

# Getting Started with LTE Modem Cards

User Guide

Version: 01

DocId: mPLAS9\_mPLS8\_mPLS62\_startup\_guide\_v01





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## 0 Document History

New document: "Getting Started with LTE Modem Cards" Version **01**

Chapter	What is new
---	Initial document setup.

# 1 Introduction

This document describes a ready-to-use development and test environment for the Gemalto M2M LTE Modem Cards.

The development and test environment comprises the following hardware components

- LTE Modem Card mPLAS9-W, mPLAS9-X, mPLS8-US, mPLS8-E or mPLS62-W
- LTE Modem Card Adapter Board

The purpose of this document<sup>1</sup> is to guide you through the process of connecting the hardware, installing the supplied drivers on a Microsoft® Windows 7 or Microsoft® Windows 8 system and getting started with LTE Modem Card.

## 1.1 Supported Products

This document applies to the following Gemalto M2M LTE Modem cards:

- Cinterion® mPLAS9-W
- Cinterion® mPLAS9-X
- Cinterion® mPLS8-US
- Cinterion® mPLS8-E
- Cinterion® mPLS62-W

LTE Modem Card in this document refers to all of the above mentioned product variants. Where necessary a note is made to differentiate between these product variants.

## 1.2 Related Documents

- [1] PLAS9-W AT Command Set  
PLAS9-X AT Command Set  
PLS8-US AT Command Set  
PLS8-E AT Command Set  
PLS62-W AT Command Set
- [2] mPLAS9-W Hardware Interface Description  
mPLAS9-X Hardware Interface Description  
mPLS8-US Hardware Interface Description  
mPLS8-E Hardware Interface Description  
mPLS62-W Hardware Interface Description

To visit the Gemalto website you can use the following link:

<http://www.gemalto.com/m2m>

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<sup>1</sup> The document is effective only if listed in the appropriate Release Notes as part of the technical documentation delivered with your Gemalto M2M module.

## 2 Getting Started with LTE Modem Cards

### 2.1 Technical Requirements for Using LTE Modem Cards

- LTE Modem Card (for details see [Figure 1](#) and [\[2\]](#))<sup>2</sup>
- corresponding driver package (USB)
- Computer running Windows 7 or Windows 8, USB 2.0 High Speed compatible
- Local administrator privileges on the particular Windows computer to install and uninstall the drivers
- LTE Modem Card Adapter Board (for details see [Section 3.1](#))
- Accessories:
  - Two (mPLAS9-W, mPLAS9-X, mPLS62-W) or three (mPLS8-US, mPLS8-E) short 50 Ohms RF adapter cables - 2xRF and 1xGNSS, with ultra-miniature U.FL SMT connectors to connect the appropriate U-FL connectors on the LTE Modem Card Adapter Board (supplied by Gemalto)
  - Two external 50 Ohms RF antennas - GSM/UMTS/LTE main antenna and UMTS/LTE Rx diversity/MIMO antenna, with SMA connector to connect the SMA connector on the LTE Modem Card Adapter Board (supplied by Gemalto)
  - **mPLS8-US and mPLS8-E only:** One GNSS antenna with SMA connector to connect the SMA connector on the LTE Modem Card Adapter Board (not supplied by Gemalto).
  - 3.3V power supply applied at the LTE Modem Card Adapter Board for powering up the LTE Modem Card Adapter Board and the connected LTE Modem card (not supplied by Gemalto M2M)
  - USB cable with mini-USB plug (supplied by Gemalto M2M)
- Appropriate application for controlling the module from within a PC's operating system. For Windows, e.g. Windows Hyperterminal
- (U)SIM from a GSM/UMTS/LTE network provider

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<sup>2</sup>. For ordering information see [\[2\]](#).

## 2.2 Connecting the LTE Modem Card to the LTE Modem Card Adapter Board

To properly connect the LTE Modem Card and all accessories to the LTE Modem Card Adapter Board please complete the steps listed below. The complete setup with the LTE Modem Card mounted onto the LTE Modem Card Adapter Board is shown in [Figure 2](#).

