Windows Drivers

u-blox GNSS drivers for Microsoft Windows systems

Application Note

Abstract

This document describes the installation and use of u-blox GNSS drivers for the Windows operating system to use with u-blox GNSS receivers.

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Document Information

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Contents

1 Introduction

1.1 Scope

This application note provides a comprehensive reference for customers integrating a u-blox GNSS (Global Navigation Satellite System) receiver into a Windows-operating system. u-blox and Microsoft provide USB (Universal Serial Bus) drivers to speed up the integration of u-blox GNSS products into customer's portable devices.

2 GNSS drivers for Windows 10

This section describes the drivers for the Windows 10 operating system available from u-blox and Microsoft.

2.1 u-blox universal GNSS driver for Windows 10

In Windows 10, Microsoft has introduced the new Universal GNSS driver model for GNSS driver interfaces. This driver model enabled u-blox to build a universal GNSS driver that runs on Windows 10 Intel platforms.

Modern drivers should aim to comply with Microsoft's four design principles of Declarative, Componentized, Hardware Supported Application and Universal (D/C/H/U). The u-blox GNSS driver uses the UMDF (User Mode Driver Framework) 2.0 model and complies with the D/C/H principles.

This driver supports applications that use the Windows 10 location service. This new location service does not support the sensor platform, thus, existing sensor platform applications will not work with this driver.

☞   For more information on Sensor and Location platform of Windows, visit Introduction to the Sensor and Location Platform in Windows
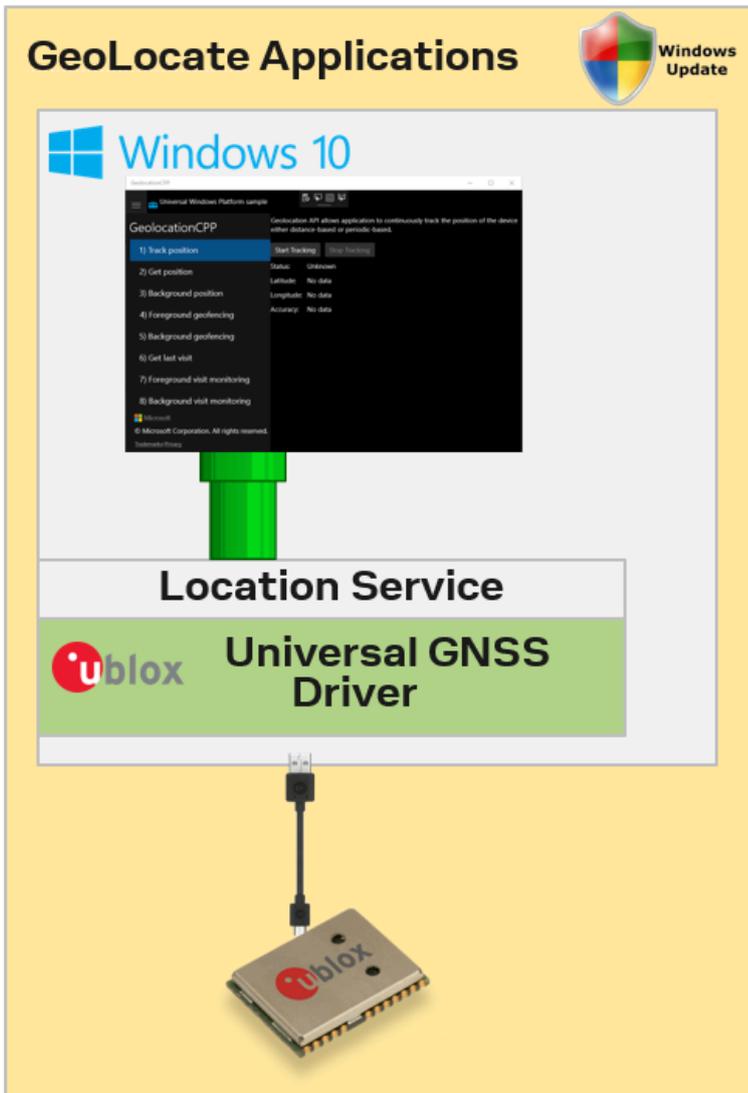
Figure 1: Standard driver application

2.1.1 Universal GNSS driver architecture

The following high-level component block diagram from Microsoft shows the architectural layers of the various components of Universal GNSS UMDF 2.0 driver architecture and I/O considerations depicting how the GNSS UMDF 2.0 driver integrates with the Windows 10 platform.
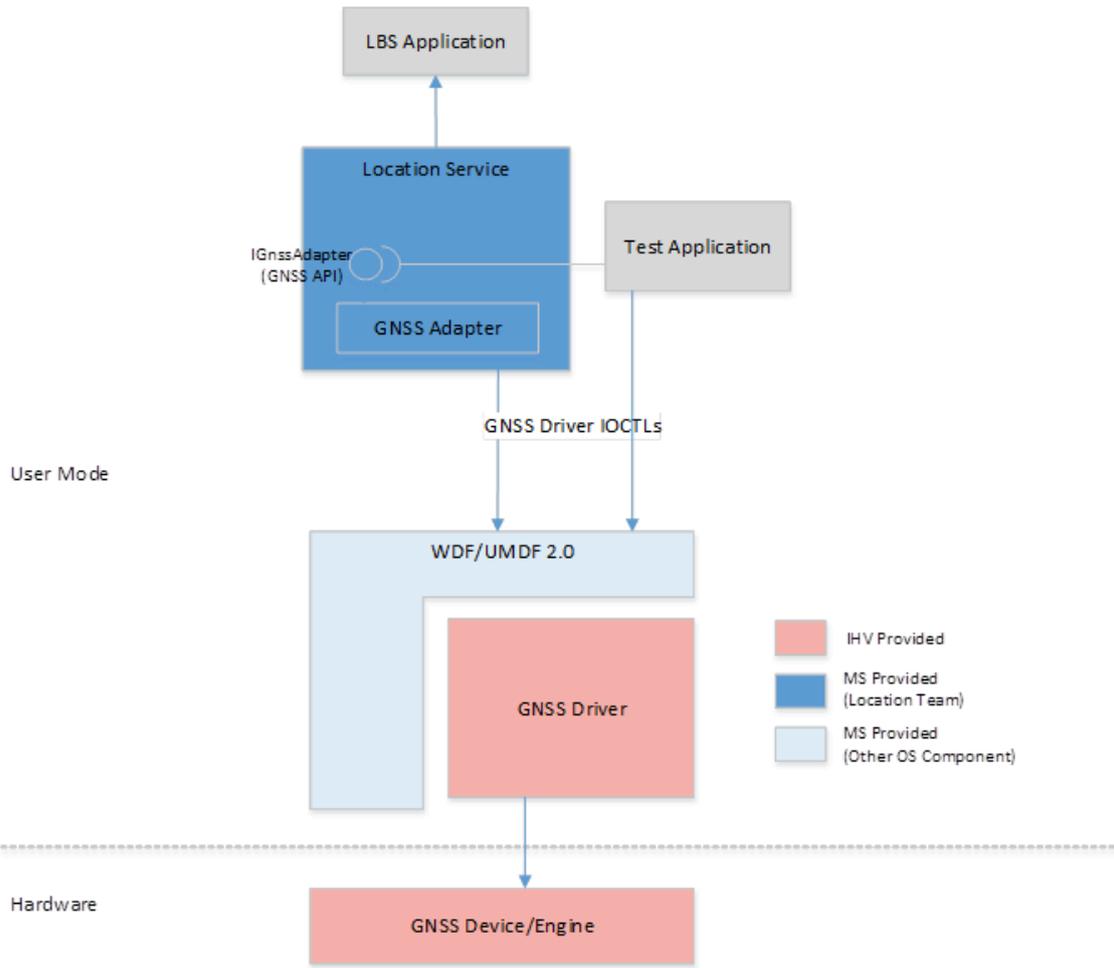
Figure 2: Universal GNSS driver architecture

☞ For more information about the Universal GNSS driver architecture, visit Microsoft docs page.

