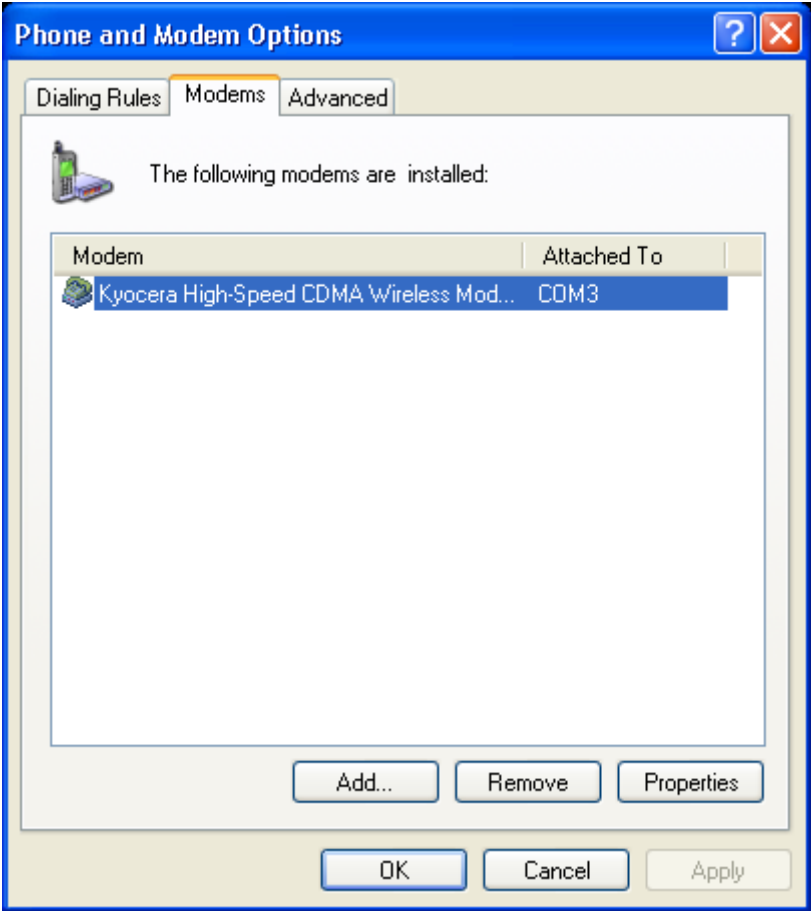


Driver Installation and Modem Setup Guide



KYOCERA WIRELESS CORP.
10300 CAMPUS POINT DRIVE
SAN DIEGO, CALIFORNIA 92121 U.S.A.
Visit us at www.kyocera-wireless.com
82-N8838-1EN, Rev. 001

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4,901,307	5,109,390	5,267,262	5,416,797	5,506,865
5,544,196	5,657,420	5,101,501	5,267,261	5,414,796
5,504,773	5,535,239	5,600,754	5,778,338	5,228,054
5,337,338	5,710,784	5,056,109	5,568,483	5,659,569
5,490,165	5,511,073			

FCC/IC Notice

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Caution

The user is cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the warranty and user's authority to operate the equipment.

Warning

Use only Kyocera Wireless Corp. approved accessories with Kyocera Wireless Corp. phones. Use of any unauthorized accessories may be dangerous and will invalidate the phone warranty if the unauthorized accessories cause damage or defect to the phone.



ACN 093 453 037

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INTRODUCTION

This guide helps you set up your computer to use your Kyocera phone as a wireless modem. Follow the setup instructions to connect your desktop computer or laptop to the Internet. Graphics are included throughout this guide to help explain setup procedures and features.

Why would I use a wireless modem?

Your Kyocera phone provides you with the convenience of a wireless connection wherever you are. When you're on vacation or business travel, it's difficult to connect to the Internet using conventional methods. Many hotels provide a phone jack in their guest rooms to make a 'Dial-Up' connection. Some actually provide an Ethernet jack to connect. Using your Kyocera Wireless phone with CDMA technology and a data cable, you now have the convenience of sending or receiving E-mail, surfing the Web, accessing work files, and more from anywhere you have digital data services.

What do I need to use my Kyocera phone as a wireless modem?

1. You need a USB cable that connects the data port on the bottom of your phone to a communications port on your computer.
2. You need to install a modem driver on your computer so your Kyocera phone is a modem choice.
3. You need to install the USB drivers on this CD on your computer.
4. If you have a **non-true USB phone** (most Kyocera phones), you need to configure your communication applications to use the Kyocera CDMA Wireless Modem or Kyocera CDMA High-Speed Wireless Modem.
5. If you have a **true USB phone** such as KX2, KX5, or KX18, you do not need to configure your communications application.

How do I check if my Kyocera phone is a true USB phone?

If you have a true USB phone, a wireless connection is automatically created when you connect your phone to your computer using the USB cable. See Connecting your phone to your computer's USB port on page 2 for instructions on how to check the location of your wireless modem device.

Which Kyocera Wireless Modem should I install?

Choosing between the Kyocera CDMA Wireless Modem or Kyocera CDMA High-Speed Wireless Modem depends on two factors. The baud rate your phone can support and the baud rate your carrier can support. You should contact your carrier for this information. The Kyocera CDMA High-Speed Wireless Modem has a default baud rate of 115.2 kbps.

INSTALLING THE USB DRIVERS

Important: The instructions below will vary depending on your computer's operating system. If you have downloaded USB drivers for the Kyocera USB cable from our web site, follow the instructions on the web site to install the drivers.

1. Place the Kyocera USB driver CD into the computer's CD-ROM drive.
2. Connect the Kyocera USB cable to an open USB port.
3. After the USB cable is connected to the computer, the Windows Hardware Installation Wizard will appear.
4. Follow the on-screen instructions. If the wizard does not install the drivers automatically and asks you to specify the location of the USB drivers, select the CD-ROM drive.

CONNECTING YOUR PHONE TO YOUR COMPUTER

Important: Use a Genuine Kyocera travel charger or car power adapter to charge your phone while it is connected to your computer. Most Kyocera phones include an AC adapter, but not a travel charger.

To shop online for charging accessories, visit the Kyocera Wireless Corp. Accessory Store at www.kyocera-wireless.com/store. To order by phone, call (800) 349-4188 (USA and Canada) or (858) 882-1410.

You will need a Kyocera data cable to connect your phone to your computer for use as a wireless modem. The Kyocera USB data cable is designed to connect all data-capable QUALCOMM® QCP™ and Kyocera® phones to your computer through a USB port.

CONNECTING YOUR PHONE TO YOUR COMPUTER'S USB PORT

1. Connect the cable to any available USB port on your computer. Your computer detects the cable as new hardware and assigns it a COM port. To determine which COM port has been assigned for the cable, right-click the **My Computer** icon on your computer's desktop.
2. Right-click **Properties**.
3. Click the **Hardware** tab.
4. Select **Device Manager** and expand the **Ports (COM and LPT) Device Listing**.
5. Note the number of the COM port that you install.
6. Insert the other end of the data cable (arrow up) into your phone.

Note: It is not required, but you can charge the phone while transferring data to avoid data loss due to a low battery. The data cable has a power outlet that can be used to charge the phone while the phone is connected to the data cable.

COPYING THE KWC MODEM FILE ONTO YOUR COMPUTER

After the USB driver has been installed you will need to copy the Kyocera CDMA modem file into **C:\Windows\Inf** within Windows Explorer. If you cannot find this directory you will need to modify the Folder Options.

To modify Folder Options:

1. Right click **Start** and then left click **Explore**. Windows Explorer opens.
2. Click **Tools** and then click **Folder Options**. The box titled **Folder Options** appears.
3. Click the **View** tab.
4. Within the Advance Settings box, click **Show all Files** or **Show hidden files and folders** and then click **Apply**.
5. Click **OK**.
6. Load the Kyocera USB driver CD into the computer's CD-ROM drive.
7. Click **Start** and then click **Run**.
8. When the Run box appears, click **Browse**.
9. Click the drop down list located to the right of "Look in." Select your computer's CD-ROM drive. After selecting the CD-Rom drive, the contents of the Kyocera USB driver CD will be displayed.
10. Double-click **Modem Driver**. An empty box will be displayed. At the bottom of this box "Files of Type" is set to "Programs."
11. Click the drop down arrow and select **All Files**. A file named **mdmkwcy** will appear.
12. Copy and paste the file into **C:\Windows\Inf** within Windows Explorer.

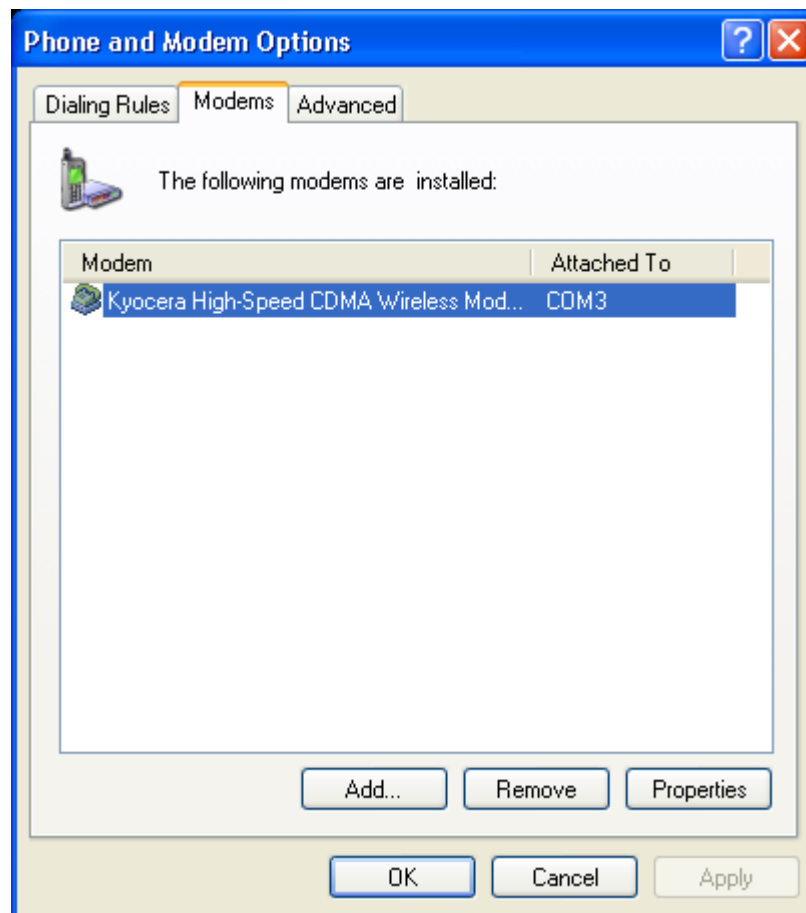
ADDING A KYOCERA CDMA WIRELESS MODEM

Note: The **Kyocera High-Speed CDMA Wireless Modem** has a default baud rate of 115.2 kbps. Certain Kyocera phones have a choice of three baud rates. The baud rate selected for your phone must match the baud rate set for the high-speed modem. If you install the Kyocera CDMA Wireless Modem, phones will **not** be able to communicate at a faster rate.

