

Technical

Service

Bulletin

Maintenance & Support

CUSTOMER SERVICE

FILE CONTROL		ORIGIN	ISSUE DATE	EXP.DATE	
BullSequana Edge	Support and R&D	XCL	July 2023	INDEF	
SUBJECT: 5G connection configurations on BullSequana Edge V1 server			DOSSIER BSE	2023-A02	REV 1

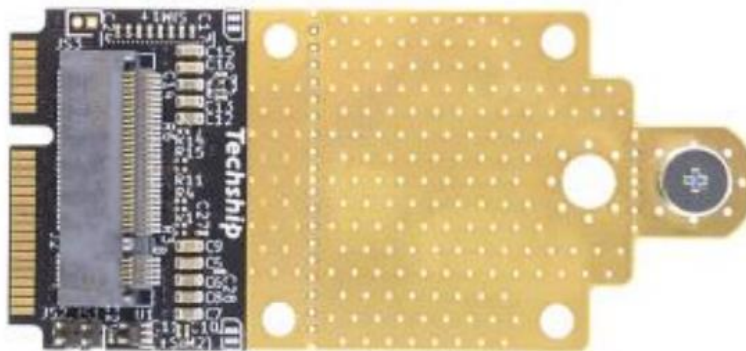
This document describes a procedure to initiate a 5G connection with Bullsequana Edge serverV1 (known as Mlpocket).

mPCIe adapter:

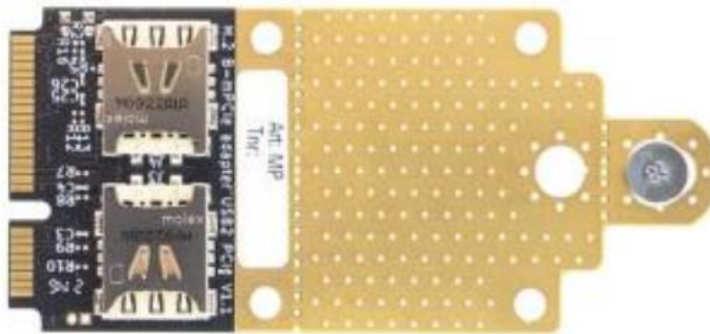
As the 5G card is a M.2 form factor, this is mandatory to use an adapter mPCIe to M.2. This adapter is provided by Techship and can manage different type of M2 devices.

There are 3 variants of this adapter, the one used is the model MP301-S. It can manage USB 2.0 and PCI-Express 1x signal.

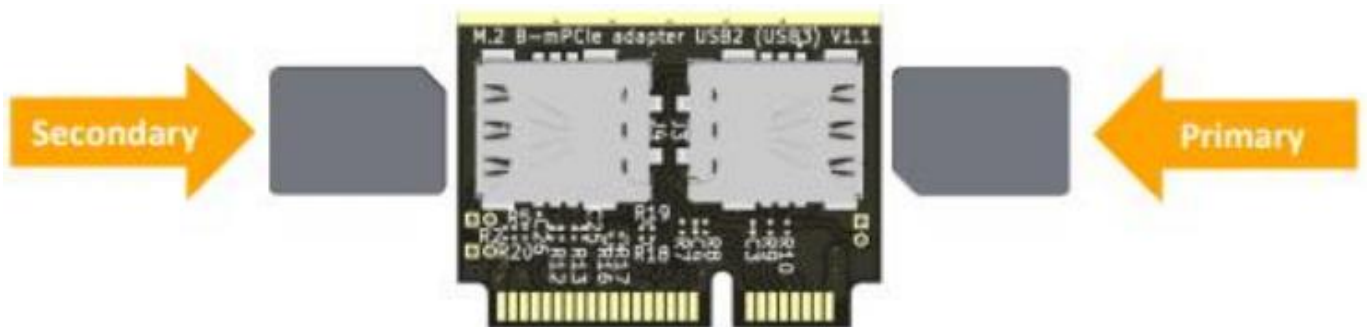
On the front, you have the M.2 key B connector, and 2 jumpers named JS1 and JS2 to configure the signal:



On the back, you have 2 μ SIM holders. Depending on the 5G card associated, only a single SIM interface is supported. This is the case for the Telit FN980 card:



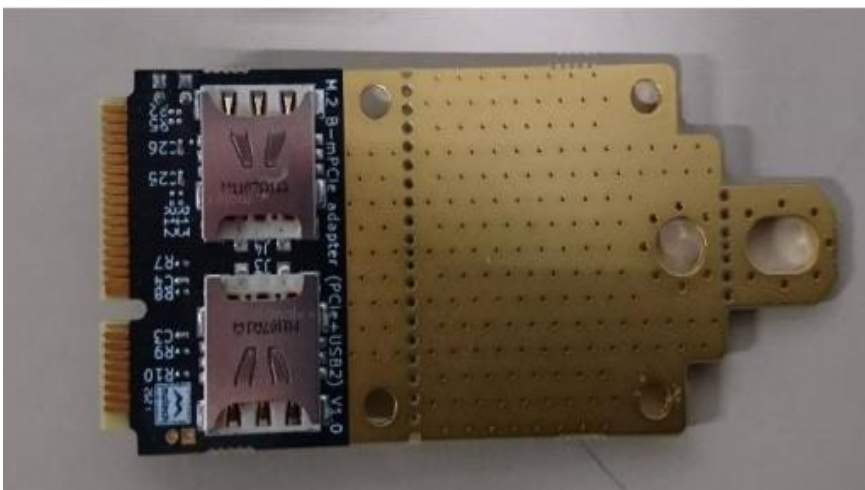
The SIM card contact pads must be oriented towards the adapter PCB.



Telit FN980 5G Card:

1. Physical Installation

Step 1 : First, you need to insert the μ SIM into the Techship adapter card.



Step 2 : Then you need to plug and screw the mPCIe adapter with 2 screws.



Step 3 : After that you can plug the M.2 card into the mPCIe M.2 slot.



