UC15 Windows USB Driver User Guide

UMTS/HSPA Module Series

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Quectel Wireless Solutions Co., Ltd.

Room 501, Building 13, No.99, Tianzhou Road, Shanghai, China, 200233

Tel: +86 21 5108 6236

Mail:info@quectel.com

Or our local office, for more information, please visit:

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About the Document

History

Revision	Date	Author	Description
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1 Introduction

This document mainly introduces how to install USB driver of Quectel module in Windows XP/Vista/7/8, and how to test the module in these systems after USB driver has been installed successfully.

2 Product Overview

UC15 supports both GSM and WCDMA network system. It also supports HSDPA. With this feature, you can easily make a telephone call or send short message. Furthermore, HSDPA can provide faster data service.

For windows systems, the module is a USB composite device. Generally, the module will create five interfaces when you connect it with your windows systems. These five interfaces have different functionalities. The details are shown as below:

Table 1: Interface Description

DM Interface	Diagnose port
Reserved Interface	Reserved port
AT Interface	For AT commands
Modem Interface	For PPP connections and AT commands
NDIS Interface	Network driver interface

NOTE

The NDIS interface is unavailable temporarily.

3 USB Interface Descriptor

During the loading process of USB driver for the module in windows systems, the system will automatically read the device descriptor and the configuration descriptor of the module. Meanwhile, the interface devices will be created according to the interface descriptors of the configuration descriptor.

3.1. Composite Communication Device Enumeration

3.1.1. Device Descriptor

Table 2: Device Descriptor

Name	Value	Dec	Hex
bLength	18	18	0x12
bDescriptorType	Device	1	0x01
bcdUSB	2.0	512	0x0200
bDeviceClass	Class defined at interface level	0	0x00
bDeviceSubClass	Subclass defined at interface level	0	0x00
bDeviceProtocol	None	0	0x00
bMaxPacketSize0	64	64	0x40
idVendor	0x05c6	1478	0x05c6
idProduct	0x9090	37008	0x9090
bcdDevice	0.0	0	0x0000
iManufacturer	3	3	0x03
iProduct	2	2	0x02
iSerialNumber	0	0	0x00

bNumConfigurations	1	1	0x01

3.1.2. Configuration

Table 3: Configuration Descriptor\Configuration

Name	Value	Dec	Hex
bLength	Valid	9	0x09
bDescriptorType	Configuration	2	0x02
wTotalLength	138bytes	138	0x008A
bNumInterfaxe	5	5	0x05
bConfigurationValue	1	1	0x01
iConfiguration	1	1	0x01
bmAttributes	0xE0	224	0xE0
bmAttributes.RemoteWakeup	Supported	1	0x01
bmAttributes.SelfPowered	Yes	1	0x01
bmAttributes.Reserved7	One	1	0x01
bMaxPower	500mA	250	0xFA

3.1.3. Interface 0 (DM Port)

Table 4: Configuration Descriptor\Interface 0

Name	Value	Dec	Hex
bLength	Valid	9	0x09
bDescriptorType	Interface	4	0x04
bInterfaceNumber	0	0	0x00
bAlternateSetting	0	0	0x00
bNumEndpoints	2	2	0x02

bInterfaceClass	Vendor-specific	255	0xFF
bInterfaceSubClass	Vendor-specific	255	0xFF
bInterfaceProtocol	Vendor-specific	255	0xFF
iInterface	0	0	0x00

Table 5: Configuration Descriptor\Interface 0\Endpoint Descriptor 1

Name	Value	Dec	Hex
bLength	Valid	7	0x07
bDescriptorType	Endpoint	5	0x05
bEndpointAddress	1 IN	129	0x81
bmAttributes	Transfer-type: BULK	2	0x02
wMaxPacketSize	512bytes	512	0x0200
bInterval	At most one NAK each 32 microframes	32	0x20

Table 6: Configuration Descriptor\Interface 0\Endpoint Descriptor 2

Name	Value	Dec	Hex
bLength	Valid	7	0x07
bDescriptorType	Endpoint	5	0x05
bEndpointAddress	1 OUT	1	0x01
bmAttributes	Transfer-type: BULK	2	0x02
wMaxPacketSize	512bytes	512	0x0200
bInterval	At most one NAK each 32 microframes	32	0x20

3.1.4. Interface 1 (Reserved Port)

Table 7: Configuration Descriptor\Interface 1

Name	Value	Dec	Hex
bLength	Valid	9	0x09
bDescriptorType	Interface	4	0x04
bInterfaceNumber	1	1	0x01
bAlternateSetting	0	0	0x00
bNumEndpoints	2	2	0x02
bInterfaceClass	Vendor-specific	255	0xFF
bInterfaceSubClass	Vendor-specific	255	0xFF
bInterfaceProtocol	Vendor-specific	255	0xFF
iInterface	0	0	0x00

Table 8: Configuration Descriptor\Interface 1\Endpoint Descriptor 1

Name	Value	Dec	Hex
bLength	Valid	7	0x07
bDescriptorType	Endpoint	5	0x05
bEndpointAddress	2 IN	130	0x82
bmAttributes	Transfer-type: BULK	2	0x02
wMaxPacketSize	512bytes	512	0x0200
bInterval	At most one NAK each 32 microframes	32	0x20

Table 9: Configuration Descriptor\Interface 1\Endpoint Descriptor 2

Name	Value	Dec	Hex
bLength	Valid	7	0x07
bDescriptorType	Endpoint	5	0x05
bEndpointAddress	2 OUT	2	0x02
bmAttributes	Transfer-type: BULK	2	0x02
wMaxPacketSize	512bytes	512	0x0200
bInterval	At most one NAK each 32 microframes	32	0x20

3.1.5. Interface 2 (AT Port)

Table 10: Configuration Descriptor\Interface 2

Name	Value	Dec	Hex
bLength	Valid	9	0x09
bDescriptorType	Interface	4	0x04
bInterfaceNumber	2	2	0x02
bAlternateSetting	0	0	0x00
bNumEndpoints	2	2	0x02
bInterfaceClass	Vendor-specific	255	0xFF
bInterfaceSubClass	Vendor-specific	255	0xFF
bInterfaceProtocol	Vendor-specific	255	0xFF
iInterface	0	0	0x00

Table 11: Configuration Descriptor\Interface 2\Endpoint Descriptor 1

Name	Value	Dec	Hex
bLength	Valid	7	0x07

bDescriptorType	Endpoint	5	0x05
bEndpointAddress	3 IN	131	0x83
bmAttributes	Transfer-type: BULK	2	0x02
wMaxPacketSize	512bytes	512	0x0200
bInterval	At most one NAK each 32 microframes	32	0x20