Note: These steps are for the Windows XP operating system, if you are using an older operating system the exact screens and content displayed during the setup process may vary.

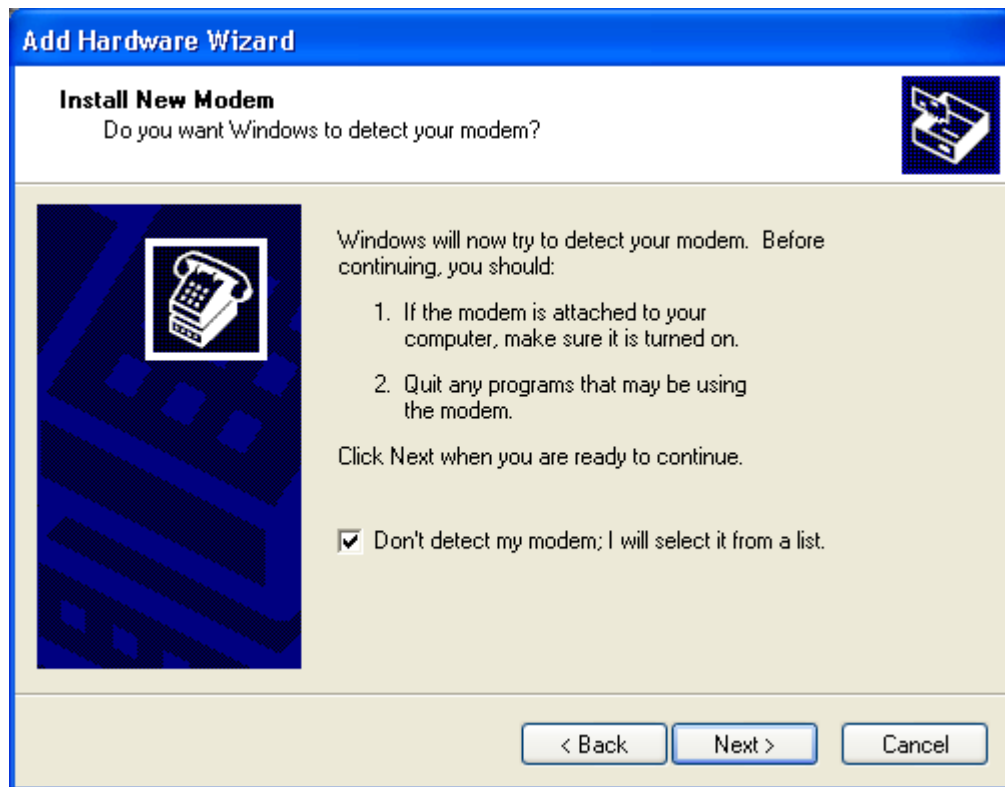
Steps for installing your Kyocera CDMA Wireless Modem are listed here.

1. Open the Windows Control Panel and double-click the **Phone and Modem Options** icon.

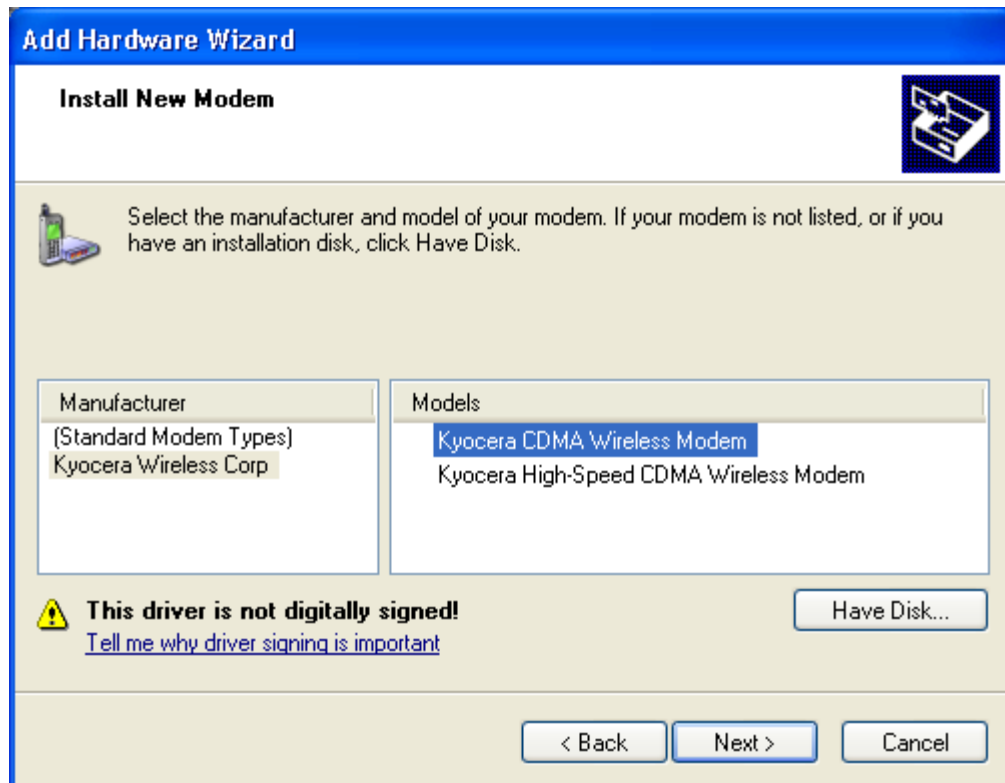


2. Select the **Modems** tab. Is the modem listed? If so, proceed to Setting up Dial-Up Networking (DUN) on page 6. If your modem is not installed, proceed.
3. Click **Add**.

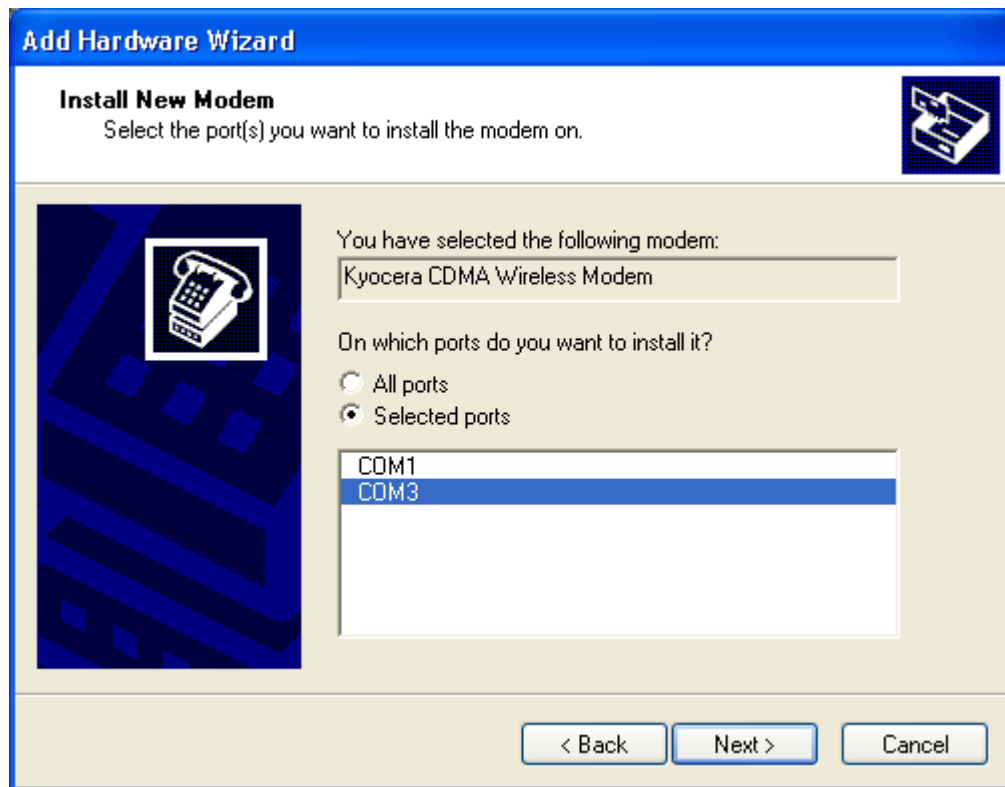
4. Check **Don't detect my modem; I will select it from a list** and click **Next**.



5. Select **Kyocera Wireless Corp** from the Manufacturer list and select **Kyocera CDMA Wireless Modem** (or the **Kyocera High-Speed CDMA Wireless Modem** if you are using a high-speed phone) from the Model list. Then click **Next**.



6. Select the communications port you will use with this modem, then click **Next**.



7. Windows 2000 will display a **Digital Signature Not Found** message. Click **YES** to continue.
 8. Click **Finish** and close **Phone and Modem Options**.
- Your Kyocera phone is now set up to work as a wireless modem.

SETTING UP DIAL-UP NETWORKING (DUN)

Dial-Up Networking (DUN) allows you to set up a data connection to make calls to your corporate network or to the Internet through your account with an Internet Service Provider (ISP).