- Ensure that all jumpers on the LTE Modem Card Adapter Board are set to their default positions as shown in [Figure 7](#) and [Table 1](#).
- Screw the external GSM/UMTS/LTE main and Rx diversity/MIMO antennas to the appropriate SMA connectors on the LTE Modem Card Adapter Board (X13 and X14).
- **mPLS8-US and mPLS8-E only:** Screw the external GNSS Antenna to the SMA Connector on the LTE Modem Card Adapter Board (X15).
- Plug the USB 2.0 Mini-connector of the USB cable to the Mini USB jack at the LTE Modem Card Adapter Board (X4). The other end of the USB cable connects to a PC.
- Insert the LTE Modem Card into the connector X1 on the LTE Modem Card Adapter Board.
- Connect the U.FL SMT connectors for the GSM/UMTS/LTE main and Rx diversity/MIMO antennas on the LTE Modem Card Adapter Board (X10 and X11) to the matching U.FL SMT connectors on the LTE Modem Card.
- **mPLS8-US and mPLS8-E only:** Connect the U.FL SMT connector for the GNSS antenna on the LTE Modem Card Adapter Board (X12) to the matching U.FL SMT connector on the LTE Modem Card.
- Insert the (U)SIM card into the card reader labeled X8.
- If not powered over USB make sure that the power supply adapter is switched to 3V3 Volts and place the Jumper on X20 on the LTE Modem Card Adapter Board to PIN 3 and PIN 4 (see [Table 1](#)). Connect the power cables to the red (X3 = 3V3) and black (X2 = Ground) connectors of the LTE Modem Card Adapter Board.

After connecting the LTE Modem Card with the LTE Modem Card Adapter Board, the LTE Modem Card can be switched on. The initial startup and possible USB driver installation are described in [Section 2.3](#).

2.2 Connecting the LTE Modem Card to the LTE Modem Card Adapter Board

Top side

Bottom side

Antenna U.FL-R SMT connectors:

Main antenna DRX/MIMO antenna

GPS antenna

PLS8-US R4 SMT module

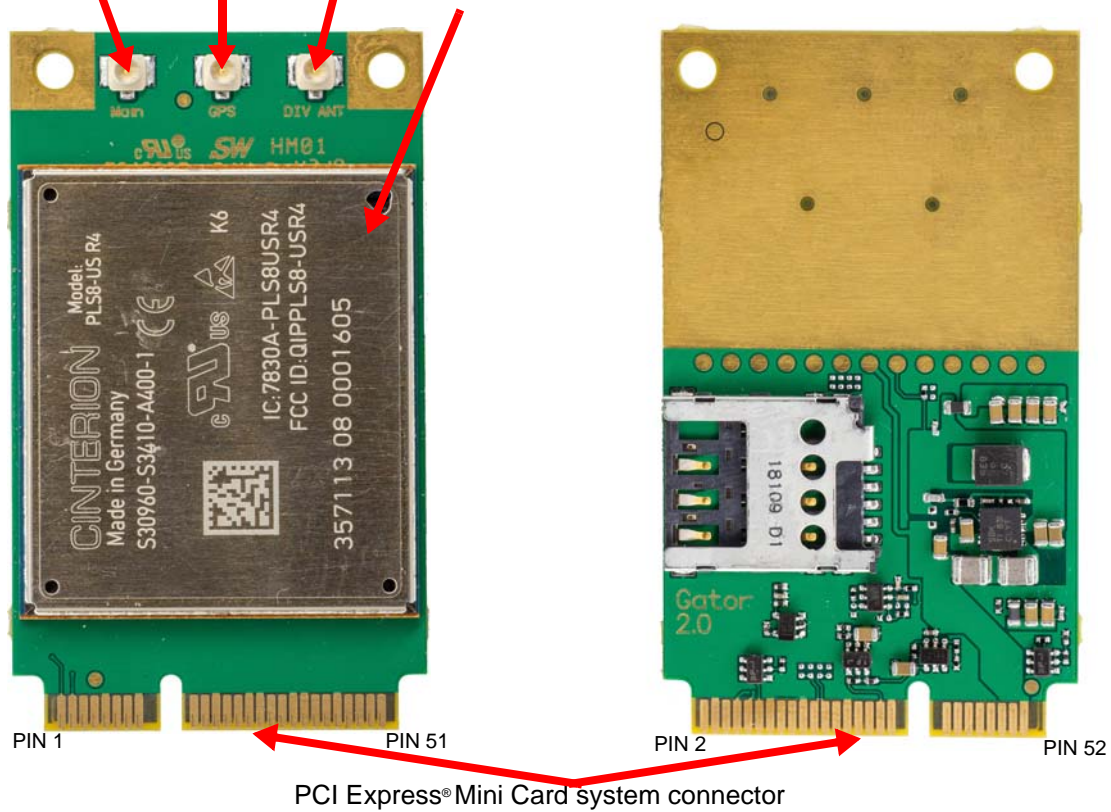


Figure 1: LTE Modem Card (mPLS8-US shown)



