Book	Store up to 200 entries in phone memory and 200 entries in UIM card memory
Recent Calls	Records for MO, MT, and missed calls
UTK	UIM Card Management
Phone Setting	Sounds, Display, Security, Network, Language, Call Forward, Call Waiting
Tool Box	Schedule, Alarm Clock
Phone Status	Display Software Versions and etc.
Message	Sending/Receiving SMS
Battery Management	Battery Charging, Battery Level Indication.
AT Commands	Standard
CDMA 1X Data Service	Up to 153.6kbps

## 4 Basic Operations

### 4.1 Power On/Off

#### 4.1.1 Power On

Hook up handset to your phone and put the handset to hang up position, then connect DC power supply to the "DC IN" port at the rear of the phone. Switch the "Power" switch (on the rear of the phone) to ON, wait for a few seconds, your phone should go to idle screen and is ready for use.

#### 4.1.2 Power Off

Turn the "Power ON/OFF" switch (on the rear of the phone) to OFF.

### 4.2 Make a Call

While your phone is on and at idle screen, enter a destination number you wish to call, then press "SND/RDL" key. (Note: To modify digits you enter, you can press "BACK/CLR" key to delete wrong digits first and then reenter new digits).

Once the call is connected, the phone's screen will display the number you have dialed, and the time duration the call has lasted.

The phone also has a speaker. To use the speaker to make a call, press "SPK" key, enter a phone number, and press "SND/RDL" key.

### 4.3 Receive a Call

When there is an incoming call, the phone will ring and display the phone number of the incoming call (if the number is available). You can pick up the handset or press "SPK" key to take the incoming call.

### 4.4 End a Call

You can always end a call by pressing "END" key. If you are using the handset for a phone call, hanging up the handset will end the call automatically. If you are using the speaker phone, pressing "SPK" key can terminate the call.

### 4.5 3 Ways call

Before you use the 3 ways call function, please apply the call waiting service from the local operator. You can make a call with your friend, and when you are talking with him/her, and input another number, then press "send" key, so you will talk with two friends at the same time.

### 4.6 DND/MUTE key functions

#### 4.6.1 DND function

During the calling, press "DND/MUTE" key, you can hide your voice so the listener can not hear your voice, but still you can hear the other side's voice.

**4.6.2 MUTE function**

When at the Idle screen ,press “DND/MUTE” key , you can not receive any call which you don't want to receive, but still you can make calls.

### 5 Idle Screen

After powered up, the phone will display the following idle screen in a few seconds:

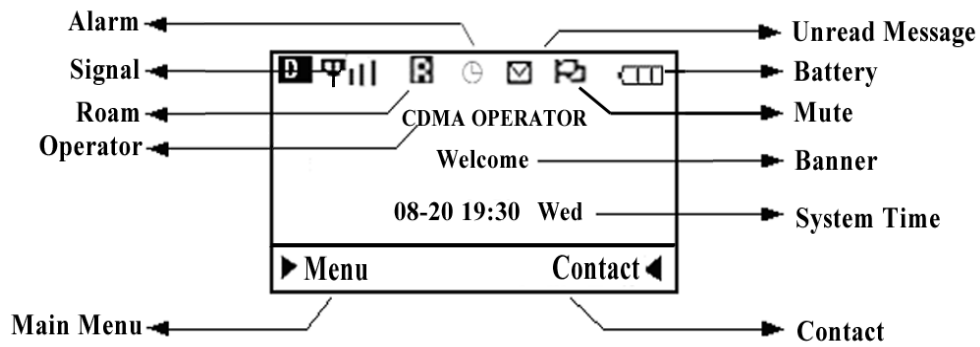


Figure 3 Idle Screen

## 6 Phone Menu

The idle screen displays: received CDMA signal strength, battery level, CDMA system time (the same as your local time), your CDMA operator name and banner, and some other useful information: for example, if you have unread short message, the message icon will be on.

### 6.1 Main Menu

At the bottom of the display (see Figure 4), there is an area called softkey area, in which there are two softkeys: Menu and Contact. Pressing Menu key will take you to the available application menu you phone supports. The main menu contains the following sub-menu items:

- 1) Contacts (Phonebook)
- 2) Messages
- 3) Recent Calls
- 4) Tools
- 5) Settings

The following diagram depicts CDMA FWA 's menu tree:

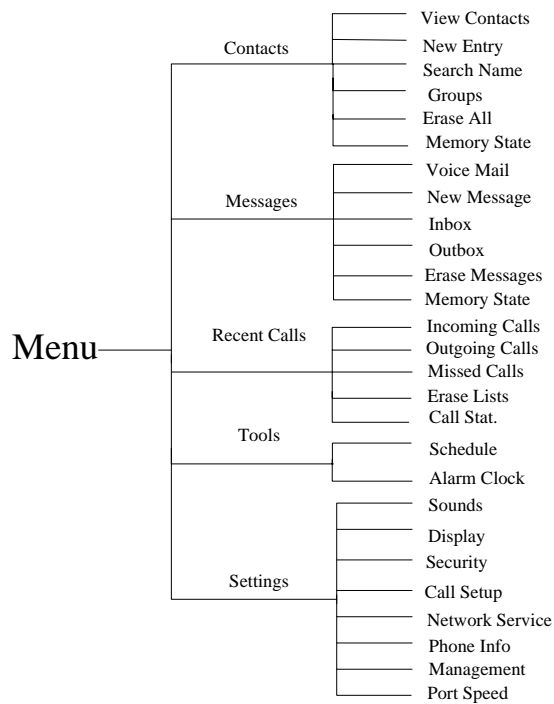


Figure 4 Menu Tree

## 6.2 Contacts (Phonebook)

Phonebook can be used to store a person's name and the person's phone numbers, mailing address, email address and internet address. You can store up to 200 phonebook entries to phone memory. If your phone supports UIM card, you can store an extra 200 phonebook entries to your UIM card.

Phonebook menu is depicted in the following diagrams:

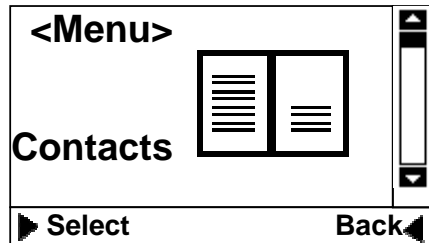


Figure 5 Phonebook: Menu -1

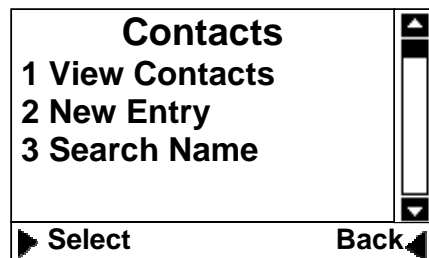


Figure 6 Phonebook: Menu -2

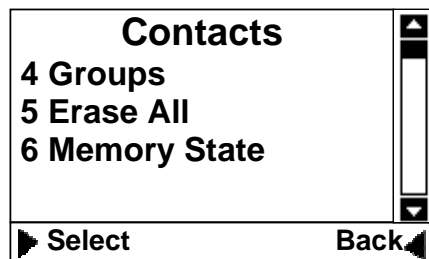


Figure 7 Phonebook: Menu -3

- 1) View Contacts: You can use this menu item to browse all phonebook records that are already stored. For each selected phonebook record, you can edit, delete the record or make a phone call.
- 2) New Entry: You can use this menu item to add a new phonebook record to the phonebook:

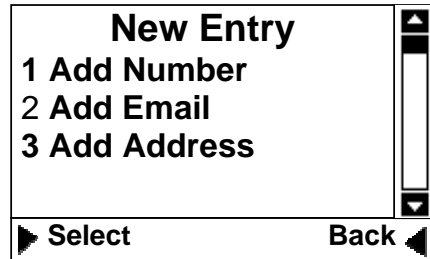


Figure 8 Phonebook: New Entry -1

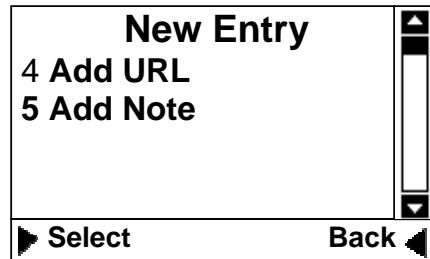


Figure 9 Phonebook: New Entry -2

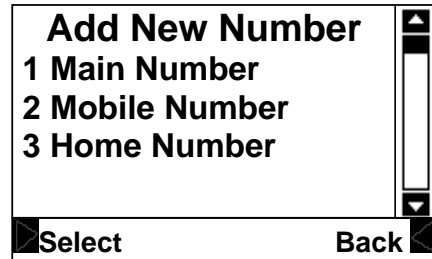


Figure 10 Phonebook: New Entry -3

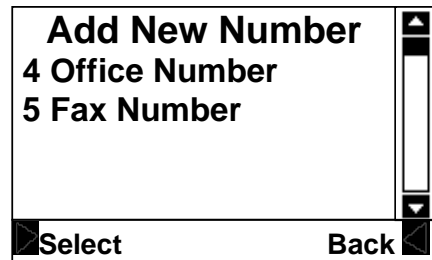


Figure 11 Phonebook: New Entry -4

- 3) Search Name: Using this menu item, you can search a phonebook entry by entering the name of the entry you wish to find.
- 4) Groups: You can use this menu item to group phonebook entries into six different groups: default, family, friends, colleagues, business friends, and classmates:

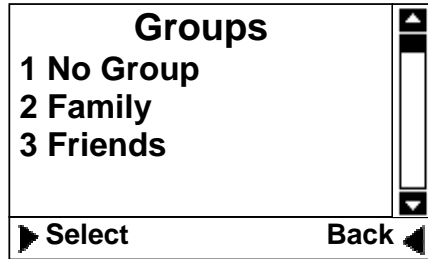


Figure 12 Phonebook: Group - 1

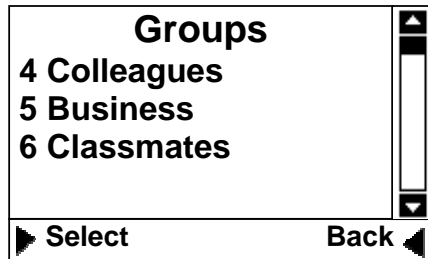


Figure 13 Phonebook: Group - 2

- 5) Erase All: Using this menu item, you can delete all phonebook entries from either phone memory or UIM card memory:

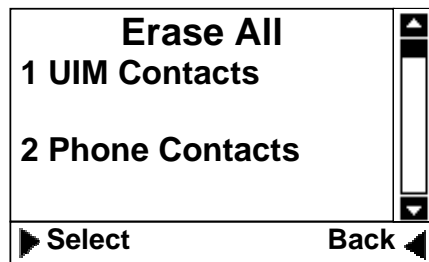


Figure 14 Phonebook: Erase All

- 6) Memory State: This menu can display the memory state of phone and UIM card.