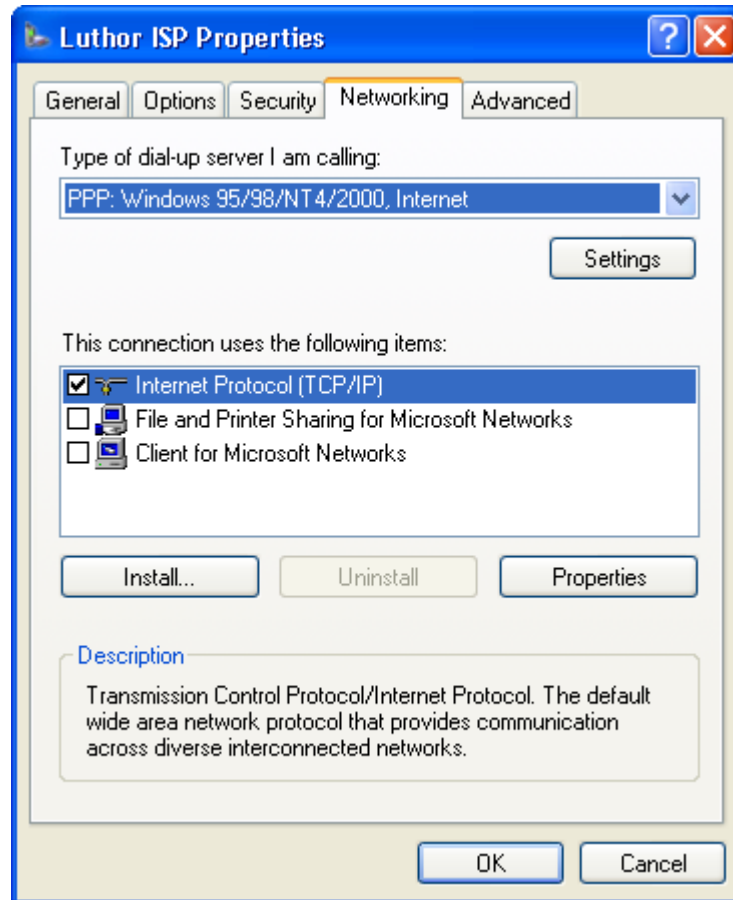
If you currently use Dial-Up Networking to connect to your ISP, it is best to make a new connection and copy all your settings from an existing connection. The only difference will be which device you are using to make the connection.

Note: Trying to change the modem in your existing connection can cause you to lose any special settings that were in place.

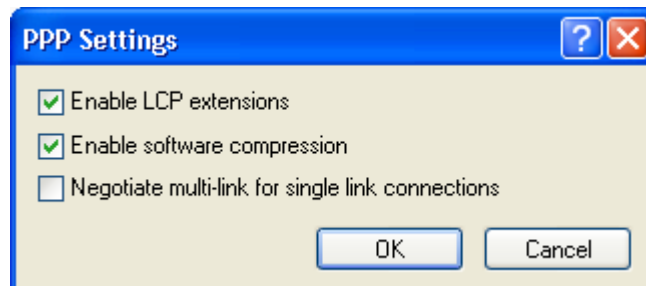
Windows XP allows you to duplicate a DUN connection. The steps here allow you to duplicate your settings manually for Windows XP.

1. Open the Windows Control Panel and double-click the **Network Connections** icon.
2. Right-click the connection icon for which you want to create a wireless version.
3. Click **Properties**. **Do not** change any of your settings. On a sheet of paper, record all your settings, including area code and phone number.

4. Click the **Networking** tab.

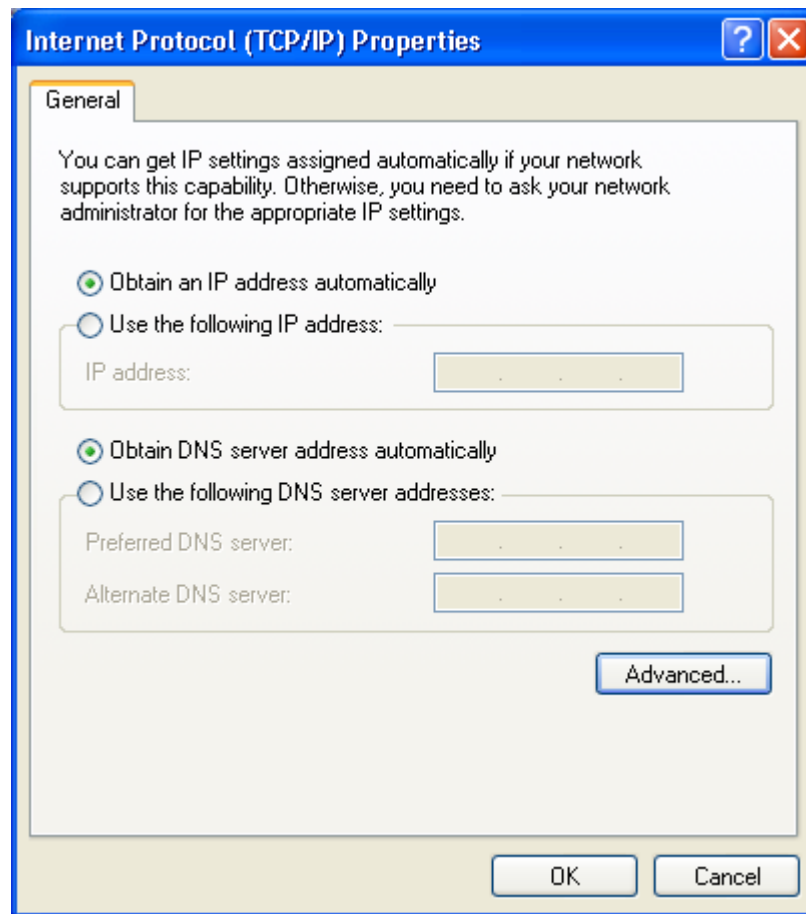


5. Click the **Settings** button and record the PPP settings. Click the **Cancel** button.



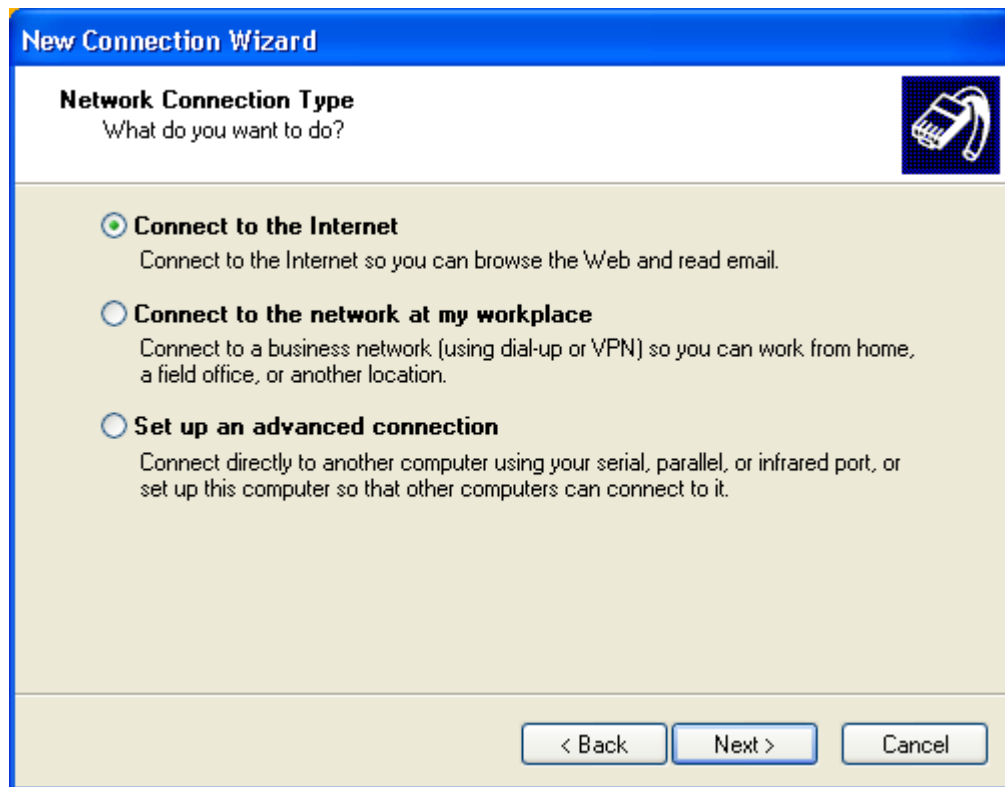
6. Return to the **Networking** tab and record which protocols are used.

7. Highlight the **Internet Protocol(TCP/IP)** protocol and click the **Properties** button.

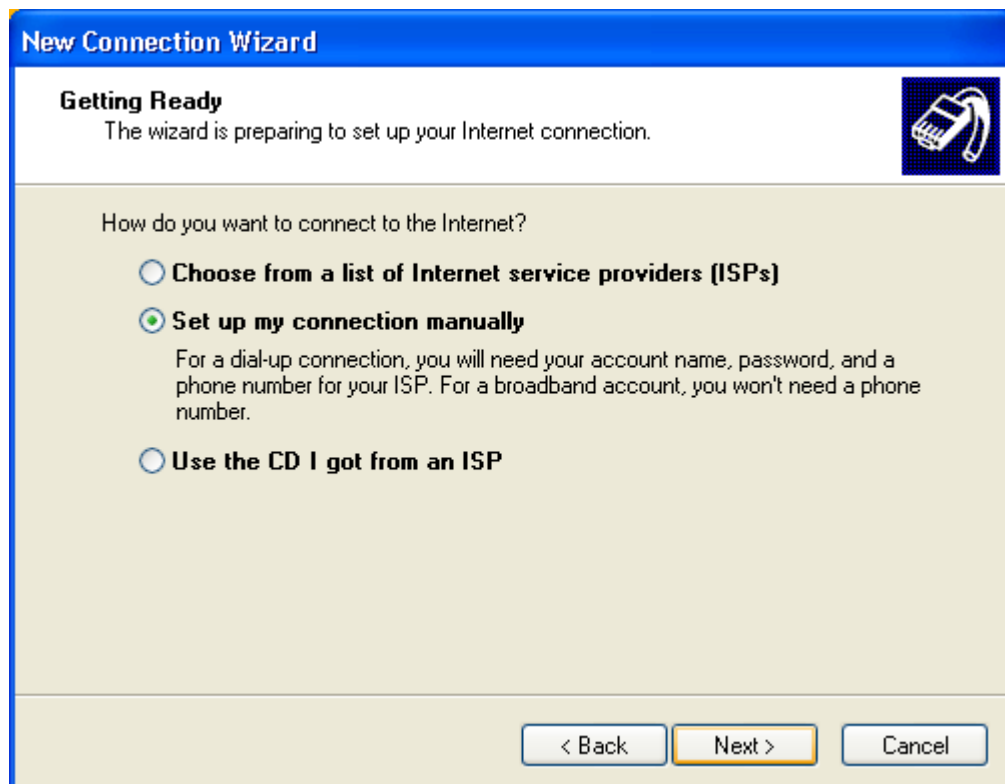


8. Record any special settings here, especially (DNS) Domain Name Server addresses, if they are used. Click **Cancel** to close the window.
9. Click **Cancel** again to close the Network Connection. Using the settings you have just recorded, you can now set up your new connection.
10. Double-click **Create a new connection**.
11. Click **Next** to start the New Connection Wizard.