2.2 Microsoft CDC-ACM driver for Windows 10

Windows 10 provides support as standard for USB to COM (CDC-ACM) straight out of the box. As Microsoft CDC (Communication Device Class)-ACM (Abstract Control Model) driver is the delivered driver, it does not need to be downloaded from Windows Update. The first time a USB device is connected, and without need of an Internet connection, the CDC-ACM driver will load automatically. Applications can then access the COM port and directly communicate with u-blox receivers as defined in the Receiver Description. See the u-blox 8/M8 Receiver Description and Protocol Specification [2]

☞ Only supports Windows 10.

Figure 3: Standard driver application

⚠ The u-blox Universal GNSS driver and the Microsoft CDC-ACM driver cannot be used at the same time in the same machine.
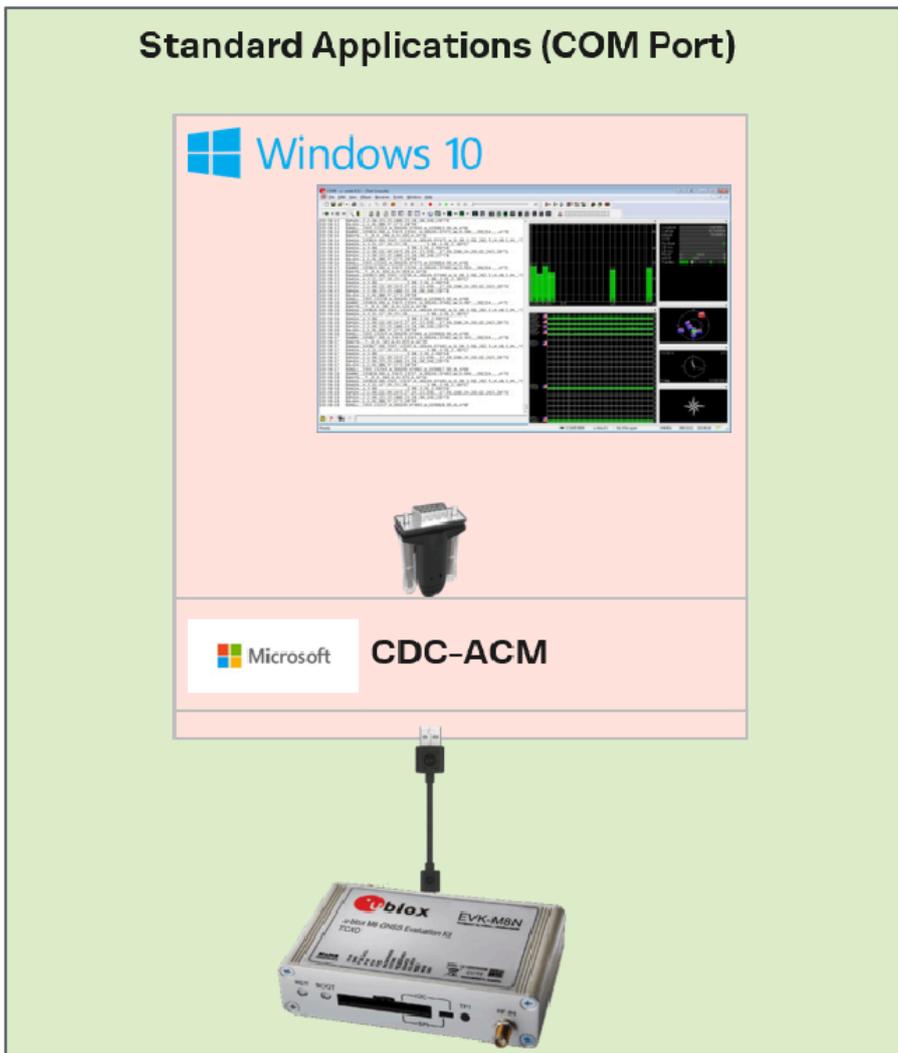
3 u-blox GNSS drivers for Windows 7 and Windows 8

This section explains about the available drivers for Windows 7 and 8 operating system from u-blox.

3.1 u-blox CDC-ACM driver for Windows 7 and Windows 8

USB CDC-ACM driver emulates UART interface serial ports over USB. This is the only Windows USB driver solution from u-blox that is developed in Kernel Mode Driver Framework (KMDF).

The main purpose of this driver is to evaluate u-blox receivers with u-center and to integrate devices with custom applications accessing the receiver directly over COM port.

☞ Only supports Windows XP up to Windows 8.1.
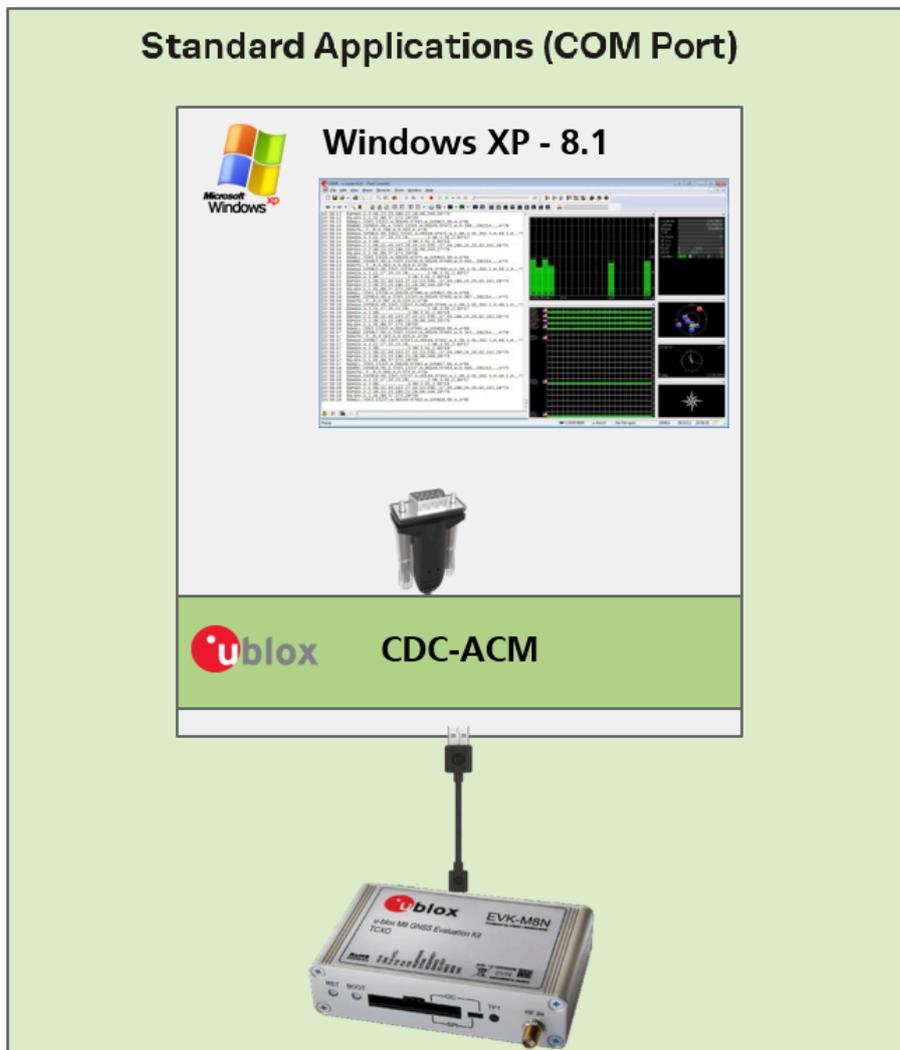
Figure 4: Standard driver application

4 GNSS driver selection for u-blox receivers

The table below summarizes which driver to use for which use-case in specific Windows operating system versions.

Windows Versions	GNSS developer (engineer)/ User application	Customer Specific Product Windows Location Framework/ User application
7	CDC-ACM (u-blox)/u-center	N/A
8.x	CDC-ACM (u-blox)/u-center	N/A
10	CDC-ACM (Windows)/u-center Windows 10 preinstalled driver	Universal GNSS Driver (u-blox)/Universal Windows Platform GNSS Applications

5 Installing and uninstalling drivers

5.1 Installing/uninstalling drivers on Windows 10

This section explains the procedure to install and uninstall u-blox GNSS drivers on the Windows 10 operating system.