2.2 Connecting the LTE Modem Card to the LTE Modem Card Adapter Board

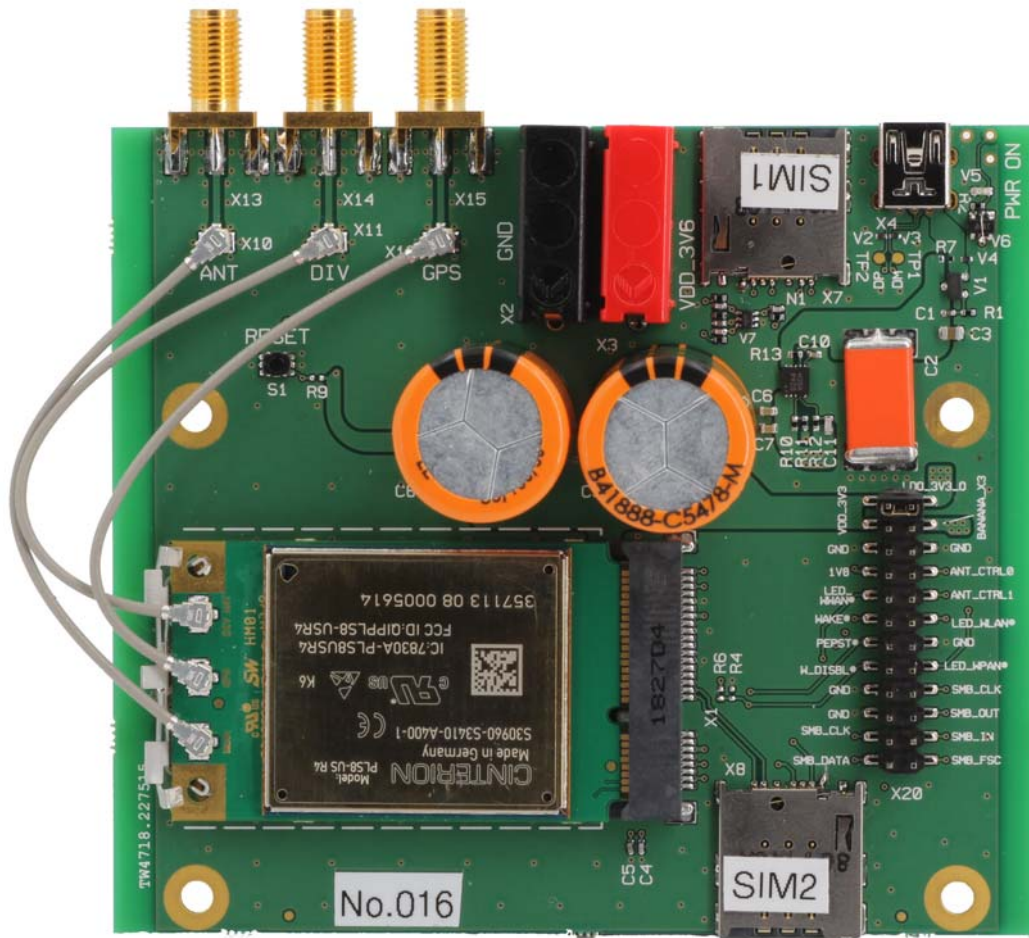


Figure 2: mPLS8-US mounted on LTE Modem Card Adapter Board

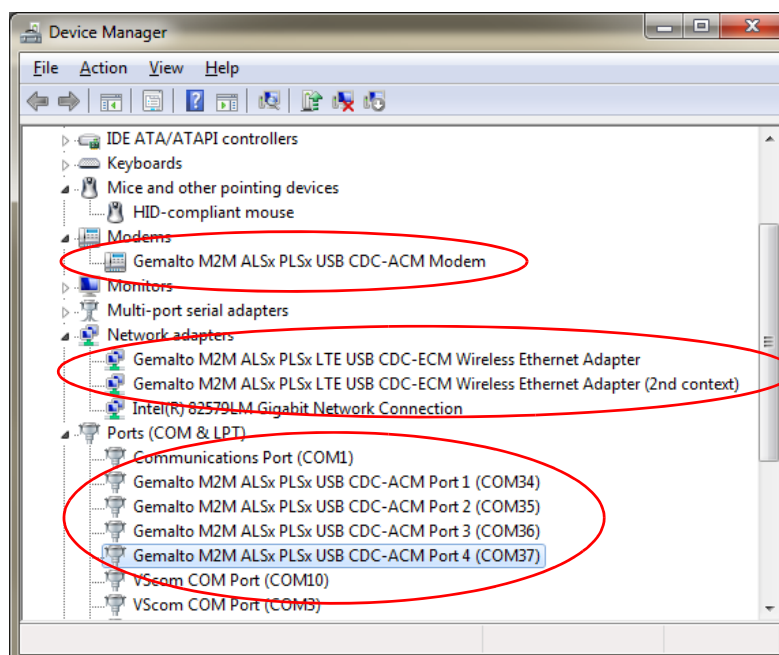
## 2.3 Start Up the Module

After connecting the E Modem Card to the LTE Modem Card Adapter Board as described in [Section 2.2](#), the module can be switched on.

