UC20 Windows USB Driver User Guide

UMTS/HSPA Module Series

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About the document

History

Revision	Date	Author	Description
1.0	2013-06-27	Clare CHEN	Initial

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1 Introduction

This document mainly introduces how to install USB driver of UC20 module in Windows XP/Vista/7/8, and how to test UC20 module in this operating system after the USB driver is loaded successfully.

2 Product Overview

Quectel UC20 is a 3G wireless WCDMA module. You can use it to implement some functions such as Voice Call and browsing the Internet and so on.

In general, the UC20 module will create five interfaces when you connect it with embedded equipments. These five interfaces have different functionalities. The details are shown as below:

Table 1: Interface Description

DM interface	Diagnose port
NMEA interface	For GPS NMEA sentence output
AT interface	For AT commands
Modem interface	For PPP connections and AT commands
NDIS interface	Network driver interface

NOTE

The NDIS interface is temporarily unavailable.

3 USB Interface Descriptor

U20 module is a composite communication device. After USB driver is installed in Windows, Windows will automatically read the device descriptor and the configuration descriptor of the UC20 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	0x9003	36867	0x9003
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	138 bytes	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	500 mA	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

Endpoint Descriptor 1

Table 5: Configuration Descriptor\Interface 0\Endpoint Descriptor

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

Endpoint Descriptor 2

Table 6: Configuration Descriptor\Interface 0\Endpoint Descriptor

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

3.1.4. Interface 1 (NMEA 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

Endpoint Descriptor 1

Table 8: Configuration Descriptor\Interface 1\Endpoint Descriptor

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

Endpoint Descriptor 2

Table 9: Configuration Descriptor\Interface 1\Endpoint Descriptor

Name	Value	Dec	Hex
bLength	Valid	7	0x07
bDescriptorType	ENDPOINT	5	0x05
bEndpointAddress	2 OUT	2	0x02
bmAttributes	Transfer-Types: BULK	2	0x02
wMaxPacketSize	512 bytes	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

Endpoint Descriptor 1

Table 11: Configuration Descriptor\Interface 2\Endpoint Descriptor

Name	Value	Dec	Hex
bLength	Valid	7	0x07
bDescriptorType	ENDPOINT	5	0x05
bEndpointAddress	3 IN	131	0x83
bmAttributes	Transfer-Types: BULK	2	0x02
wMaxPacketSize	512 bytes	512	0x0200
bInterval	At most one NAK each 32 microframes	32	0x20

Endpoint Descriptor 2

Table 12: Configuration Descriptor\Interface 2\Endpoint Descriptor

Name	Value	Dec	Hex
bLength	Valid	7	0x07
bDescriptorType	ENDPOINT	5	0x05
bEndpointAddress	3 OUT	3	0x03
bmAttributes	Transfer-Types: BULK	2	0x02
wMaxPacketSize	512 bytes	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

Endpoint Descriptor 1

Table 14: Configuration Descriptor\Interface 3\Endpoint Descriptor

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

Endpoint Descriptor 2

Table 15: Configuration Descriptor\Interface 3\Endpoint Descriptor

Name	Value	Dec	Hex
BLength	Valid	7	0x07
BDescriptorType	ENDPOINT	5	0x05
BEndpointAddress	5 IN	133	0x85
bmAttributes	Transfer-Types: BULK	2	0x02

wMaxPacketSize	512 bytes	512	0x0200
bInterval	At most one NAK each 32 microframes	32	0x20

Endpoint Descriptor 3

Table 16: Configuration Descriptor\Interface 3\Endpoint Descriptor

Name	Value	Dec	Hex
bLength	Valid	7	0x07
bDescriptorType	ENDPOINT	5	0x05
bEndpointAddress	4 OUT	4	0x04
bmAttributes	Transfer-Types: BULK	2	0x02
wMaxPacketSize	512 bytes	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

Endpoint Descriptor 1

Table 18: Configuration Descriptor\Interface 4\Endpoint Descriptor

Name	Value	Dec	Hex
bLength	Valid	7	0x07
bDescriptorType	ENDPOINT	5	0x05
bEndpointAddress	6 IN	134	0x86
bmAttributes	Transfer-Types: INTERRUPT	3	0x03
wMaxPacketSize	64 bytes	64	0x0040
bInterval	At most one NAK each 32 microframes	32	0x20

Endpoint Descriptor 2

Table 19: Configuration Descriptor\Interface 4\Endpoint Descriptor

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

Endpoint Descriptor 3

Table 20: Configuration Descriptor\Interface 4\Endpoint Descriptor

Name	Value	Dec	Hex
bLength	Valid	7	0x07
bDescriptorType	ENDPOINT	5	0x05

bEndpointAddress	5 OUT	5	0x05
bmAttributes	Transfer-Types: 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 UC20 module includes three driver files, each of which is corresponding to the driver file of Windows XP/ Vista, Windows 7, and Windows 8 respectively.

4.1. Driver Files Name

The names of the driver files in Windows XP/Vista/7/8 are listed as the following:

1) UC20WINXPVISTAUSB_SR01A01_CR01A01
2) UC20WIN7USB_SR01A01_CR01A01
3) UC20WIN8USB_SR01A01_CR01A01

NOTE

The substring before the first char '_'shows which OS the driver file uses, and the substring after the char is the version of the USB driver file.

4.2. Driver Files Content

The content of the driver files includes many information files, driver files and so on. You need not care about the use of each file, and just select the parent folder of these files when you install the USB driver.

5 Install USB Driver

UC20 module is a USB composite device, containing five interfaces. You need to install the driver software of these interfaces one by one when you connect UC20 module with your PC for 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 Device

When you connect UC20 module with PC for the first time, the Device Manager will list five unknown devices, shown as follows:

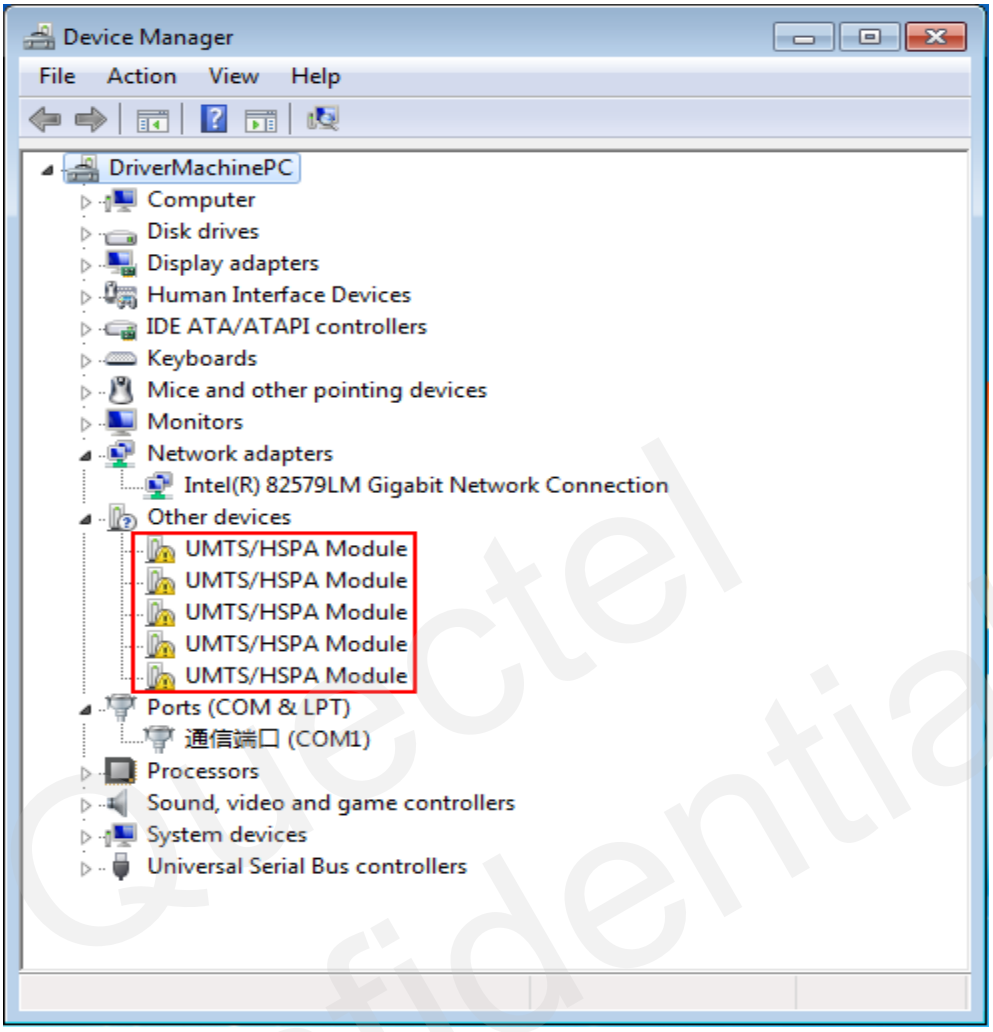

Figure 1：Unknown Devices Shown in Device Manager

Next, install the driver software of the unknown devices one by one. Take driver installation of 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.

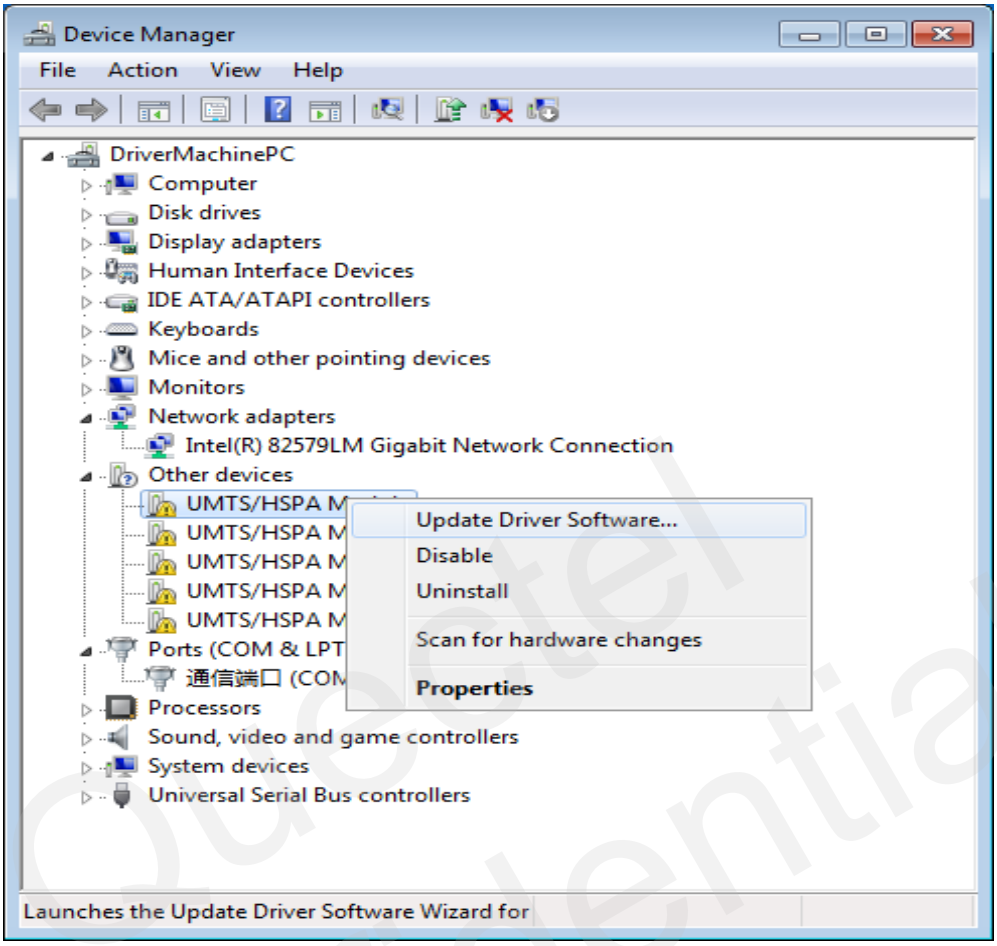

Figure 2：Installation Steps-1

Click "**Browse my computer for driver software**" in the popup window.

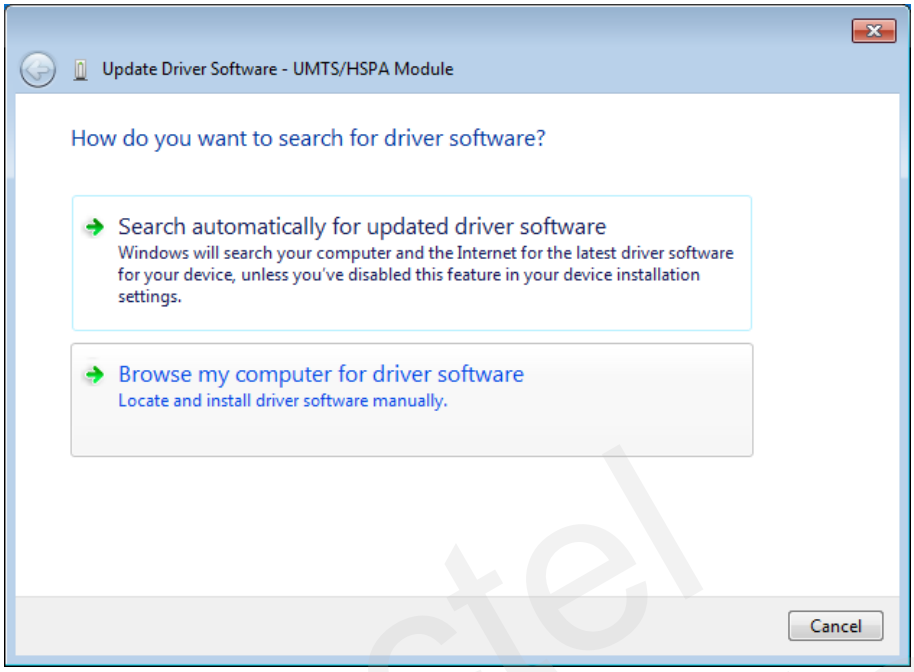

Figure 3：Installation Steps-2

Click the button "**Browse**" to set the search path for installation, then find the folder of UC20 driver files in your disk or CD-ROM, click "**Next**" to enter next step.