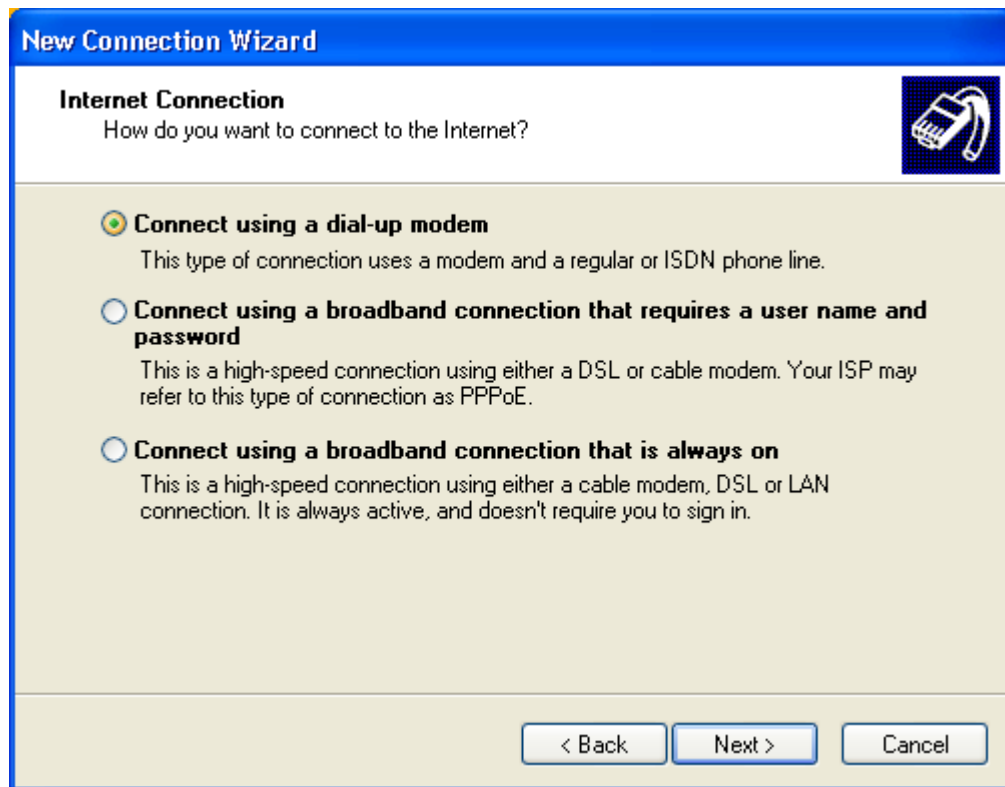
12. Select the **Connect to the Internet** radio button and click **Next**.



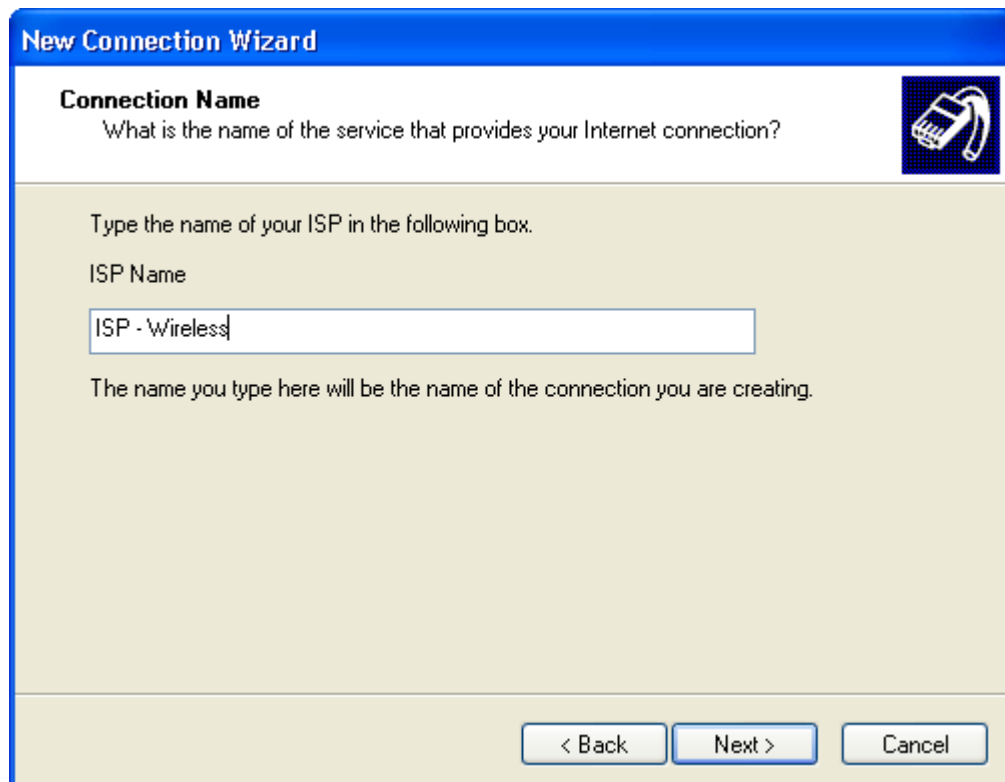
13. Select the **Set up my connection manually** radio button and click **Next**.



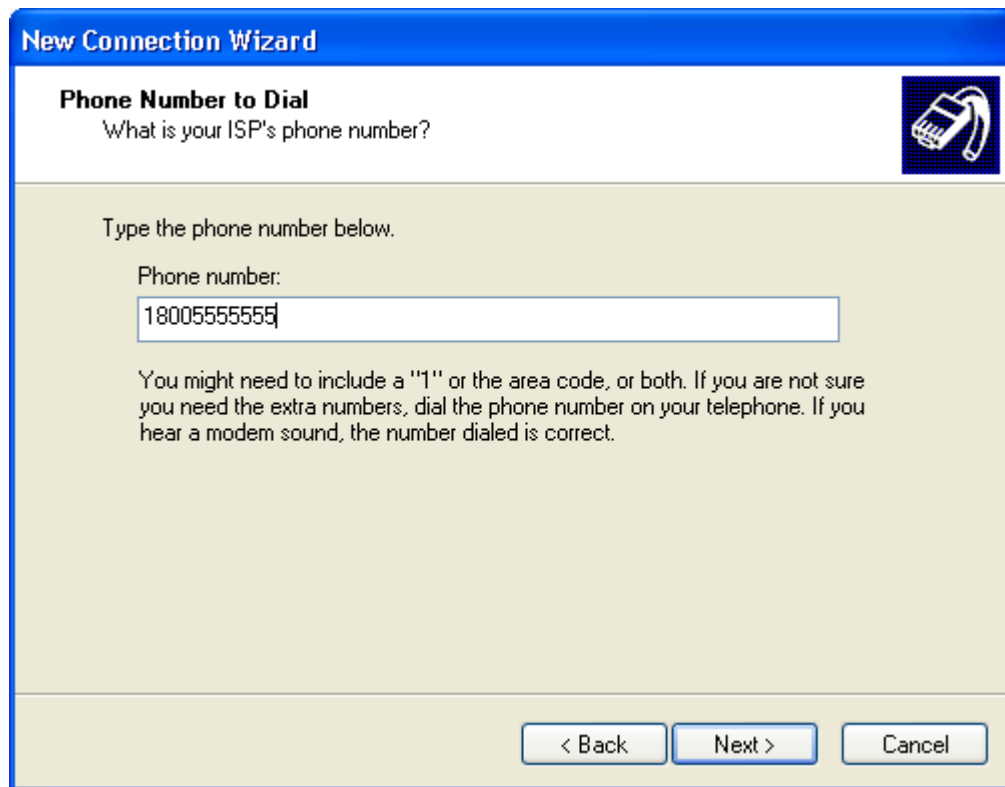
14. Select the **Connect using a dial-up modem** radio button and click **Next**.



15. Enter a name for the connection that describes the ISP and the device you are using to make the connection (ISP - Wireless) and click **Next**.

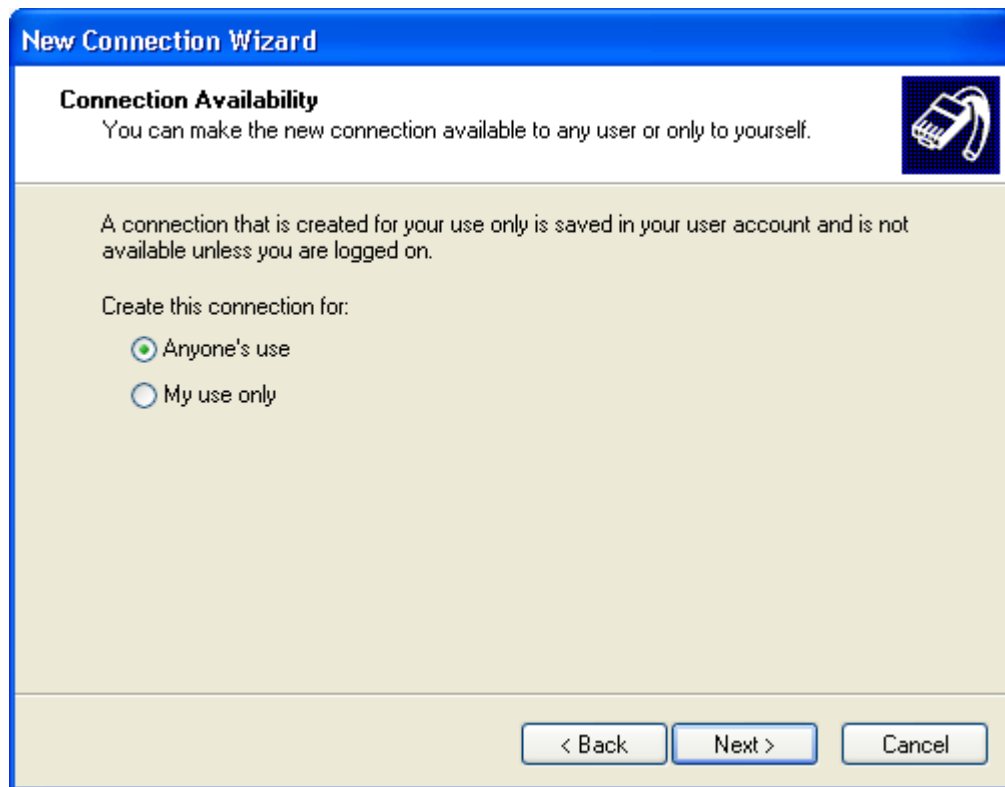


16. If you have more than one modem, select **Kyocera CDMA Wireless Modem** (or the **Kyocera High-Speed CDMA Wireless Modem** if you are using a high-speed phone).
17. Enter the area code and phone number of the ISP and click **Next**.