Table 12: Configuration Descriptor\Interface 2\Endpoint Descriptor 2

Name	Value	Dec	Hex
bLength	Valid	7	0x07
bDescriptorType	Endpoint	5	0x05
bEndpointAddress	3 OUT	3	0x03
bmAttributes	Transfer-type: BULK	2	0x02
wMaxPacketSize	512bytes	512	0x0200
bInterval	At most one NAK each 32 microframes	32	0x20

3.1.6. Interface 3 (Modem Port)

Table 13: Configuration Descriptor\Interface 3

Name	Value	Dec	Hex
bLength	Valid	9	0x09
bDescriptorType	Interface	4	0x04
bInterfaceNumber	3	3	0x03
bAlternateSetting	0	0	0x00
bNumEndpoints	3	3	0x03
bInterfaceClass	Vendor-specific	255	0xFF

bInterfaceSubClass	Vendor-specific	255	0xFF
bInterfaceProtocol	Vendor-specific	255	0xFF
iInterface	0	0	0x00

Table 14: Configuration Descriptor\Interface 3\Endpoint Descriptor 1

Name	Value	Dec	Hex
bLength	Valid	7	0x07
bDescriptorType	Endpoint	5	0x05
bEndpointAddress	4 IN	132	0x84
bmAttributes	Transfer-type: INTERRUPT	3	0x03
wMaxPacketSize	64bytes	64	0x0040
bInterval	At most one NAK each 32 microframes	32	0x20

Table 15: Configuration Descriptor\Interface 3\Endpoint Descriptor 2

Name	Value	Dec	Hex
BLength	Valid	7	0x07
BDescriptorType	Endpoint	5	0x05
BEndpointAddress	5 IN	133	0x85
bmAttributes	Transfer-type: BULK	2	0x02
wMaxPacketSize	512bytes	512	0x0200
bInterval	At most one NAK each 32 microframes	32	0x20

Table 16: Configuration Descriptor\Interface 3\Endpoint Descriptor 3

Name	Value	Dec	Hex
bLength	Valid	7	0x07

bDescriptorType	Endpoint	5	0x05
bEndpointAddress	4 OUT	4	0x04
bmAttributes	Transfer-type: BULK	2	0x02
wMaxPacketSize	512bytes	512	0x0200
bInterval	At most one NAK each 32 microframes	32	0x20

3.1.7. Interface 4 (NDIS Port)

Table 17: Configuration Descriptor\Interface 4

Name	Value	Dec	Hex
BLength	Valid	9	0x09
bDescriptorType	Interface	4	0x04
bInterfaceNumber	4	4	0x04
bAlternateSetting	0	0	0x00
bNumEndpoints	3	3	0x03
bInterfaceClass	Vendor-specific	255	0xFF
bInterfaceSubClass	Vendor-specific	255	0xFF
bInterfaceProtocol	Vendor-specific	255	0xFF
iInterface	0	0	0x00

Table 18: Configuration Descriptor\Interface 4\Endpoint Descriptor 1

Name	Value	Dec	Hex
bLength	Valid	7	0x07
bDescriptorType	Endpoint	5	0x05
bEndpointAddress	6 IN	134	0x86
bmAttributes	Transfer-type: INTERRUPT	3	0x03

| wMaxPacketSize | 64 bytes | 64 | 0x0040 |
| bInterval | At most one NAK each 32 microframes | 32 | 0x20 |

Table 19: Configuration Descriptor\Interface 4\Endpoint Descriptor 2

Name	Value	Dec	Hex
BLength	Valid	7	0x07
BDescriptorType	Endpoint	5	0x05
BEndpointAddress	7 IN	135	0x87
bmAttributes	Transfer-type: BULK	2	0x02
wMaxPacketSize	512 bytes	512	0x0200
bInterval	At most one NAK each 32 microframes	32	0x20

Table 20: Configuration Descriptor\Interface 4\Endpoint Descriptor 3

Name	Value	Dec	Hex
bLength	Valid	7	0x07
bDescriptorType	Endpoint	5	0x05
bEndpointAddress	5 OUT	5	0x05
bmAttributes	Transfer-type: BULK	2	0x02
wMaxPacketSize	512 bytes	512	0x0200
bInterval	At most one NAK each 32 microframes	32	0x20

4 Driver Package

The released USB driver package in Windows XP/Vista/7/8 of the module includes three driver files, each of them is corresponding to the driver file of Windows XP/Vista, Windows 7, and Windows 8 respectively.

4.1. Driver Files Package

The package name of the driver files in Windows XP/Vista/7/8 is shown as below:

UC15_Windows_USB_Driver_Vx.x.x

4.2. Content of Driver Files

The content of the driver files includes many information files, driver files and so on. There is no need to care about the use of each file. You just need to select the parent folder of these files when you install the USB driver.

5 Install USB Driver

As mentioned before, this module is a USB composite device and it includes five interfaces. You need to install the driver software of these interfaces one by one when you connect the module with your PC at the first time.

NOTE

All the illustrations in this document are based on Windows 7 operating system.

5.1. Install the Driver of the Five Unknown Devices

When you connect the module with PC for the first time, the Device Manager will list five unknown devices, shown as follows:
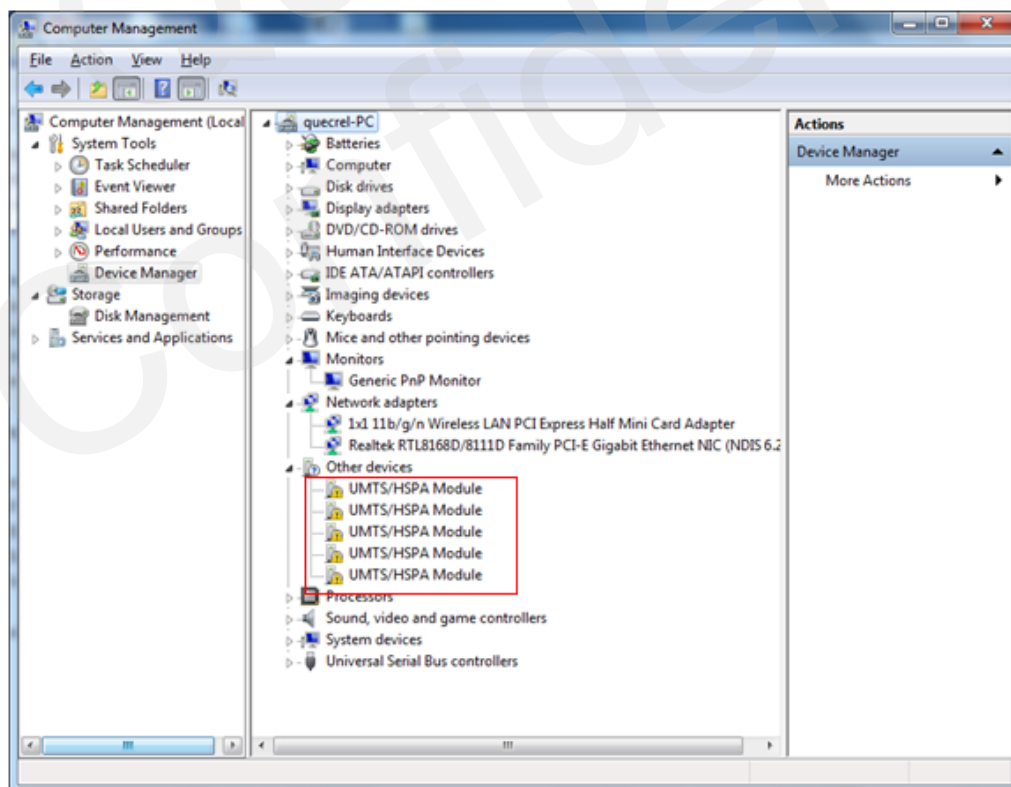
Figure 1: Unknown Devices Shown in Device Manager