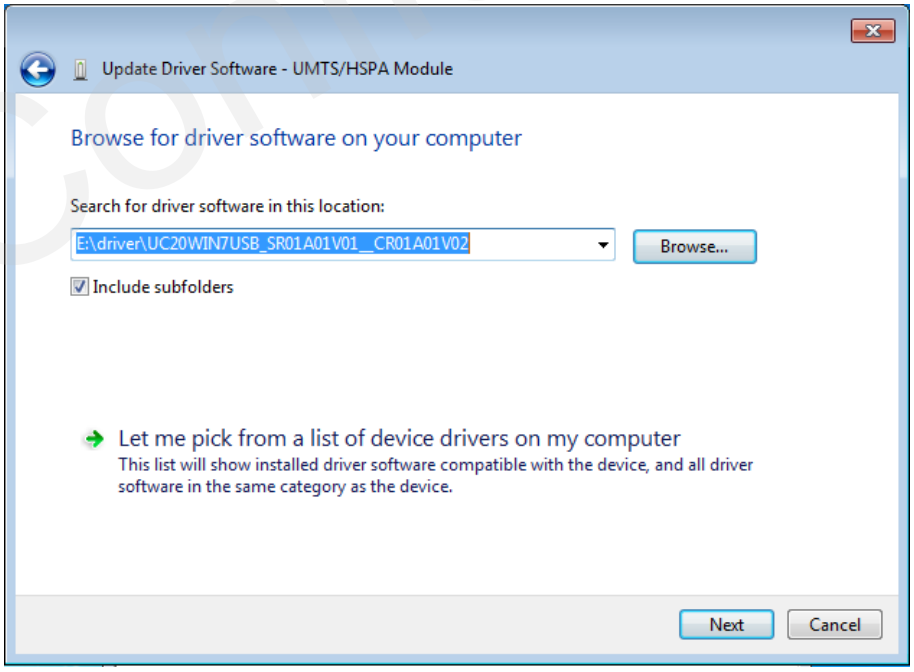

Figure 4：Installation Steps-3

Click "**Install this driver software anyway**" each time this screen appears.

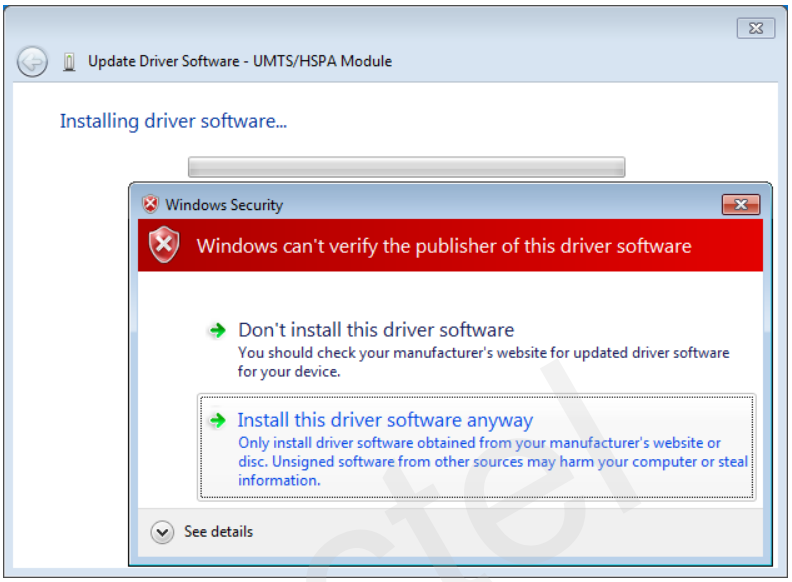

Figure 5：Installation Steps-4

When Windows finished installing the driver software, click "**Close**" to end the installation.

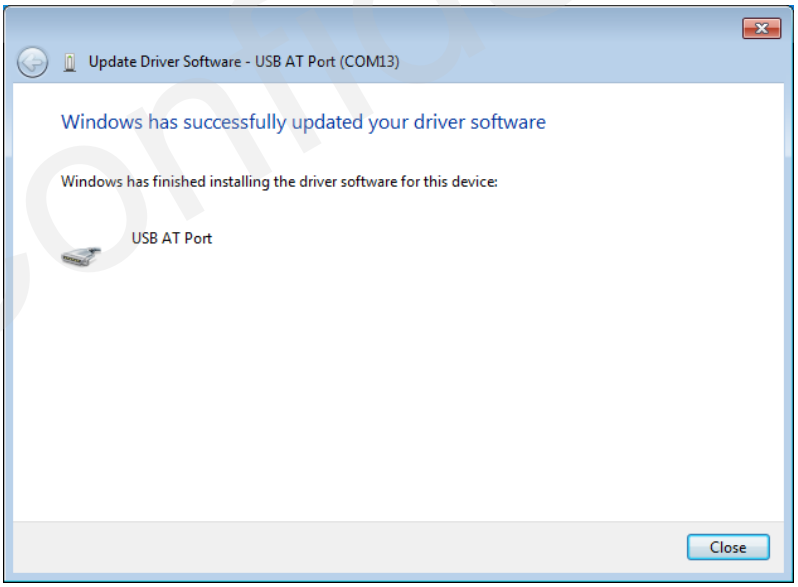

Figure 6：Installation Steps-5

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:

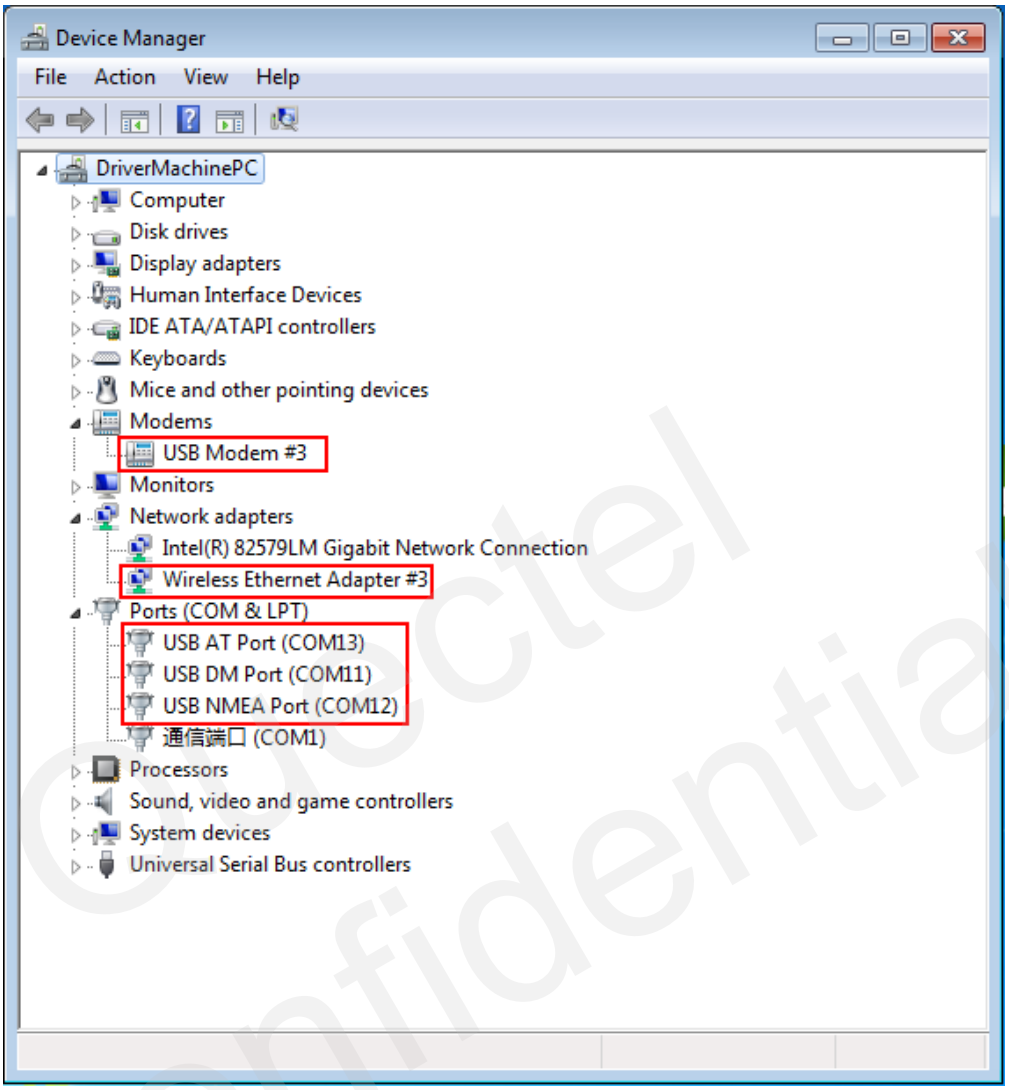

Figure 7：Information of All Devices in Device Manager

6 Module Testing

After UC20 module is connected with your PC, you can test the module in two ways: one is to send AT commands via AT port or Modem port using serial debugging tools, the other is to create PPP connection via Modem port with 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 of the UC20 module. You can confirm the port number of the two devices by checking the content of Device Manager, which is shown in Figure 7.

The port number of the USB Modem is shown in its property window, as follows:

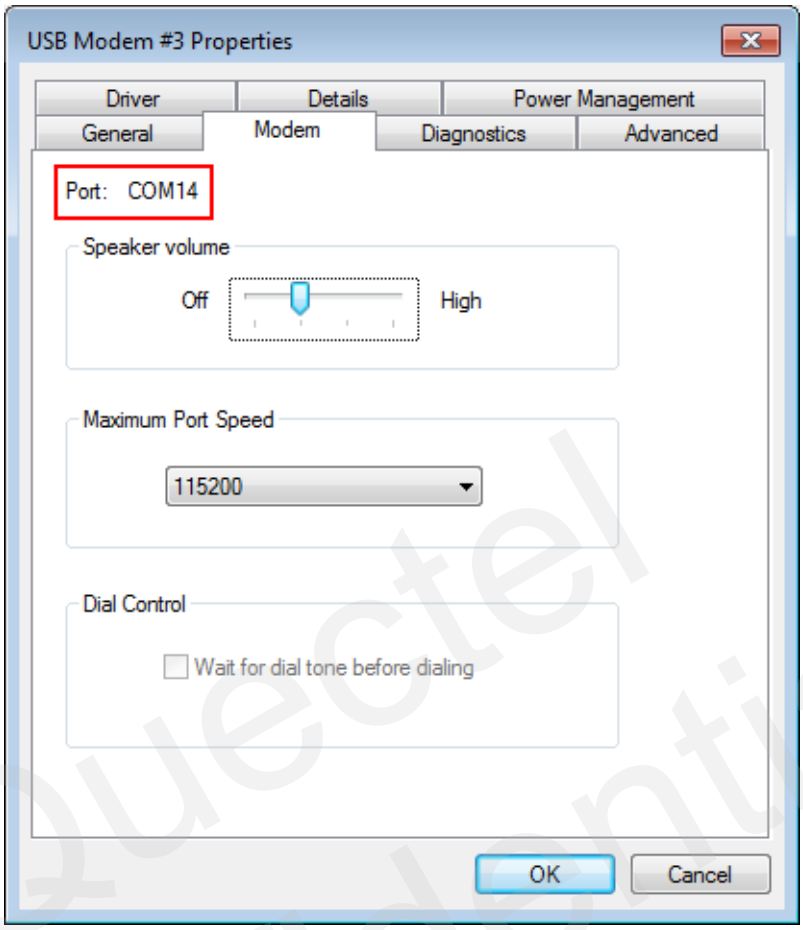

Figure 8：Confirm the Serial Port Number-2

You can refer to the UC20_AT_Commands_Manual to retrieve the syntax information of AT commands.