5.1.1 Getting the Microsoft default CDC-ACM driver for Windows 10

As the Microsoft CDC-ACM driver is the the delivered driver, it does not need to be downloaded from Windows Update. The first time a USB device is connected, and without need of an Internet connection, the CDC-ACM driver will load automatically.

When the Windows 10 delivered CDC-ACM driver is loaded, the u-blox device appears in the device manager with the name "USB Serial Device (COMx)"
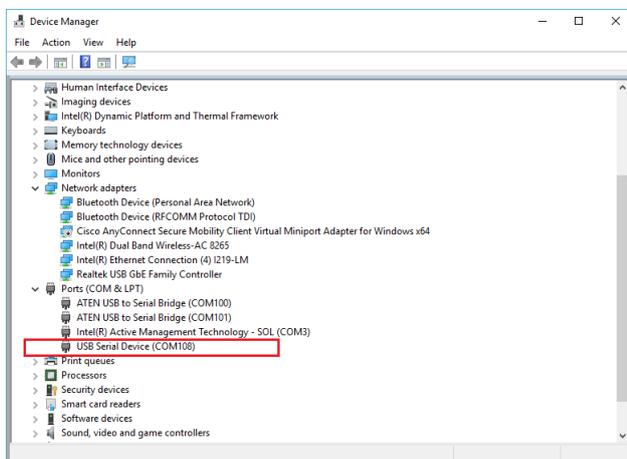

Figure 5: Loaded CDC-ACM driver in Windows 10

5.1.2 Getting the u-blox Universal GNSS driver for Windows 10

To get the u-blox Universal GNSS driver from the Windows Update, follow the instructions below:

- Inform your u-blox sales contact that you would like to evaluate the Universal GNSS driver for Windows 10. See the Contacts section at the end of this document for more information on contacting u-blox.
- Install the received u-blox Universal GNSS driver to the desired device (see Installing the u-blox Universal GNSS driver with the setup file)
- Once the functionality of the driver has been accepted, request to add the product's Computer Hardware ID (CHID) to the Windows Update Universal GNSS driver products list by providing the following information:
  - CHID (Computer Hardware ID).
  - Make and Model of the product.
- Once the request is accepted, the CHID will be added to Windows Update by u-blox.
- Restart the device with an Internet connection to get the Universal GNSS driver from the Windows Update.

5.1.3 Installing the u-blox Universal GNSS driver with the setup file

This section explains the installation of the u-blox Universal GNSS Driver with the internally provided setup file. This is only be needed to evaluate and test before requesting for the deployment to the Windows Update.

- Open the folder for desired system type, i.e., x64 or x86.
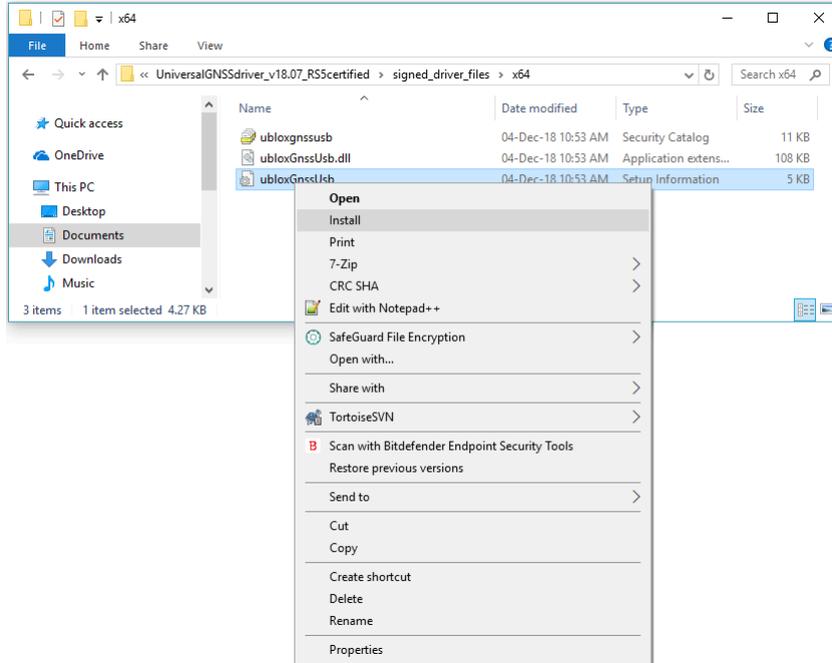- Right click on the INF file named "ubloxGnssUsb" and click "Install".

Figure 6: Installing with the setup file

- INF default installation window will pop-up to ask for the confirmation, click "Yes".
- The installation of the Universal GNSS Driver is now finished and you can click "OK" to quit the installer.
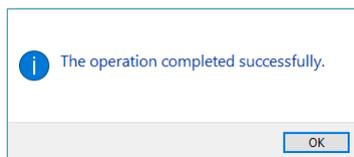

Figure 7: Universal GNSS driver installed

- Now connect a u-blox GNSS receiver to any USB port.
- The installed driver appears in the Device Manager as in the figure below:
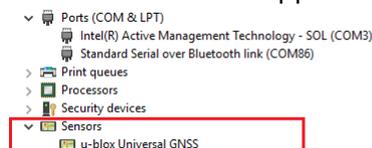

Figure 8: Device Manager

- The Location service from "Settings->Privacy->Location" should be on to use the location of the device for applications i.e., Microsoft Maps.
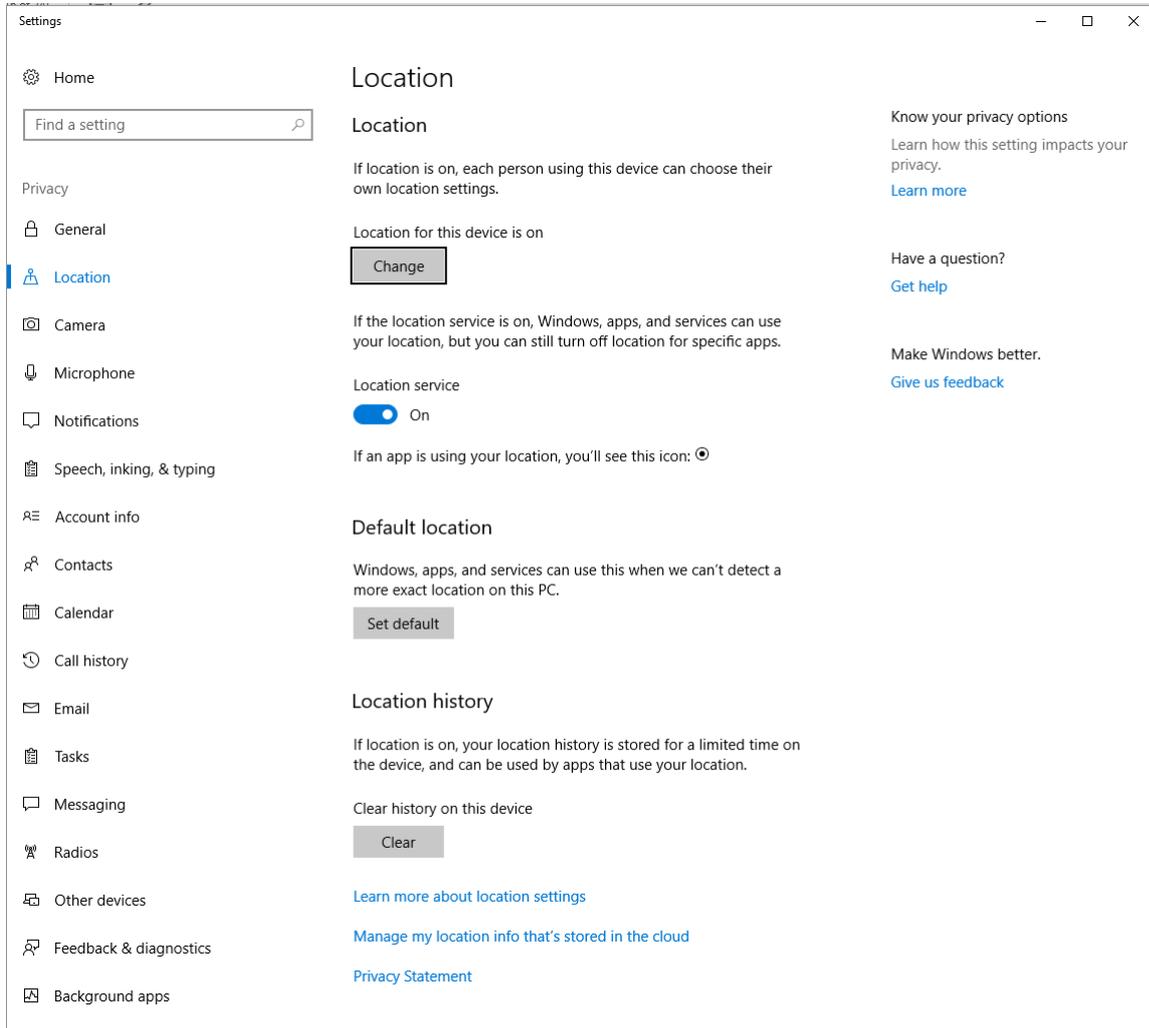