Next, install the driver software of the unknown devices one by one. Take one unknown device as an example. The detailed steps are shown as follows:

Right click one of the five unknown devices, select and click the item "**Update Driver Software**" in the popup menu.
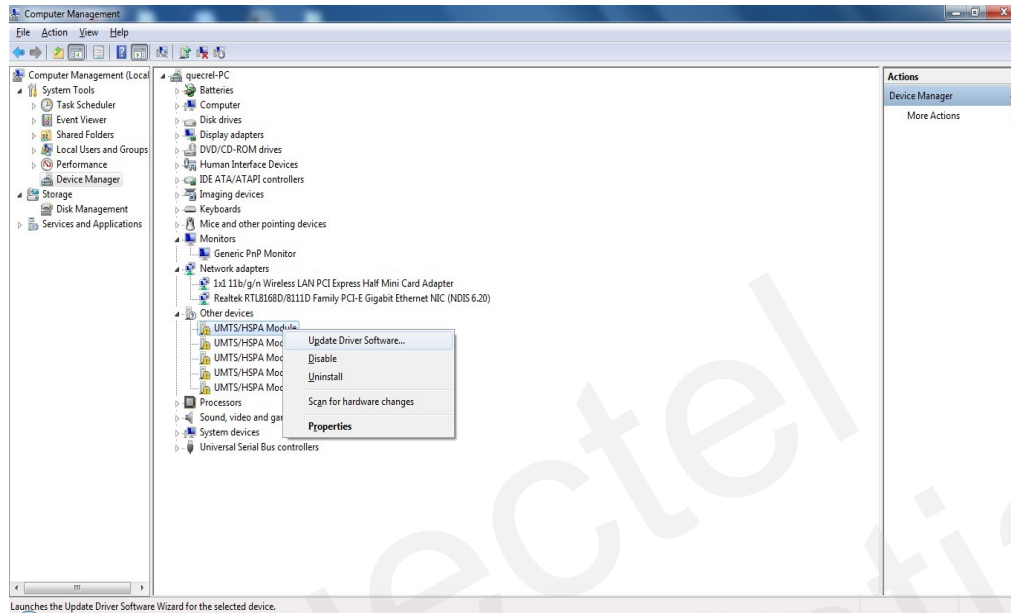
Figure 2: Update Driver Software

Click "**Browse my computer for driver software**" in the popup window.
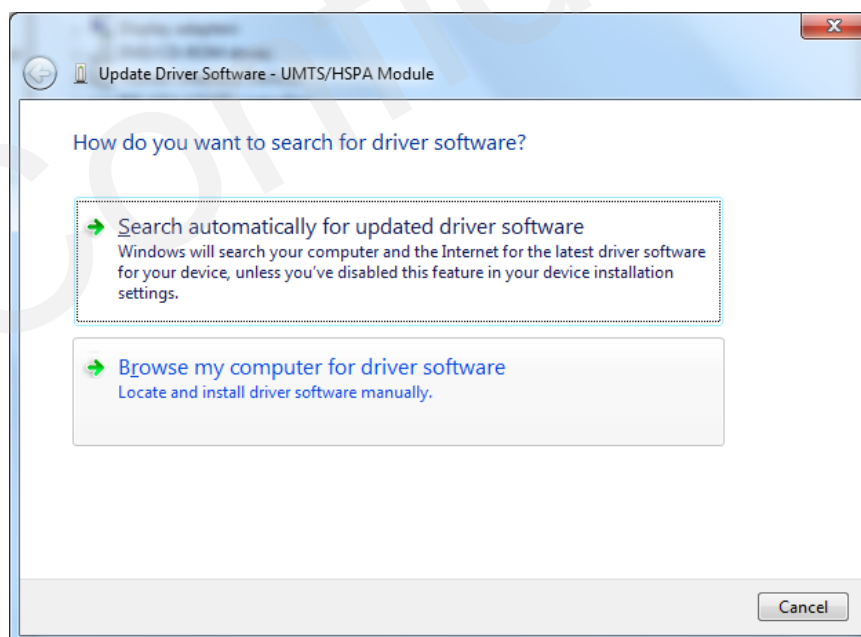
Figure 3: Browse My Computer for Driver Software

Click the button "**Browse**" to set the search path for installation, then you will find the folder of the module driver files in your disk or CD-ROM, click "**Next**".

Figure 4: Set Search Path

Click "**Install this driver software anyway**" each time when this screen appears.
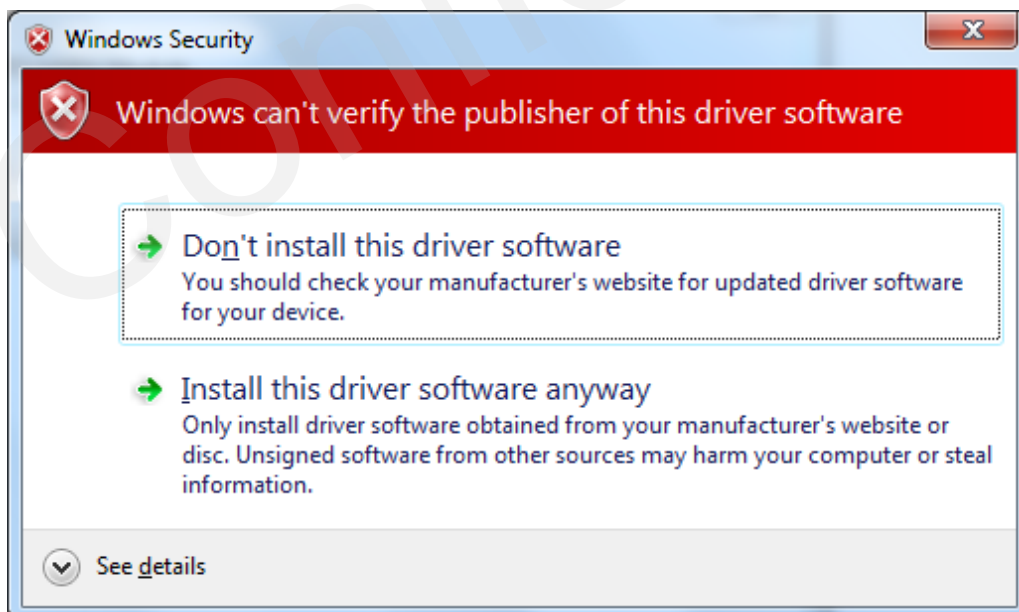
Figure 5: Install the Drive Software