6.2. Create PPP Connection via Modem Port

When UC20 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 UC20 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, user should change it according to the operator), as follows:

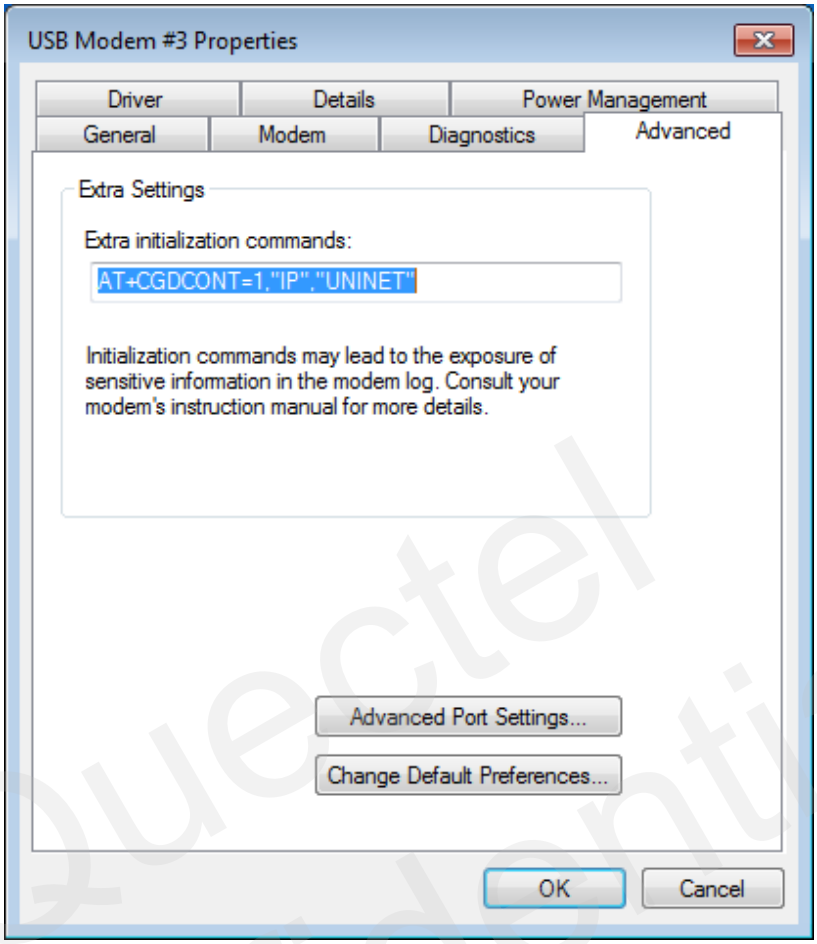

Figure 9：Modem Setting

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:

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

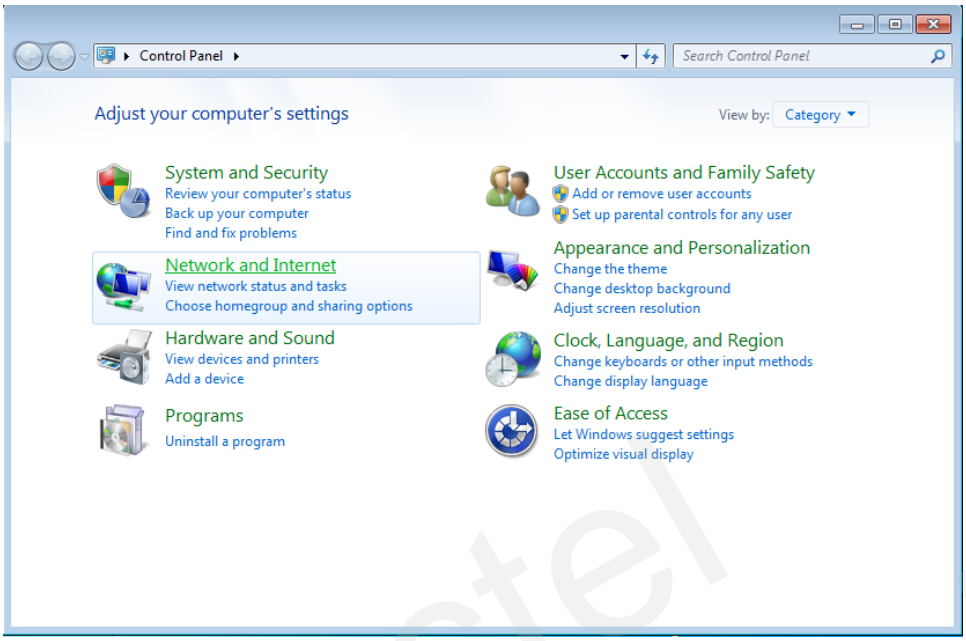

Figure 10：Setup a Dial-up Connection-1

Click "**Network and Sharing Center**".

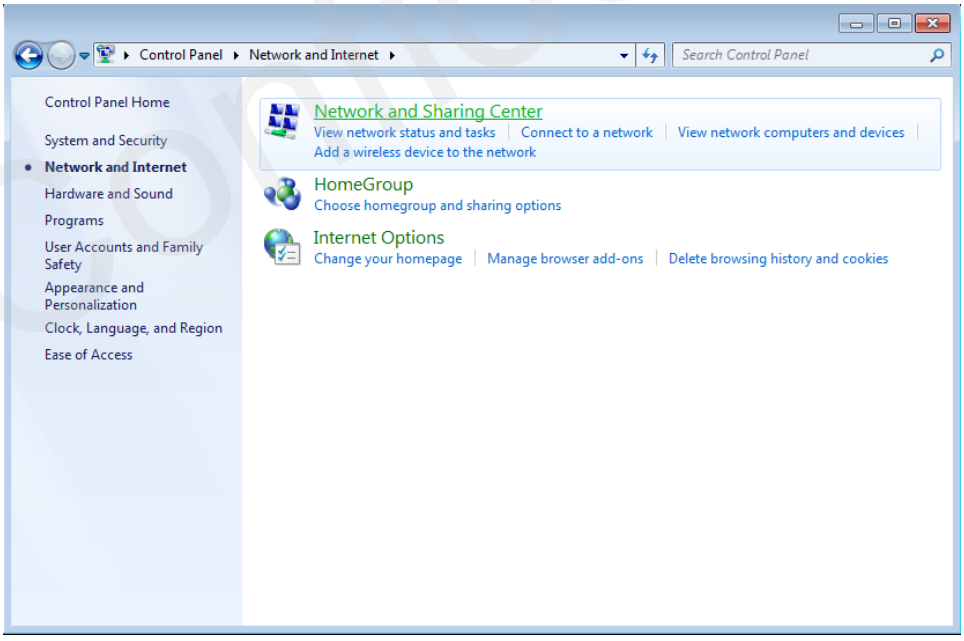

Figure 11：Setup a Dial-up Connection-2

Click "**Set up a new connection or network**".