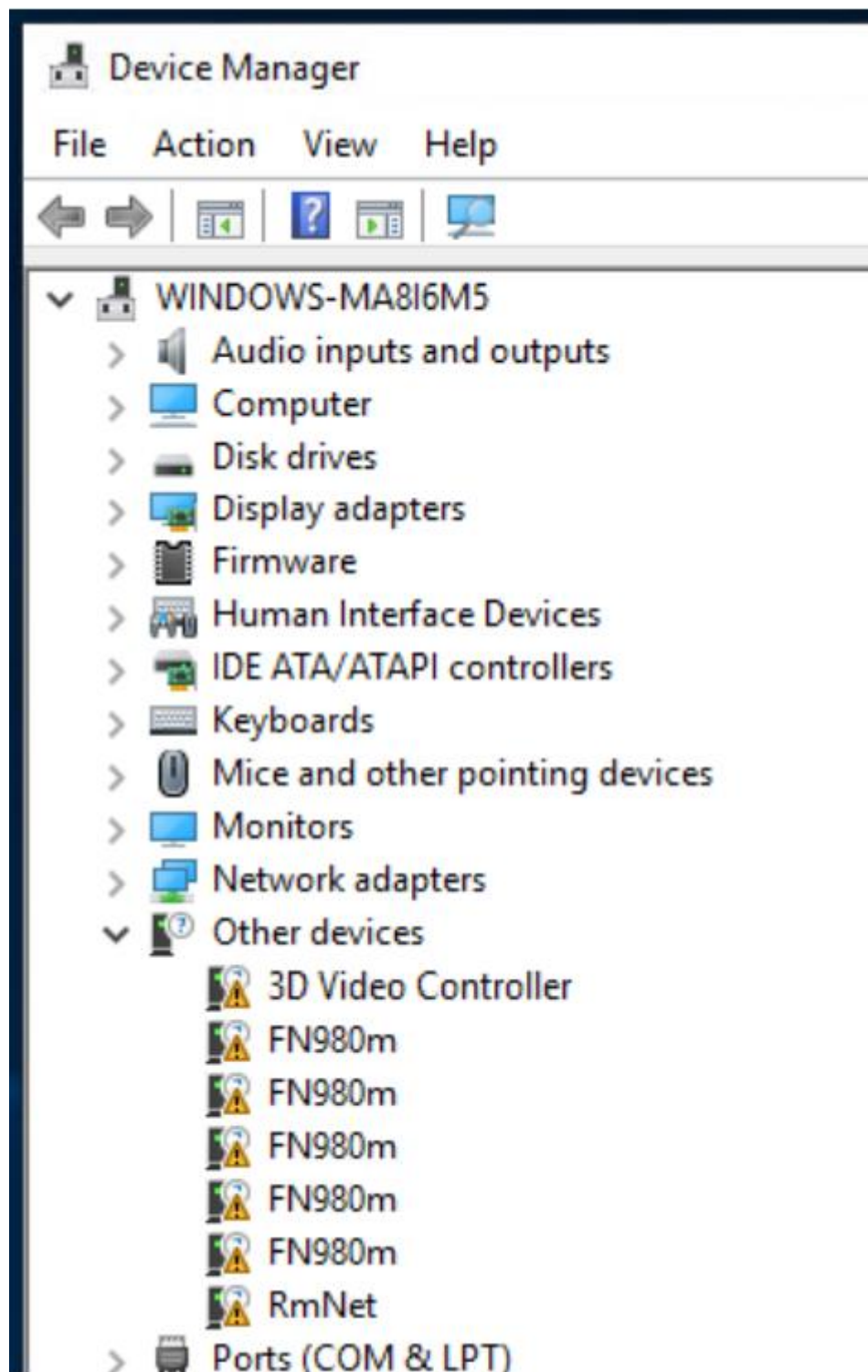
Step 4: To finalize the installation, you need to connect the antenna as required.

For antenna cabling, please refer to the table below:

Antenna Port	Technology	TX	RX
ANT 0	3G WCDMA	B1, B2, B3, B4, B5, B6, B8, B9, B19	B1, B2, B3, B4, B5, B6, B8, B9, B19
	4G LTE	B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B29, B30, B32, B34, B38, B39, B40, B41, B46, B48, B66, B71	B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B29, B30, B32, B34, B38, B39, B40, B41, B42, B43, B46, B48, B66, B71
	5G NR FR1	n1, n2, n3, n5, n7, n8, n12, n20, n28, n38, n40, n41, n66, n71	n1, n2, n3, n5, n7, n8, n12, n20, n25, n28, n38, n40, n41, n48, n66, n71, n77, n78, n79
ANT 1	3G WCDMA	–	B1, B2, B3, B4, B5, B6, B8, B9, B19
	4G LTE	B5, B20, B42, B43, B48, B71	B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B29, B30, B32, B34, B38, B39, B40, B41, B42, B43, B46, B48, B66, B71
	5G NR FR1	n5, n48, n77, n78, n79	n1, n2, n3, n5, n7, n8, n12, n20, n25, n28, n38, n40, n41, n48, n66, n71, n77, n78, n79
ANT 2	3G WCDMA	–	–
	4G LTE	B1, B2, B3, B4, B7, B41, B66	B1, B2, B3, B4, B7, B25, B30, B32, B34, B38, B39, B40, B41, B42, B43, B46, B48, B66
	5G NR FR1	n1, n2, n3, n7, n25, n41, n66, n77, n78, n79	n1, n2, n3, n7, n25, n38, n40, n41, n48, n66, n77, n78, n79
ANT 3	3G WCDMA	–	–
	4G LTE	–	B1, B2, B3, B4, B7, B25, B30, B32, B34, B38, B39, B40, B41, B42, B43, B46, B48, B66
	5G NR FR1	–	n1, n2, n3, n7, n25, n38, n40, n41, n48, n66, n77, n78, n79

2.Driver installation:

If your 5G card is well plugged, Windows should detect the card in the Device Manager utility



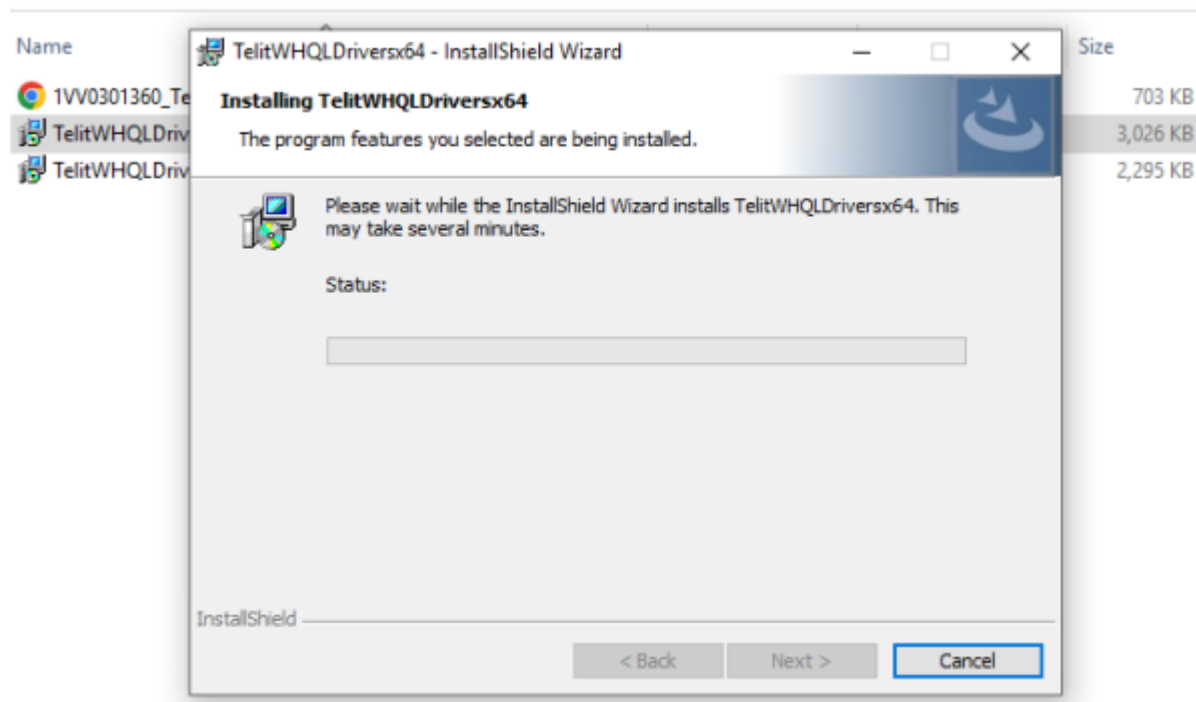
Windows can't manage the 5G card, so you must install a specific driver from Telit site.