### 6.3 Messages

The Message menu can be used to create messages, send out messages, view received messages, delete stored messages, extract and store phone numbers from messages, and reply messages. You can store up to 200 messages to phone memory and 40 messages to UIM card.

Messages' main menu and menu tree Message are depicted below:



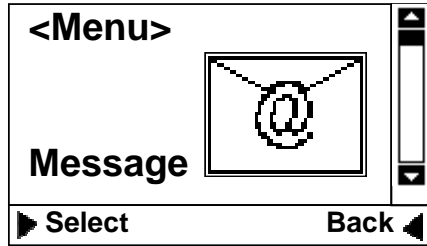


Figure 15 Message: Menu

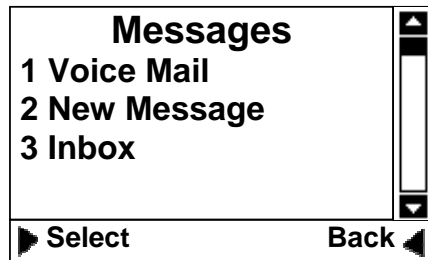


Figure 16 Message: Menu-2

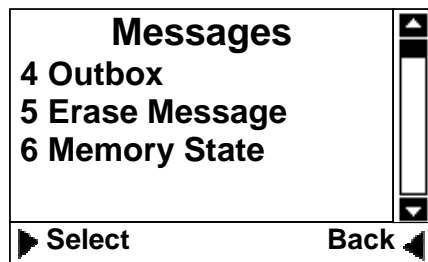


Figure 17 Message: Menu-3

- 1) Voice Mail: You can use this menu item to access your voice mail box (Note: you should get the access number from your service provider first).
- 2) New Message: You can use this menu item to create a new message and send out the message. The sent message will be stored to message outbox.
- 3) Inbox: You can use this menu item to view all of the messages you have received. For each message, you can delete, reply and forward the message. You can also store the sender's phone number and make a call to the sender.
- 4) Outbox: Outbox stores all of the messages you have sent out so far. The box can store up to 100 messages. For each message inside the outbox, you can delete, reply, or resend the message.
- 5) Erase Messages: You can erase messages from Inbox, Outbox, or All.
- 6) Memory State: This menu can display the memory state of phone and UIM card.

### 6.4 Recent Calls

The "Recent Calls" records information for all calls including incoming calls, outgoing calls, and missed calls.

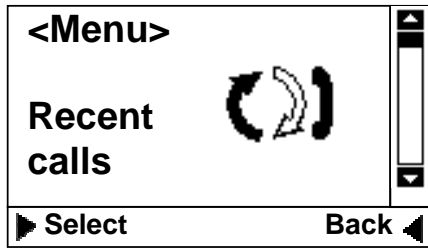


Figure 18 Recent Call: Menu - 1

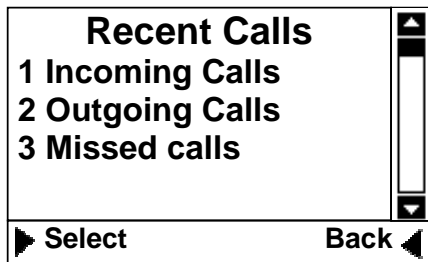


Figure 19 Recent Call: Menu - 1

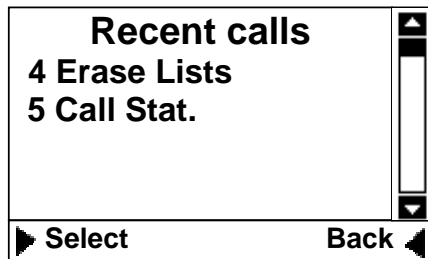


Figure 20 Recent Call: Menu - 2

- 1) Incoming Calls: All received calls' information can be accessed through this menu. For each incoming call entry, you can perform the following operations: save phone number show as Figure 21, reply to the caller, delete the entry, and send SMS to the caller.

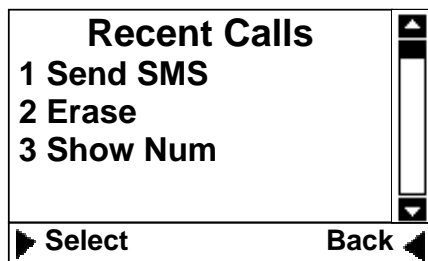


Figure 21 Recent Call: Incoming Call – 1

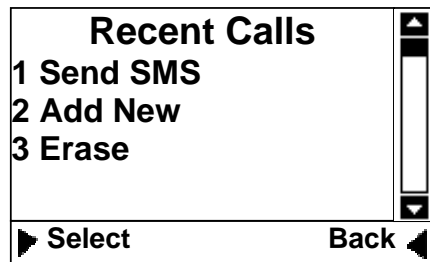


Figure 22 Recent Call: Incoming Call – 2

- 2) **Outgoing Calls:** The information of the calls you have made can be accessed through this menu. For each outgoing call, you can perform the following operations: store receiver's phone number, delete the entry, and send SMS to the receiver.
- 3) **Missed Calls:** This menu records all of the incoming calls you missed. For each missed call, the following information gets saved: the phone number of the missed call, the time when the call arrived.
- 4) **Erase Lists:** You can delete incoming calls, outgoing calls, and missed calls by using this menu:

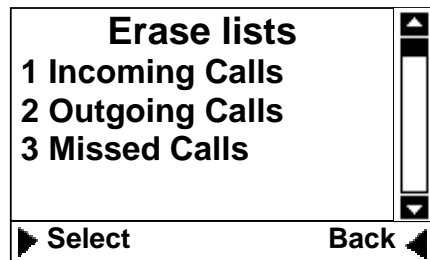


Figure 23 Recent Call: Erase All - 1

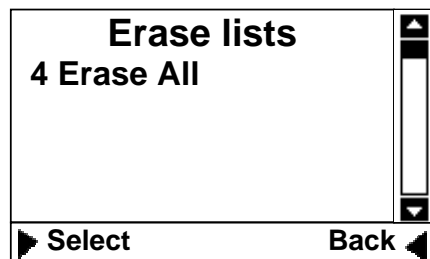


Figure 24 Recent Call: Erase All - 2

- 5) **Call Stat.:** This menu stores statistic data for all incoming calls and outgoing calls. The statistic data includes the total number of calls and calling time.

**6.5 Tools**

CDMA (FWA) FWA phones provides you with the following tools:

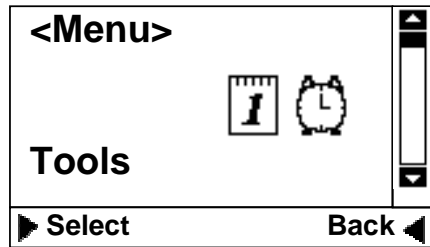


Figure 25 Tools: Menu-1

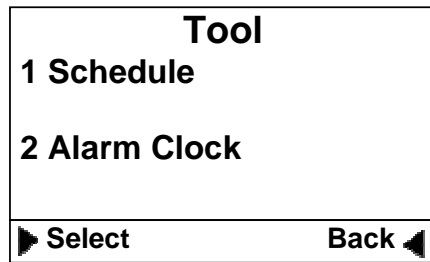


Figure 26 Tools: Menu-2

- 1) Schedule: The schedule can be used as an event reminder. Once a date has been setup for an event, the phone will start ring when the date is reached reminding you that there is an event coming up. Up to ten schedules can be set at the time. You can view, edit and delete any schedule.

**Comment [k1]:** The module will ring as a reminder to the user, when the programmed timer is off.

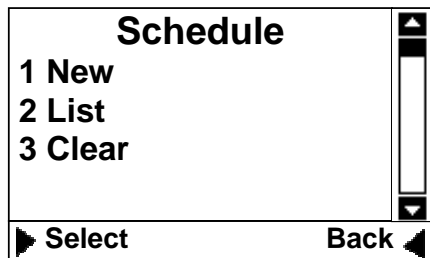


Figure 27 Tools: Schedule

- 2) Alarm: The function of this tool is the same as that of regular alarm clock.

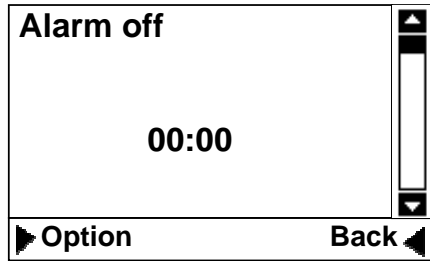


Figure 28 Tools: Alarm-1

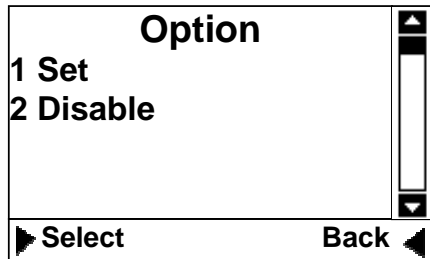


Figure 29 Tools: Alarm-2

## 6.6 Settings

You can use Setting menu to customize your phone's setup. The Setting menu is shown below:

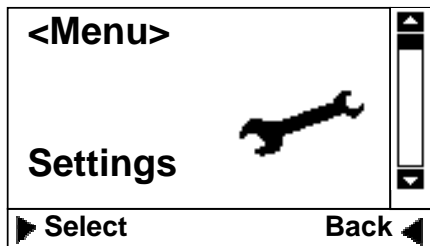


Figure 30 Settings Menu -1

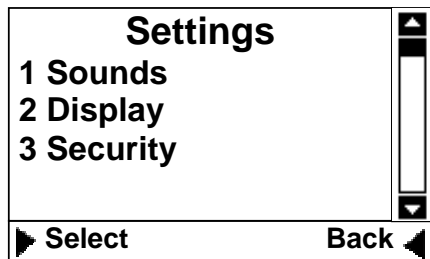


Figure 31 Settings-1

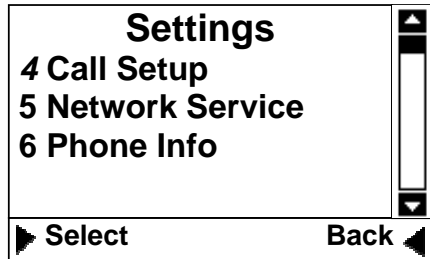


Figure 32 Settings Setting-2

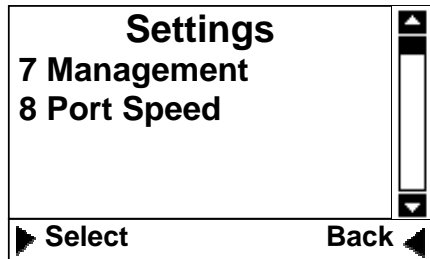


Figure 33 Settings Menu – 3

1. Sounds:
  - Ring Tone: You can select your preferred ring tone.
  - Volume: You can change the volume of ring tone, key press tone, handset tone, and speaker tone.
  - Alerts: You can set the alerting tones for service change, call connect, minute reminder (reminding you every minute during a call) and power on/off.
2. Display
  - Banner: Setting a banner on idle screen.
  - Backlight: Setting backlight's duration and contrast.
  - Contrast: Setting LCD's contrast
  - Language: Setting phone's language (English, Chinese, Spanish, etc.)

