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Reference name BAEPMOD-COM-019-A01 and BAEPMOD-COM-021-A01

CHAPTER 1

PMOD-Huawei Solution

CHAPTER 2

INTRODUCTION

PMOD-Huawei board has mounted an Huawei device with the possibility using SIM or eUICC interface. Using the **Empire** board it is possible send via virtual com AT commands. There are 2 version of this board:

- **BAEPMOD-COM-019-A01** with mounted **MU709S2** device
- **BAEPMOD-COM-021-A01** with mounted **ME909s** devuce

CHAPTER 3

BAEPMOD-COM-019-A01

MU709S2 family is high-quality designed HSPA+ module in small size and Huawei standard LGA form factor which specially for industrial-grade M2M applications such as vehicle telematics, tracking, mobile payment, industrial router, safety monitor and industrial PDAs.

Based on Huawei standard LGA technology, the M709S2 modules provide a smoothly path to Huawei LTE high-speed modules.

MU709S2 family supports 21.6Mbps downlink data rate, providing data and voice service under global GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/HSPA+ networks. The module also include enhanced features like embedded TCP/IP stack, SMTP, FOTA, Jamming Detection, Netscan, CMUX, SSL, eCall, Huawei enhanced AT commands, cell lock, network monitoring, DTMF decoder, baud rate adaptation, multi PDP, SIM swap, .etc.

Features:

- Bands: HSPA+/UMTS dual-band 900/2100 MHz, GSM/GPRS quad-band 850/900/1800/1900 MHz
- Data Transfer Rate: Downlink:21.6 Mbps, Uplink: 5.76 Mbps
- **Interface:**
  - Antenna interface
  - 1*8 UART & 1*2 UART
  - USB 2.0 High speed
  - PCM Voice
  - SIM Interface (1.8V/3.0V)
  - eUICC
  - GPIOs
- Power Supply: 3.3 V

CHAPTER 4

BAEPMOD-COM-021-A01

ME909s-120 is the first LTE cat4 module based on Hi-Silicon chipset. Which is high-quality designed LTE module in small size and Huawei standard LGA form factor, especially for industrial-grade M2M applications such as vehicle telematics, tracking, mobile payment, industrial router, safety monitor and industrial PDAs.

- ME909s-120 supports 150Mbps downlink data rate, including enhanced features like FOTA, USSD and Huawei enhanced AT commands.
- ME909s-120(B1/B2/B3/B4/B5/B7/B8/B20) supports EMEA region, and has two different form factor: LGA and Mini PCIe form factor.

With Huawei pin-to-pin form factor, it is easy to migrate from MU609, MU709 or ME909u family to ME909s-120. All Huawei modules comply with the RoHS directive and Regional certification.

Features:

- Bands: LTE (FDD): B1,B2,B3,B4,B5,B7,B8,B20; DC-HSPA+/HSPA+/HSPA/UMTS : B1,B2,B5,B8; EDGE/GPRS/GSM: 850/900/1800/1900 MHz
- Data Transfer Rate: DC-HSPA+ :Downlink:42 Mbps, Uplink: 5.76 Mbps; LTE FDD: Downlink:150 Mbps, Uplink: 50 Mbps @Bandwidth 20M (CAT4)
- **Interface:**
  - Antenna interface
  - 145 pins LGA interface
  - UART
  - PCM Voice
  - SIM Card
  - LED
- Power supply: 3.3 V

Developement tools

The **ME909s** and **MU709S2** uart interface can be implemented with the **Empire** board, follow instruction inside *Quick start guide*

Document references

The board reference documentation is available on:

- the architech-board website.
- the mu709S2 documentation
- the me909s documentation

Contents:

Quick start guide

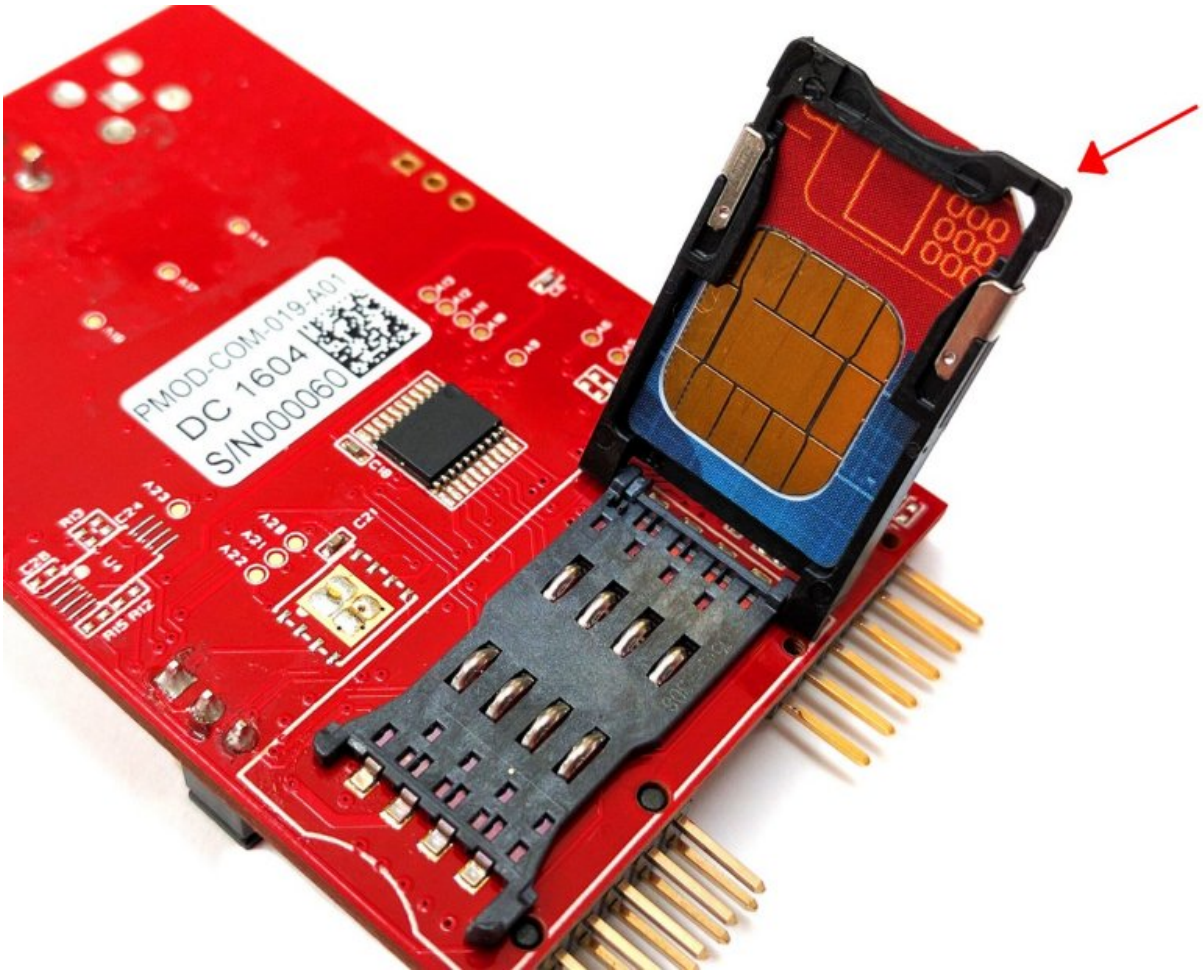
In this guide we used Ubuntu in order to use the PMOD-Huawei board. With the following commands you will be able to navigate on the internet via the PMOD-Huawei. These steps are equal for both version of the boards ME909s and MU709S2.

1. On the PMOD-Huawei board insert the antenna in **CN4** connector

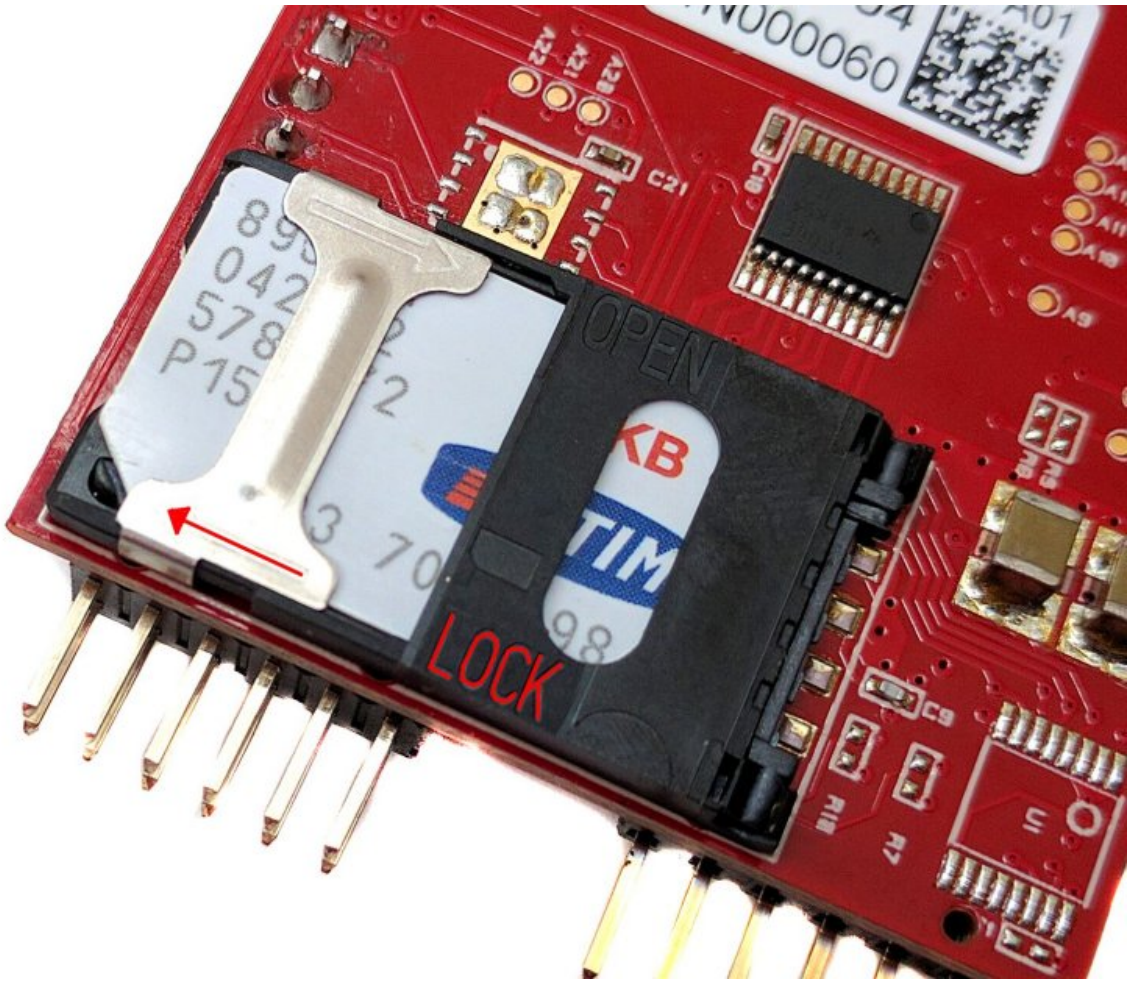
2. Insert your SIM card in the slot located in the bottom layer of the PMOD-Huawei