All the latest drivers will be available, and you can download it here:

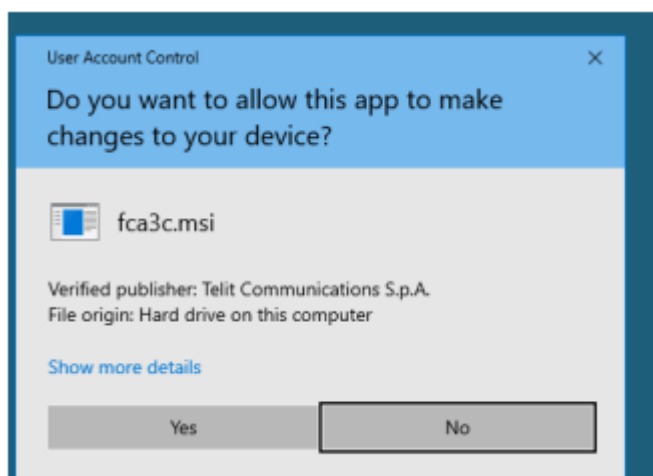
<https://www.telit.com/fn980m-download-zone/>

Drivers are packaged in an executable file, you just need to execute the file, TelitWHQLDrivers64.msi with administrator privileges.

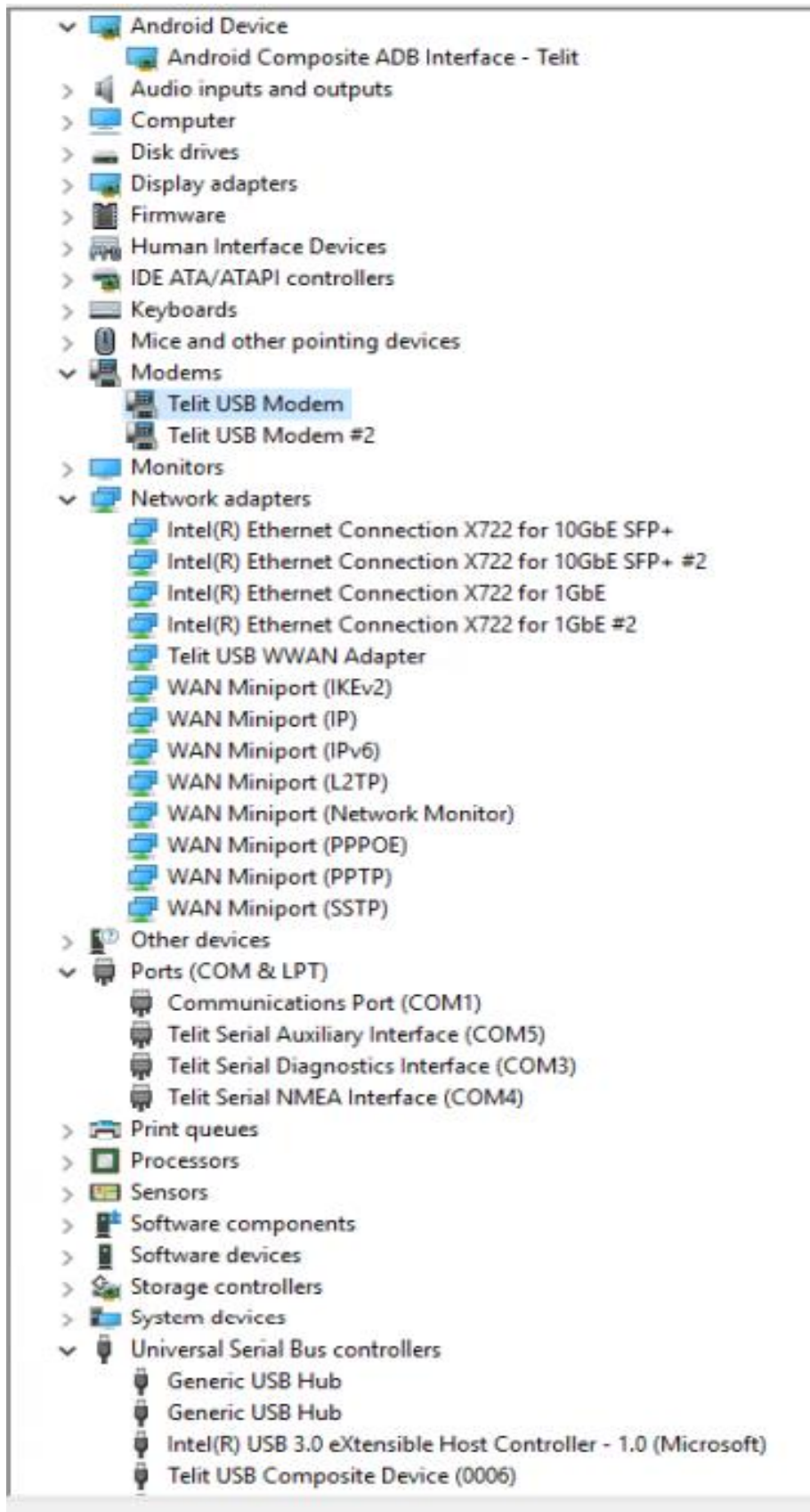
Once the driver has been downloaded, it must be installed by clicking on the executable file,



Click no to avoid the changes to be made on your device:

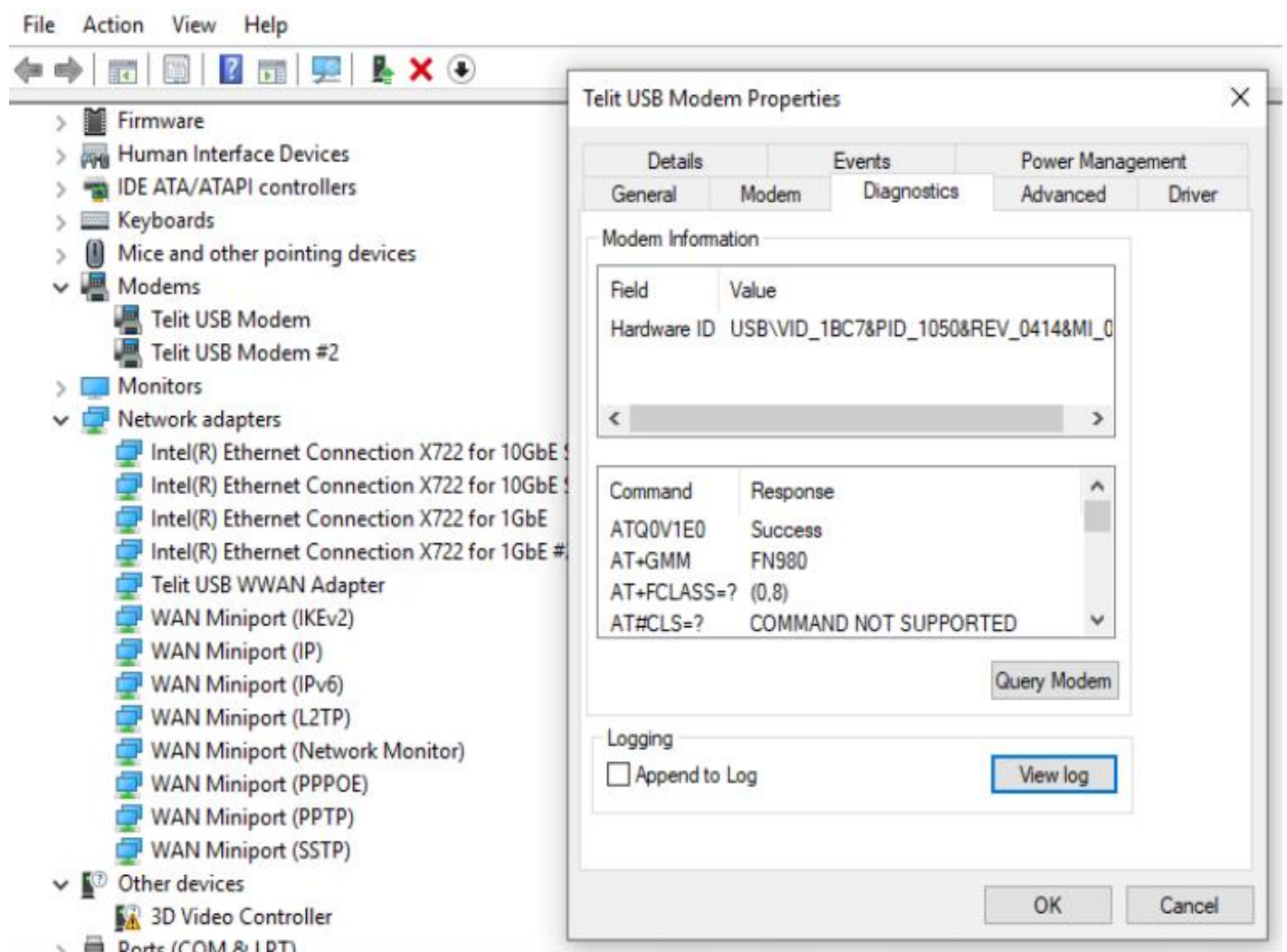


Once it's finished, the device manager should be populated with Telit components:



To validate the driver installation, you can try to communicate with the 5G modem.

Select Telit USB Modem, Properties, Diagnostics, then click on Query Modem button.

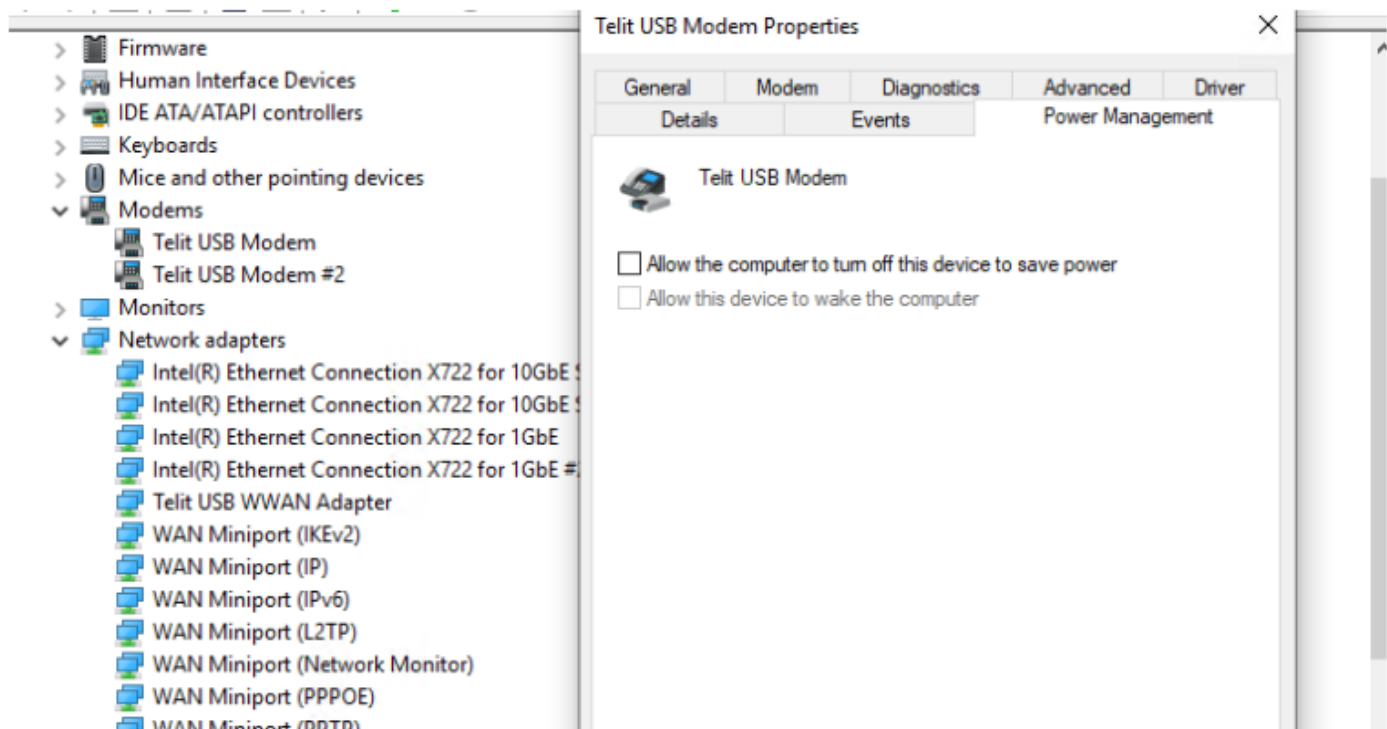


You should get something like this:

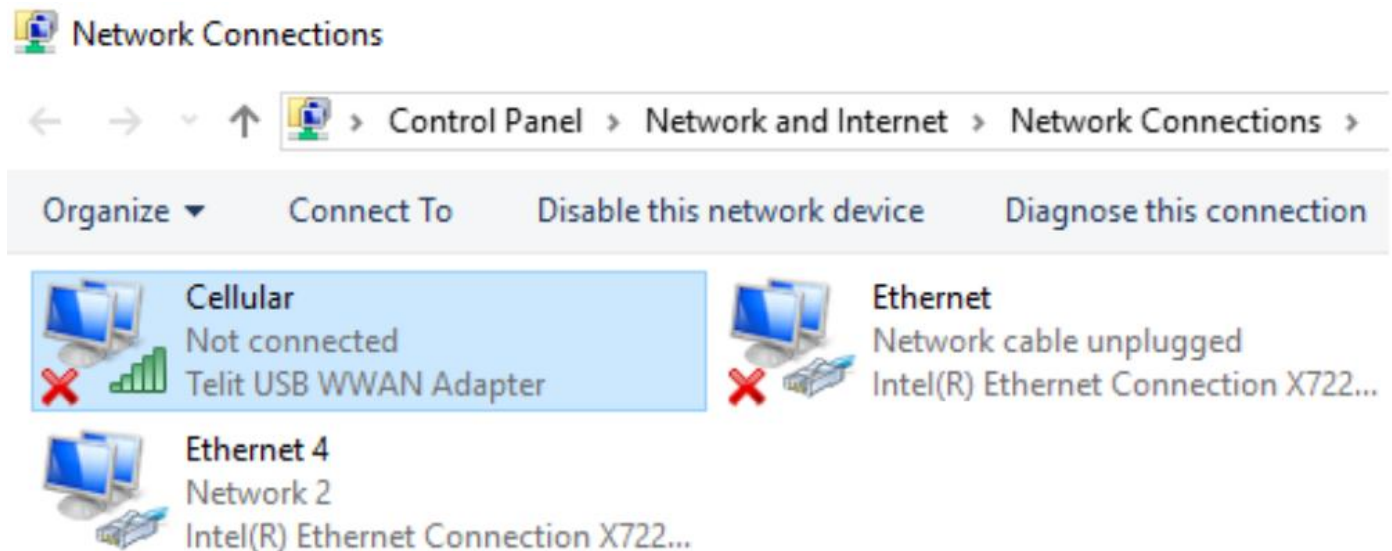
```

ATQ0V1E0 - OK
AT+GMM - FN980
AT+FCLASS=? - (0,8)
AT#CLS=? - COMMAND NOT SUPPORTED
AT+GCI? - +GCI: 59
AT+GCI=? - +GCI: (59)
ATI1 - 0 ATI2 - OK
ATI3 - Telit ATI4 - FN980
ATI5 - DOB v.2.0
ATI6 - COMMAND NOT SUPPORTED
ATI7 - COMMAND NOT SUPPORTED
  
```


To avoid any disconnection, you can disable the power management feature but it's not mandatory:



In addition, you should have a new type of network connection named Cellular:



3.Card Configuration:

Prior to establish a wireless communication, you should configure the Telit Card to use your μ SIM.

This configuration can be carried out using AT commands and a serial connection.

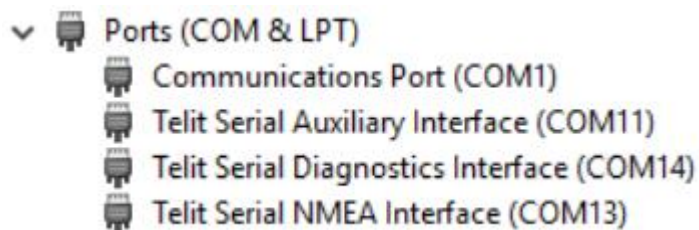
The AT command is a set of instructions used to control a modem.

To configure your card, you need to establish a serial connection to send AT commands. You can use a client like minicom, putty or the dedicated AT Telit program available here:

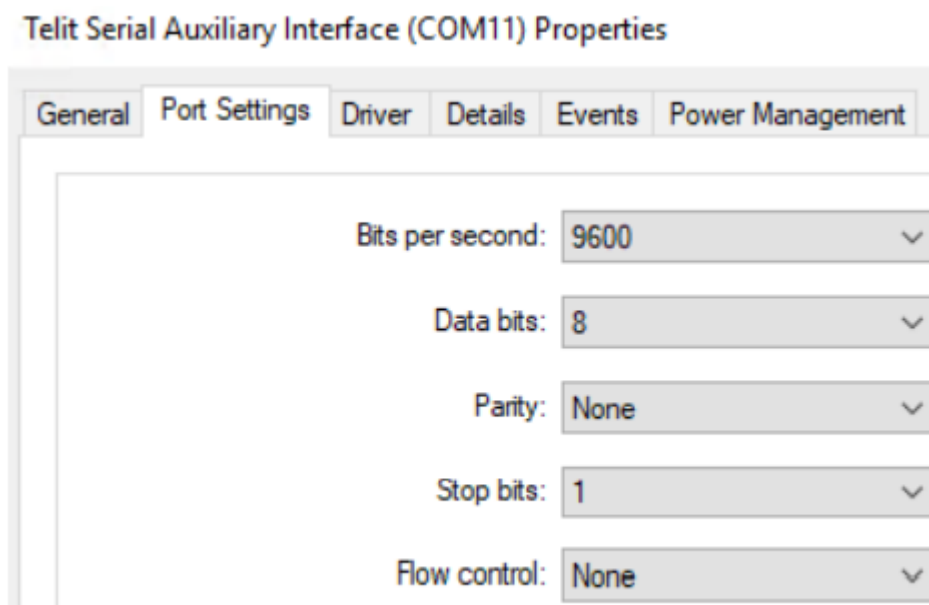
<https://www.telit.com/fn980m-download-zone/>

Once the program is installed, open it, and configure your serial connection.