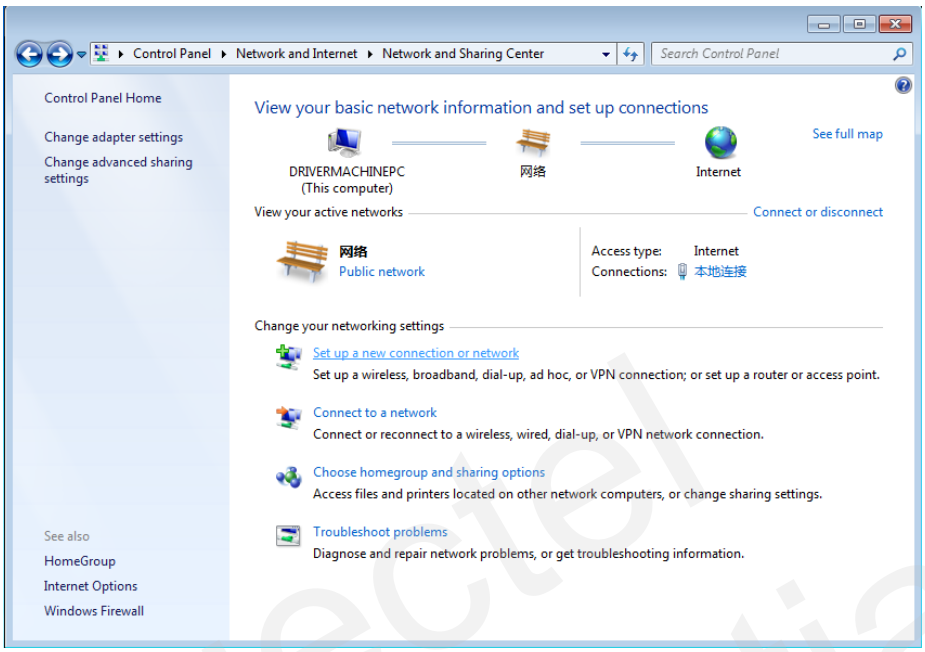

Figure 12：Setup a Dial-up Connection-3

Select "**Connect to the Internet**" and click "**Next**".

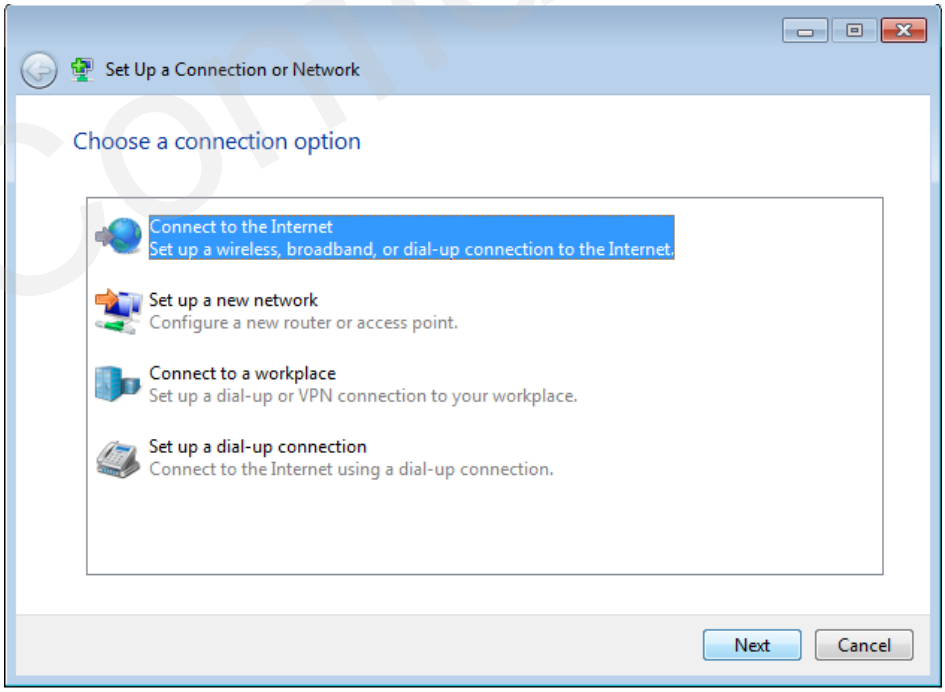

Figure 13：Setup a Dial-up Connection-4

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

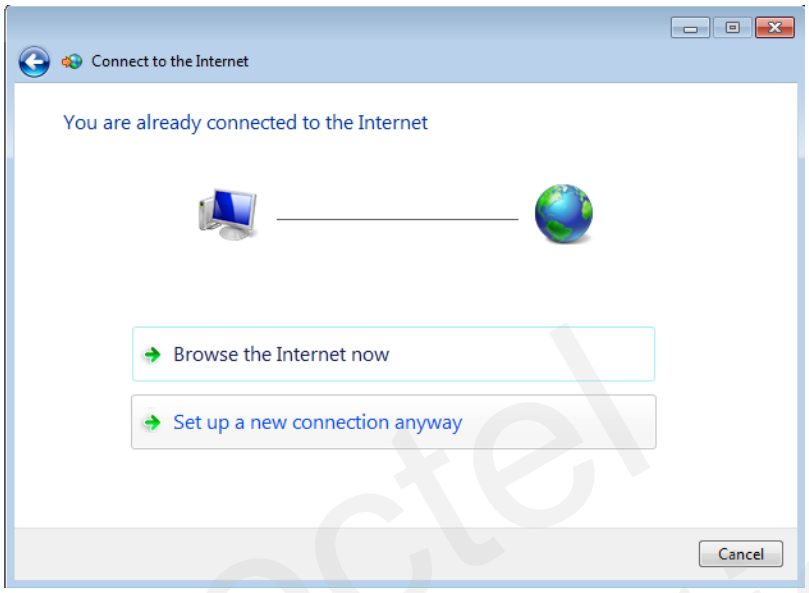

Figure 14：Setup a Dial-up Connection-5

Click "**Dial-up**".