The screenshot shows a Windows-style dialog box titled "New Connection Wizard". The main heading is "Phone Number to Dial" with a sub-question "What is your ISP's phone number?". A small icon of a mobile phone is in the top right corner. Below the heading, it says "Type the phone number below." and "Phone number:". A text input field contains "18005555555". A note below the field reads: "You might need to include a '1' or the area code, or both. If you are not sure you need the extra numbers, dial the phone number on your telephone. If you hear a modem sound, the number dialed is correct." At the bottom right, there are three buttons: "< Back", "Next >", and "Cancel".

18. Choose who can use this connection and click **Next**.



New Connection Wizard

Connection Availability
You can make the new connection available to any user or only to yourself.

A connection that is created for your use only is saved in your user account and is not available unless you are logged on.

Create this connection for:

- Anyone's use
- My use only

< Back Next > Cancel

19. Enter your ISP settings and click **Next**.



New Connection Wizard

Internet Account Information
You will need an account name and password to sign in to your Internet account.

Type an ISP account name and password, then write down this information and store it in a safe place. (If you have forgotten an existing account name or password, contact your ISP.)

User name:

Password:

Confirm password:

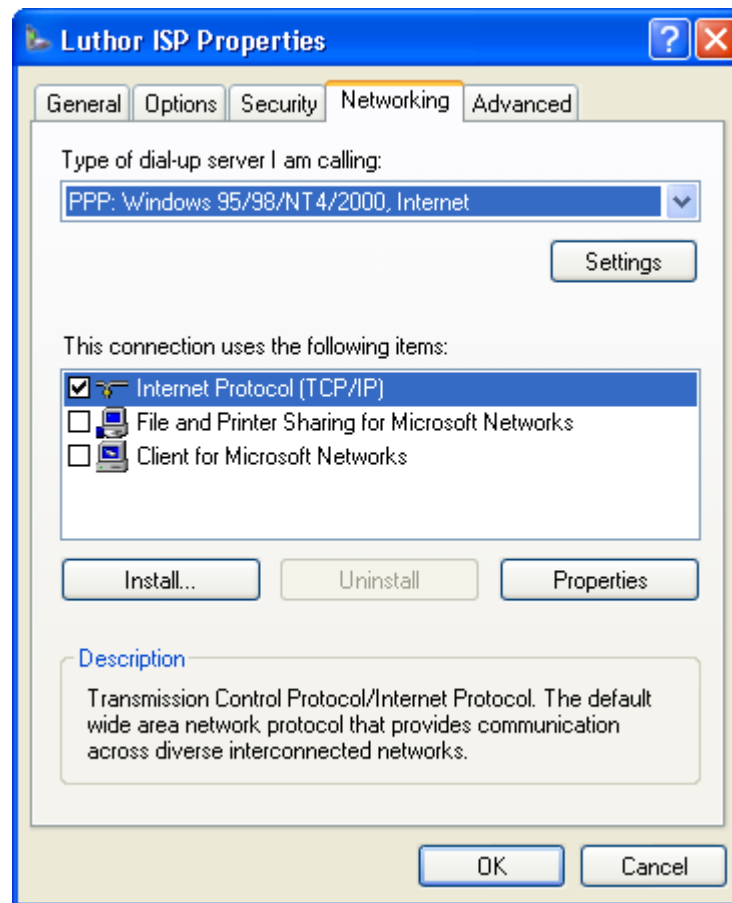
- Use this account name and password when anyone connects to the Internet from this computer
- Make this the default Internet connection
- Turn on Internet Connection Firewall for this connection

< Back Next > Cancel

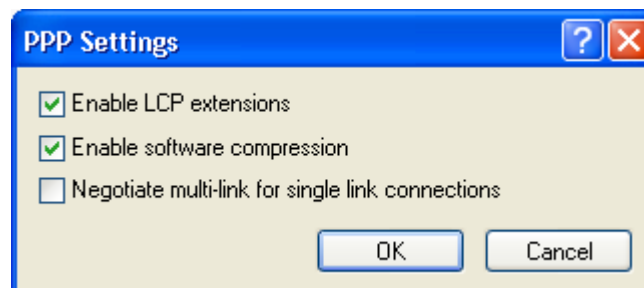
20. Click **Finish**. The window for the new connection appears.

21. Click Properties.

22. Click the **Networking** tab.

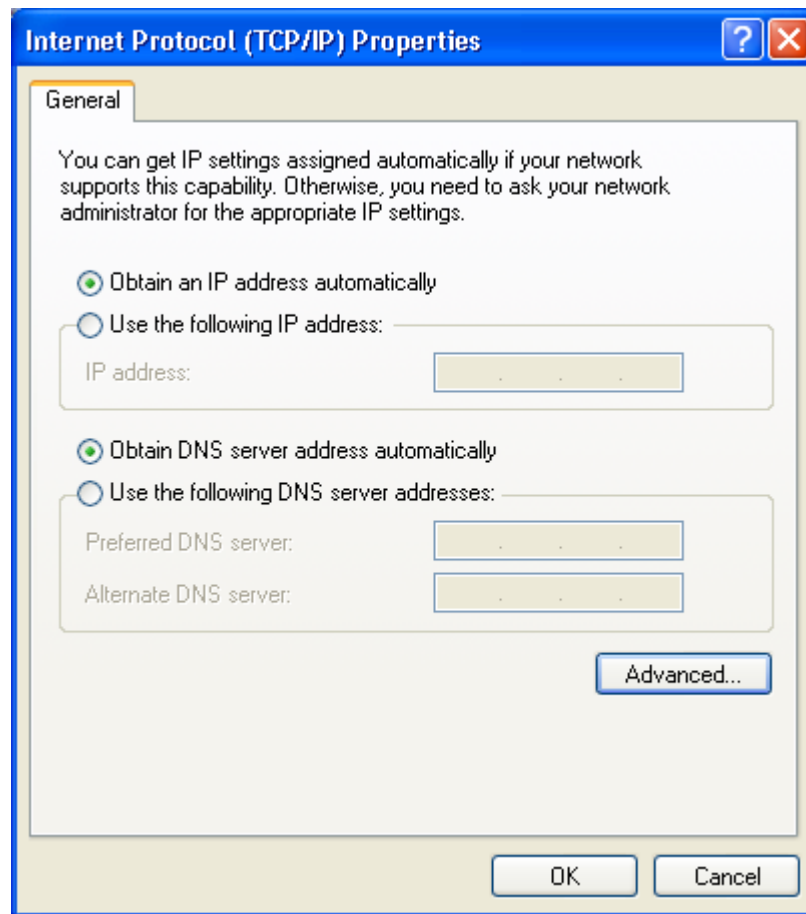


23. Click **Settings** and verify your PPP settings. Click **OK**.



24. Return to the **Networking** tab and verify the correct protocols are used.

25. Highlight the **Internet Protocol(TCP/IP)** protocol and click **Properties**.



26. Verify any special settings here, especially (DNS) Domain Name Server addresses, if they are used. Click **OK** to close the window.

You may be able to increase your connection speed by adjusting your settings, please contact your Internet Service Provider for help.

MAKING A QUICKNET CONNECT DATA CALL

Most phone service providers offer a QuickNet Connect™ (QNC) packet data connection. This service allows you to quickly and reliably connect to the Internet without dialing your Internet service provider. Your provider may have another name for this service. Contact your service provider for details on obtaining a packet data connection.

1. Open **Dial-Up Networking**.
2. Double-click the **Make New Connection** icon.
3. Type a name for your new connection.
4. Select your installed modem, then click **Next**.
5. Leave the area code blank and enter the special dial string provided by your service provider as the telephone number and click **Next**, then **Finish**. Contact your service provider to obtain these special dial strings.
6. Answer **Connection Availability** question and click **Next**.

7. Type a new name for your connection and click **Finish**.
8. Right-click the **New** icon and select **Properties**.
9. Click **Server Types** and check **TCP/IP**. Uncheck **Log on to network**, **NetBEUI** and **IPX/SPX/Compatible**.
10. Obtain the user name and password from your phone's service provider.

TROUBLESHOOTING

Call Failed Or No Carrier Or Beeping/busy/alarm sound

If you try to make a data call and the phone displays one of these messages:

Call Failed, No Carrier, or Beeping/Busy/Alarm sound

it means that either there are no CDMA data services in your area or your phone's account is not properly provisioned to use the CDMA data services. Please check with your phone's service provider for assistance.

Call Drops

If your call drops soon after it starts, disconnect the data cable from the phone and try making a voice call to the number you are trying to dial (your Internet service provider).

Call Disconnects

If you are connecting to your ISP's server but get disconnected, there may be a problem with your DUN configuration or even with your Internet service provider. Check your DUN settings and contact your Internet service provider.

ERROR - CAN'T OPEN PORT or PORT IN USE

Ensure that no other application that uses the COM port is running, such as a program that synchronizes your handheld device to your computer. Examples of these programs include HotSync® or ActiveSync®. If your USB driver shares the same COM port, close the application to use the wireless modem. Do not install more than one modem on a COM port.