When Windows finished installing the driver software, click "**Close**" to end the installation.
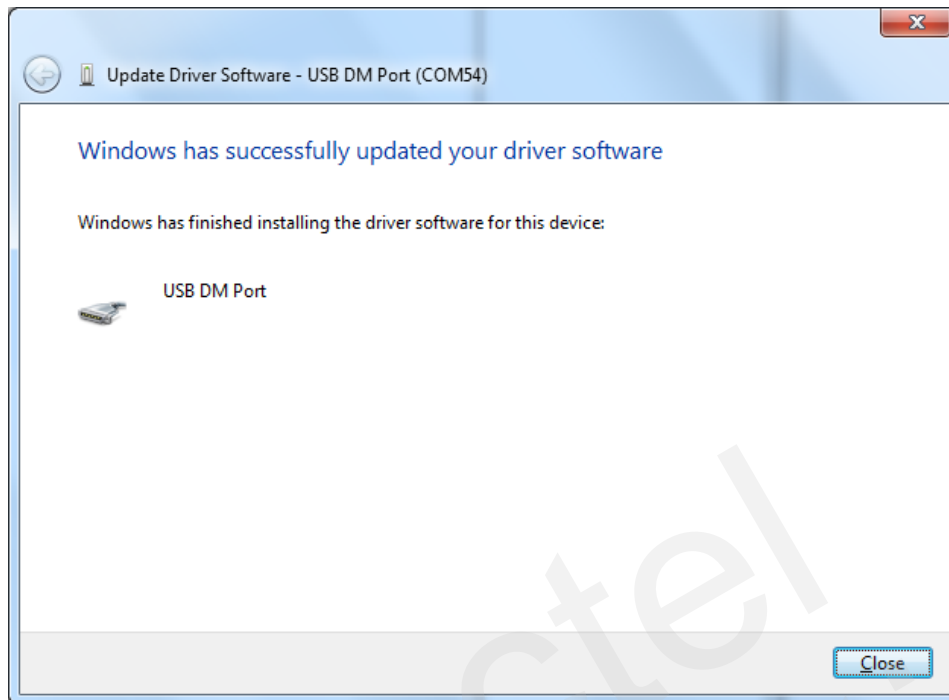
Figure 6: Installation Finished

Then continue to install the driver software of the other four devices. When installation is successful, the information of the devices in Device Manager is shown as follows:
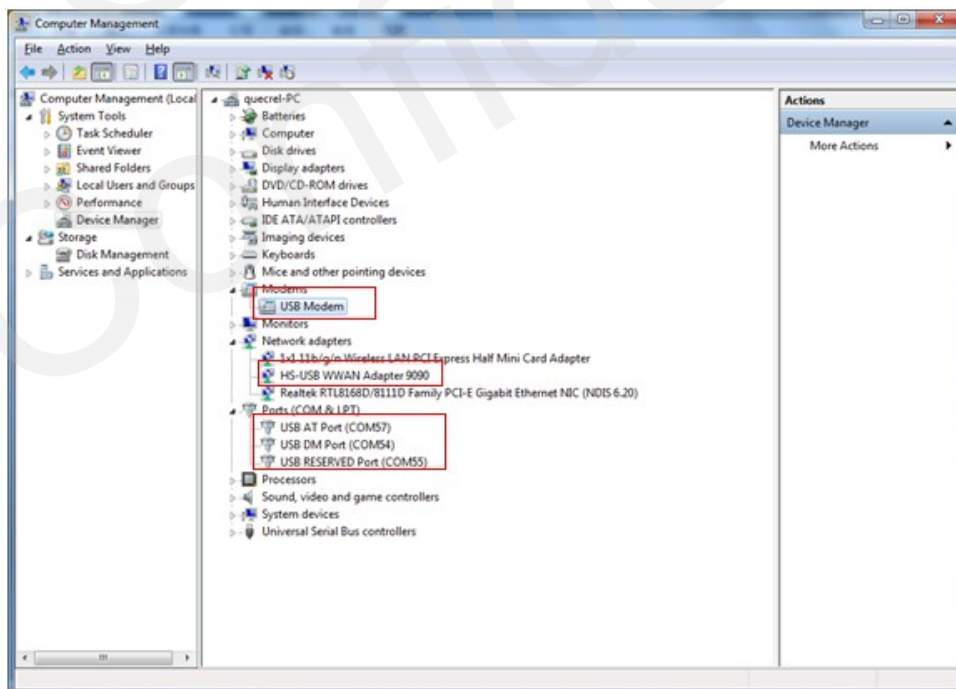
Figure 7: Information of All Devices in Device Manager

6 Module Testing

After the module has been connected with your PC, you can test the module in two ways: one way is to send AT commands via AT port or Modem port by serial debugging tools, the other way is to create PPP connection via Modem port by the wizard of Windows OS.

6.1. Test Module by Sending AT Commands

You can use serial debugging tools to send AT commands via the ports of USB AT port and USB Modem port of the module. Meanwhile, you can confirm the port number of the two devices by checking the content of Device Manager, shown in Figure 7.

The port number of the USB Modem port is shown in its property window, as follows:
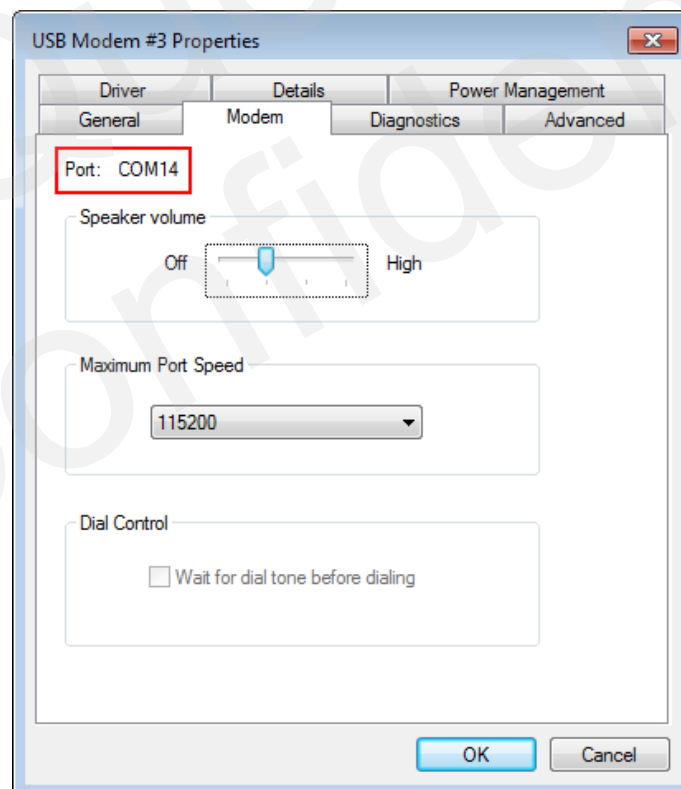
Figure 8: Confirm the Serial Port Number

You can refer to the *UC15_AT_Commands_Manual* to retrieve the syntax information of AT commands.