You can determine which COM port to use via the device manager:

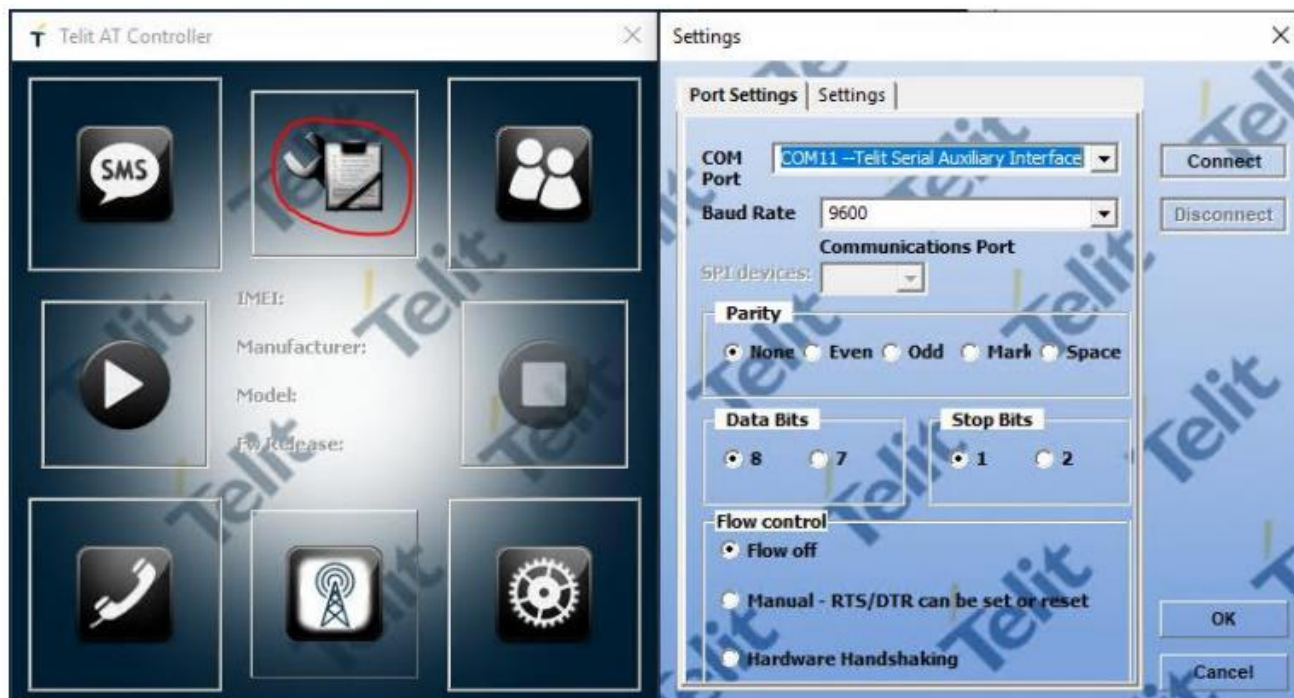


Here we will use the port COM 11 (Auxiliary interface) and these settings:



On Telit AT Controller, configure serial connection according to Port settings with these values:

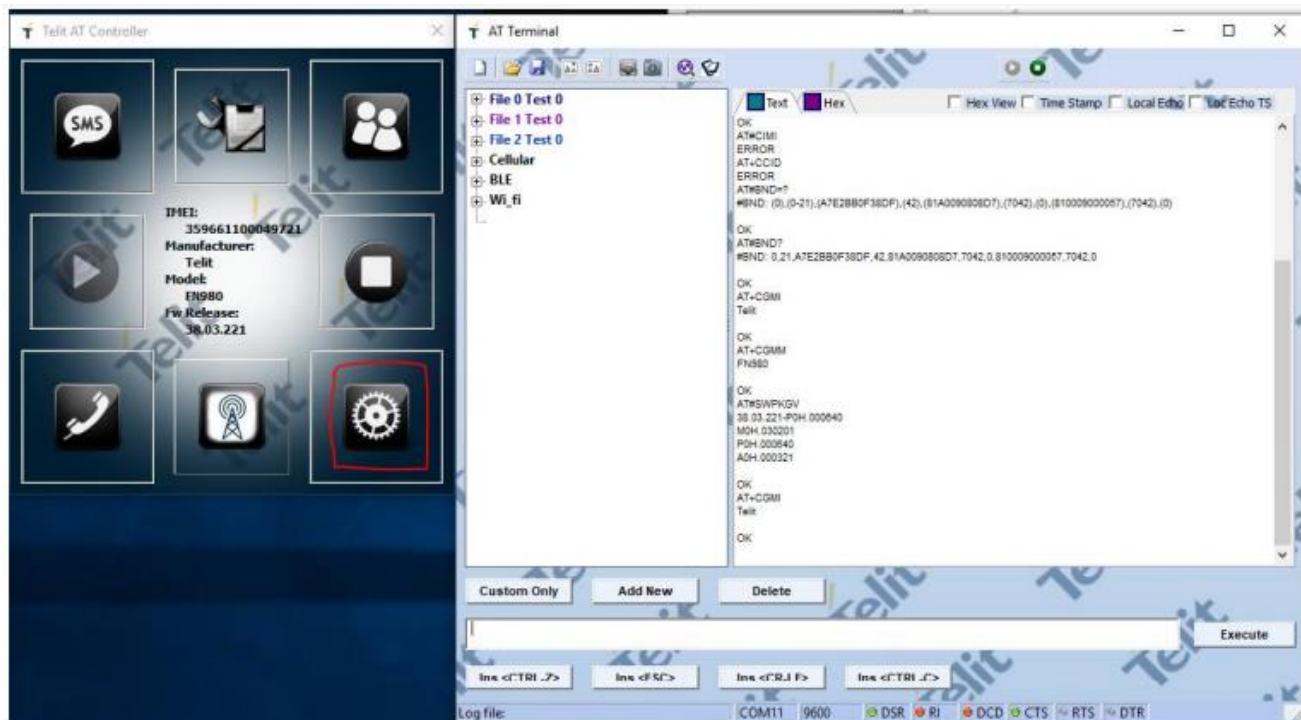
Then click on Connect button.



You should get connected.