**Note:** The USB drivers provided by Gemalto M2M need to be available. Copy the supplied driver files to a folder on the Windows computer. Be sure to use the latest USB driver software supplied by Gemalto.

- Start the Windows PC.
- switch on the external 3.3V power supply, when the power supply of the LTE Modem Card Adapter Board will be not dne via USB.
- If the USB cable was plugged as described above, and the USB drivers provided by Gemalto were not yet installed on the computer, you will be prompted to install them:
  - On Windows 7 or Windows 8, wait a few seconds until all USB devices show up as "CDC Serial" in the Windows Device Manager under "Other Devices". Then - from top to bottom - right-click each "CDC Serial" device, select the option "Update Driver Software...", browse to the folder you copied the Gemalto USB drivers to, and select this folder to update the driver software from.
  - For PLS62-W** there will "PLSx" devices shown, which have to updated. Then - from top to bottom - right-click each PLSx" device, select the option "Update Driver Software...", browse to the folder you copied the Gemalto USB drivers to, and select this folder to update the driver software from.
  - In any case, cancel any Windows instructions to update the software automatically. For each USB device take care to browse to the folder containing the unzipped driver software.

After successful USB driver installation the installed USB devices are listed in the Windows Device Manager under "Modems", "Network adapters" and "Ports (COM & LPT)" as shown in [Figure 3](#) for mPLS8-E/US, in [Figure 4](#) for mPLAS9-W/X and in [Figure 5](#) or PLS62-W.



**Figure 3:** Installed USB devices mPLS8-E/US

## 2.3 Start Up the Module

**mPLS8-E/US:**

The assignment of the module's installed USB CDC ACM ports 1-4 (see [Figure 3](#)), the ASC0 UART interface and the possible Multiplex channels to the two AT command service instances MDM and APP as well as the NMEA streaming service interfaces is done by the AT command `AT^SSRVSET`. The command provides a number of preconfigured service sets and a customizable service set.

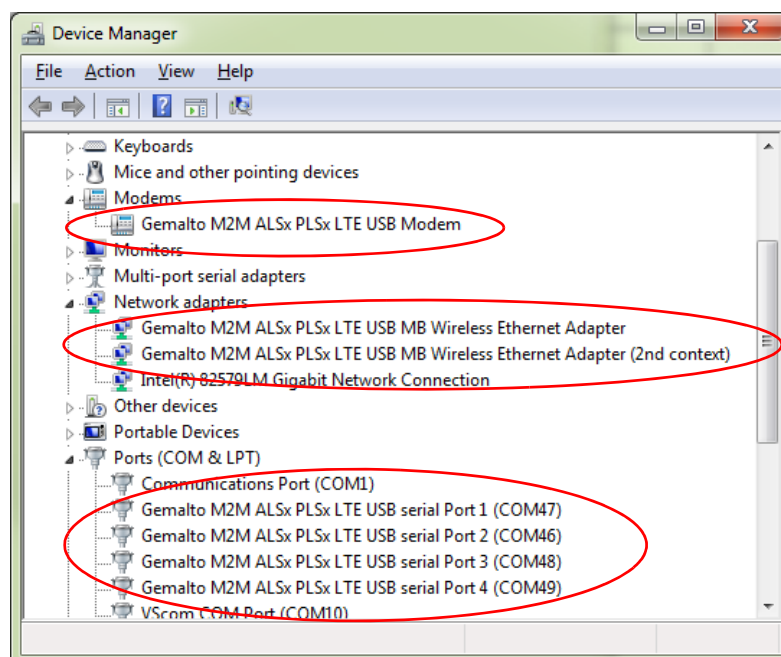
With PLS8 for example, Service Set 1 is configured as delivery default:

- the MDM service is available at the ASC0 interface (UART COM port)
- the APP service is available at the USB interface (CDC ACM port 1)
- the NMEA service (reserved for GNSS data) is also available at the USB interface (CDC ACM port 2)

The AT command `AT^SQPORT` shows whether the MDM or APP service is connected to the device interface the command was sent over.