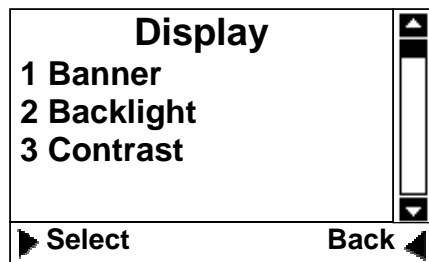


Figure 34 Setting: Display-1

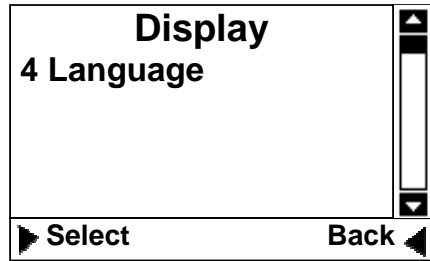


Figure 35 Setting: Display-2

### 3. Security

Before entering security menu, you will be prompted to input a valid password. The default password was set to 0000. You can change this password once you enter the security menu successfully.

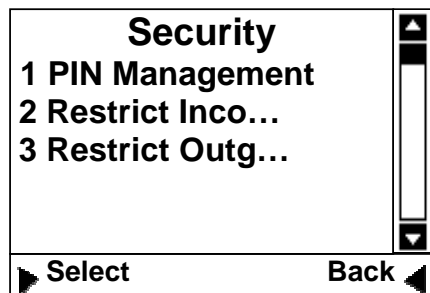


Figure 36 Setting: Security-1

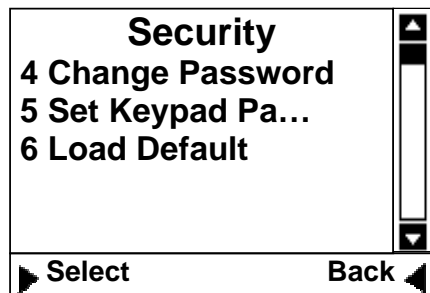


Figure 37 Setting: Security-2

- a) PIN Management: This menu allows you to enable/disable PIN and change PIN.

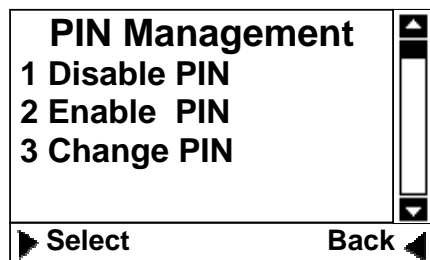


Figure 38 Setting: Pin Management

- b) Restrict Incoming Call: You can enter up to 10 phone numbers for restricted incoming calls.
  - c) Restrict Outgoing Call: You can enter up to 10 phone numbers for restricted outgoing calls.
  - d) Change Password: You can change your security password through this menu.
  - e) Set Keypad Password: You can change your keypad locking code. The default is 0000.
  - f) Load Default: This menu lets you reset your phone with the default values that come out from manufacture. This is very important feature. For the case that when you think that your FWA is not working the way as you expected, you can always use "Load Default" to re-set your FWA to its default setting.
4. Call Setup: This menu allows you to set call answer mode, which include:
- a) Auto Answer: Allows you to answer incoming calls automatically.
  - b) Answering Selection: Allows you to select preferred greeting voice message when you are unable to answer an incoming call.
  - c) Voice Privacy: Turning on "Voice Privacy" can enhance the security of the your call. When this feature is on, your voice call will be encrypted.

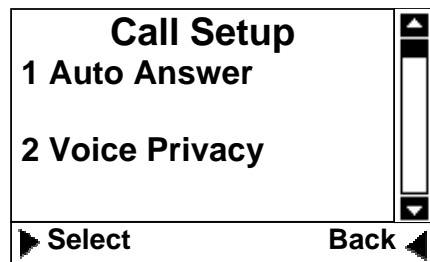


Figure 39 Setting: Call Setup

5. Network Service

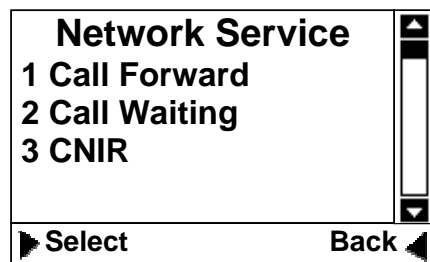


Figure 40 Setting: Network Service

- a) Call Forward: You can forward incoming calls to a designated phone number. You can forward incoming call under the following situations:
  - busy forwarding
  - No answer forwarding
  - Unconditional forwarding



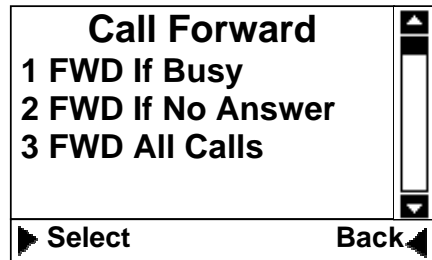


Figure 41 Setting: Call Forward

b) Call Waiting: You can enable/disable call waiting function through this menu.

5. Phone Info

- a) Phone Number: You can use this menu to enter and store your phone number.
- b) Software Version: This menu can display the version of the software the phone is running with.

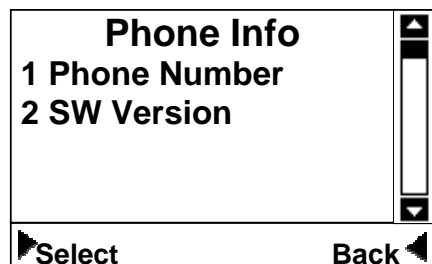


Figure 42 Setting: Phone Info

- 6. Management: This menu can be used for the following setting: UIM locking, Cell locking, Phone locking, Local Area Code, and IP dialing. This feature is mainly used by your operator. For details of these functions, please see section "Extended Functions". For details on how to use UIM Locking, Cell Locking and Phone Locking, please contact your operator.
- 7. Port Speed: You can choose a port speed for your phone from this menu. A right port speed is very important when you use your phone as a modem or when you want to send AT commands to your phone. The phone supports the following port speeds:
  - ❑ 9600
  - ❑ 19200
  - ❑ 57600
  - ❑ 115200
  - ❑ 230400

## 7 Keypad Locking

For better protection, FWA provides you with Keypad locking feature. You can lock your FWA 's keypad if you do not want someone else to access your FWA while you are away from your FWA.

Once FWA 's keypad is locked, FWA will not allow to make outgoing calls or access other features, such as Contact, Recent Calls. But a locked FWA will allow to accept incoming calls and notify you for any incoming short messages (but you can't read the content of the messages).

### 7.1 Lock Keypad

- When FWA is at idle state(FWA must be at idle state), pressing "BACK/CLR" key for over 2 seconds, the keypad will be locked, and the display will popup a window:

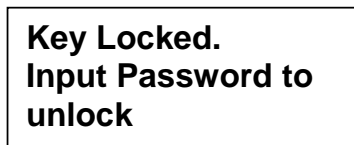


Figure 43 Keypad Locking-1

- When any key is pressed while keypad is locked, FWA will show a password dialog. The default password for unlocking keypad is: 0000. (Note: In the case that you forgot your keypad locking code, FWA allows you to use the password for access "Security" to unlock keypad).

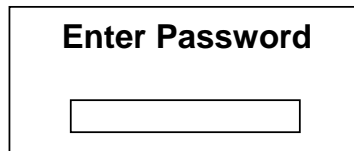


Figure 44 Keypad Locking -2

- Once keypad is locked, at Idle state, "Key Guard Mode" message will be displayed on LCD to indicate that the keypad has been locked:

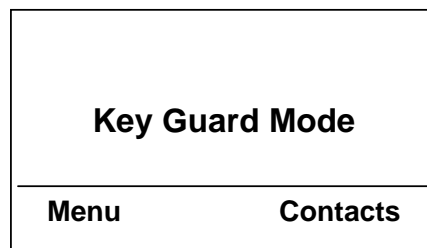


Figure 45 Keypad Locking -3

## 7.2 Modify Keypad Locking Code

- Go to Settings menu, then choose “Security” sub-menu, from there, you will find “Set Keypad Password” sub-menu, once this menu is selected, LCD will show a password dialog. Just enter a new password for keypad locking:

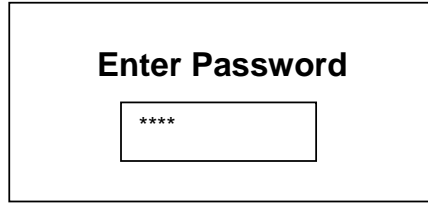


Figure 46 Change Keypad Locking Password-1

- After a new password is entered, a password confirmation dialog will be displayed. Re-enter the new password you just entered:

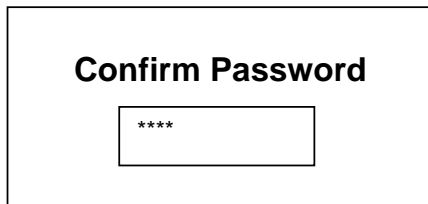


Figure 47 Change Keypad Locking Password -2

- If the re-entered password is the same as the one you enter for the first time, the new password will be changed successfully.