Once you're connected, open AT Terminal:



You can validate the communication with the 5G card and get the firmware version with this command:

```
AT#SWPKGV
```

The result should be like this output according to your firmware version.

```
AT#SWPKGV
38.00.201-B005-POH.000360
MOH.000201-B005
POH.000360
AOH.000001-B005
```

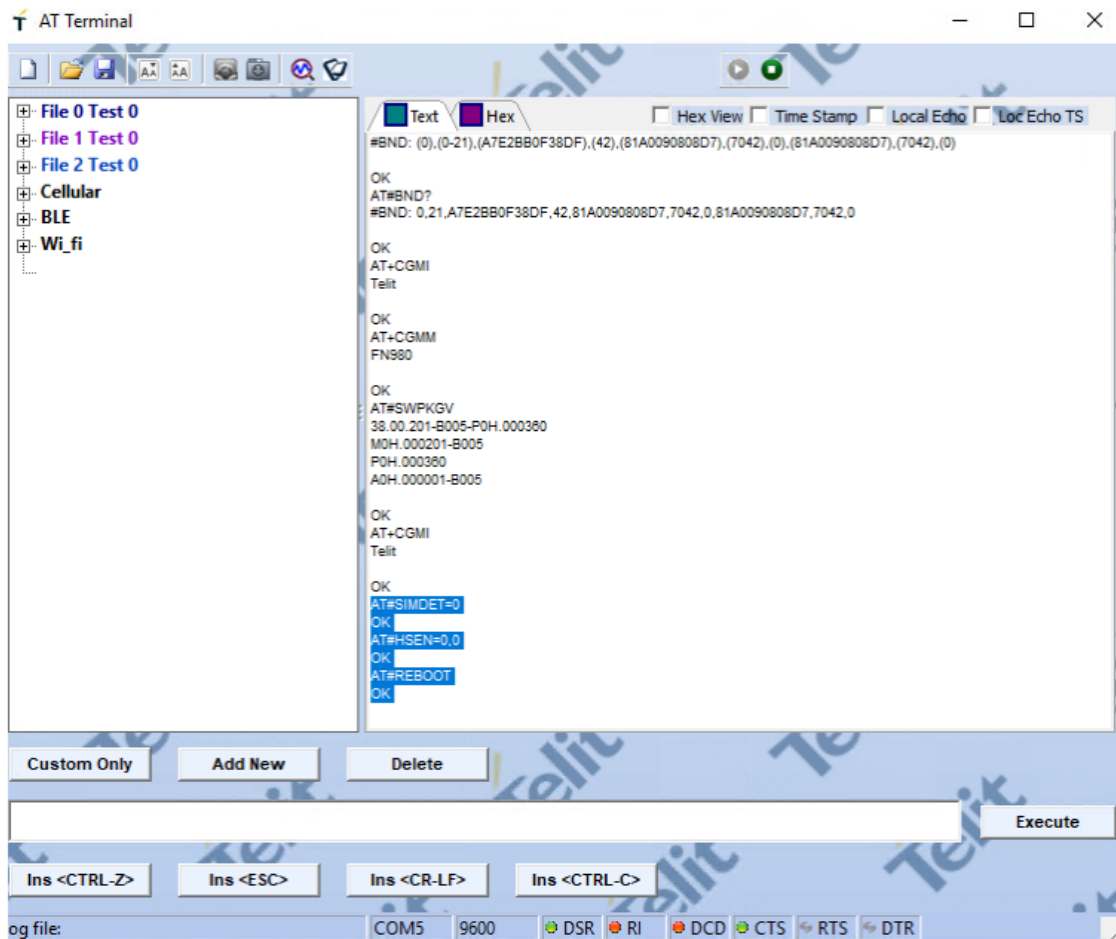
To communicate with the SIM card, we need to disable SIM card hot-swap functionality.

By doing so, the SIM card can be loaded at power-on without the SIM card detect signal indicating a SIM card present.

To disable SIM card hot swap functionality for primary SIM card interface, send this command:

```
AT#SIMDET=0
AT#HSEN=0,0
AT#REBOOT
```

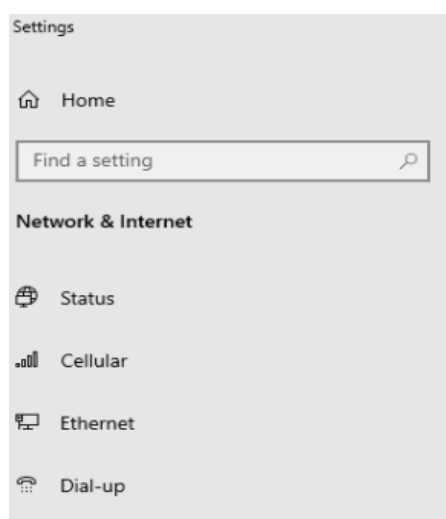
Here is the result. Each command should return OK.



On Windows OS, you also need to pass this command:

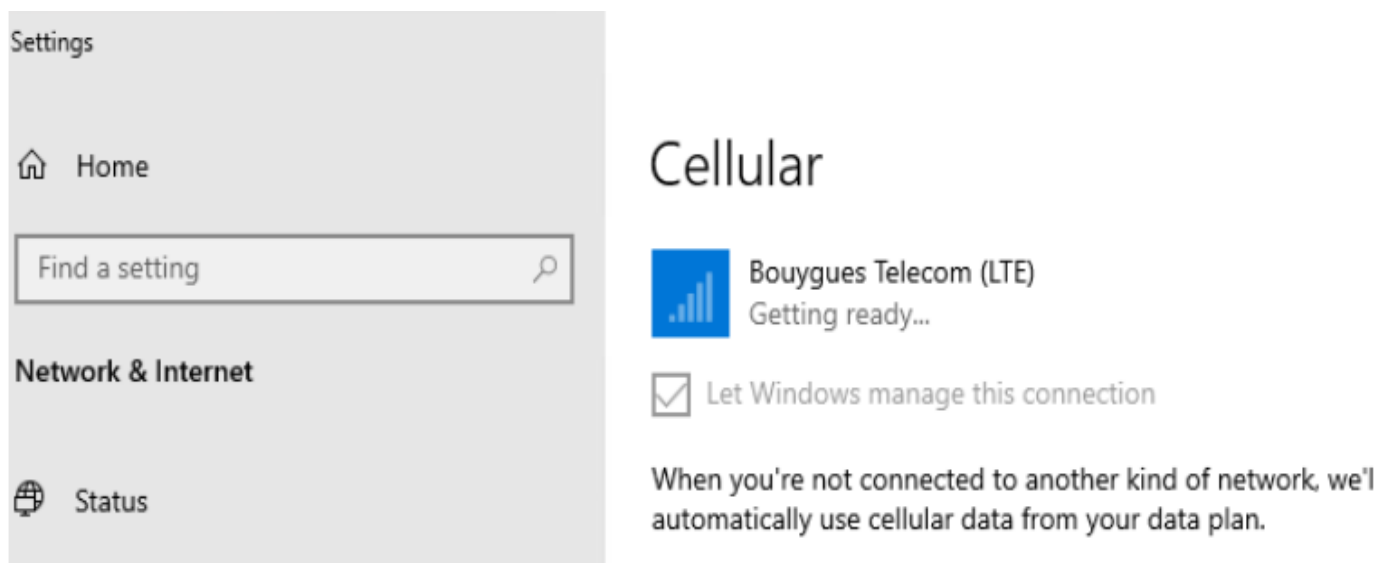
```
AT#USBCFG=2
```

You can close the program and go to the network settings menu of Windows, then Cellular