Helpful hints

- If you have the USB version of the data cable kit, install the USB drivers **before** connecting your USB cable to your computer. If you connect the USB cable to your computer before installing the drivers, it may cause the drivers to be installed in an incorrect location on your computer. If this happens, you may need to update the driver manually. Open the **Device Manager**. If your USB driver did not install properly it may appear as **Other Device**. Highlight it, click **Properties** and then click **Update Driver**. Follow the directions to update the drivers. They are located on the CD-ROM drive at **/Usb/win9x-me** or **/win2k-xp** depending on which version of Windows you are running.
- **Always** reboot your computer after installing USB drivers, adding a modem, or creating a dial-up networking connection.
- **Only** assign one modem to a communications (COM) port on your computer. If you are using a Kyocera 2235, 2255, 2325, or 2345 phone, install the Kyocera CDMA High-Speed Wireless Modem. Contact your phone's service provider for information on additional charges.
- The Kyocera high-speed phone models have a default COM port speed of 115.2 kbps. This is the data rate at which your phone connects with your computer. The phones' COM port speed can be lowered to 19.2 kbps or raised to 230.4 kbps. The Kyocera CDMA Wireless Modem has a default data speed of 19.2 kbps. The Kyocera CDMA High-Speed Wireless Modem has a default data speed of 115.2 kbps and can be set to a maximum of 230.4.

Make sure the data speeds on your phone and wireless modem are the same. To change your phone's data speed, consult the user guide that came with your phone.

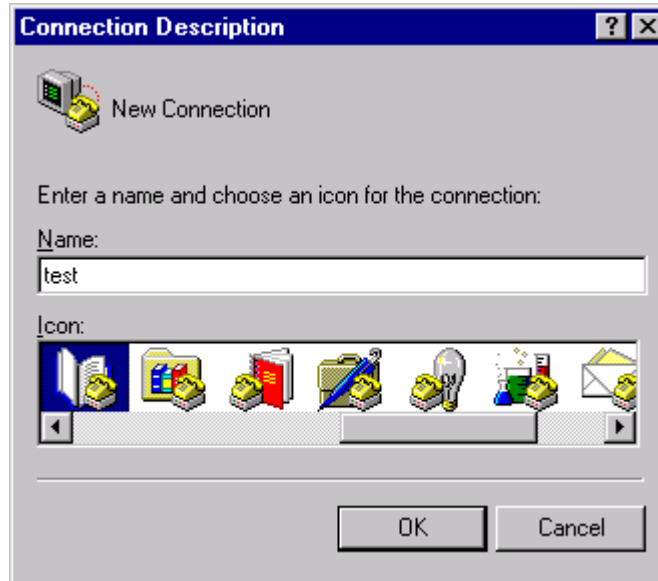
- Make sure the phone is on and the cable is firmly connected to an enabled COM port with no hardware resource conflicts.
- Make sure you properly added your modem to your computer.
- Make sure your IR (infrared) port does not conflict with your COM port. Disable it if you are not using it. An IR port can interfere with the COM port even after you successfully connect. Also, some products may not show any conflict on COM1, but disabling the IR port may fix the problem.
- If your computer's port appears to be locked, reboot your computer.
- Do not use 'Disable call waiting' when configuring Dialing Properties.

Diagnosing Com port problems using HyperTerminal

If you are experiencing problems with your modem, you can verify that your phone and computer are communicating using HyperTerminal. Follow the steps here.

Note: Running diagnostics from Modem Properties will not work because the computer attempts to communicate with the phone at a different rate of speed.

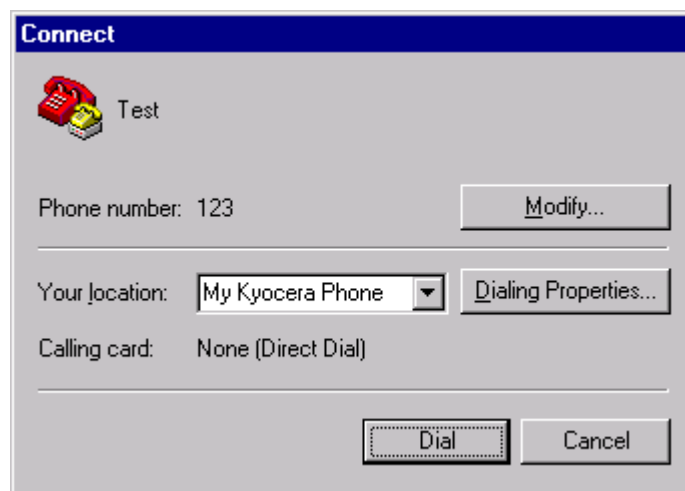
1. From your **Start** menu on the desktop, select **Programs** → **Accessories** → **HyperTerminal**.
2. Enter a name for the new connection, such as 'Test' and select an icon. Click **OK**.



3. Enter '123' and click **OK**. This is just a test, so a real phone number is not required.



4. At the Connect screen, click **Cancel**.



5. In the upper left corner of your HyperTerminal display, the cursor will be blinking. Type in **ATZ** and your phone should reply **OK**.
6. Type in **AT&V** and your phone should provide your computer with several strings of code.

If your phone replies **OK** and sends your computer the strings of code discussed in step 6, your phone and computer are communicating and your wireless modem is operating properly.

FREQUENTLY ASKED QUESTIONS

How do I connect to a Data-Enabled Hands-free Car Kit?

There are Hands-free Car Kits for certain Kyocera phone models. These Hands-free Car Kits use their own data cable to connect to a computer's RS-232 COM port. Once connected, the phone and computer function the same as using the data cable recommended by Kyocera.

The Data Enabled Hands-free Car Kit offers several advantages:

- the phone is conveniently mounted
- the phone is powered
- the phone is attached to an external antenna

Note: The car accessory switch must be on and supplying power to the kit for the computer to communicate with phone. Data capabilities are not included in the Portable Hands-Free Car Kit. These kits do not support USB connections.

Does the phone understand AT commands?

Yes. For information on AT commands, see the AT Command Reference section on [page 21](#) of this guide.

At what speed can I send data?

CDMA data transmission provides faster and more reliable connections than analog technology. You can expect to connect at 14.4 kbps minimum speed, but speeds could be higher. Speeds at which you can send and receive data are contingent on several factors, including your carrier, location, your proximity to the base station, and other considerations. If you have a high-speed phone, check with your service provider to find the data rate they support.

GETTING HELP

This setup guide provides basic information on wireless modem setup. Review the **Troubleshooting** section of this guide on [page 17](#). If you do not find the information you are looking for, you may need to refer to your computer's user manual for help setting up your modem connections, etc.

If you need further assistance, contact the Kyocera Wireless Corp. Customer Care Center:

- Phone: (800) 349-4478 (toll-free in the USA and Canada only) or (858) 882-1401
- E-mail: phone-help@kyocera-wireless.com
- Web site: www.kyocera-wireless.com
- Kyocera Wireless Corp., 10300 Campus Point Drive, San Diego, CA 92121 USA

AT COMMAND REFERENCE

The modem functions in the phone are controlled using the same industry standard AT commands that are used to control landline modems. A knowledge of these commands is not required by most users of the phone, but they are provided here for reference.

The parameters set by the various AT commands in the appendix are remembered by the phone, and are transmitted to the modem at the carrier's site each time you make a call. In this way, your settings continue to be used until you power down the phone. The settings are lost on power-down.

It also gives you automatic support of all AT commands that are unknown to the phone but are supported by your cellular carrier. Since the carrier may charge you for the air time used for this connection, the phone's autoconnect ability is disabled by default. (Use the AT+CXT command to change this behavior.)

The phone has two operational states:

- Command state
- Online state

Initially, it is in the command state where the phone accepts the industry-standard AT commands. When instructed to dial out or answer a data call, the phone is in the online state.

Modes of Operation

Asynchronous mode—transfers information between two computers.

Facsimile (fax) mode—transfers information between two Group 3 fax machines with digital interfaces (or computer applications that can emulate these machines).

Speeds

Kyocera CDMA Wireless Modem

The COM port speed for most phones is 19.2 kbps at power-up. If you are connecting with a phone that has a default COM port speed of 19.2 kbps, select the Kyocera CDMA Wireless Modem as your modem choice. Your computer's COM port speed must also be configured at 19.2 kbps. The baud rate can be changed via the AT+IPR command, but it will return to 19.2 kbps after a power cycle. If you are connecting to a Kyocera high-speed phone, the default baud rate is 115.2 kbps. Select the Kyocera CDMA High-Speed Wireless Modem.

Kyocera CDMA High-Speed Wireless Modem

The Kyocera high-speed phone models are capable of sending and receiving data at higher speeds. These phones have a default data speed of 115.2 kbps. Your computer port speed must be configured at 115.2 kbps also. The phone's COM port speed can be changed via the AT+IPR command. The phone's COM port speed can be lowered to 19.2 kbps or raised to 230.4kbps through the phone menu. Consult the user guide that came with your phone.

Command Line Syntax

A command line consists of the Attention code, followed by one or more commands, followed by the end of line code. The Attention code is the character pair "AT" or "at."

By default, the end of line character is the ASCII CR character (decimal 13), unless it is changed by the S3 command (see the S-Registers Table). Spaces are ignored but may be included between commands, if desired.

The basic and S-register commands may follow each other on the command line without any separating delimiters. The extended format commands (those beginning with a "+" character) must be terminated by a ";" if they are followed by another command on the same line. A ";" is not required after the last command on the line.

Commands may be edited by using the backspace character. The backspace deletes the last character in the command line. The backspace will not delete the AT at the beginning of the line.

The A/ command repeats the last command line received by the modem. The A/ is used in place of the AT and is not followed by a carriage return.

Basic Sets of Commands

This section lists some basic commands for you to use with your phone.

Command	Description
ATDT5553232	Connects to the number 555-3232. There is a delay of up to 20 seconds before the phone actually connects. Successful connection is identified by a connect message on the computer. Your cellular carrier may support the *3282 prefix for modem pools. If they do, ask them how to use it in order to receive better AMPS data performance.
ATH	Hangs up the phone. There is a delay before this happens.
ATSO=3	Sets auto answer 15 seconds after first ring.
AT+CXT	Sets whether the phone will originate a call upon reception of an unknown AT command. AT+CXT=0 disables the unknown AT command origination.

Types of Commands

There are nine types of commands:

1. Basic AT parameters
2. S-registers
3. Basic Action commands
4. Extended Configuration commands
5. Fax parameters
6. Fax Action commands
7. Cellular CDMA commands
8. Cellular AT commands
9. Cellular Identification commands

Result Codes

When in the command mode, eight possible result codes may be returned.

The digit code is returned when the verbose mode is OFF; the word code is returned when the verbose mode is ON. See the “V” command in the Basic AT Parameters Table.

