



Technical

Service Bulletin

Maintenance & Support

CUSTOMER SERVICE

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BullSequana Edge Support and R&D		XCL	July 2023	INDEF		
			DOSSIER		REV 1	
	SUBJECT: 5G connection con	figurations on BullSequana Ed	BSE	2023-A02		

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

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 mCPIE 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	ТХ	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, B30, B34, B38, B39, B40, B41, 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

File Action View Help
 WINDOWS-MA8I6M5
V 🖁 WINDOWS-MA816M5
> 🖬 Audio inputs and outputs
> 💻 Computer
> 👝 Disk drives
> Display adapters
> Firmware
> 🖓 Human Interface Devices
> The ATA/ATAPI controllers
> Keyboards
> Mice and other pointing devices
> Monitors
> Vetwork adapters
✓ V Other devices
3D Video Controller
FN980m
ENIO20m
ENIO20m
ENIQ80m
RmNet
Ports (COM & LPT)

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,

		A					
Name	🖟 TelitWHC	LDriversx64 - InstallShield Wizar	d	-		×	Size
1VV0301360_Te TelitWHQLDriv TelitWHQLDriv	Installing TelitWHQLDriversx64 Image: Constalled in the program features you selected are being installed.					703 KB 3,026 KB	
jy rearrangeon	P		L, 293 ND				
		Status:					
	InstallShield —		< Back	Next >	Cance	ł	

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.

> Firmware	Telit USB Moder	n Propert	ies		
> 🐺 Human Interface Devices	Details		Events	Power Manag	ement
> TIDE ATA/ATAPI controllers	General	Modem	Diagnostics	Advanced	Driver
Explored and other pointing devices	Modem Informa	tion			
Modems Telit USB Modem Telit USB Modem #2	Field Hardware ID	Value USB\VID_	1BC7&PID_1050&R	EV_0414&MI_0	
Monitors Monitors Provide adapters Intel(P) Ethernet Connection X733 for 10GhE (۲			>	
 Intel(R) Ethernet Connection X722 for 10GbE 1 Intel(R) Ethernet Connection X722 for 1GbE Intel(R) Ethernet Connection X722 for 1GbE # Intel(R) Ethernet Connection X722 for 1GbE # Telit USB WWAN Adapter WAN Miniport (IKEv2) WAN Miniport (IP) 	Command ATQ0V1E0 AT+GMM AT+FCLASS= AT#CLS=?	Respons Success FN980 ? (0.8) COMMA	se s ND NOT SUPPORT	red v	
WAN Miniport (IPv6)				Query Modern	
WAN Miniport (L2TP) WAN Miniport (Network Monitor) WAN Miniport (PPPOE) WAN Miniport (PPTP)	Logging	Log		View log	
WAN Miniport (SSTP)					

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 µSIM.

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:

✓ Ports (COM & LPT)

Communications Port (COM1)

Telit Serial Auxiliary Interface (COM11)

- Telit Serial Diagnostics Interface (COM14)
- Telit Serial NMEA Interface (COM13)

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

Telit Serial Auxiliary Interface (COM11) Properties

General	Port Settings	Driver	Details	Events	Power Management
		Bits pe	er second	9600	~
Data bits:				8	~
Parity:			None	~	
Stop bits:			1	~	
		Flo	w control	None	~

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

Then click on Connect button.



You should get connected.

Telit AT Controller	× Settings	×
	Port Settings Settings COM COM11Telt Serial Auxiliary Interface Port Baud Rate 9600	Connect
IMEL: 35966. Manufacturer: Telit Model: EN980 Fw Release: 38.03.221	SPIstevices:	Telit
	Flow control Flow off Manual - RTS/DTR can be set or reset Hardware Handshaking	OY. Cancel



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-P0H.000380 M0H.000201-B005 P0H.000380 A0H.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.

T AT Terminal			-		×
		00		,	
 Pile 0 Test 0 File 1 Test 0 File 2 Test 0 Cellular BLE Wi_fi 	Text Hex F #BND: (0), (0-21), (A7E2BB0F38DF), (42), (81A00 (0), (0-21), (A7E2BB0F38DF), (42), (81A00 OK AT#BND? #BND: 0, 21, A7E2BB0F38DF, 42, 81A0090808D OK AT#CGMI Teilt OK AT+CGMI Teilt OK AT#SWPKGV 38.00, 201-8005-P0H, 000380 MOH, 000201-8005 POH, 000380 ADH, 000001-8005 OK AT#CGMI Teilt OK AT+CGMI Teilt OK AT#SWPKGV 38.00, 201-8005-P0H, 000380 ADH, 000001-8005 OK AT+CGMI Teilt OK AT#GENDET=0 OK AT#REEDOT	Hex View Time Stamp 7 190808D7).(7042).(0).(81A00908080 7,7042.0,81A0090808D7,7042,0	Local Echo	Loc Echo T	5
Custom Only Add New	Delete	~	-		
			X	Execute	
Ins <ctrl-z> Ins <esc></esc></ctrl-z>	Ins <cr-lf> Ins <ctrl-c></ctrl-c></cr-lf>		~		
og file:	COM5 9600 🗎 DSR 🖶 RI	DCD CTS RTS	DTR		

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

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

Settings	
ம் Home	Cellular
Find a setting $ ho$	II Cellular Getting ready
Network & Internet	Let Windows manage this connection
🖨 Status	When you're not connected to another kind of network, we'll automatically use cellular data from your data plan.
l Cellular	Data roaming options
Ethernet	Roam V
📅 Dial-up	Depending on your service agreement, you might pay more when using data roaming.

Select "Let Windows manage this connection" to automatically establish the connection.

Then you can select Roam option according to your needs.

Settings	
命 Home	Cellular
Find a setting \wp	Getting ready
Network & Internet	Let Windows manage this connection
🖨 Status	When you're not connected to another kind of network, we'l automatically use cellular data from your data plan.

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

eneral				
Connection				
IPv4 Connectiv	nectivity:		Internet	
IPv6 Connectiv	rity:	No networ	k access	
Media State:		Enabled		
Duration:		00:00:49		
Speed:			1.2 Gbps	
Dataile	1			
Details				
Details	Sent —		Received	
Details Activity	Sent — 326,842		Received	

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



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 ghee 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.
otal 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.

•	327.7 Mb/s	AVG: 302.8 Mb/s	♦ 31 ms Jitter: 6 ms	AVG: 34 ms
-	70.03 Mb/s	AVG: 66.15 Mb/s	Paris, FR 40 Gb/s Free	free 🚺
			Free Mobile Mobile	#3454789110915017

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",P0H.000640

#FWSWITCH: 0,1,"Generic PTCRB",P0H.010640

#FWSWITCH: 0,10,"AT&T",P0H.100701

#FWSWITCH: 0,11,"T-Mobile",P0H.110670

#FWSWITCH: 0,12,"Verizon",P0H.120660

#FWSWITCH: 0,14,"Bell",P0H.140100

#FWSWITCH: 0,15,"Rogers",P0H.150080

#FWSWITCH: 0,16,"Telus",P0H.160080

#FWSWITCH: 0,20,"SK Telecom",P0H.200670

#FWSWITCH: 0,21,"SK Telecom Dongle",P0H.210220

#FWSWITCH: 0,30,"NTT Docomo",P0H.300560

#FWSWITCH: 0,31,"KDDI",P0H.310300

#FWSWITCH: 0,40,"Telstra",P0H.400280

#FWSWITCH: 0,50,"Anatel",P0H.500200
```

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