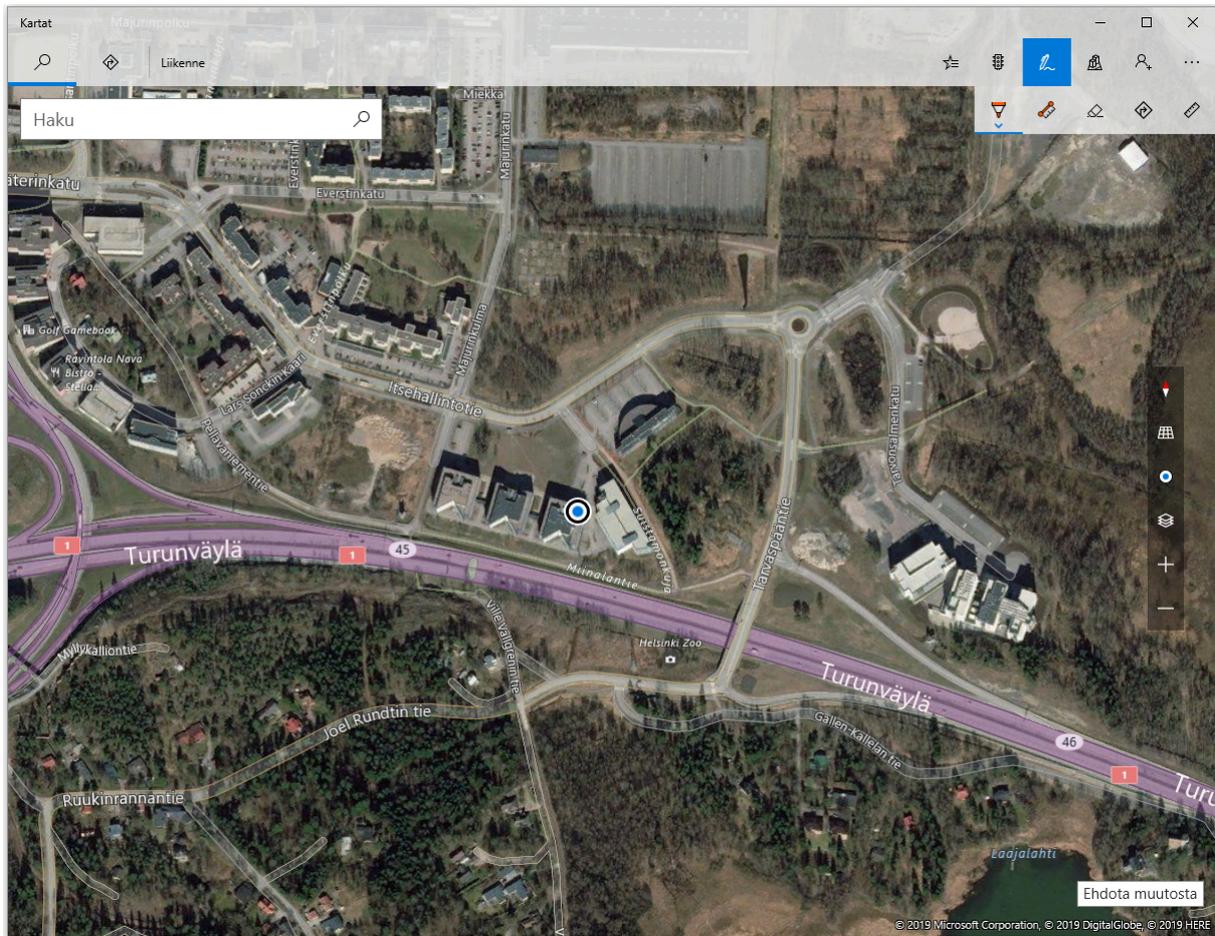**Figure 9: Location service Dialog Windows 10**

Figure 10: Maps with Location service

5.1.4 Uninstalling the u-blox Universal GNSS driver

To uninstall the manually installed u-blox Universal GNSS driver from the device, follow the instructions below:

- Open the Device Manager and right click on "Sensors->u-blox Universal GNSS".
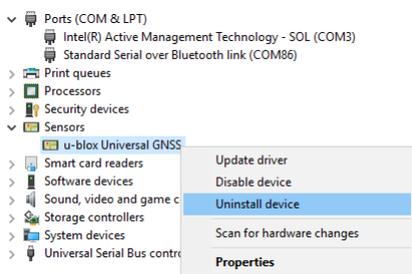- From the menu window, click "Uninstall device".

Figure 11: Uninstall Universal GNSS from Device Manager

- From the pop-up Uninstall device window, select the "Delete the driver software for this device" option.
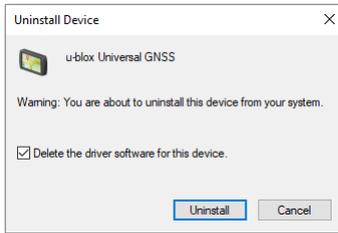

Figure 12: Selection to delete all the driver files for the device

- Click "Uninstall".
- A System Settings Change pop-up window will appear to ask if you want to restart. Click "Yes" to restart and remove the device driver.
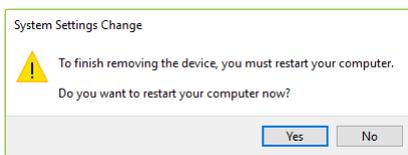

Figure 13: Restart the computer to remove the device driver

- Open the Device Manager to check that the Universal GNSS driver has been properly uninstalled.

Figure 14: Check Device Manager to check that the Universal GNSS device driver is uninstalled successfully

5.1.5 Uninstalling the legacy Sensor driver from Windows 10

To uninstall the u-blox legacy Sensor driver from Windows 10, remember to log in as an administrator and follow the instructions below:

- Connect the u-blox GNSS receiver, open the Device Manager, and right click "Sensors->u-blox GNSS Location Sensor".

- From the menu window, click "Uninstall device".

Figure 15: Uninstalling legacy Sensor driver from Device Manager

- From the pop-up "Uninstall Device" window, select the "Delete the driver software for this device" option.