6.2. Create PPP Connection via Modem Port

When the module is connected with your PC, USB Modem will be shown in the Device Manager, through which you can create a PPP connection. The detailed steps are described as follows:

6.2.1. Set Parameters for the Module's USB Modem

Right click the "**USB modem**" in Device Manager and click "**Properties**" in the popup menu, then select the "**Advanced**" tab, and input **AT+CGDCONT=1**,"**IP**","**UNINET**" under "**Extra initialization commands**" label ("UNINET" is the APN of China UNICOM, you should change it according to the operator), as follows:
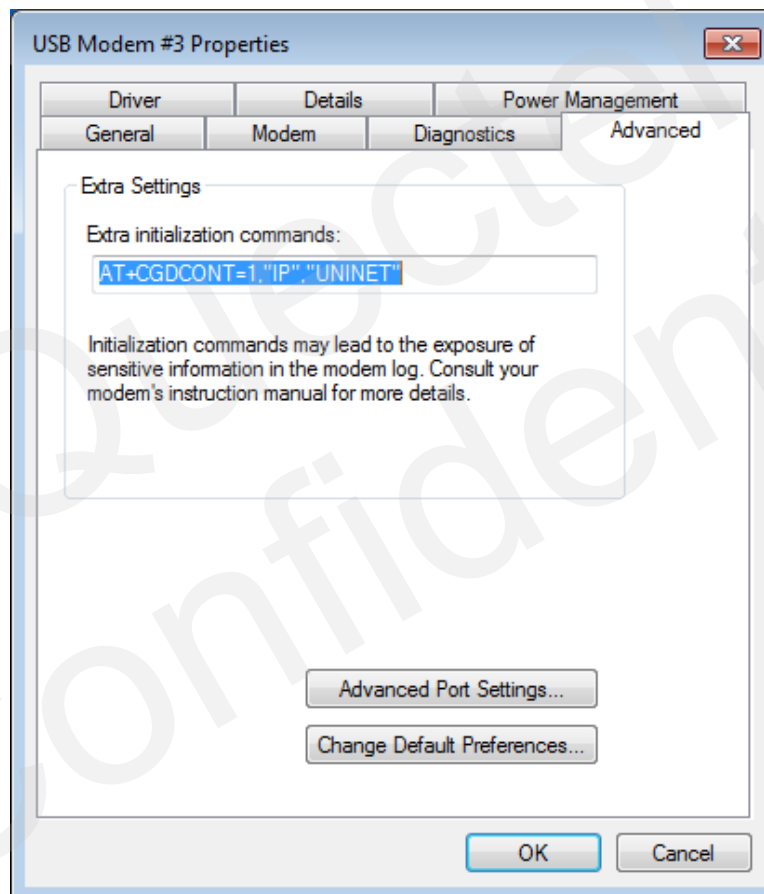
Figure 9: Modem Setting

Click "**OK**" button to complete the Modem's setting.

6.2.2. Setup a New Dial-up Connection via USB Modem

After setting the modem properties above, follow the instructions in the installation wizard to setup a Dial-up Connection, after that, you can execute the operations of **"Connect"** or **"Disconnect"** on the Dial-up Connection. The detailed steps in Windows 7 OS are listed as follows:

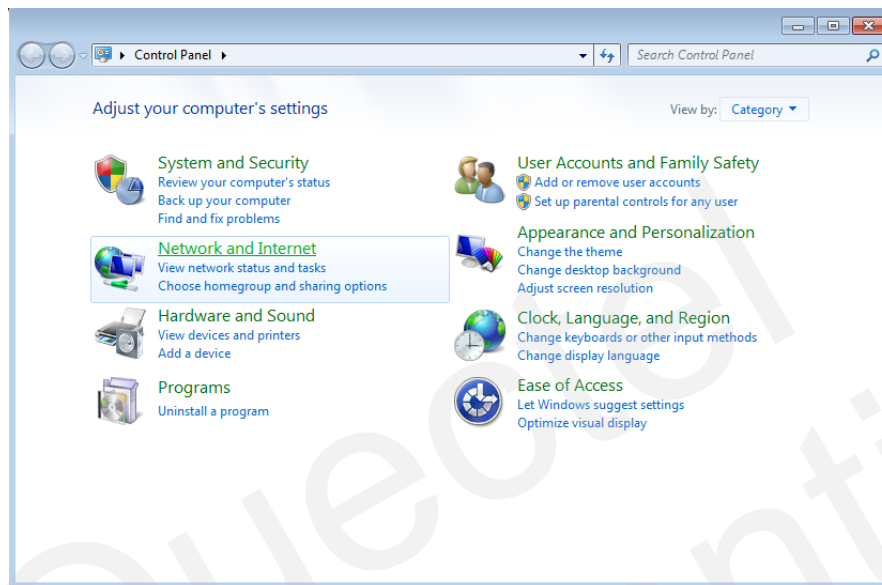1. Open Control Panel of the OS, and select **"Network and Internet"**.

Figure 10: Select Network and Internet

2. Click **"Network and Sharing Center"**.
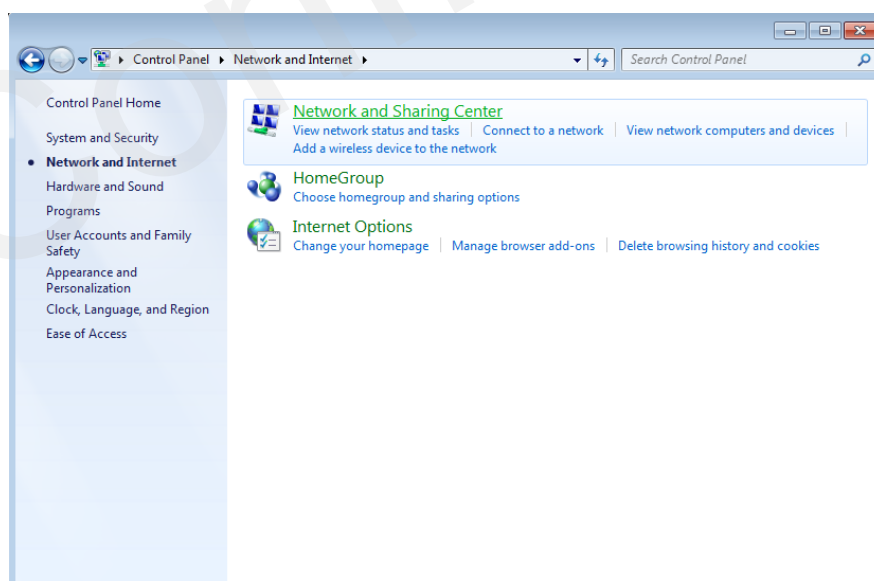
Figure 11: Select Network and Sharing Center