## **8 Extended Functions**

### **8.1 UIM Card Locking**

This feature ensures that a locked UIM card can only be used with the phone that the UIM card has been locked on (Note: this feature only applies when your CDMA operator supports UIM card).

### **8.2 Phone Locking**

This feature will link a locked phone with a particular UIM card. The phone can't function without using the UIM card that the phone has been locked on (Note: this feature only applies when your CDMA operator supports UIM card).

### **8.3 Cell Locking**

CDMA (FWA) FWA provides cell locking feature. When cell locking is enabled for a set of cells, a phone can only be used for voice, messages, and data service within that particular set of cells.

### **8.4 IP Dialing**

IP dialing allows you to store an IP access number for your long distance call. When you make a long distance call, the phone will automatically prefix you destination number with the stored IP number.

## **9 Data Service**

### **9.1 Introduction**

CDMA FWA phone can provide high speed data service (up to 153.6kbps, the actual speed depends on your CDMA service provider and the service you have purchased). You can use you're a CDMA FWA phone as the modem for your computer.

## 10 Technical Specifications

Frequency:	CDMA PCS 1900MHZ
Maximum Transmitting Power:	23~25 dBm @ 50 ohm
Receiving Sensibility:	< -105dBm/1.23MHz;
External DC Voltage:	DC 6.6V
Ambient Temperature:	-10°C ~ +45°C
Ambient Humidity:	0~95%
Storage Temperature:	-30°C~+60°C
Pressure:	86—106Kpa

## 11 Tips For Troubleshooting

- ❑ Unable to send/receive data/fax calls: Check all the connections from CDMA FWA to other equipment (computer, fax, machine, etc.) Verify that necessary settings have been properly configured.
- ❑ Moisture or ventilation problems: Visually inspect the CDMA FWA 's unit enclosure, moisture can damage the equipment. Ventilation is also very important. Move the your CDMA FWA to correct as necessary.
- ❑ No power: Verify that DC power source and its corresponding circuit breaker are functioning properly.
- ❑ Cellular telephone service is not working: If the cellular telephone service is not working, contact your cellular service provider.
- ❑ If FWA can't make data connection:
  1. Make sure to follow Modem installation procedures (see Appendix)
  2. Make sure that you have purchased CDMA1x service from your CDMA operator
  3. Make sure that both PC's modem and FWA 's baud rates are 115200 (see Appendix).
  4. Make sure that FWA 's "Serial Choice" switch is at "Data" position
- ❑ Unable to receive incoming calls:
  1. Make sure the CDMA (FWA) FWA is "on hook".
  2. Make sure that the incoming call is not restricted;
  3. Make sure that "Mute" flag icon is not on
- ❑ Unable to make outgoing calls:
  1. Make sure that the numbers you dialed are not restricted;
  2. Make sure that your FWA is receiving good CDMA signal
- ❑ Can't receive short messages: Make sure that your FWA 's memory is not full for storing short messages. If you fins that the memory is full, just delete a few messages.
- ❑ Remember, you can always use "Load Default" sub-menu from "Security" menu to reset your FWA to its default setting.

## 12 Appendix: How to Install FWA As PC's Modem

### 12.1 Computer Configuration

#### 12.1.1 Modem Installation

You can follow the steps described below to install FWA as a standard 33600 modem to your PC computer (Note: this document assumes that COM1 is the computer's port to which FWA will be connected).

- Connect FWA and PC with a serial cable .
- Open "Control Panel-> Phone and Modem Options", you will see "Add/Remove Hardware Wizard" window, select "Modems" tab, press "Add...", select "Next >" button, then install new modem.

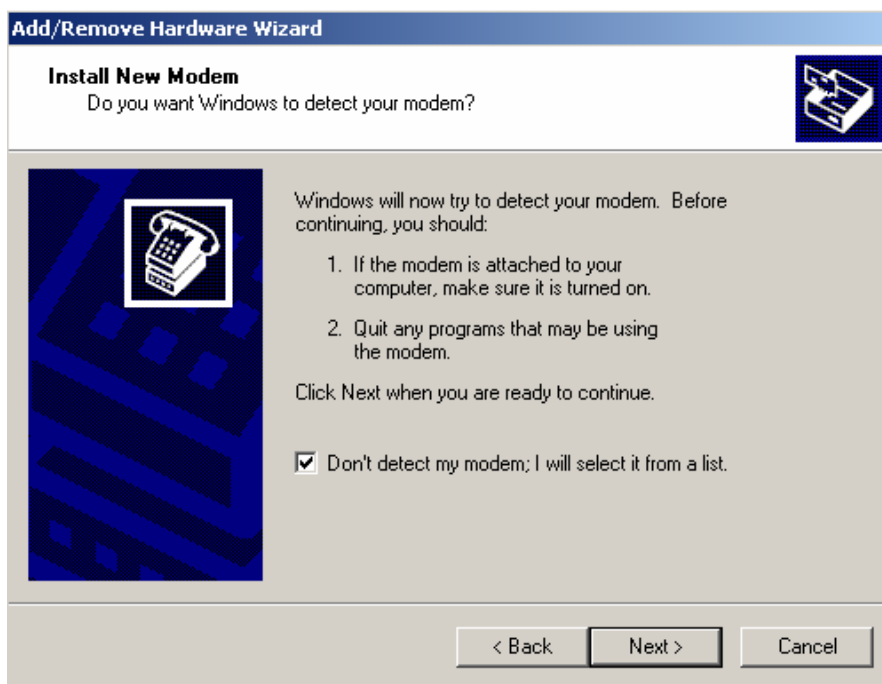


Figure 48 Add/Remove Hardware Wizard-1

- Move highlight to "Standard 33600 bps Modem", select the key of "Next>".



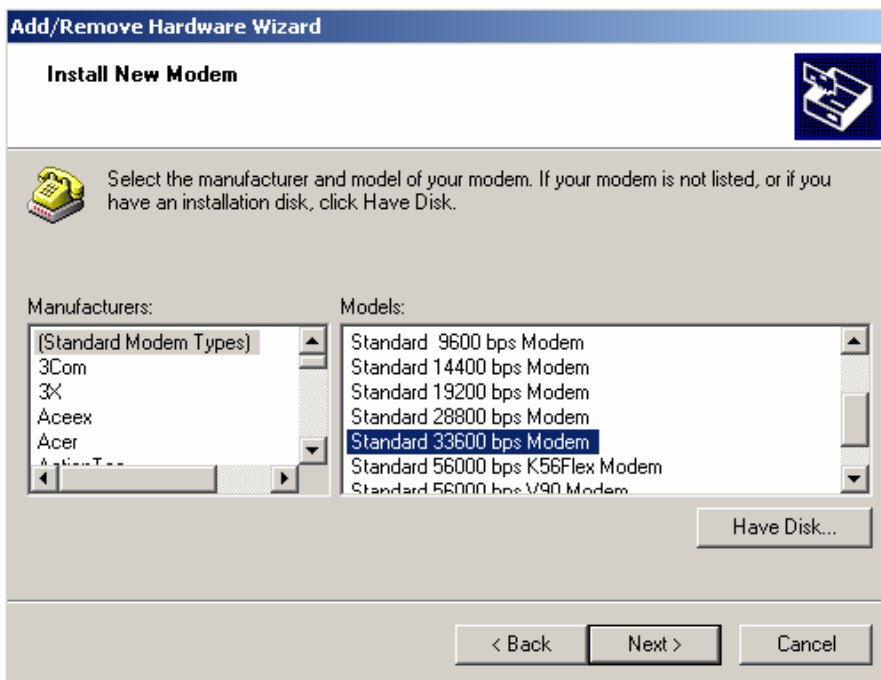


Figure 49 Add/Remove Hardware Wizard-1

- Choose "COM1", press "Next>" button.

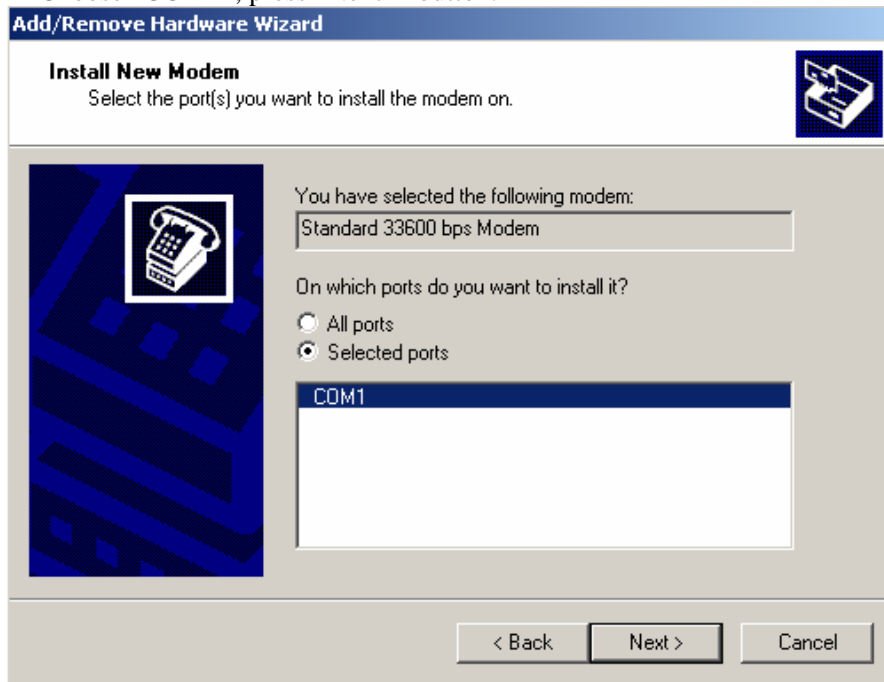
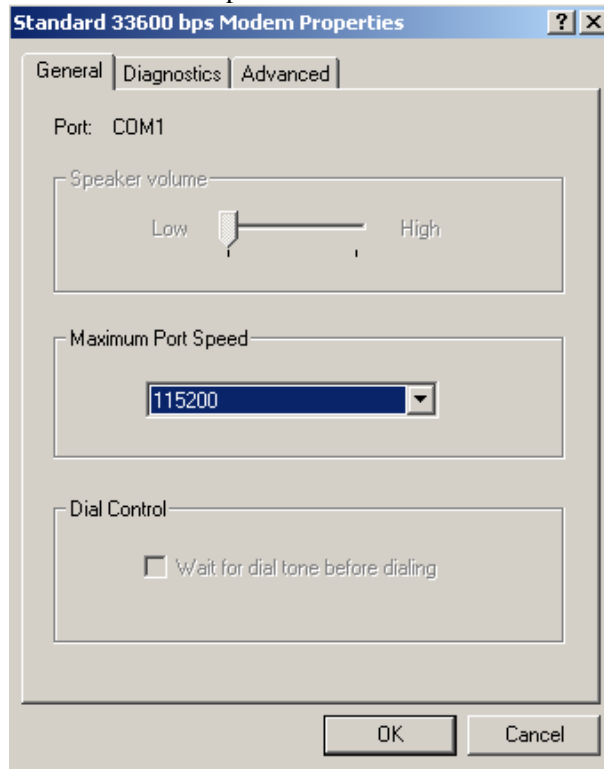


Figure 50 Add/Remove Hardware Wizard—3

- Modem installation is finished.