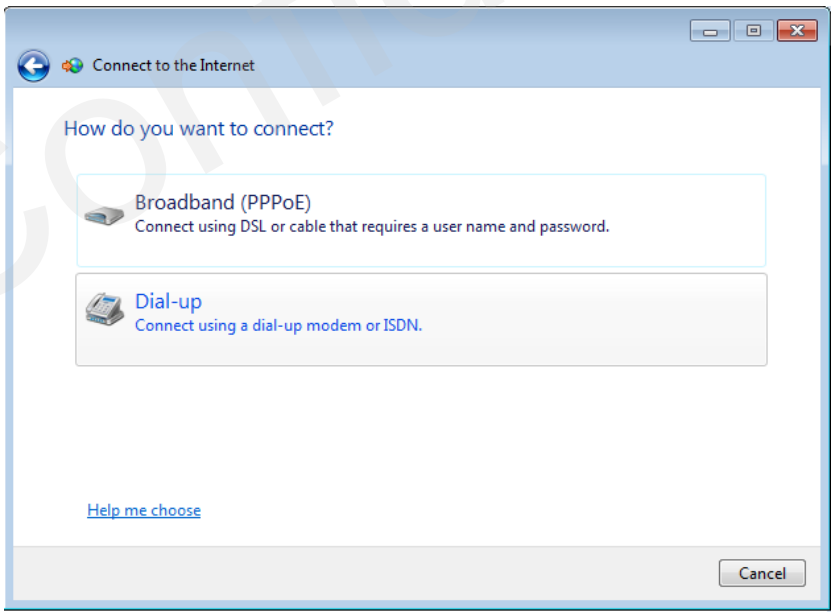

Figure 15：Setup a Dial-up Connection-6

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

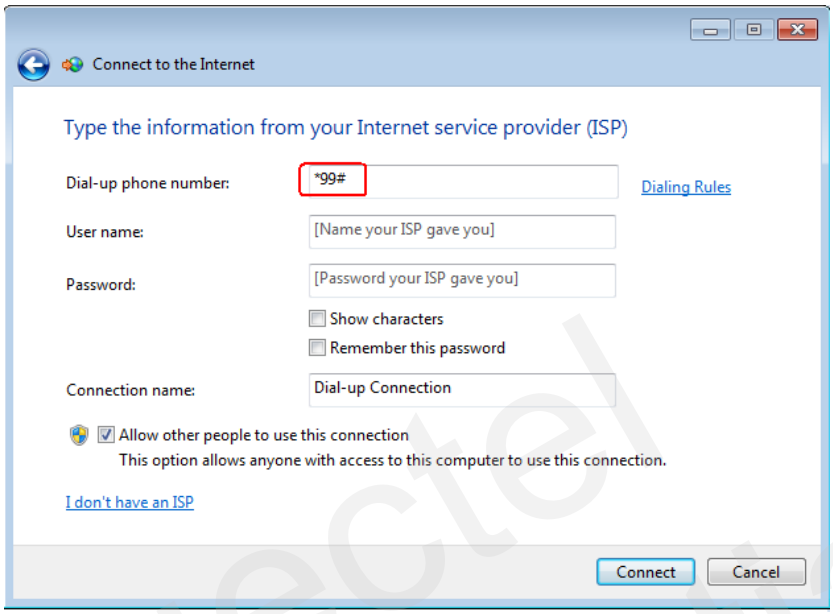

Figure 16：Setup a Dial-up Connection-7

Start the connecting process.