3. Click "**Set up a new connection or network**".
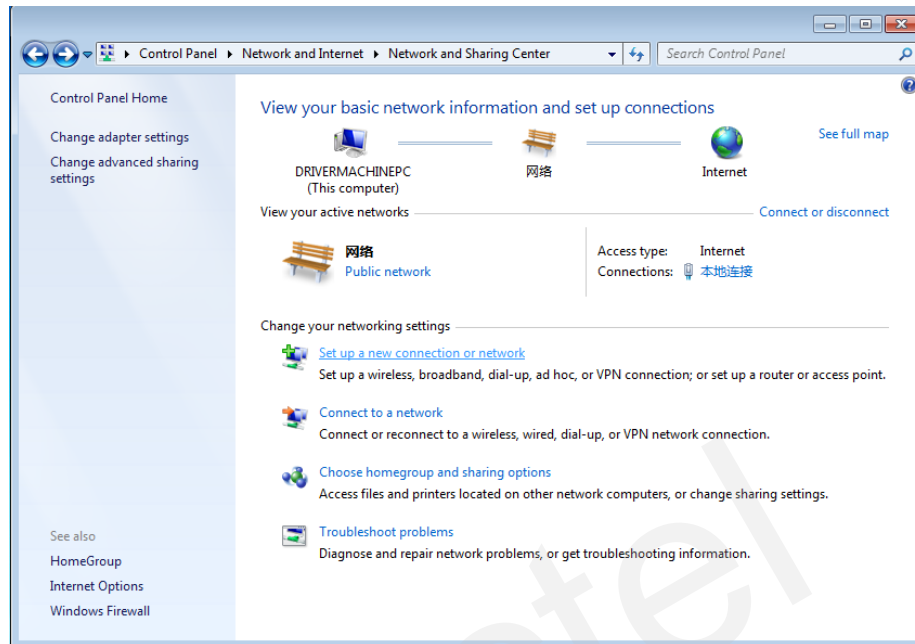
Figure 12: Set up a New Connection or Network

4. Select "**Connect to the Internet**" and click "**Next**".
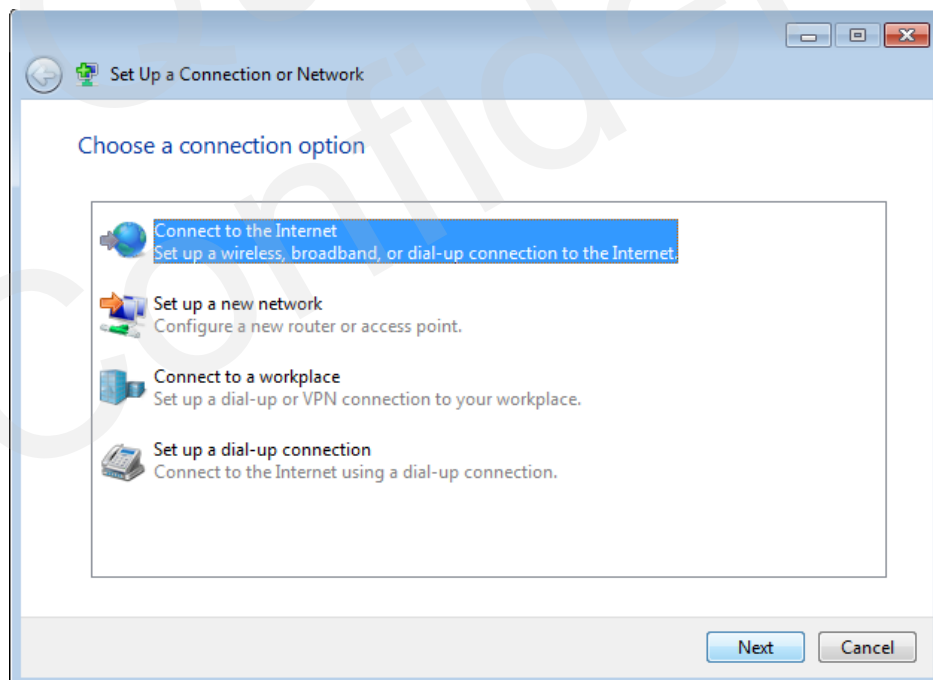
Figure 13: Connect to the Internet