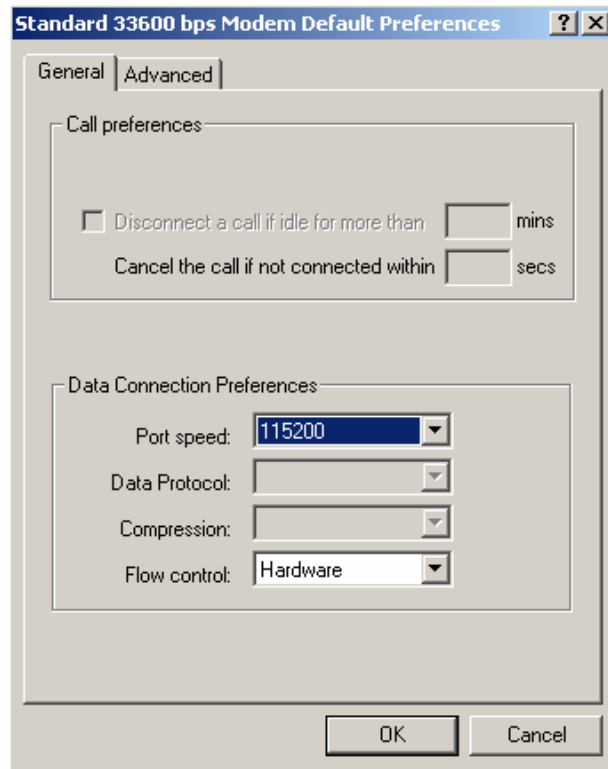
### 12.1.2 Configure properties

- Open “Control Panel-> Phone and Modem Options”, choose ”Modems” tab from “Phone and Modem Options” window , select list item ”Standard 33600 bps Modem”, press the key of ”Properties”, then change parameter ”Maximum Port Speed” to 115200.



**Figure 51 Properties Configuration —1**

- Open ”Standard 33600 bps Modem Properties”->”Advanced” tab, press ”Change Default Preferences...”button and check the parameter: Port speed: 115200



**Figure 52 Properties Configuration —2**

- Change to "Advanced" tab at "Standard 33600 bps Modem Properties" window, input AT Command "AT+CRM=1; +CPS=33; +CMUX=1; +CTA=0" at initialization command frame, after finishing it, then press "OK".

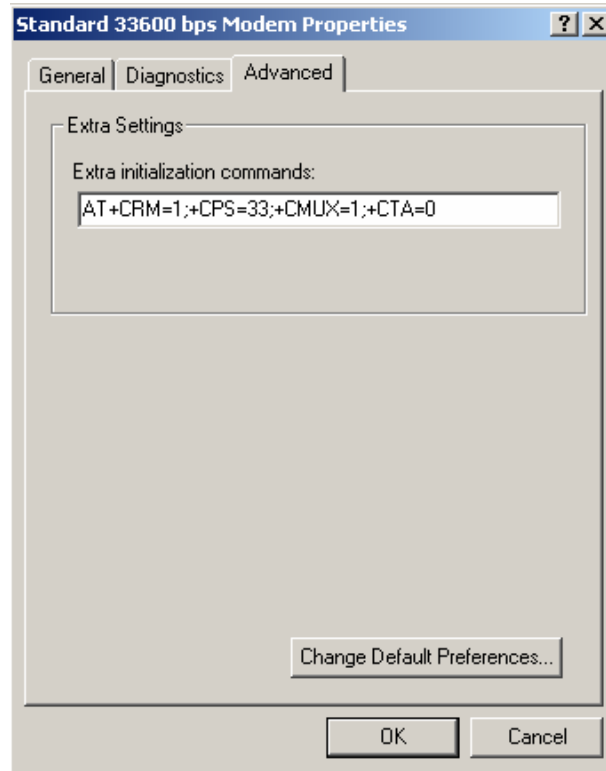


Figure 53 Properties Configuration — 3

### 12.1.3 Create dial-up Connection

This section shows you how to create a dial-up connection using a FWA as the modem (you should have followed the previous section to install a modem with your computer).

- Open “Control Panel-> Network and Dial-up Connections”, click “Make New Connection”, you will see a “Network Connection Wizard” window, press “Next>” button.

Formatted: Indent: Hanging: 7.1 ch, Bulleted + Level: 2 + Aligned at: 1.59 cm + Tab after: 2.22 cm + Indent at: 2.22 cm

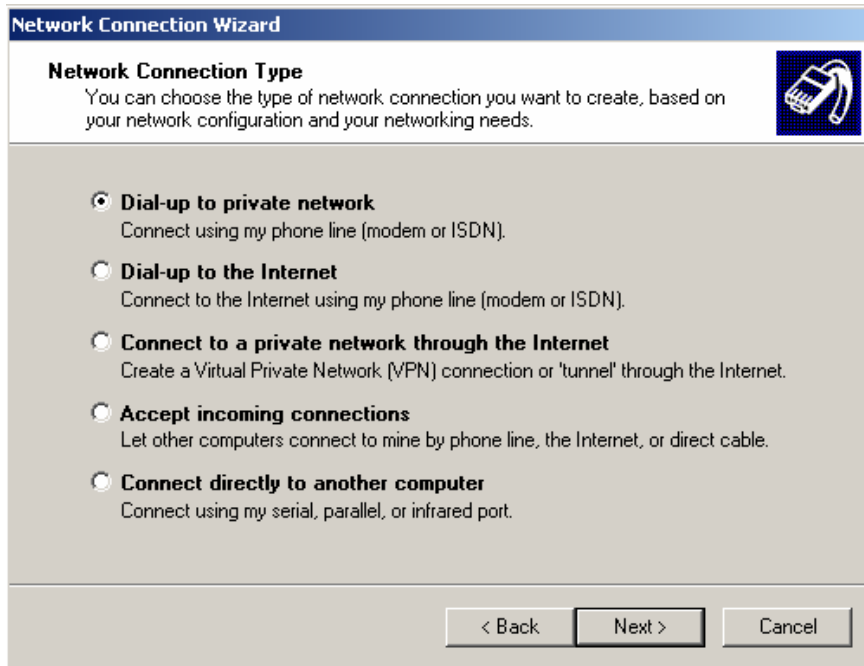


Figure 54 Network Connection Wizard—1

- Input "Phone number", Press "Next>" till "Connect Dial-up Connection" window will be shown.

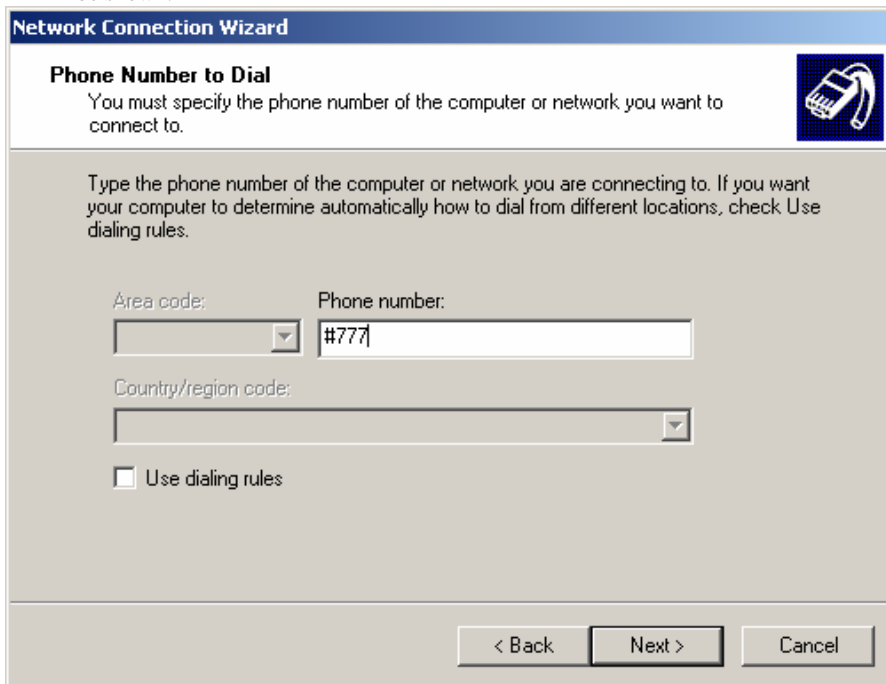
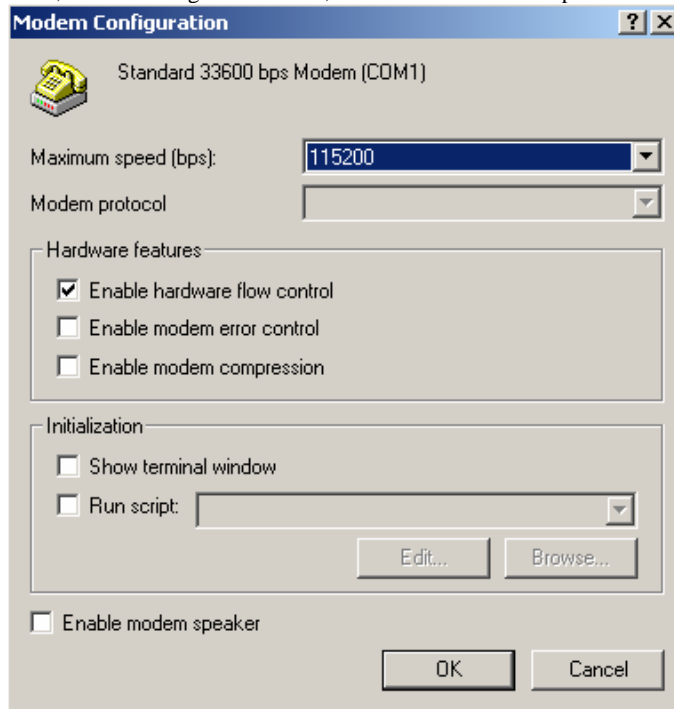