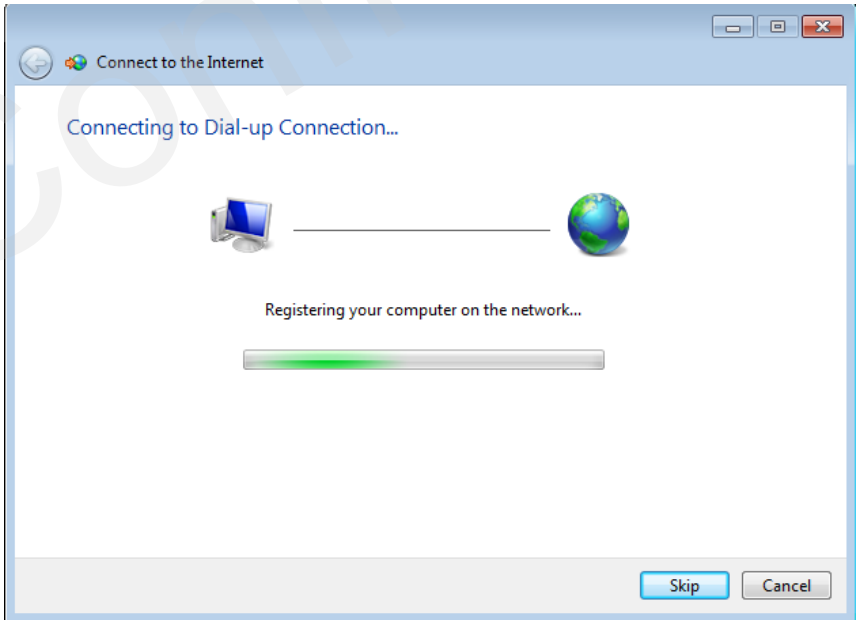

Figure 17：Setup a Dial-up Connection-8

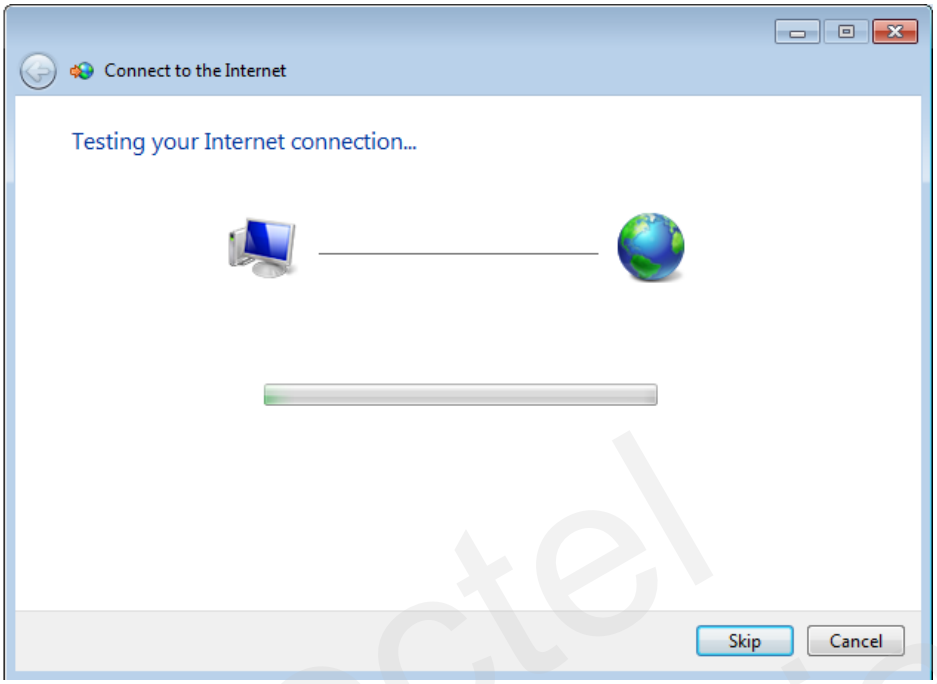

Figure 18：Setup a Dial-up Connection-9

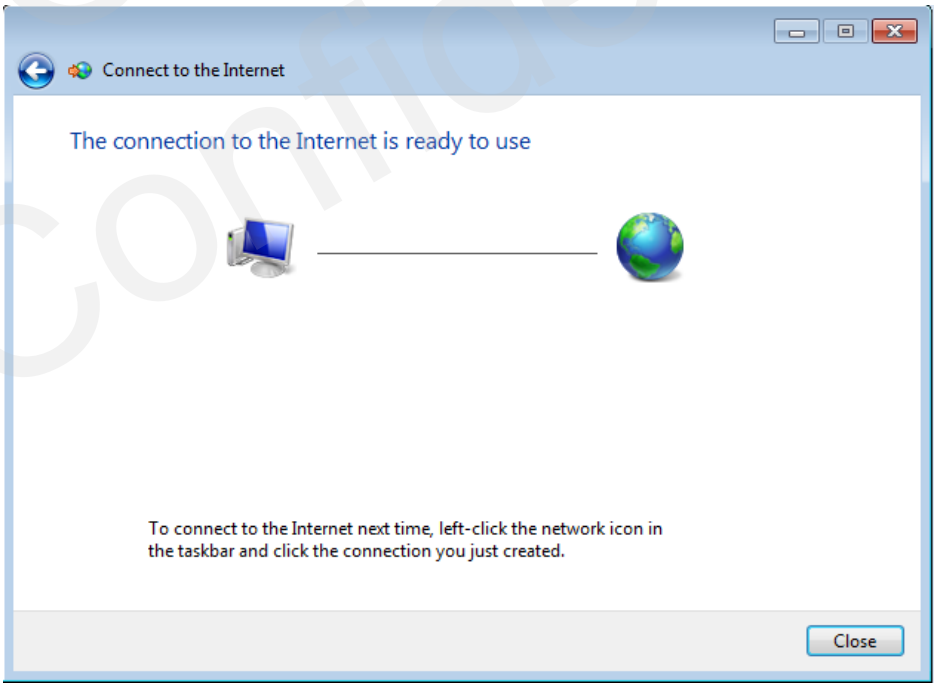

Figure 19：Setup a Dial-up Connection-10

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 from the Internet through it at any time. Open Control Panel and browse the path below, and click "**Change adapter settings**", you will see the Dial-up Connection you have created before:

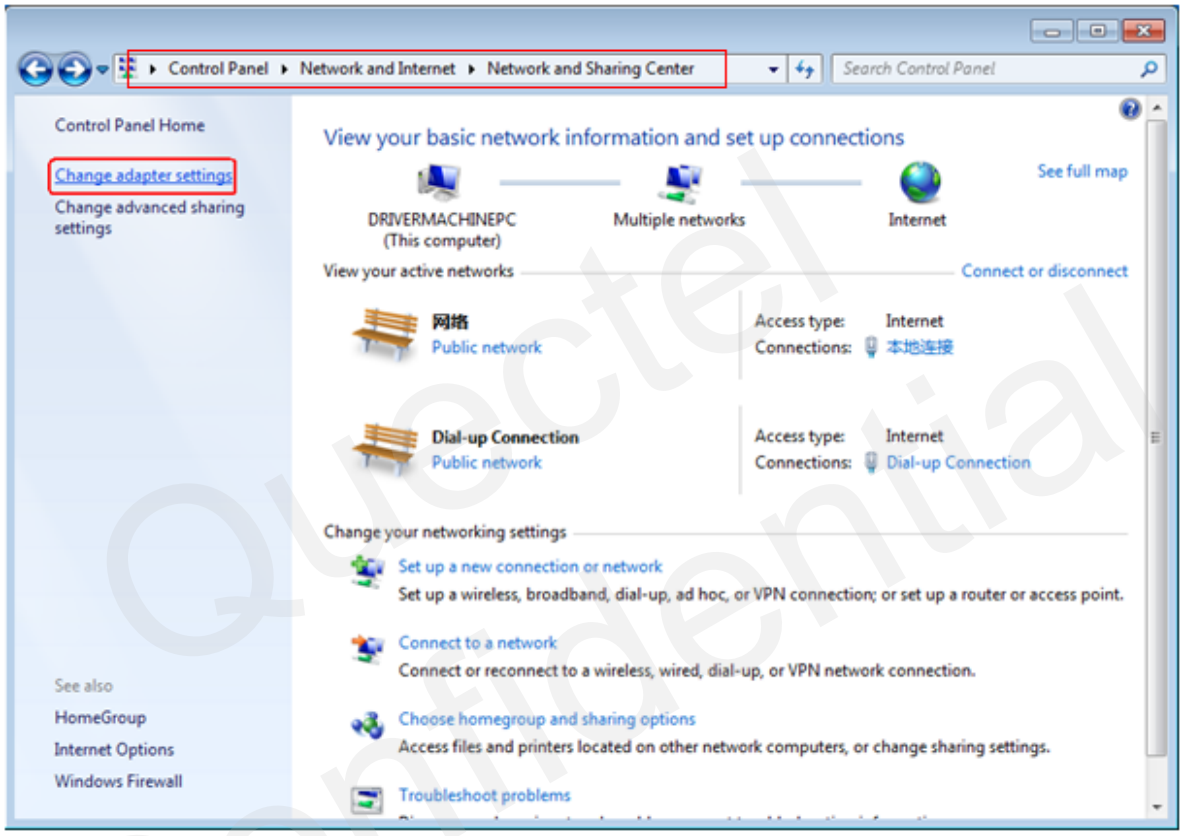

Figure 20：Use a created Dial-up Connection-1

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

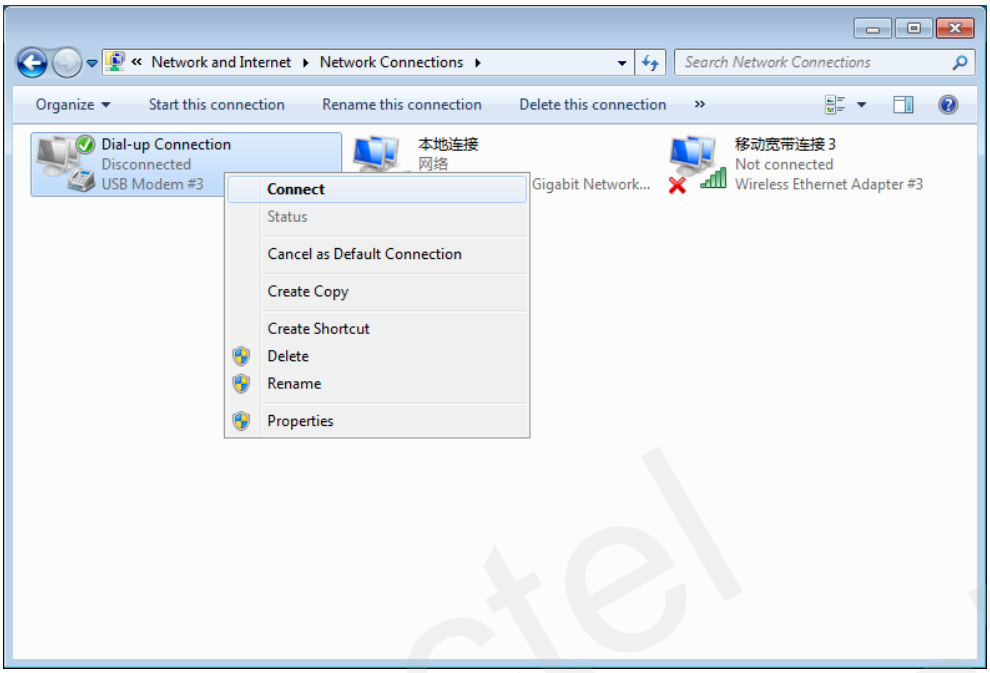

Figure 21：Use a created Dial-up Connection-2

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

Figure 22：Use a created Dial-up Connection-3

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