The two USB devices implemented as USB CDC ECM network adapters are activated and deactivated by the AT command `AT^SWWAN`. Via the two WWAN or RmNet adapters different APNs can be assigned and used simultaneously.

For further details and more information on the above AT commands to configure and operate the module please refer to [\[1\]](#).



**Figure 4:** Installed USB devices mPLAS9-W/X

**PLAS9-W/X:**

The assignment of the module's installed LTE USB Modem and LTE USB ports 1-4 (see [Figure 4](#)) to the two AT command service instances MDM and APP is done by the AT command `AT^SSRVSET`. The command provides a number of preconfigured service sets and a customizable service set.

## 2.3 Start Up the Module

With PLAS9-W for example, Service Set 2 is configured as delivery default:

- the MDM service is available at the USB0 interface (CDC ACM LTE USB Modem port)
- the APP service is available at the USB1 interface (CDC ACM LTE USB serial port 1)

The AT command `AT^SQPORT` shows whether the MDM or APP service is connected to the device interface the command was sent over.

The two USB devices implemented as USB CDC ECM wireless network adapters are activated and deactivated by the AT command `AT^SWWAN`. Via the two WWAN or RmNet adapters different APNs can be assigned and used simultaneously.

For further details and more information on the above AT commands to configure and operate the module please refer to [1].

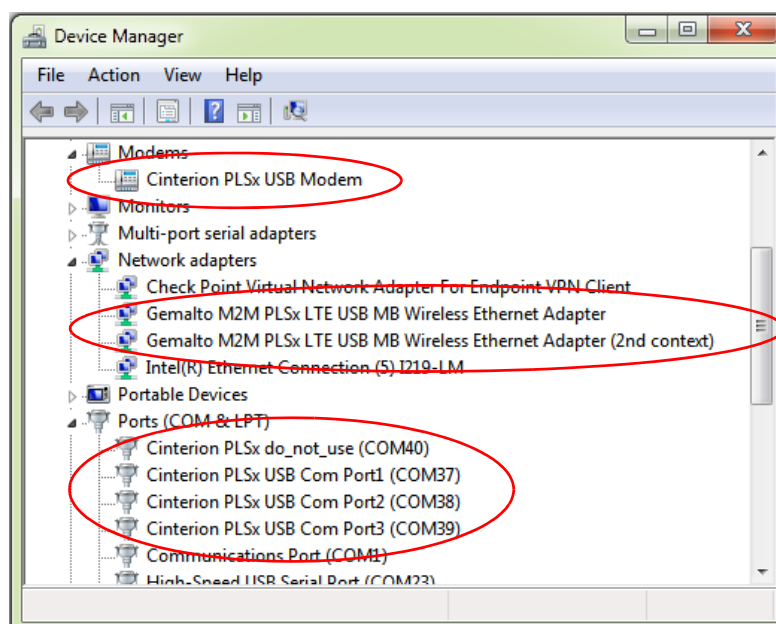


Figure 5: Installed USB devices mPLS62-W

**mPLS62-W:**

The two USB devices implemented as USB CDC ECM network adapters are activated and deactivated by the AT command `AT^SWWAN`. Via the two WWAN or RmNet adapters different APNs can be assigned and used simultaneously.

With the AT command `AT^SSRVSET` the two USB CDC ECM network adapters can be changed to one USB CDC MBIM (Mobile Broadband Interface Model) interface.

For further details and more information on the above AT commands to configure and operate the module please refer to [1].

2.3 Start Up the Module

- For example, to connect to the mPLS9-W LTE Modem Card via USB interface, check the properties of the enumerated CDC ACM LTE USB serial port 1, call a terminal program on the PC and connect to the assigned COM port - in the below Figure 6 to COM port 47 assigned to the CDC ACM LTE USB serial port 1 (Figure 4). You may have to type the AT command ATE1 to enable an echo for entered AT commands and then type ATI to display module identification information.