- Open the slot:

- Insert the SIM in the correct way:

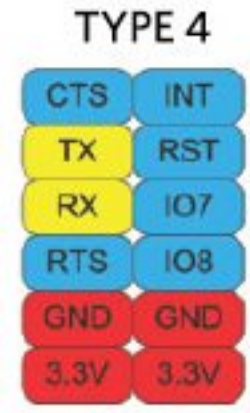


- Close the slot:



3. Insert the jumper from **PIN2** and **PIN3** of the **SW1**

4. Connect board with PMOD interface TYPE 4 to **CN6** connector



The **PIN1** of the **CN6** is signed with a white triangle on the board.

5. In the PMOD-TYPE4 interface are used the line in the following way:
   - CTS: not used (**CN6 PIN1**)
   - TX: used
   - RX: used
   - RTS: not used
   - INT: at startup setted high then setted low only for 1 seconds (**CN6 PIN7**)
   - RST: setted high
   - IO7: not used
   - IO8: not used
   - GND & VCC: used
6. When the **LED1** on the PMOD-Huawei will start to blink steadly every 1 second the module will be connected to the netowrk (feature only for **MU709S2**)

7. We used an device in order to comunicate via UART 3v3 to the pmod interface. For example we used minicom connecting to **/dev/ttyACM0** at baudrate: 115200, 8N1
8. If all works correctly sending the command *AT* the PMOD will reply with *OK*
9. Write this command followed by enter:

AT+CGDCONT=1,"IP","YOUR APN"

Where *"YOUR APN"* is the **Access Point Name** of your SIM

10. Launch this AT command *ATDT*99#* then exit from minicom
11. With the following commands you will be able to navigate on the internet:

    sudo pppd ttyACM0 115200 nodetach noauth lock usepeerdns
    sudo route add default ppp0

12. Open your preferred browser and try to navigate

Warning: remember to disable your wifi connection or LAN connection if they have access to the internet

Note: If you want use Windows, install the right driver using LPCUSBlib_VirtualSerial.inf file and installing it. In this way you will have the virtual com enabled in order to comunicate with the PMOD. In this guide we don't explain how to use the PMOD-Huawei with Windows.

Hardware Guide

The board is provided with:

- PMOD-Huawei

Configuration MU709S2

The MU709S2 works with auto-baudrate or baudrate fixed: - auto-baudrate: the first time you sent a data to the device, it will set its baudrate as yours. - The device starts with a fixed baudrate and it sends data about its configuration

We have configurated the device with baudrate fixed in this way:

0. Connect the board with the PC via USB
1. Launch minicom and set the baudrate to **9600**
2. Send a charachter
3. Send the command: *AT+IPR=115200*
4. Turn off the module and set the minicom to **115200**, then turn on the module
5. Set these commands to configure the LED timing:

AT^LEDCTRL=2,00000FF0,1,20,2 AT^LEDCTRL=2,0000000F,1,2,20

Useful general AT Commands

- **AT+GMR**: permits to know the firmware version. Actually the version is **11.652.65.00.00**
- **AT+CPIN?**: if MU709S2/ME909S replies with *READY*, the SIM (or the eUICC) is correctly seen
- **AT+CSQ**: it is used to check the quality of the signal:

<rssi>	GSM or UTRAN Cell Signal Strength
0	–113 dBm
WCDMA	1 –111 dBm
2	–30 –109 dBm to –53 dBm
31	–51 dBm
99	Unknown or undetectable

Datasheet and more

Please refer to:

- the architech-board website.
- the mu709S2 documentation
- the me909s documentation

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