Extended result codes may also be returned. Extended result codes are listed in the following table.

Result Codes Table

Digit	Verbose	Description
0	OK	Command executed without errors.
1	CONNECT	Connected to remote modem.
2	RING	Incoming Call.
3	NO CARRIER	Carrier from remote modem lost or never present.
4	ERROR	Error in the command line.
6	NO DIALTONE	No dial tone detected within time out period.
7	BUSY	Busy signal detected.
8	NOANSWER	Five seconds of silence not detected after ring back when @ dial modifier is used.

Basic AT Parameters

These commands control the basic configuration of the modem. The parameters can only be read back by the &V command when in command state. The following table shows the command format.

Basic AT Parameters Table

Parameter	Description
E0	Do not echo commands in command state or online command state.
E1	Echo commands in command state or online command state.
L0	Low speaker volume.
L1	Low speaker volume.
L2	Medium speaker volume.
L3	High speaker volume.
M0	Speaker off.
M1	Speaker on until carrier reported (support of this feature is optional).
M2	Speaker on (support of this feature is optional).
Q0	Return result codes.
Q1	Do not return result codes.

Basic AT Parameters Table

Parameter	Description
V0	Display result codes as numbers.
V1	Display result codes as words.
X1	Enable additional result code CONNECT <rate>. Disable dial tone and busy detection. ^Ψ
X2	Enable additional result codes CONNECT <rate> and NO DIALTONE. Disable busy detection. Enable dial tone detection. ^Ψ
X3	Enable additional result codes CONNECT <rate> and BUSY. Enable busy detection. Disable dial tone detection. ^Ψ
X4	Enable additional result codes CONNECT <rate>, BUSY and NO DIALTONE. Enable busy and dial tone detection. ^{Ψ*}
Z0	Reset to default configuration.
&C0	Circuit 109 (CF) always ON.
&C1	Circuit 109 (CF) ON in accordance with the specified service.
&C2	Circuit 109 (CF) always on except wink on channel disconnect.
&D0	Ignore circuit 108/2 (CD).
&D1	Enter online command state following ON-to-OFF transition of circuit 108/2.
&D2	Enter command state following On to Off transition of circuit 108/2.
T	Select tone dialing.
P	Select pulse dialing.
&F0	Effect is implementation dependent.
&FO	Set to default configuration.
&V	Dump configuration parameters.

^ΨFor async data or fax settings, the dialtone detection settings do not apply.

* Factory Default Settings

S-Registers

The value of an S-register may be set by using the syntax,

Sn=xxx

where n is the register number and xxx is a decimal value.

For instance, to set the register S0 to 3, the command S0=3 would be used.

The following table describes the S-registers.

S-Registers Table

Register	Value	Description
S0	0 [1 to 255]	Disable automatic answering. [Enable automatic answering after (Value - 1) * 6 seconds.]
S3	13	Carriage Return character.
S4	10	Line Feed character.
S5	8	Backspace character.
S6	2 to 10 2	Pause before blind dialing.
S7	1 to 255 [50]	Number of seconds to establish end-to-end data connection.
S8	0 to 255 2	Number of seconds to pause when “,” is encountered in dial string.
[S9]	0 to 255 6	Carrier detect threshold in increments of 0.1 second.
S10	1 to 254 [14] [255]	Number of tenths of a second from carrier loss to disconnect. [Disable carrier detect.]
[S11]	50 to 255 95	DTMF tone duration and spacing in milliseconds.

Basic Action Commands

The following table describes the Basic Action commands.

Basic Action Commands Table

Command	Description
A	Go off hook. Answer any incoming call
D<dial string>	Dial. The dial string may contain the following characters: Digits 0 to 9, *, #, A, B, C, and D. The dial string may contain the following dial modifiers: T Tone dialing P Pulse dialing , Pause during dialing W Wait for dial tone @ Wait for quiet answer

Basic Action Commands Table

Command	Description
!	Hook flash
\$	Wait for billing tone (for credit-card calls)
;	After dialing, the phone remains in command state
HO	Disconnect and return to command state.
O0	Return to online data state from O0

Extended Commands

The extended commands use the extended syntax. To set a value using an extended command, use the WRITE command:

```
+CMD=xxx
```

where CMD is the command, and xxx is the value.

Some extended commands take more than one value. For example, the WRITE command for two values becomes

```
+CMD=xxx,yyy
```

Some extended commands take character strings as values, instead of numbers. In that case, the syntax is

```
+CMD="character string"
```

Note that while spaces are ignored everywhere else, spaces are significant inside the quotation marks.

To read back a value, use the READ command:

```
+CMD?
```

To determine if a particular command is supported, along with the range of values it supports, use the TEST command:

```
+CMD=?
```

An extended command must be terminated with a semicolon if another command follows it on a single command line.

The following table describes the extended AT configuration commands.

Extended AT Configuration Commands Table

Command	Description
+DR	Data Compression Reporting. This extended-format numeric parameter controls whether the extended-format "+DR:" intermediate result code is transmitted from the IWF over the Um interface.
+DS	Data Compression. This extended-format compound parameter controls the V.42bis data compression function on the PSTN link if provided in the IWF.
+EB	Break Handling in Error Control Operation. This extended-format compound parameter is used to control the manner of V.42 operation on the PSTN link (if present in the IWF).
+EFCS	This extended-format numeric parameter controls the use of the 32-bit frame check sequence option in V.42 on the PSTN link (if present in IWF).

Extended AT Configuration Commands Table

Command	Description
+ER	Error Control Reporting. This extended-format numeric parameter controls whether the extended-format "+ER:" intermediate result code is transmitted from the IWF over the Um interface.
+ES	Error Control Selection. This extended-format compound parameter is used to control the manner of operation of the V.42 protocol on the PSTN link (if present in the IWF).
+ESR	This extended-format numeric parameter controls the use of the selective repeat (SREJ) option in V.42 on the PSTN link (if present in the IWF).
+ETBM	This extended-format compound parameter controls the handling of data remaining in IWF buffers upon service termination.
+GCAP	This extended-format command causes the MT2 to transmit one or more lines of information text in a specific format. The content is a list of additional capabilities command +<name>s, which is intended to permit the user of the MT2 to identify the minimum capabilities of the MT2. An MT2 conforming to this standard shall include the following items, as a minimum, in the result code for the +GCAP command +CIS707, +MS, +ES, +DS, +FCLASS.
+GMI	This command causes the MT2 to transmit one or more lines of information text, determined by the manufacturer, which is intended to permit the user of the MT2 to identify the manufacturer. Typically, the text will consist of a single line containing the name of the manufacturer, but manufacturers may choose to provide more information if desired (e.g., address, telephone number for customer service, etc.).
+GMM	This command causes the MT2 to transmit one or more lines of information text, determined by the manufacturer, which is intended to permit the user of the MT2 to identify the specific model of the device. Typically, the text will consist of a single line containing the name of the product, but manufacturers may choose to provide any information desired.
+GMR	This command causes the MT2 to transmit one or more lines of information text, determined by the manufacturer, which is intended to permit the user of the MT2 to identify the version, revision level or date, or other pertinent information of the device. Typically, the text will consist of a single line containing the version of the product, but manufacturers may choose to provide any information desired.
+GOI	This command causes the MT2 to transmit one or more lines of information text, determined by the manufacturer, which is intended to permit the user of the MT2 to identify the device, based on the ISO system for registering unique object identifiers. Typically, the text will consist of a single line containing numeric strings delimited by period characters.
+GSN	This command causes the MT2 to transmit one or more lines of information text, determined by the manufacturer, which is intended to permit the user of the MT2 to identify the individual device. Typically, the text will consist of a single line containing a manufacturer determined alpha-numeric string, but manufacturers may choose to provide any information desired.

Extended AT Configuration Commands Table

Command	Description
+ICF	TE2-MT2 Character Framing. This extended-format compound parameter is used to determine the local serial port start-stop (asynchronous) character framing that the MT2 shall use while accepting TE2 commands and while transmitting information text and result codes to the TE2, if this is not automatically determined (see +IPR).
+IFC	TE2-MT2 Local Flow Control. This extended-format compound parameter is used to control the operation of local flow control between the TE2 and MT2 [1].
+ILRR	TE2-MT2 Local Rate Reporting. This extended-format numeric parameter controls whether the extended-format +ILRR:<rate> information text is transmitted from the MT2 to the TE2.
+IPR	Fixed Rm Rate. This numeric extended-format parameter specifies the data rate at which the MT2 will accept commands, in addition to 1200 bit/s or 9600 bit/s (as required in EIA/TIA-602). It may be used to select operation at rates at which the MT2 is not capable of automatically detecting the data rate being used by the TE2.
+MA	Modulation Automode Control. This extended-format compound parameter is a list of modulations that the base station may use to connect with the remote DCE in Automode operation, for answering or originating data calls, as additional alternatives to the modulation specified in the +MS command.
+MR	Modulation Reporting Control. This extended-format numeric parameter controls whether the extended-format +MCR:<carrier> and +MRR:<rate> intermediate result codes are transmitted from the IWF to the mobile station.
+MS	Modulation Selection. This extended-format compound parameter is used to control the manner of operation of the modulation capabilities in the IWF.
+MV18R	V.18 Reporting Control. This extended-format numeric parameter controls whether the extended-format "+MV18R:" result code is transmitted from the IWF to the mobile station.
+MV18S	V.18 Selection. This extended-format compound parameter is used to control the manner of operation of the V.18 capabilities (if present in the IWF).

Fax Parameters

The Fax parameters follow the same syntax rules as the extended commands, except that the numeric values are in hexadecimal, instead of decimal. The following table describes the Fax parameters.

These commands are used between Fax applications and the modem and are listed for reference only.