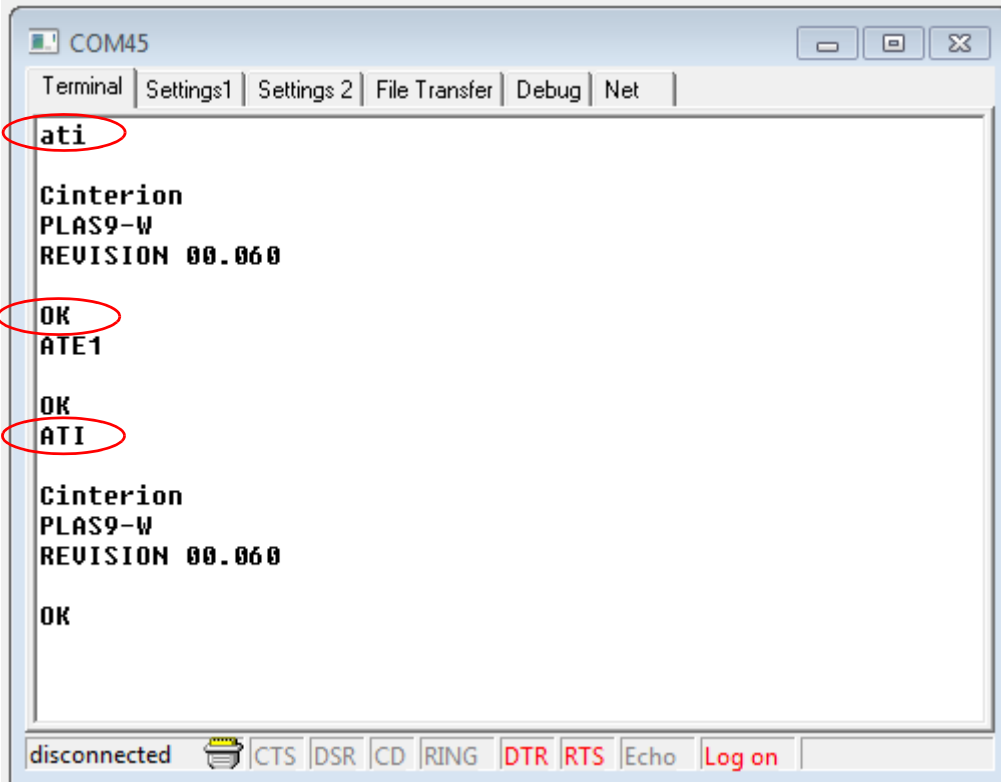


Figure 6: Connection via Gemalto M2M ALSx PLSx LTE USB serial port

### 3 Appendix

#### 3.1 LTE Modem Card Adapter Board

##### 3.1.1 Package content

The LTE Modem Card Adapter Board will be delivered together with

- 1 USB Cable (USB Connector A to USB Mini Connector B)
- 3 Hirose Antenna cables
- 2 GMS/UMTS/LTE Antennas

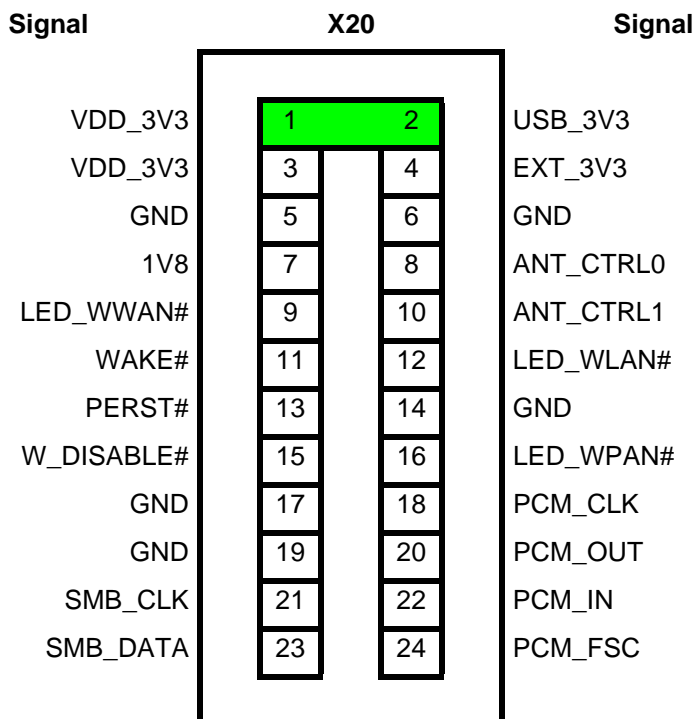
GNSS Antenna and Power supply are not part of the LTE Modem Card Adapter Board delivery.

Ordering Number: L30960-N3202-A300

##### 3.1.2 LTE Modem Card Adapter Board Description

The LTE Modem Card Adapter Board can be powered over USB (X20: Jumper 1-2) or by an external power supply connected to X2 (GND) and X3 (3V3). For the usage of the external power supply the jumper on X20 must be set on PIN 3 and Pin 4. On X20 all other signals used by the LTE Modem Card except USB signals are available.