Figure 16: Selection to delete all the driver files for the device

- Click "Uninstall" to start uninstalling the driver.
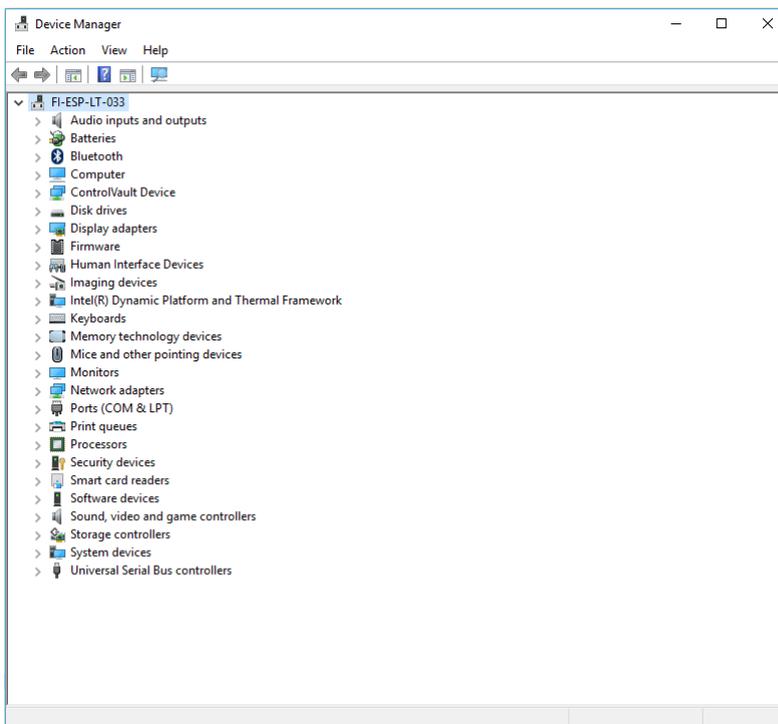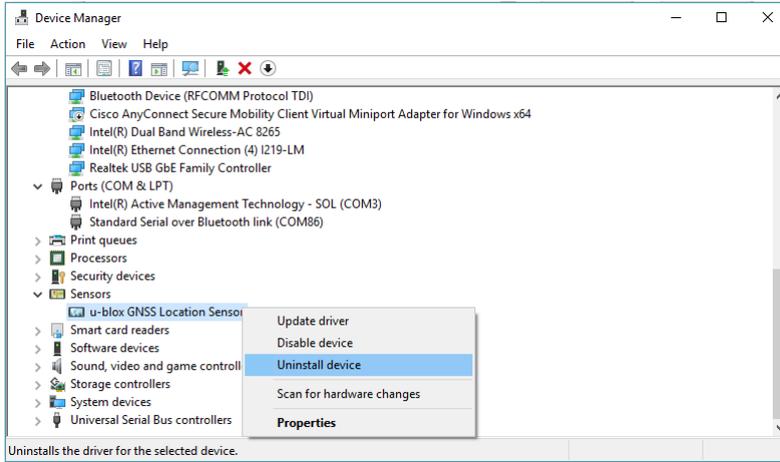- Open the Device Manager to check that the Sensor driver has been properly uninstalled.

Figure 17: Check Device Manager to check that the legacy Sensor driver is uninstalled successfully

5.1.6 Uninstalling the legacy VCP driver from Windows 10

To uninstall the u-blox legacy VCP driver from Windows 10, remember to log in as an administrator. The GNSS receiver should be disconnected from the PC and the driver should be uninstalled both from the "Control Panel->Programs->Programs and Features" and the "Device Manager". To uninstall from the "Device Manager", follow the instructions below:

- Open the Device Manager and right click "Ports->u-blox Virtual COM Port (COMxx)".

- From the menu window, click "Uninstall device".

Figure 18: Uninstalling legacy VCP driver from Device Manager

- From the pop-up "Uninstall Device" window, select the "Delete the driver software for this device" option.
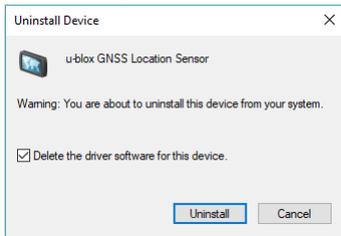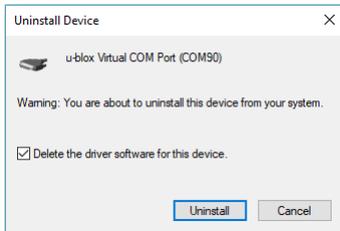

Figure 19: Selection to delete all the driver files for the device

- Click "Uninstall" to start uninstalling the driver.
- Open the Device Manager to check that the VCP driver is uninstalled properly and the u-blox device will be detected as other device.
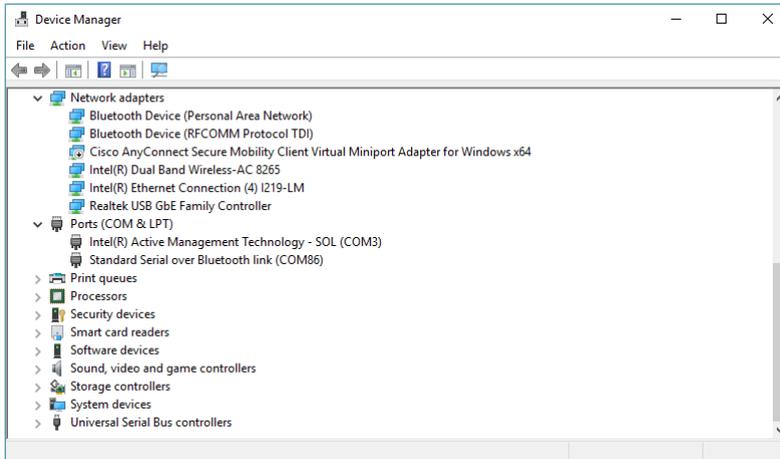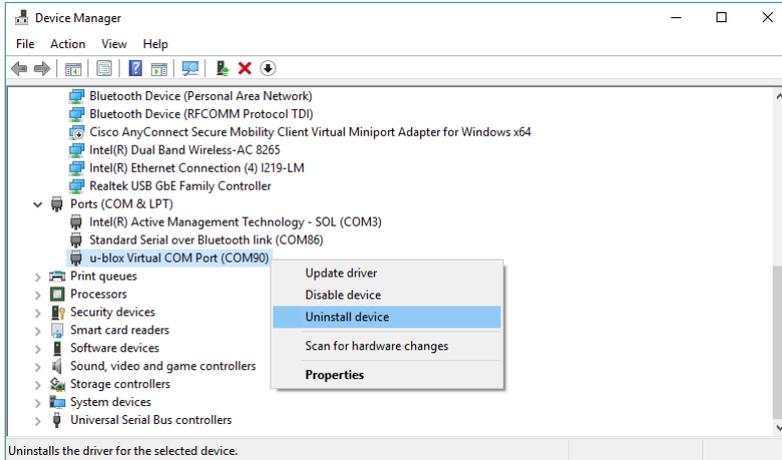

Figure 20: Check the legacy VCP driver is uninstalled successfully

To uninstall from the "Control Panel->Programs->Programs and Features", follow the instructions below:

- Open the "Control Panel->Programs->Programs and Features" and right click "u-blox GNSS VCP Device Driver for Windows".

- click "Uninstall".

Figure 21: Uninstalling legacy VCP driver from Programs and Features
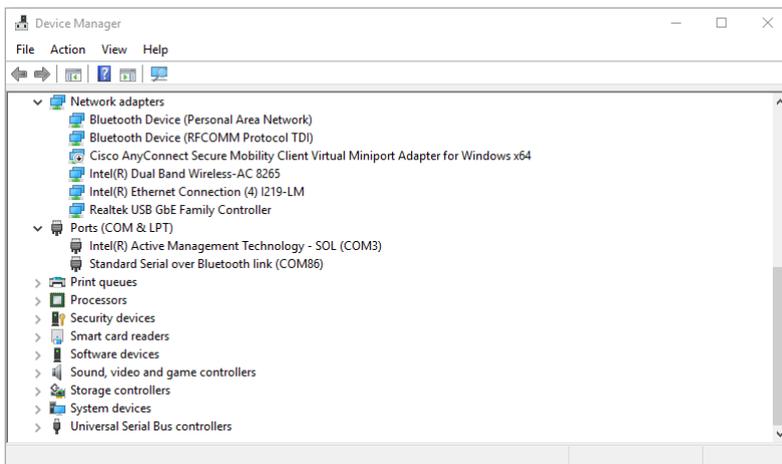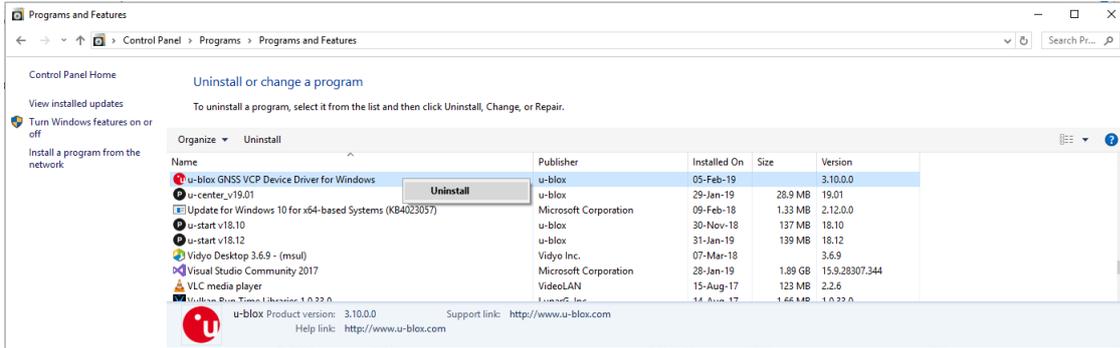
- The driver will be uninstalled as shown in the screenshot below.
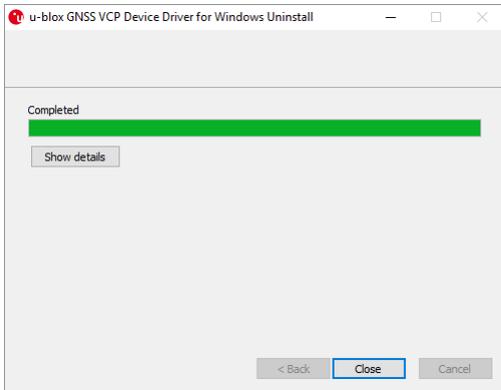
Figure 22: Uninstallation complete window