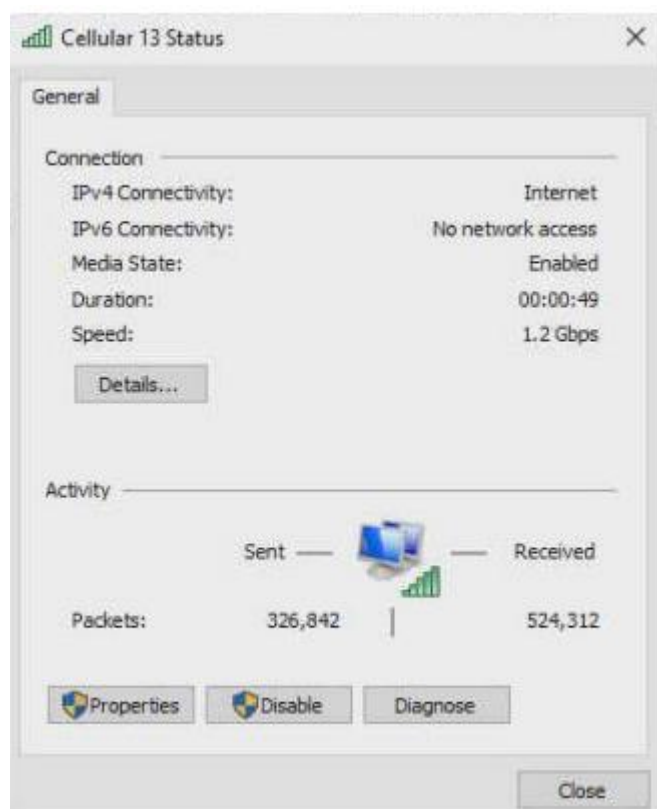


Select “Let Windows manage this connection” to automatically establish the connection.

Then you can select Roam option according to your needs.



After few seconds, you should be connected to your operator:



The speed connection will depend on the type of network you are connected to.

For a LTE connection, we observe a connection speed at 400Mbps.

For a 5G connection we observe 1.2 Gbps. These speeds vary from place to place depending on the antenna and signal strength.

4. Firmware upgrade (optional):

It's recommended to upgrade the firmware to the latest version if you want to support all 5G features and enhancements.

The latest firmware is available here (Telit site):

Firmware releases : <https://www.telit.com/fn980m-download-zone/>

It's a zip file which include an windows utility tool to flash, and the firmware associated to Telit card.

Unzip the file downloaded and then launch a cmd terminal to execute the firmware tool.

It's not needed to provide paramaters for the executable file.

During the upgrade process, you should not reboot your system and should wait for the upgrade process to complete.

All cellular connections will be interrupted during the upgrade process.

```
*****
TFI V2 (Version 1.60)
*****
Update started at Thu Jun 15 14:45:17 2023

Verifying hash...DONE

File name: C:\Users\Admin\Downloads\Telit_FN980M_38.03.X21_TFI\FN980M_38.03.X21_CUST_0991_SIGNED_TFI.exe
Product: FN980M
Version: 38.03.X21
TFI ST Ver : 1
EX Opt : 0x00000040

Starting update process...
Waiting module...
Using device COM14
Current version : 38.00.201-B005
Read IMEI...3596C...
Checking CEFS backup...CEFS backup exist.
Try to set module to download mode.
Waiting module reboot...
```

```
C:\Users\Admin\Downloads\Telit_FN980M_38.03.X21_TFI\FN980M_38.03.X21_CUST_0991_SIGNED_
Erase all before download...
Update rawdata partition... 100%
Update mibib partition... 100%
Update modem1 partition... 100%
Update stream_flex partition... 100%
Update apdp partition... 100%
Update tz partition... 100%
Update tz_devcfg partition... 100%
Update multi_image partition... 100%
Update aop partition... 100%
Update qhee partition... 100%
Update IPA_FW partition... 100%
Update abl partition... 100%
Update uefi partition... 100%
Update boot partition... 100%
Update recovery partition... 100%
Update recoveryfs partition... 100%
Update system partition... 100%
Update sbl partition... 100%
All binaries flashed...

Firmware update is successful and module will reboot.

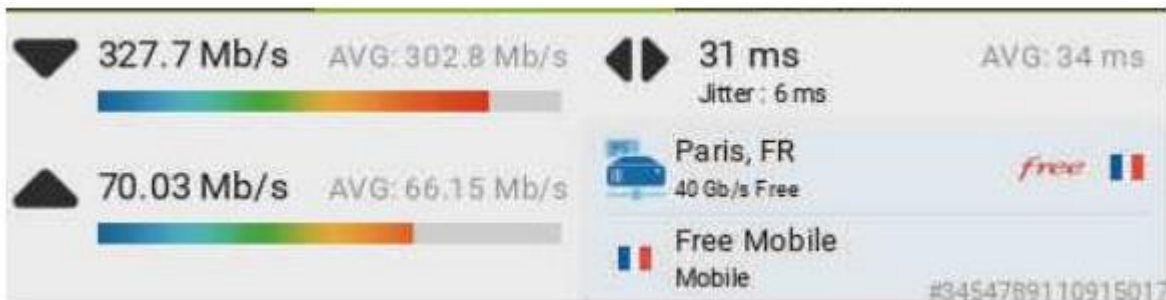
-----
All DONE.
-----
Total elapsed time : 1 min 26 sec
```

Please note that after a firmware upgrade, some customizations made on the card will be lost.

Please refer to the Card Configuration section to deactivate the SIM hot-swap functionality.

5. Tests:

You can evaluate your bandwidth with nperf. Here is a result with a 5G connection.



You can also use AT commands to get information about the type of connection, 5G band used...

Please check the Telit manual to get AT commands associated.

6. Specific configuration:

The following command has not been evaluated, but the modem can support operator-specific network configurations with following command:

```
AT#FWSWITCH[=<config_num>[,<modem_fw>]]
```

Network configuration available:

```
AT#FWSWITCH
#FWSWITCH: 0,0,"Generic GCF",POH.000640
#FWSWITCH: 0,1,"Generic PTCRB",POH.010640
#FWSWITCH: 0,10,"AT&T",POH.100701
#FWSWITCH: 0,11,"T-Mobile",POH.110670
#FWSWITCH: 0,12,"Verizon",POH.120660
#FWSWITCH: 0,14,"Bell",POH.140100
#FWSWITCH: 0,15,"Rogers",POH.150080
#FWSWITCH: 0,16,"Telus",POH.160080
#FWSWITCH: 0,20,"SK Telecom",POH.200670
#FWSWITCH: 0,21,"SK Telecom Dongle",POH.210220
#FWSWITCH: 0,30,"NTT Docomo",POH.300560
#FWSWITCH: 0,31,"KDDI",POH.310300
#FWSWITCH: 0,40,"Telstra",POH.400280
#FWSWITCH: 0,50,"Anatel",POH.500200
```

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