**Table 1:** Signals and Jumper on X20



3.2 LTE Modem Card Adapter Board Schematic

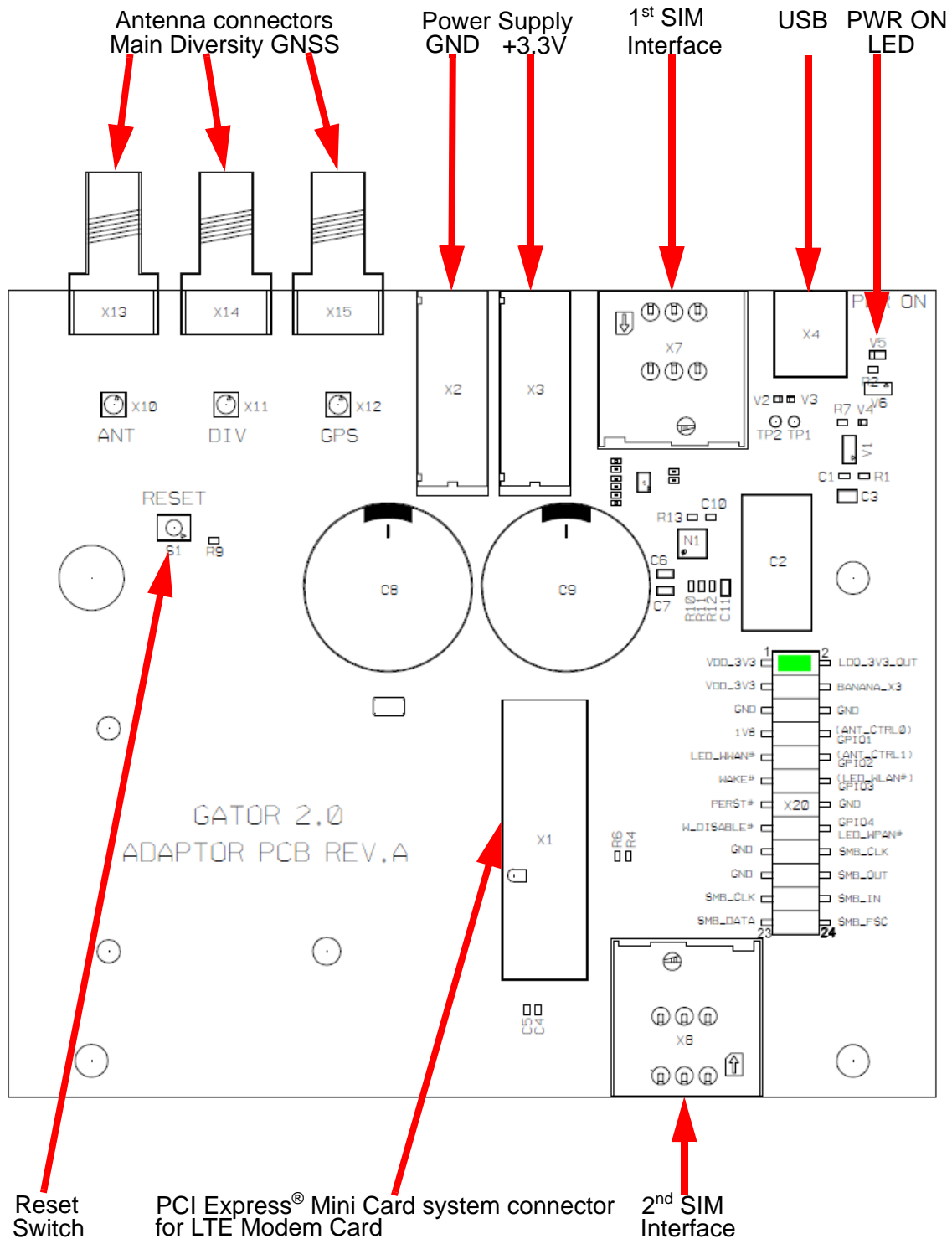


Figure 7: LTE Modem Card Adapter Board Jumper and Connectors

### 3.2 LTE Modem Card Adapter Board Schematic

The schematic of the LTE Modem Card Adapter Board is shown in Figure 8.