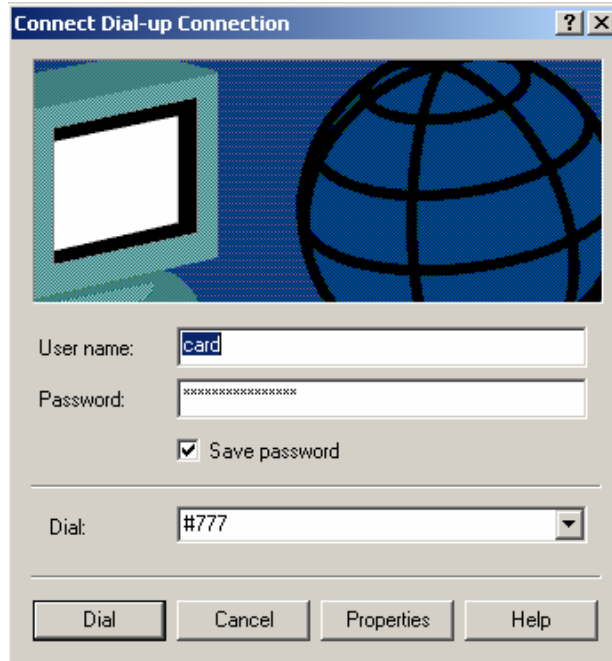
Figure 55 Network Connection Wizard—2

- Press "Properties" at "Connect Dial-up Connection" window, a figure of "Dial-up Connection" will be displayed, move highlight to "Modem-Standard 33600 bps Modem", Press "Configure..." button, and check "Maximum speed": 115200



**Figure 56 Dial-up Connection Properties Configuration**

- Input "User name" "card" and "Password" "card" at "connect Dial-up Connection" window, set up "Save password" checkbox, click "Dial" and you have finished connection.

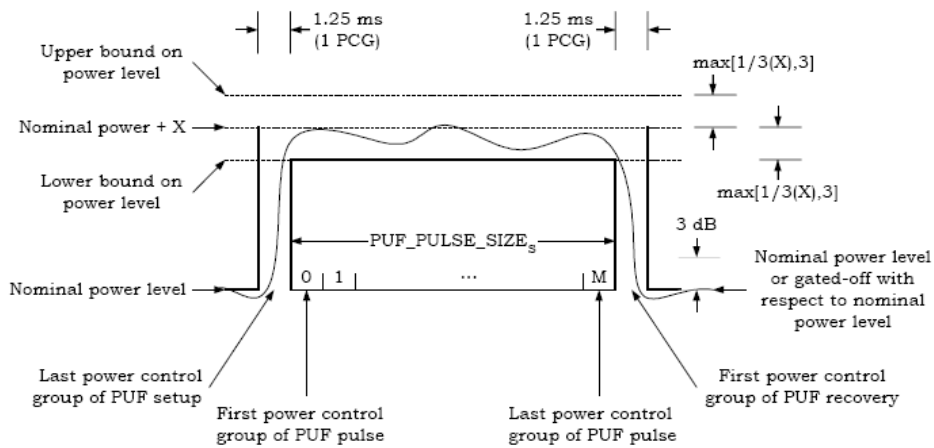


**Figure 57 Connect Dial-up Connection**

## 12.2 Configure FWA

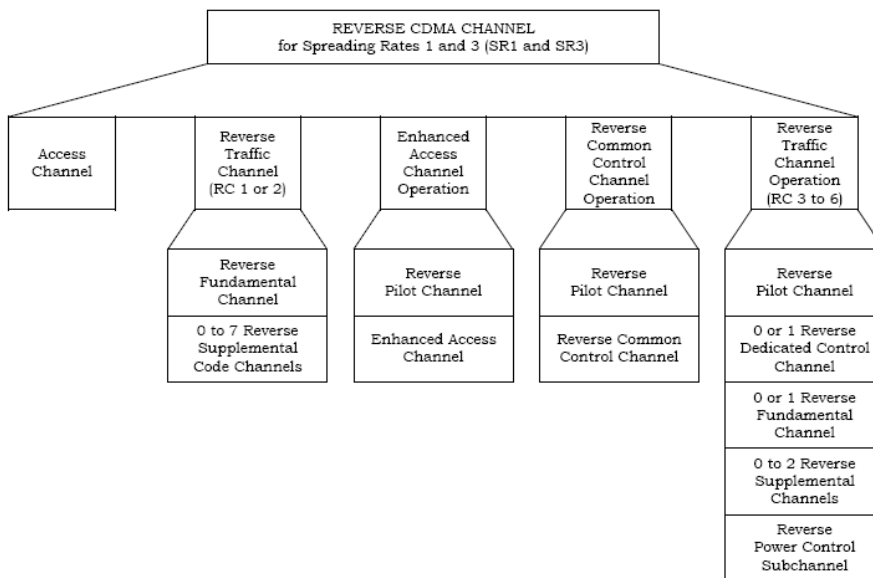
- Make sure that the baud rate of FWA is set to 115200. To verify or change the baud rate, go to "Settings" menu, then choose "Port Speed" sub-menu.
- Make sure that the "Serial Choice" switch is turned to "Data" position.
- Make sure that a DB9 serial cable is used to connect FWA to your PC.
- Once finishing the configuration of both you PC and FWA, re-start your FWA.

### 13 Modulation work structure



Note:  $X = PUF\_INIT\_PWR_s + (CURRENT\_PUF\_PROBE_s \times PUF\_PWR\_STEP_s)$

Figure 2.1.2.3.1.4-1. Power Up Function Transmission Envelope Mask



1  
2

Figure 2.1.3.1.1-1. Reverse CDMA Channels Received at the Base Station



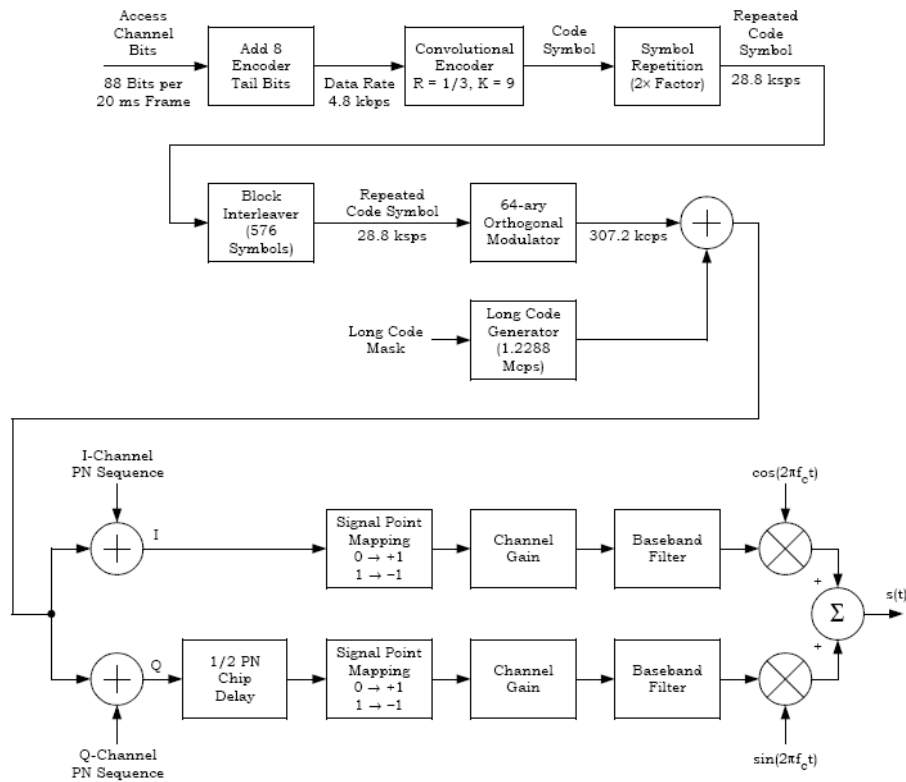


Figure 2.1.3.1.1.1-1. Channel Structure for the Access Channel for Spreading Rate 1

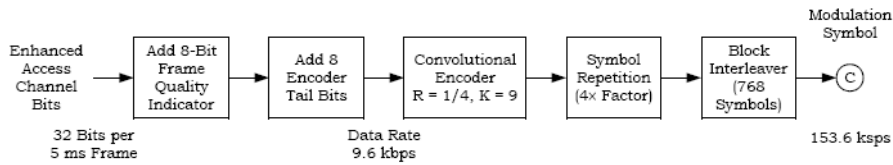


Figure 2.1.3.1.1.1-2. Channel Structure for the Header on the Enhanced Access Channel for Spreading Rate 1

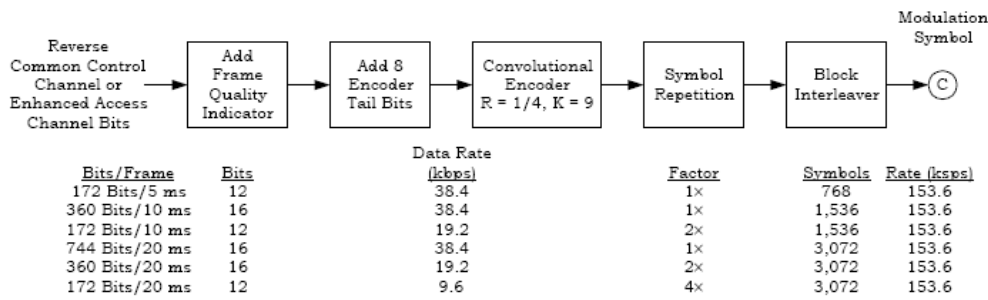
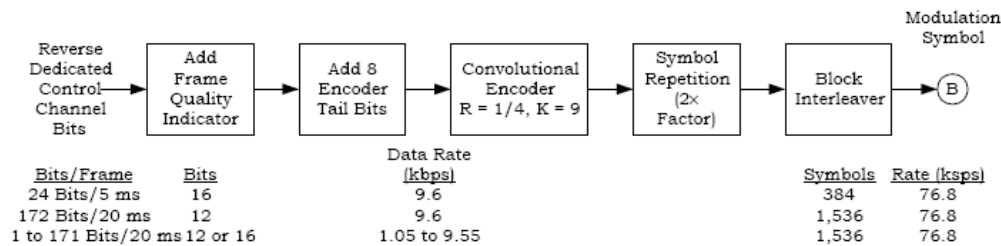
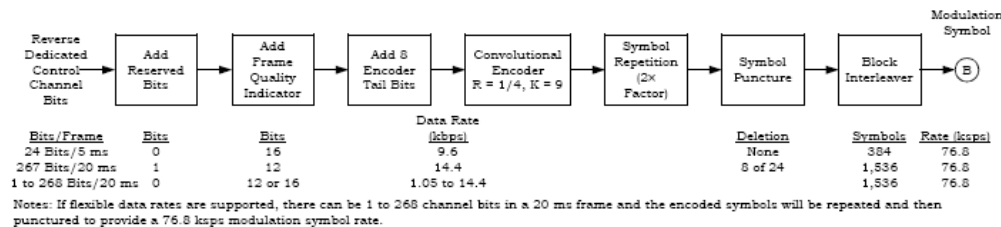