Fax Parameters Table

Command	Description
+FAA	Adaptive-answer parameter. See +FCLASS.
+FAP	Addressing and Polling capabilities parameter.
+FBO	Phase-C data-bit-order parameter.
+FBS	Buffer size. Read-only parameter.
+FBU	HDLC-frame-reporting parameter.
+FCC	DCE-capabilities parameters. VC - Vertical-resolution subparameter. [BR] - Bit-rate subparameter. <ul style="list-style-type: none"> • 2400 bits/s • 4800 bits/s • 7200 bits/s • 9600 bits/s WD - Page-width subparameter. [LN] - Page-length subparameter. [DF] - Data-compression-format subparameter. [EC] - Error-correction subparameter. BF - Binary-file-transfer subparameter. ST - Scan-time-per-line subparameter.
[+FCLASS]	Service-class selection parameter. <ul style="list-style-type: none"> • Class-0 • [Class-1 support unavailable] • Class-2.0 fax service (EIA/TIA-592)
+FCQ	Copy-quality-checking parameter.
[+FCR]	Capability-to-receive parameter.
+FCS	Current-session results parameters.
+FCT	DTE Phase-C timeout parameter.
+FEA	Phase-C received EOL-alignment parameter.
+FFC	Format-conversion parameter.
+FHS	Call-termination-status parameter.
+FIE	Procedure-interrupt-enable parameter.
+FIS	Current-session negotiation parameters.

Fax Parameters Table

Command	Description
[+FLI]	Local-ID-string parameter (TSI or CSD).
+FLO	Flow-control-select parameter.
+FLP	Indicate-document-to-poll parameter.
+FMI	Request DCE manufacturer identification.
+FMM	Request DCE model.
+FMR	Request DCE revision.
[+FMS]	Minimum-Phase-C-speed parameter.
+FNR	Negotiation-message-reporting control parameters.
+FNS	Nonstandard-frame FIF parameter.
+FPA	Selective Polling Address parameter.
[+FPI]	Local-polling-ID-string parameter.
+FPR	Serial-port-rate-control parameter.
[+FPS]	Page-status parameter.
+FPW	Password parameter (Sending or Polling).
[+FRQ]	Receive-quality-threshold parameters.
+FRY	ECM-retry-value parameter.
+FSA	Subaddress parameter.
[+FSP]	Request-to-poll parameter.

Fax Action Commands

Fax action commands do not have arguments.

Fax Action Commands Table

Command	Description
+FDR	Receive Phase-C data
+FDT	Transmit Phase-C data
+FIP	Initialize facsimile parameters
+FKS	Terminate session

Cellular CDMA Commands

The cellular CDMA commands use the same syntax as the other extended commands. Numeric values are decimal. The following table describes the Cellular CDMA commands.

Cellular AT Commands

CDMA AT Parameter Commands Table

Command	Description
+CXT=<value>	<p>Cellular Extension.</p> <p>0 Do not pass unrecognized commands to the IWF.*</p> <p>1 When detecting an unrecognized AT command, open transport layer connection and pass unrecognized command to the IWF.</p>
+CFG="<string>"	<p>Configuration String.</p> <p>The string (up to and including the termination character) will be stored by the MT2 and sent to the base station prior to dialing. Each transmission of an AT+CFG command from the TE2 replaces the contents of the previous string. The string may be up to 248 characters.</p>
+CAD?	<p>Query Analog or Digital Service.</p> <p>Returns:</p> <p>0 if no service is available</p> <p>1 if CDMA Digital service available</p> <p>2 if TDMA Digital service available</p> <p>3 if Analog service is available</p> <p>(values 4–255 reserved)</p>
+CDR	<p>Um Interface Data Compression Reporting.</p> <p>This extended-format numeric parameter controls whether or not the extended-format "+CDR:" intermediate result code is transmitted by the MT2. The result code is the same as for the TIA/EIA/IS-131 +DR: result code.</p>
+CDS	<p>Um Interface Data Compression. This extended-format compound parameter controls the V.42bis data compression function on the Um interface. The command format is the same as for the TIA/EIA/IS-131 +DS command.</p>
+CRM=<value>	<p>Set Rm interface protocol.</p> <p>0 Asynchronous Data or Fax</p> <p>1 Packet data service, Relay Layer Rm interface</p> <p>2 Packet data service, Network Layer Rm interface, PPP</p> <p>3 Packet data service, Network Layer Rm interface, SLIP</p> <p>4 STU-III Service</p> <p>5–127 Reserved for future use</p> <p>128–255 Reserved for manufacturer specific use</p> <p>Note: The default value for the +CRM parameter shall be 0 if this value is supported by the MT2. If 0 is not supported, the default +CRM value shall be manufacturer-specific.</p>

CDMA AT Parameter Commands Table

Command	Description
+CBC?	<p>Battery Charge.</p> <p>Read-only. Returns <BCS>,<BCL></p> <p>BCS:</p> <p>0 MT2 powered by battery, BCL = status</p> <p>1 MT2 connected to external power</p> <p>2 Battery status not available</p> <p>3 Recognized power fault. Calls inhibited.</p> <p>BCL:</p> <p>0–100 Remaining battery capacity is 0–100%.</p>
+CQD=<value>	<p>Command State Inactivity Timer.</p> <p>0 Ignored</p> <p>1–255 Release call after 5x<value> seconds have elapsed without activity. The default <value> shall be 10, corresponding to 50 seconds.</p>
+CRC=<value>	<p>Cellular Result Codes.</p> <p>0 Disable Cellular Result Codes*</p> <p>1 Enable Cellular Result Codes</p>
+CMIP?	<p>Mobile Station IP Address.</p> <p>Read-only. Returns the mobile station's temporary IP address.</p>
+CBIP?	<p>Base Station IP Address.</p> <p>Read-only. Returns the base station's IP address.</p>
+CSS?	<p>Serving System.</p> <p>Read-only. Returns <AB>,<SID></p> <p>AB:</p> <p>A The mobile station is registered with an A-band system.</p> <p>B The mobile station is registered with a B-band system.</p> <p>Z The mobile station is not registered.</p> <p>SID:</p> <p>0–16383 The mobile station is registered with the system indicated.</p> <p>99999 The mobile station is not registered.</p>

CDMA AT Parameter Commands Table

Command	Description
+CSQ?	<p>Query Received Signal Quality.</p> <p>Returns the Signal Quality Measure <SQM> and the Frame Error Rate <FER> as follows:</p> <p>Signal Quality Measure <SQM></p> <p>0–31 Signal Quality Measurement^{Note 1}.</p> <p>99 SQM is not known or is not detectable.</p> <p>All other values are reserved.</p> <p>Frame Error Rate <FER></p> <p>0<0.01%</p> <p>10.01% to less than 0.1%</p> <p>20.1% to less than 0.5%</p> <p>30.5% to less than 1.0%</p> <p>41.0% to less than 2.0%</p> <p>52.0% to less than 4.0%</p> <p>64.0% to less than 8.0%</p> <p>7≥8.0%</p> <p>99 <FER> is not known or is not detectable.</p> <p>All other values are reserved.</p>
+CFC=<value>	<p>Um Interface Fax Compression.</p> <p>0 No compression.*</p> <p>1 V.42b is compression with parameters as set by the +CDS command.</p> <p>2 Modified Read compression.</p>

* Factory Default Settings

^{Note 1} The exact meaning of the Signal Quality Measure shall be manufacturer defined. The lowest quality reported by SQM shall be defined as value 00. The highest quality reported by SQM shall be defined as value 31.

These commands allow the data terminal to be used as an automatic dialer for voice calls. The format of these commands is shown in the following table.

Cellular AT Command Extensions in Support of Voice Services Table

Command	Description
+CHV<value>	<p>Hangup Voice.</p> <p>0 Hangup voice call</p> <p>1–255 Reserved</p>
+CDV<dial string>	<p>Dial command for voice calls.</p> <p>The format of <dial string> is identical to that for the ATD command.</p> <p>This command does not cause the MT2 to change to the online state.</p>

Cellular AT Command Extensions in Support of Voice Services Table

Command	Description
+CGCAP	<p>This extended-format command causes the IWF to transmit one or more lines of information text in a specific format. The content is a list of additional capabilities command +<name>s, which is intended to permit the user of the IWF to identify the minimum capabilities of the IWF.</p> <p>IWFs conforming to this standard shall include the following items, as a minimum, in the result code for the +CGCAP command: +CIS707, +MS, +ES, +DS, +FCLASS</p>
+CGMI	<p>This command causes the IWF to transmit one or more lines of information text, determined by the manufacturer, which is intended to permit the user of the IWF to identify the manufacturer. Typically, the text will consist of a single line containing the name of the manufacturer, but manufacturers may choose to provide more information if desired (e.g., address, telephone number for customer service, etc.)</p>
+CGMM	<p>This command causes the IWF to transmit one or more lines of information text, determined by the manufacturer, which is intended to permit the user of the IWF to identify the specific model of the device. Typically, the text will consist of a single line containing the name of the product, but manufacturers may choose to provide any information desired.</p>
+CGMR	<p>This command causes the IWF to transmit one or more lines of information text, determined by the manufacturer, which is intended to permit the user of the IWF to identify the version, revision level or date, or other pertinent information of the device. Typically, the text will consist of a single line containing the version of the product, but manufacturers may choose to provide any information desired.</p>
+CGOI	<p>This command causes the IWF to transmit one or more lines of information text, determined by the manufacturer, which is intended to permit the user of the IWF to identify the device, based on the ISO system for registering unique object identifiers. Typically, the text will consist of a single line containing numeric strings delimited by period characters.</p>
+CGSN	<p>This command causes the IWF to transmit one or more lines of information text, determined by the manufacturer, which is intended to permit the user of the IWF to identify the individual device. Typically, the text will consist of a single line containing a manufacturer determined alpha-numeric string, but manufacturers may choose to provide any information desired.</p>

Cellular AT Commands for Packet Data Services Table

Command	Description
+CTA=<value>	Set/Read/Test Um packet data inactivity timer. 0 Traffic Channel not released during inactivity periods. 1–255 Release the Traffic Channel after <value> 1-second intervals have elapsed since last sending or receiving RLP data frames on the Um interface. 20 (default)
+CPTC=<value>	Controls Traffic Channel state without affecting the IWF Link Layer connection. 0 Release Traffic Channel 1 Originate Traffic Channel

Cellular Result Codes Table

Result Code	Description
+CERROR: INIT FAILED <failed command>	Initialization string failed.
+CPROG: ANSWER	Indicates remote DCE has answered.
+CPROG: BONGTONE	Billing Tone was detected.
+CPROG: DIALING <number>	Indicates PSTN Dialing.
+CPROG: DIALTONE	Dial tone was detected.
+CPROG: QUIET ANSWER	Indicates Quiet Answer.
+CPROG: RINGING	Indicates PSTN Ringing.
+CPROG: VOICE	Voice detected on the PSTN connection.
RING <service option>	Specifies active service option. The <service option> shall be "ASYNC", "FAX" or "STU-III."