3.2 LTE Modem Card Adapter Board Schematic

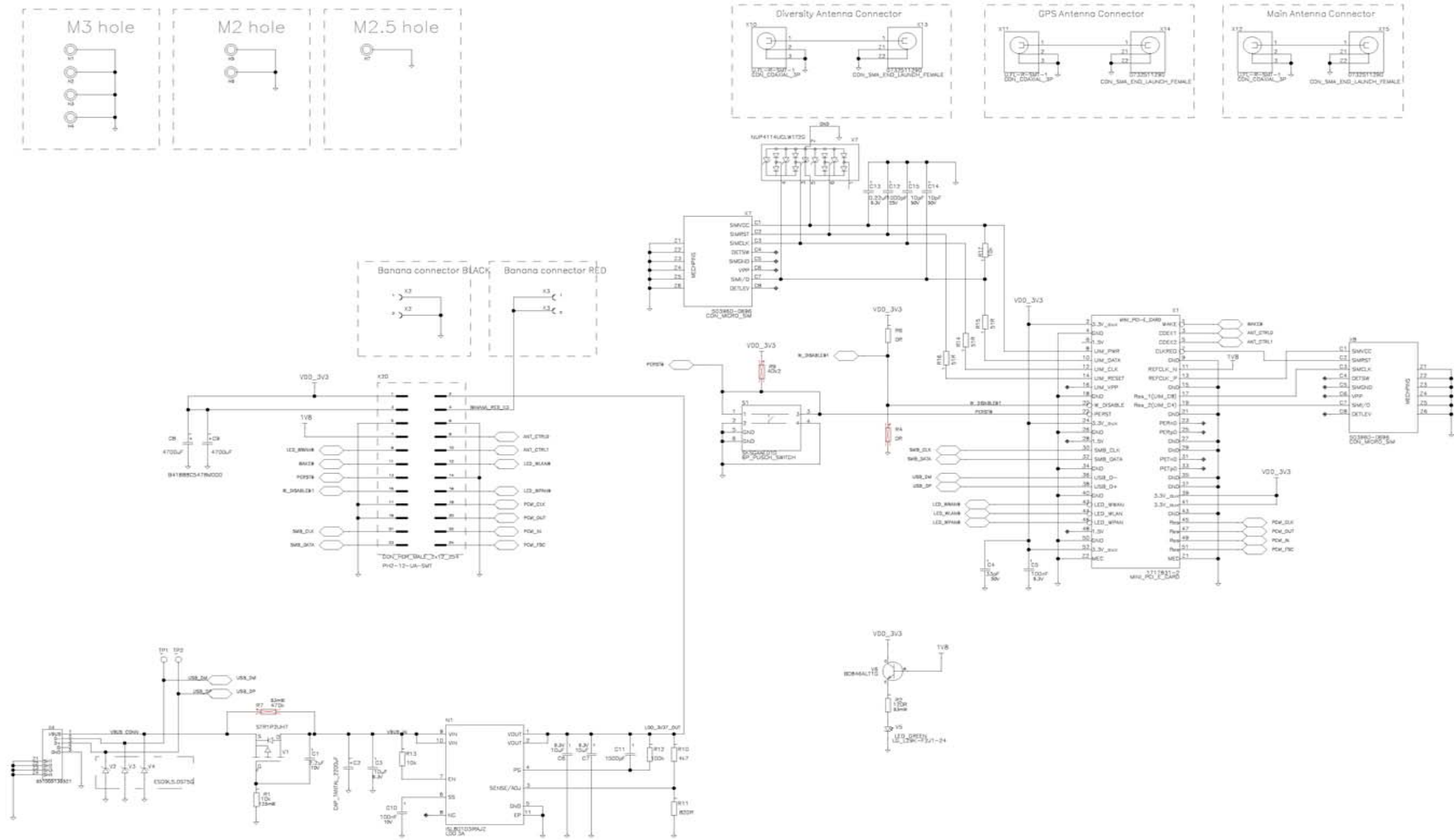


Figure 8: Schematic of the LTE Modem Card Adapter Board



## About Gemalto

Since 1996, Gemalto has been pioneering groundbreaking M2M and IoT products that keep our customers on the leading edge of innovation.

We work closely with global mobile network operators to ensure that Cinterion<sup>®</sup> modules evolve in sync with wireless networks, providing a seamless migration path to protect your IoT technology investment.

Cinterion products integrate seamlessly with Gemalto identity modules, security solutions and licensing and monetization solutions, to streamline development timelines and provide cost efficiencies that improve the bottom line.

As an experienced software provider, we help customers manage connectivity, security and quality of service for the long lifecycle of IoT solutions.

### For more information please visit

[www.gemalto.com/m2m](http://www.gemalto.com/m2m), [www.facebook.com/gemalto](https://www.facebook.com/gemalto), or Follow @gemaltoIoT on Twitter.

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