5.2 Installing/uninstalling drivers on Windows 7 and 8.x

This section explains the procedure to install and uninstall u-blox GNSS drivers for Windows 7 and Windows 8x operating systems.

5.2.1 Getting the u-blox CDC-ACM driver for Windows 7 and Windows 8.x

The u-blox CDC-ACM Driver for x64 bit version of Windows 7 and 8.x is deployed to Windows Update, so connecting the PC to the Internet and connecting the u-blox GNSS receiver will get the driver automatically from the Windows Update.

If it does not update automatically, follow the steps below to update from the Internet:

- Right click on the undetected u-blox GNSS device.

- From the menu window, select "Update Driver Software ...".

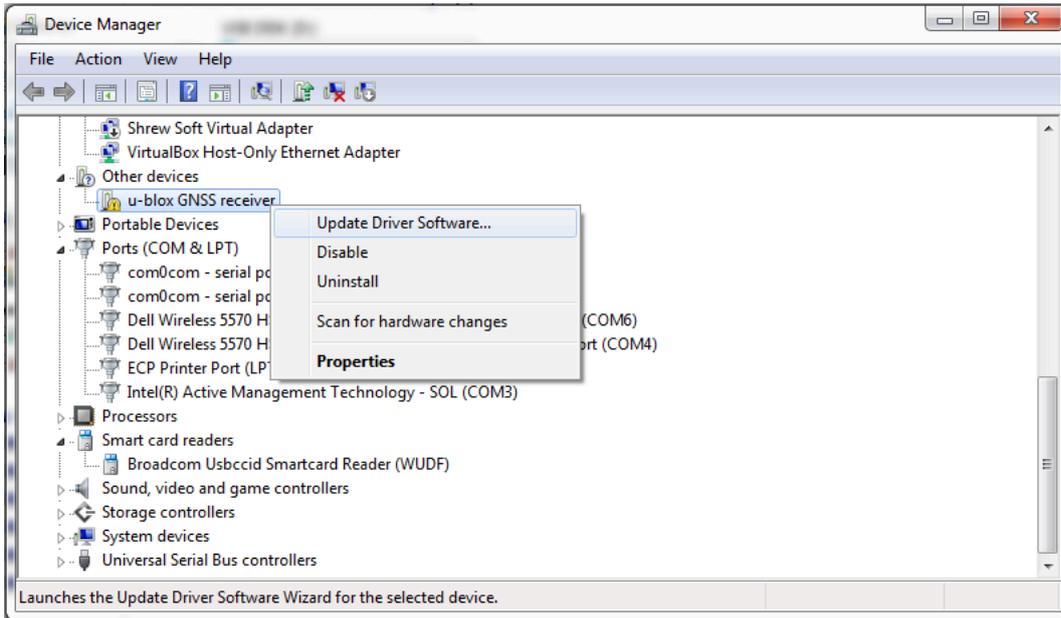**Figure 23: Getting CDC-ACM driver from Windows Update**

- From the "Update Driver Software" window, select the "Search automatically for updated driver software" option and it will search via the Windows Update to get the deployed CDC-ACM driver from u-blox.
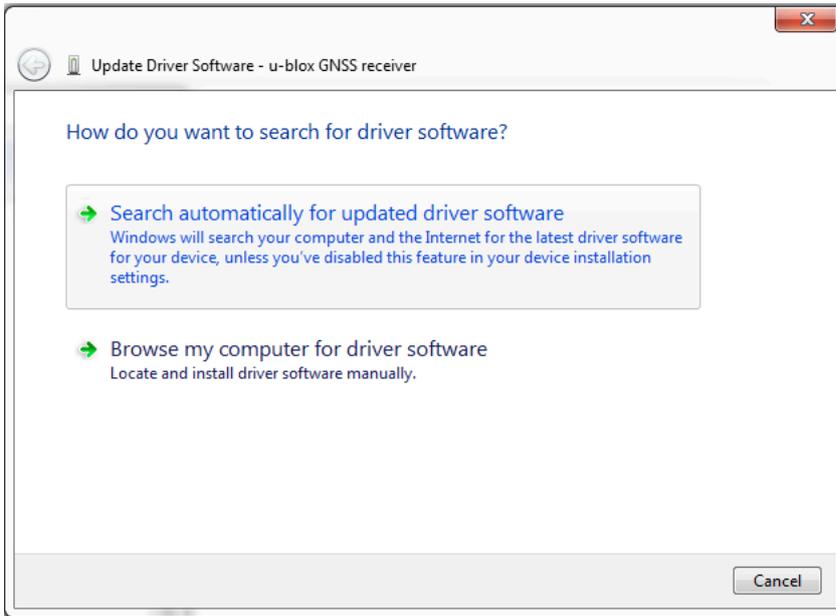
Figure 24: Searching CDC-ACM driver from Windows Update

- When the driver is successfully updated, the device will appear in the Device Manager, as shown in Figure 25.

Figure 25: Updated CDC-ACM driver from Windows Update

5.2.2 Uninstalling the u-blox CDC-ACM driver from Windows 7 and Windows 8.x

To uninstall the u-blox CDC-ACM driver from the device, follow the instructions below:

- Open the Device Manager and right click on the "Ports->u-blox GNSS Receiver (COMxx)".
- From the menu window, click "Uninstall device".