5. Click "**Set up a new connection anyway**".

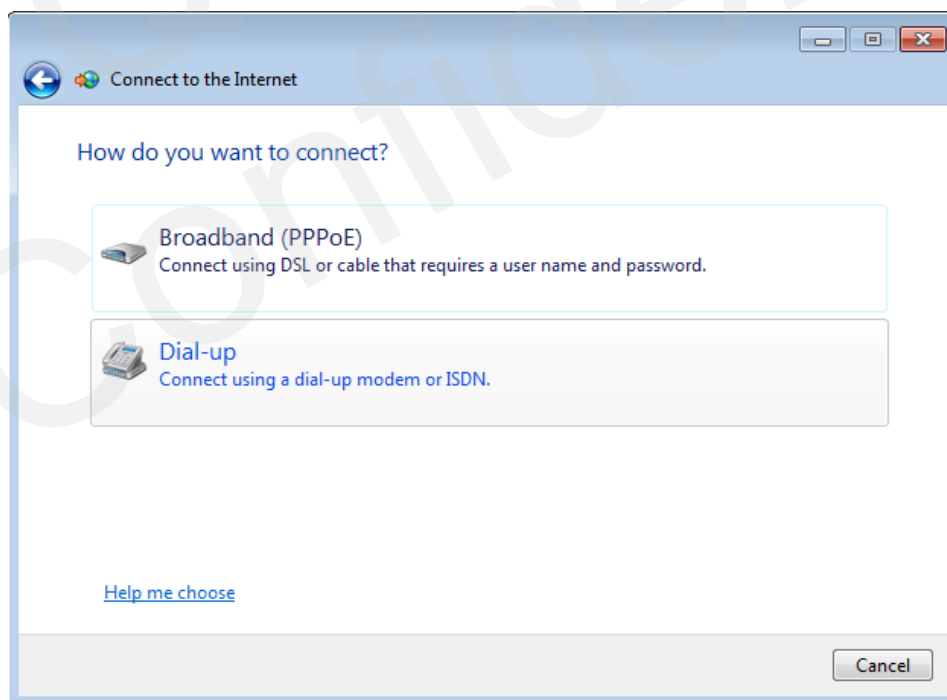**Figure 14: Set up a New Connection**

6. Click "**Dial-up**".

Figure 15: Dial-up

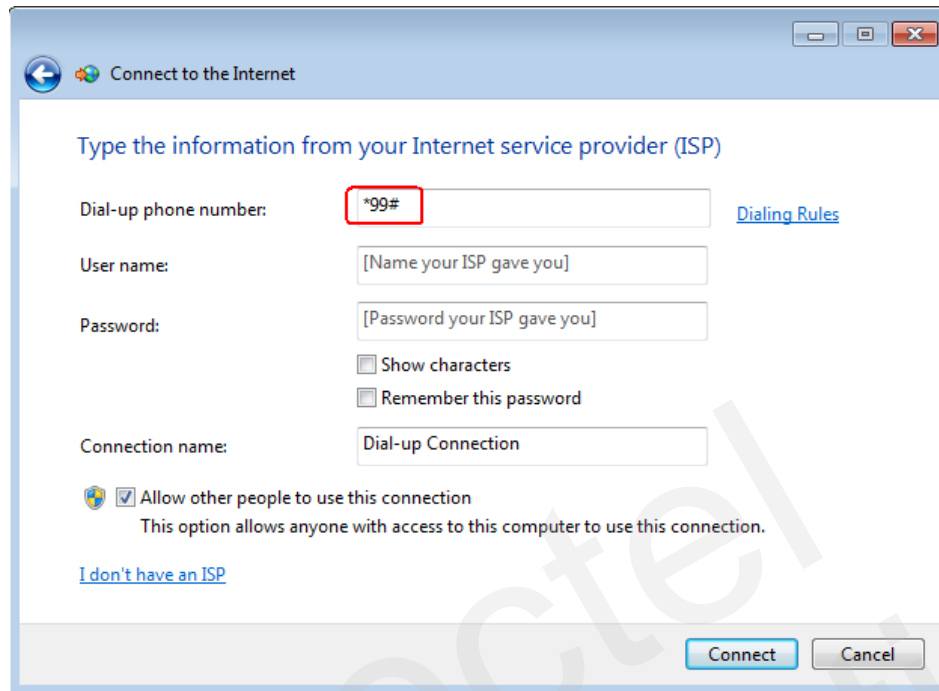7. Input the Dial-up phone number "***99#**" in the textbox, and the User name and Password can be omitted, then click "**Connect**".