Figure 2.1.3.1.1.1-3. Channel Structure for the Data on the Enhanced Access Channel and the Reverse Common Control Channel for Spreading Rate 1



Note: If flexible data rates are supported, there can be 1 to 171 channel bits in a 20 ms frame and the encoded symbols will be repeated and then punctured to provide a 76.8 ksps modulation symbol rate.

Figure 2.1.3.1.1.1-4. Reverse Dedicated Control Channel Structure for Radio Configuration 3



Notes: If flexible data rates are supported, there can be 1 to 268 channel bits in a 20 ms frame and the encoded symbols will be repeated and then punctured to provide a 76.8 ksps modulation symbol rate.

Figure 2.1.3.1.1.1-5. Reverse Dedicated Control Channel Structure for Radio Configuration 4

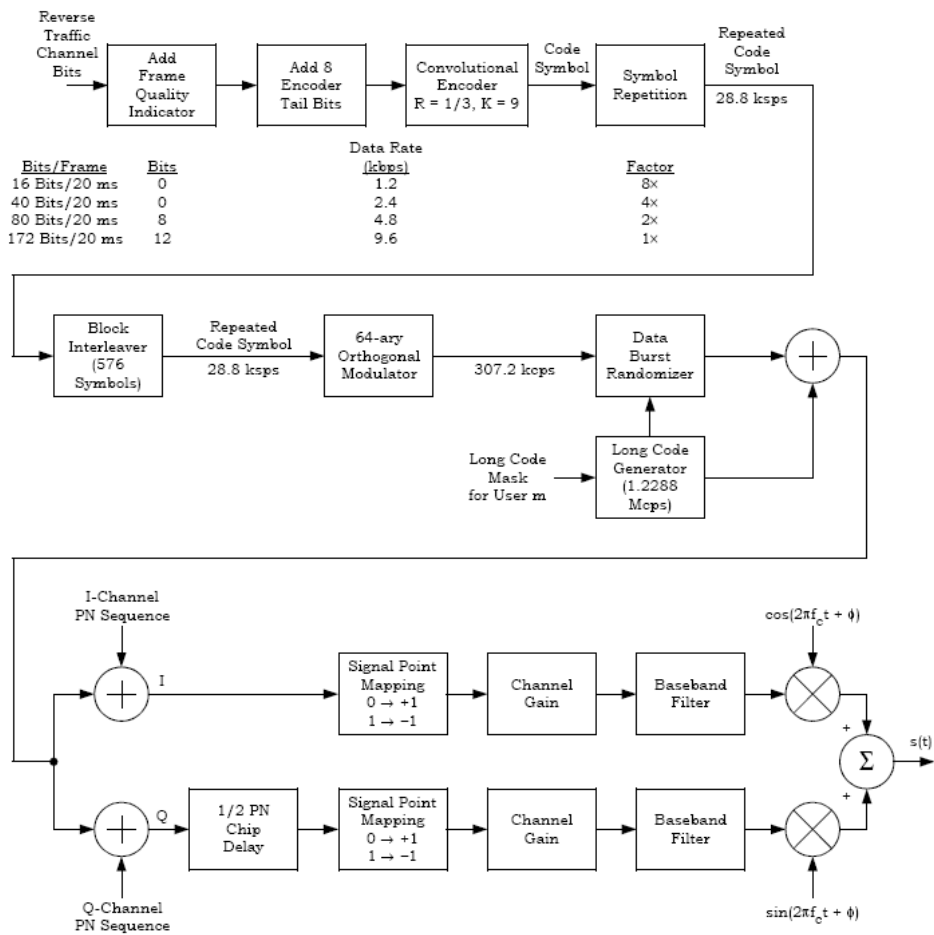


Figure 2.1.3.1.1.1-6. Channel Structure for the Reverse Fundamental Channel and Reverse Supplemental Code Channel with Radio Configuration 1

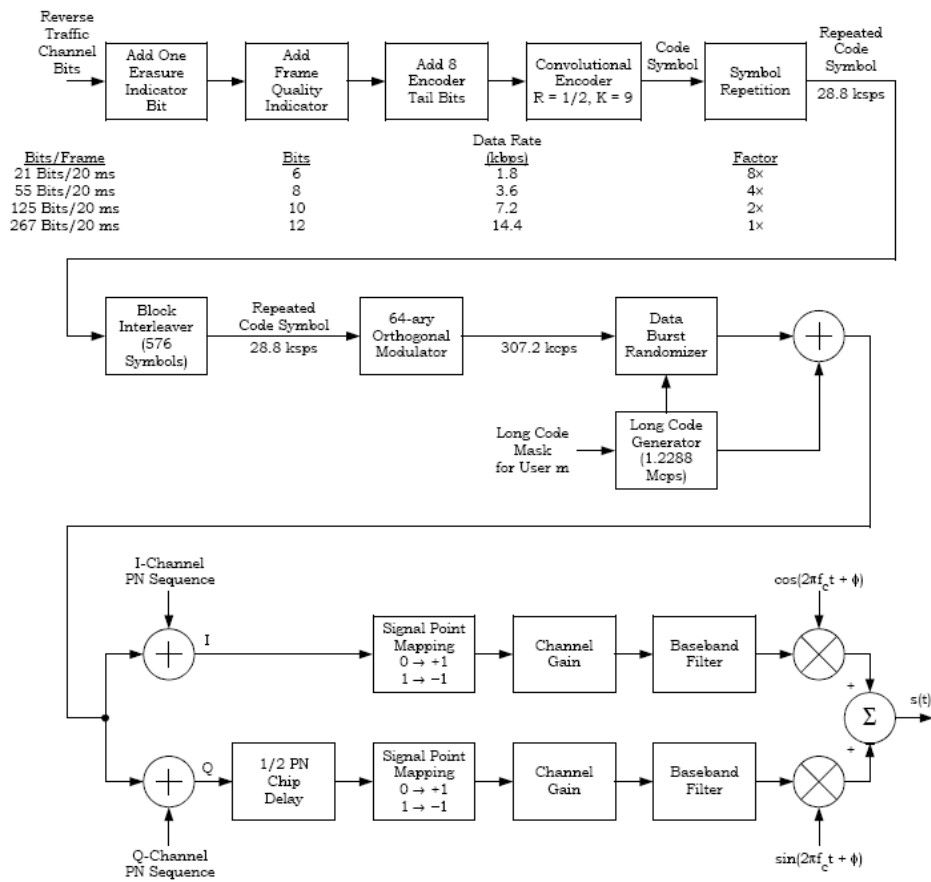
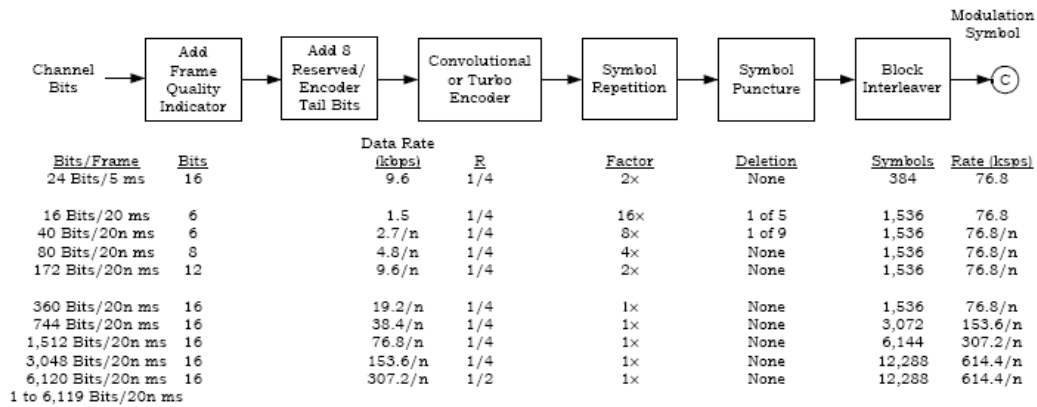


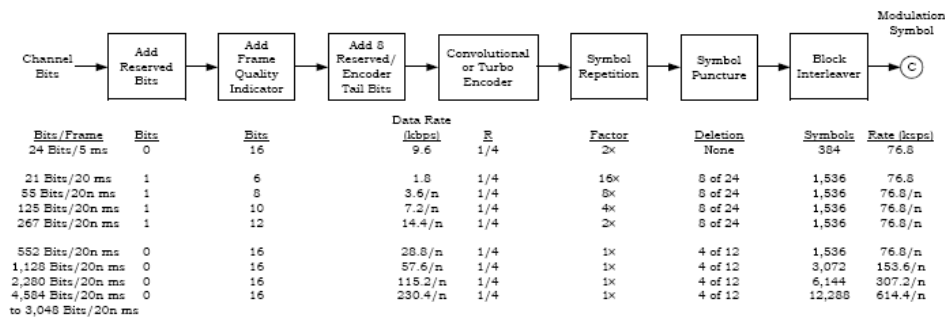
Figure 2.1.3.1.1.1-7. Channel Structure for the Reverse Fundamental Channel and Reverse Supplemental Code Channel with Radio Configuration 2



Notes:

1. n is the length of the frame in multiples of 20 ms. For 31 to 54 encoder input bits per frame, n = 1, 2, or 4.
2. The 5 ms frame is only used for the Reverse Fundamental Channel, and the Reverse Fundamental Channel only uses 15 to 192 encoder input bits per frame with n = 1.
3. Turbo coding may be used for the Reverse Supplemental Channels with 384 or more encoder input bits per frame; otherwise, K = 9 convolutional coding is used.
4. With convolutional coding, the Reserved/Encoder Tail bits provide an encoder tail. With turbo coding, the first two of these bits are reserved bits that are encoded and the last six bits are replaced by an internally generated tail.
5. If variable-rate Reverse Supplemental Channel operation, flexible reverse link data rates, or both are supported, the parameters are determined from the specified number of channel bits per frame, the maximum assigned number of channel bits per frame for the Reverse Fundamental Channel or the Reverse Supplemental Channel, and the specified frame quality indicator length.
  - The frame quality indicator length is 16 for more than 192 encoder input bits per frame; 12 or 16 for 97 to 192 encoder input bits per frame; 8, 12, or 16 for 55 to 96 encoder input bits per frame; and 6, 8, 12, or 16 otherwise.
  - The code rate is 1/2 for more than 3,072 encoder input bits per frame; otherwise, it is 1/4. If the number of encoder input bits per frame is less than 384, the type of encoding is convolutional; otherwise, it is the same as that of the maximum assigned data rate for the channel.
  - If the specified number of channel bits per frame is equal to the maximum assigned number of channel bits per frame and that number and the specified frame quality indicator length match one of the listed cases, the symbol repetition factor and symbol puncturing from that listed case are used. Otherwise, the symbol repetition factor and puncturing are calculated to achieve the same interleaver size as for the maximum assigned data rate for the channel.
  - If the maximum assigned data rate matches one of the data rates listed in the figure, the interleaver size for that listed data rate is used. Otherwise, the interleaver size of the next higher listed data rate is used.

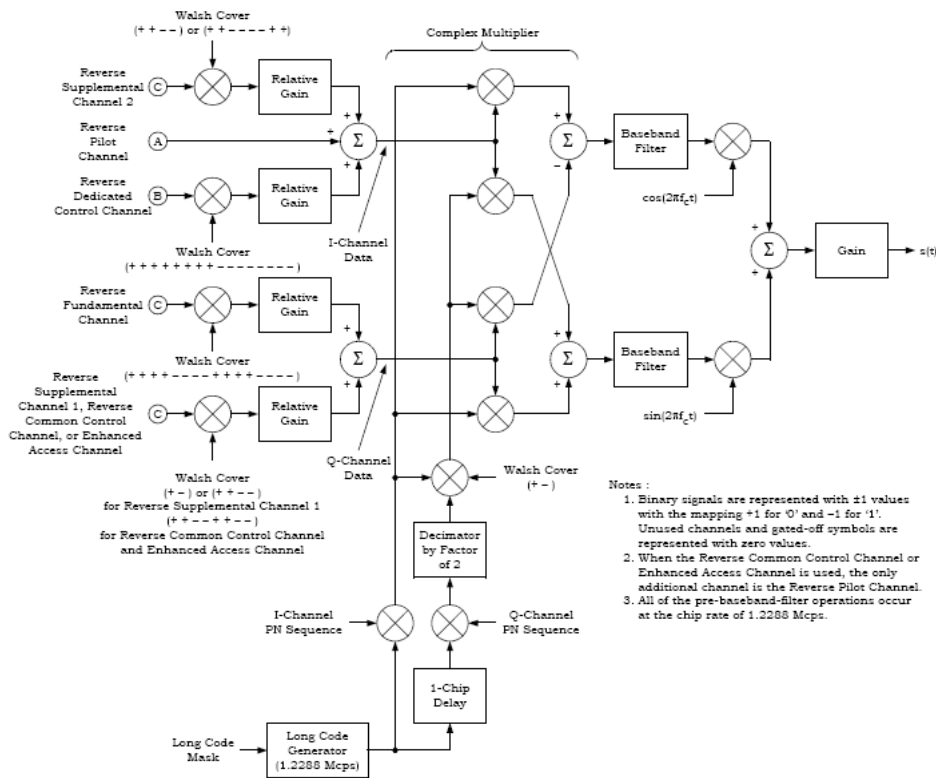
**Figure 2.1.3.1.1.1-8. Reverse Fundamental Channel and Reverse Supplemental Channel Structure for Radio Configuration 3**



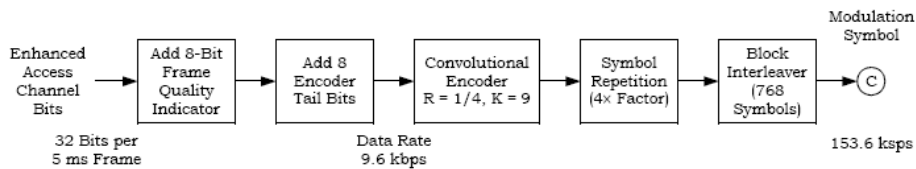
Notes:

- n is the length of the frame in multiples of 20 ms. For 37 to 72 encoder input bits per frame, n = 1 or 2. For more than 72 encoder input bits per frame, n = 1, 2, or 4.
- The 5 ms frame is only used for the Reverse Fundamental Channel, and the Reverse Fundamental Channel only uses 15 to 288 encoder input bits per frame with n = 1.
- Turbo coding may be used for the Reverse Supplemental Channels with 576 or more encoder input bits per frame; otherwise, K = 9 convolutional coding is used.
- With convolutional coding, the Reserved/Encoder Tail bits provide an encoder tail. With turbo coding, the first two of these bits that are encoded and the last six bits are replaced by an internally generated tail.
- If variable-rate Reverse Supplemental Channel operation, flexible reverse link data rates, or both are supported, the parameters are determined from the specified number of channel bits per frame, the maximum assigned number of channel bits per frame for the Reverse Fundamental Channel or the Reverse Supplemental Channel, and the specified frame quality indicator length.
  - When the number of channel bits per frame is 21, 55, 125, or 267 and the corresponding number of frame quality indicator bits is 6, 8, 10, and 12, an initial reserved bit is used; otherwise, no initial reserved bits are used.
  - The frame quality indicator length is 16 for more than 288 encoder input bits per frame; 12 or 16 for 145 to 288 encoder input bits per frame; 10, 12, or 16 for 73 to 144 encoder input bits per frame; 8, 10, 12, or 16 for 37 to 72 encoder input bits per frame; and 6, 8, 10, 12, or 16 otherwise.
  - The code rate is 1/4. If the number of encoder input bits per frame is less than 576, the type of encoding is convolutional; otherwise, it is the same as that of the maximum assigned data rate for the channel.
  - If the specified number of channel bits per frame is equal to the maximum assigned number of channel bits per frame and that number and the specified frame quality indicator length match one of the listed cases, the symbol repetition factor and symbol puncturing from that listed case are used. Otherwise, the symbol repetition factor and puncturing are calculated to achieve the same interleaver size as for the maximum assigned data rate for the channel.
  - If the maximum assigned data rate matches one of the data rates listed in the figure, the interleaver size for that listed data rate is used. Otherwise, the interleaver size of the next higher listed data rate is used.

Figure 2.1.3.1.1.1-9. Reverse Fundamental Channel and Reverse Supplemental Channel Structure for Radio Configuration 4



**Figure 2.1.3.1.1.1-10. I and Q Mapping for Reverse Pilot Channel, Enhanced Access Channel, Reverse Common Control Channel, and Reverse Traffic Channel with Radio Configurations 3 and 4**



**Figure 2.1.3.1.1.2-1. Channel Structure for the Header on the Enhanced Access Channel for Spreading Rate 3**

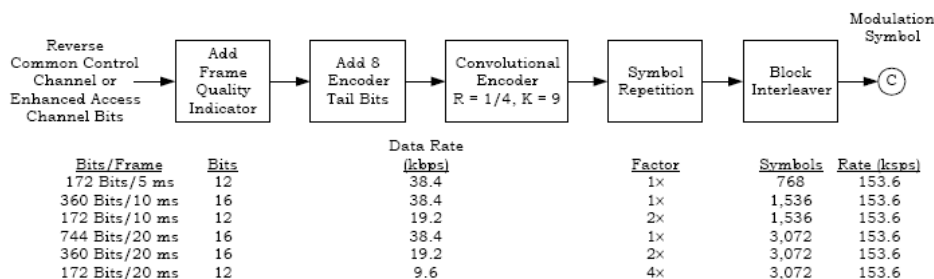


Figure 2.1.3.1.1.2-2. Channel Structure for the Data on the Enhanced Access Channel and the Reverse Common Control Channel for Spreading Rate 3

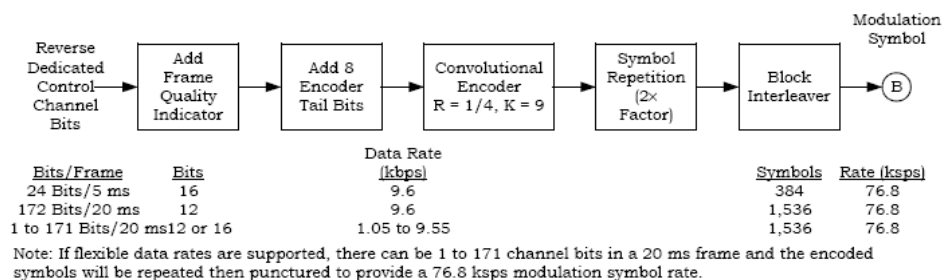


Figure 2.1.3.1.1.2-3. Reverse Dedicated Control Channel Structure for Radio Configuration 5

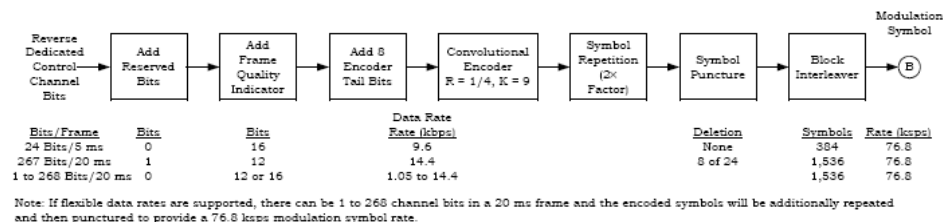


Figure 2.1.3.1.1.2-4. Reverse Dedicated Control Channel Structure for Radio Configuration 6