Figure 26: Uninstall the CDC-ACM driver from Device Manager

- From the pop-up Uninstall Device window, select the "Delete the driver software for this device" option.
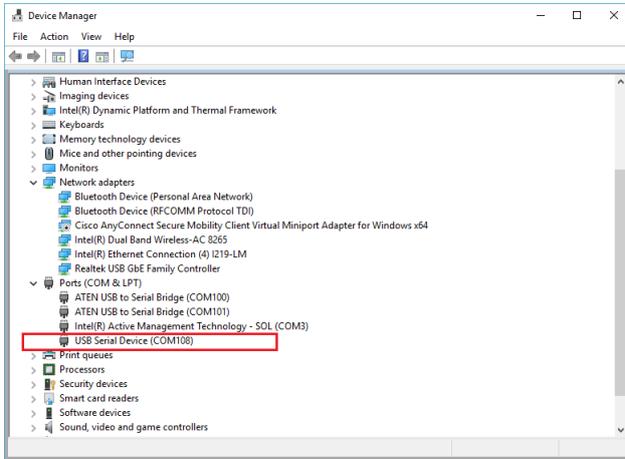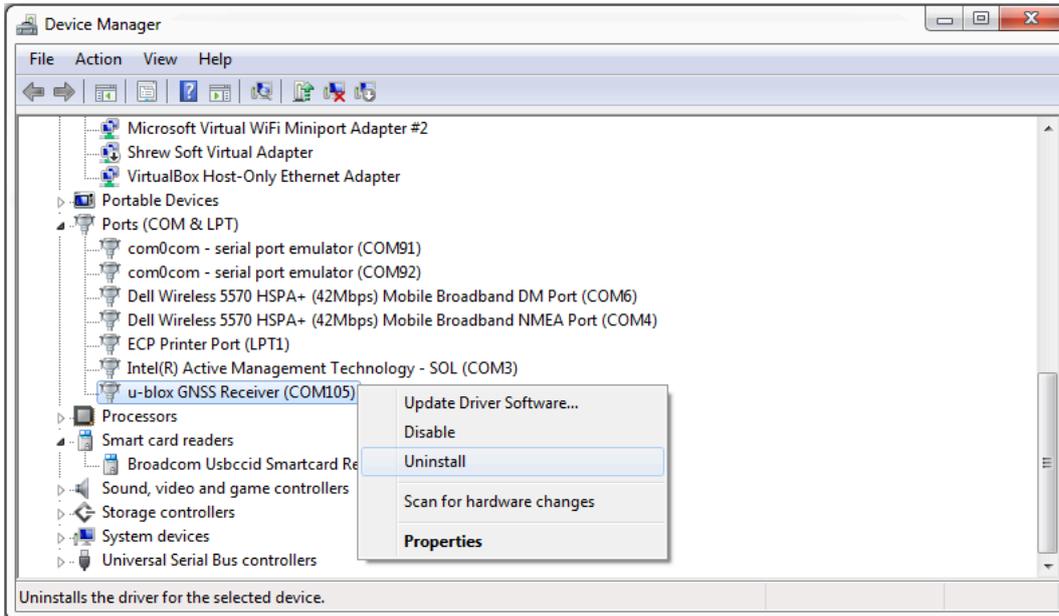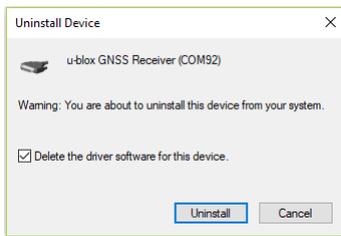

Figure 27: Selection to delete all the driver files for the device

- Click "Uninstall".
- Once the driver is uninstalled, the Device Manager window will be refreshed and the "u-blox GNSS Receiver (COMxx)" port will be uninstalled and the u-blox device will be detected as another device.

Figure 28: Check the CDC-ACM device driver is uninstalled successfully

5.2.3 Uninstalling the legacy sensor driver from Windows 7 and Windows 8.x

To uninstall the u-blox legacy sensor driver from Windows 7 and 8.x, remember to log in as an administrator and follow the instructions below:

- Connect the u-blox GNSS receiver, open the Device Manager and right click on "Sensors->u-blox GNSS Location Sensor".

- From the menu window, click "Uninstall".

Figure 29: Uninstalling legacy Sensor driver from Device Manager

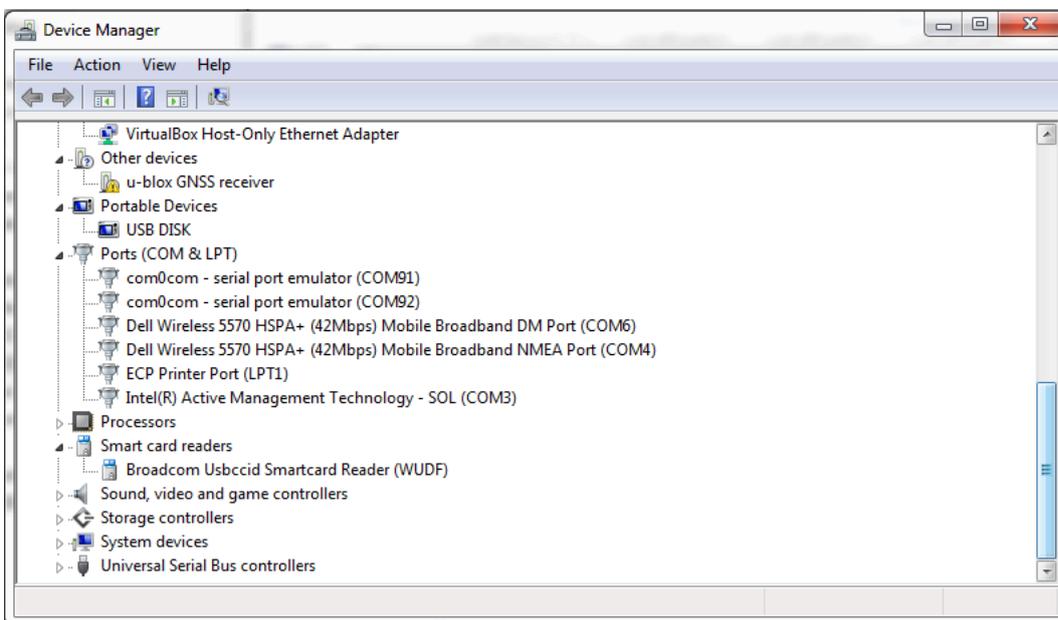- From the "Confirm Device Uninstall" window, select the "Delete the driver software for this device" option.

Figure 30: Selection to delete all the driver files for the device

- Click "OK" to start uninstalling the driver.
- Open the Device Manager to check that the sensor driver is uninstalled properly.
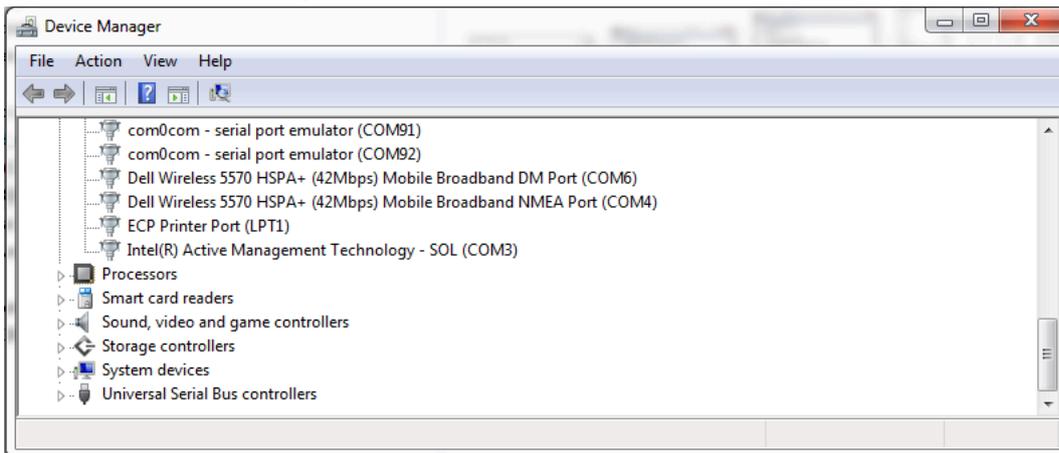
Figure 31: Check Device Manager to check that the legacy Sensor driver is uninstalled successfully

5.2.4 Uninstalling the legacy VCP driver from Windows 7 and Windows 8.x

To uninstall the u-blox legacy VCP driver from Windows 7 and 8.x, remember to log in as an administrator. The GNSS receiver should be disconnected from the PC and the driver should be

uninstalled both from the "Control Panel->All Control Panel Items-Programs and Features" and the "Device Manager". To uninstall from the "Device Manager", follow the instructions below:

- Open the Device Manager and right click on "Ports->u-blox Virtual COM Port (COMxx)".
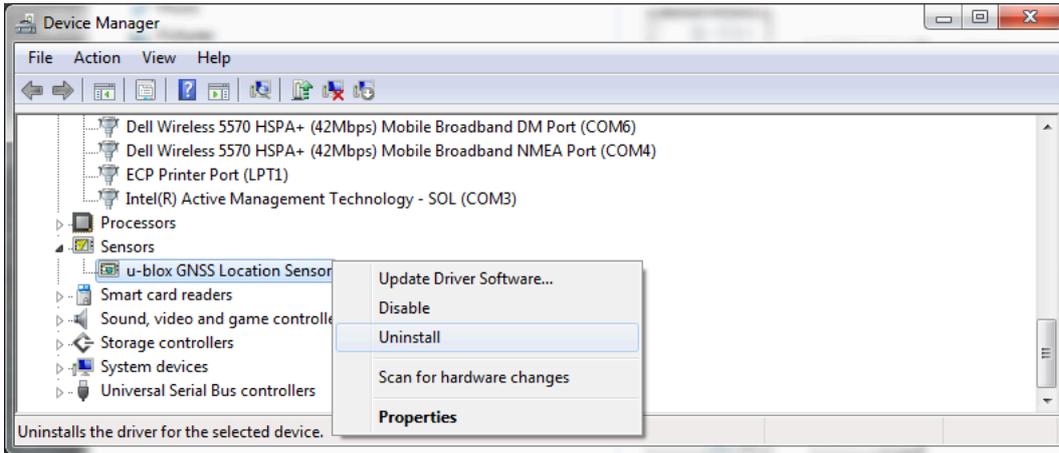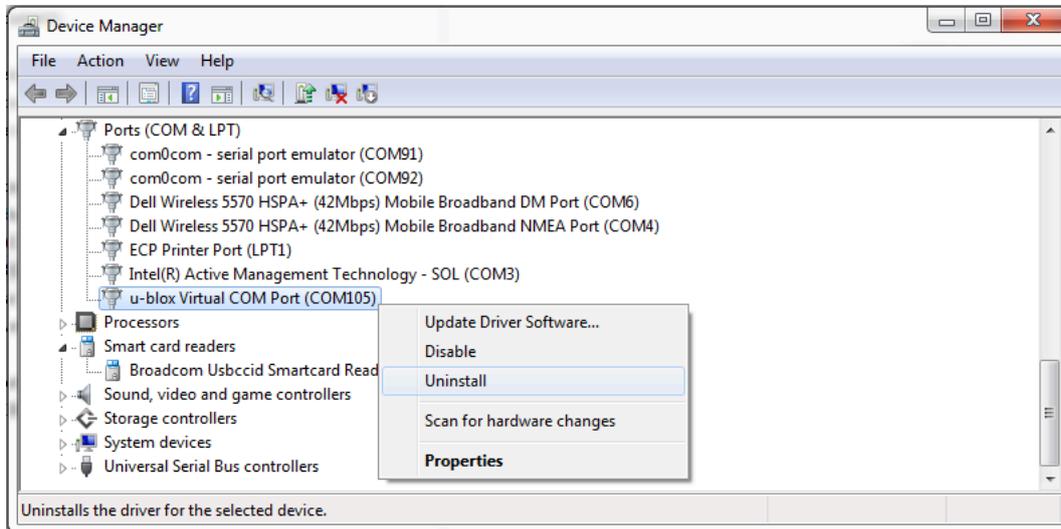- From the menu window, click "Uninstall".

Figure 32: Uninstalling legacy VCP driver from Device Manager

- From the pop-up Confirm Device Uninstall window, select the "Delete the driver software for this device" option.

Figure 33: Selection to delete all the driver files for the device

- Click "OK" to start uninstalling the driver.

- Open the Device Manager to check that the VCP driver is uninstalled properly and the u-blox device will be detected as another device.
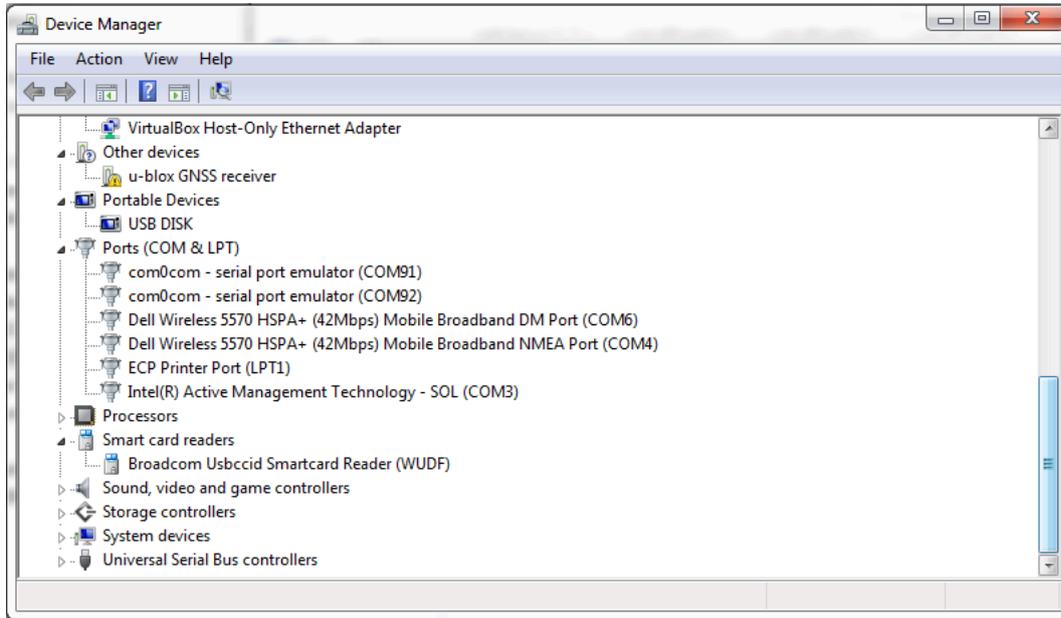
Figure 34: Check the legacy VCP driver is uninstalled successfully

To uninstall from the "Control Panel->All Control Panel Items-Programs and Features", follow the instructions below:

- Open the "Control Panel->All Control Panel Items-Programs and Features" and right click on "u-blox GNSS VCP Device Driver for Windows".
- Click "Uninstall".
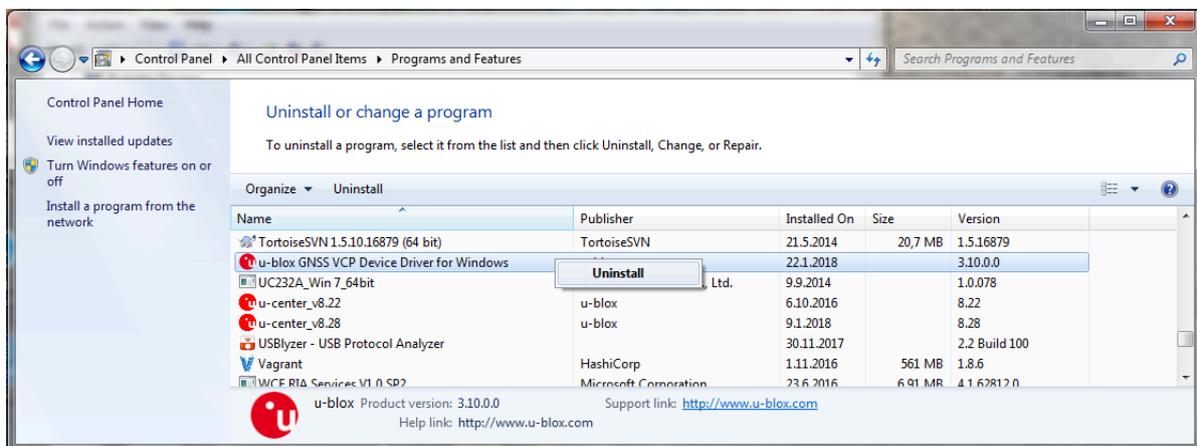
Figure 35: Uninstalling legacy VCP driver from Programs and Features

- The driver will be uninstalled as shown in the screenshot below.
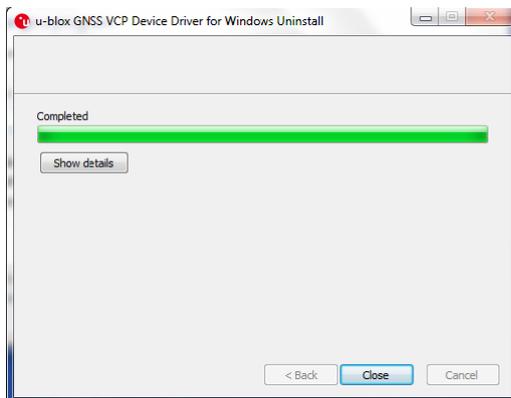
Figure 36: Uninstallation complete window

Related documents

[1]   Introduction to the Sensor and Location Platform in Windows
[2]   u-blox 8 / u-blox M8 Receiver Description Including Protocol Specification (Public version)

Revision history

Revision	Date	Name	Status / Comments
R01	16-Apr-2019	msul	Initial release

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