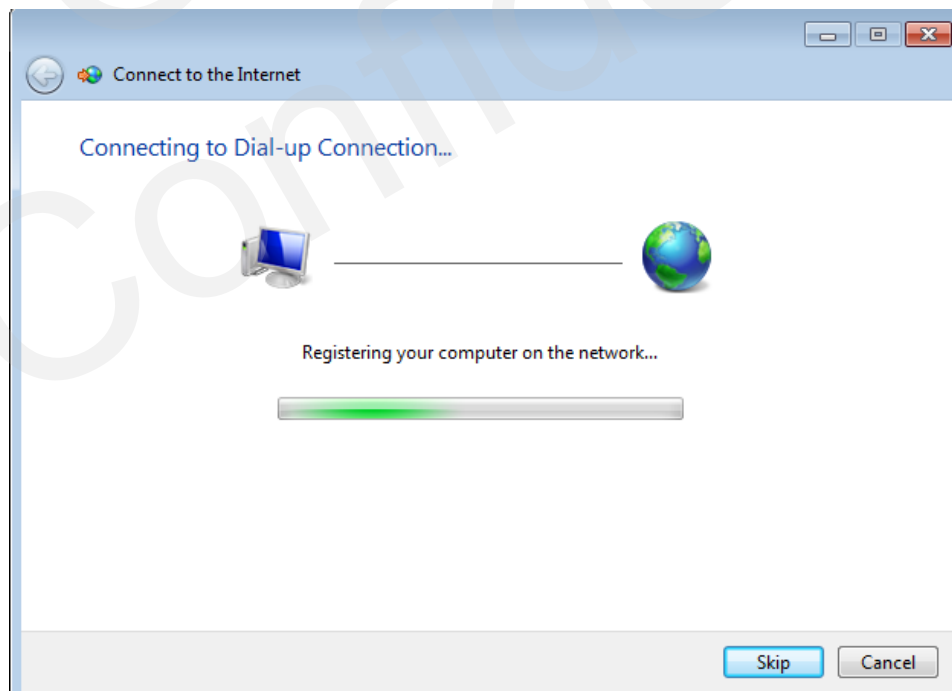**Figure 16: Input Dial-up Number**

8. Start the connecting process.
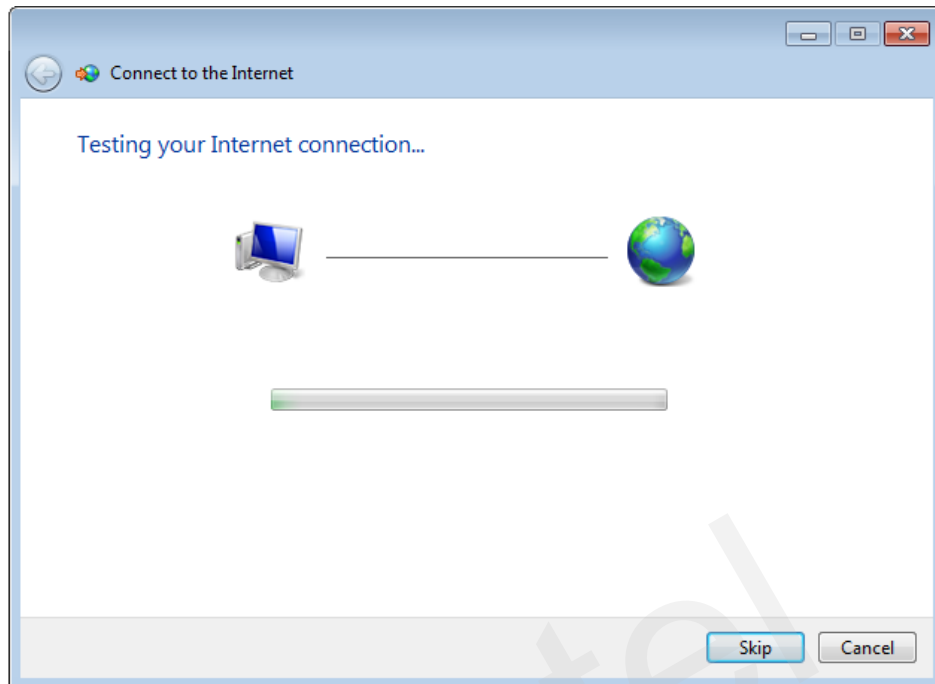

Figure 17: Connecting Process-1

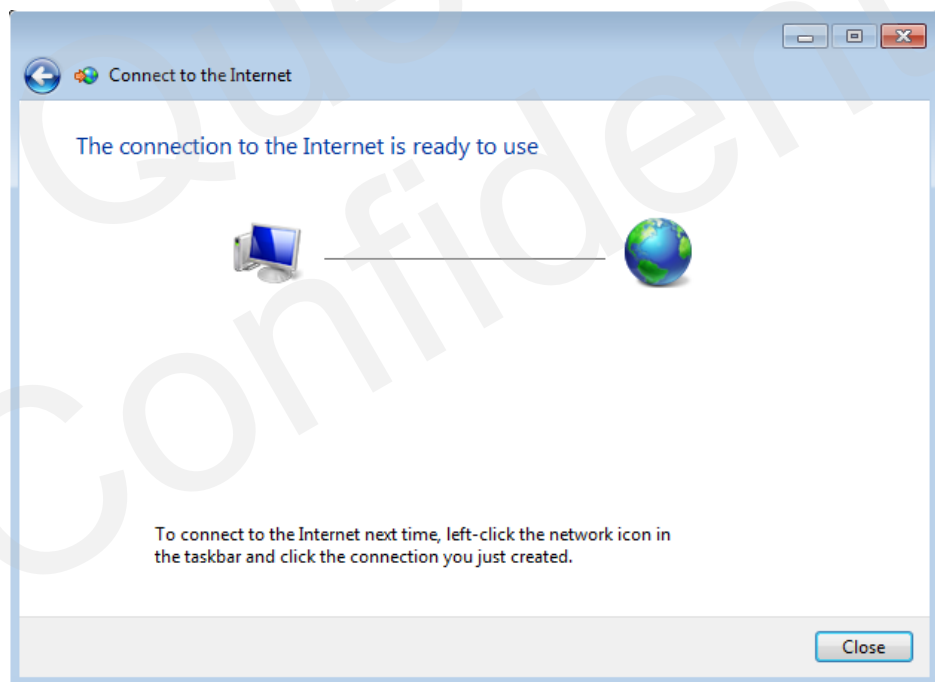**Figure 18: Connecting Process-2**

Figure 19: Connecting Process-3

6.2.3. Dial-up or Disconnect via the Dial-up Connection

After the Dial-up Connection is created, you can connect to or disconnect it from the Internet at any time.

Open Control Panel and browse the path below, and click "**Change adapter settings**", you will see the Dial-up Connection created before:
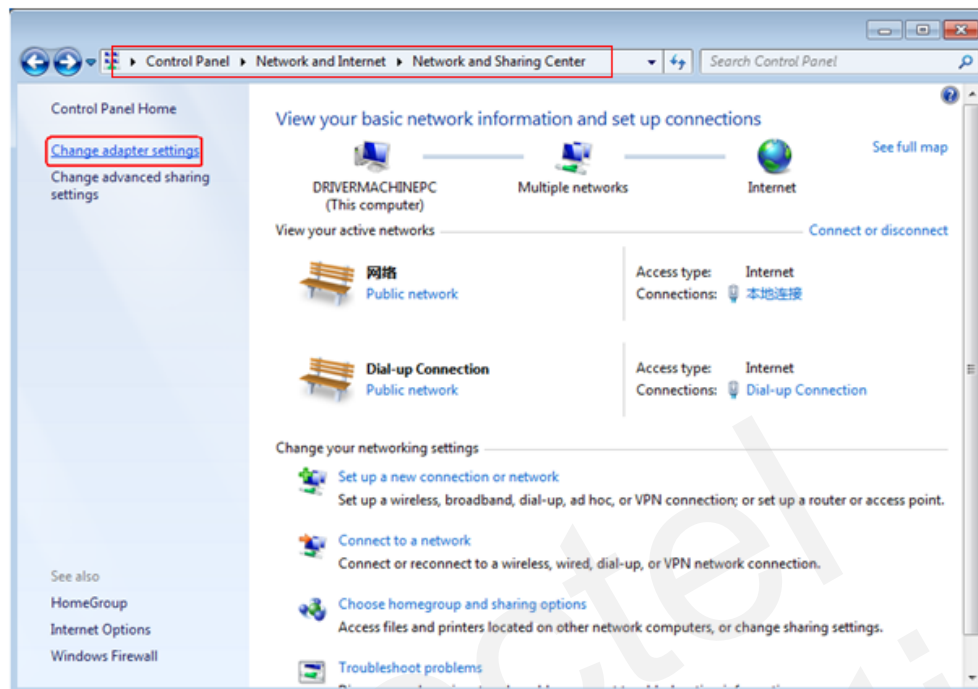

Figure 20: Created Dial-up Connections

Select the Dial-up Connection of the USB modem, and right-click on it, and click "**Connect**" on the popup menu.
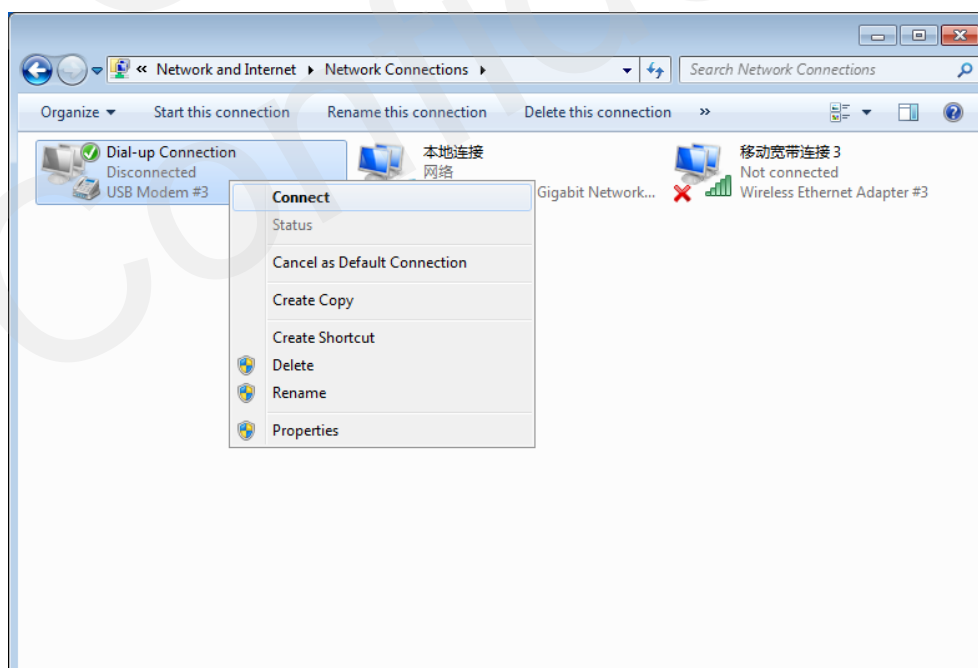

Figure 21: Connect a Dial-up Connection

Click "**Dial**" in the popup window to connect the Internet.

Figure 22: Connect to the Internet

When you want to disconnect from the Internet, select the Dial-up Connection of the USB modem, and right-click it, then click "**Disconnect**" on the popup menu.