LTE configuration tips and tricks

Uldis Cernevskis
MikroTik, Latvia

MUM Europe
March 2017

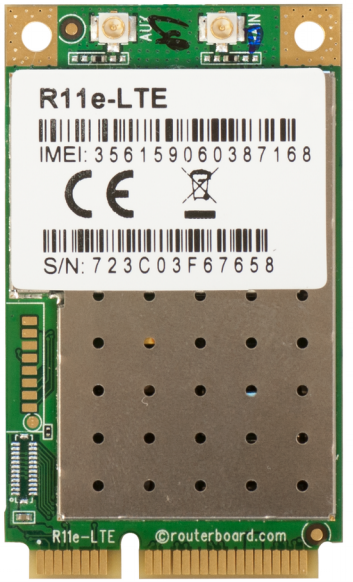
Overview

- Different modem types
- Modem interfaces
- PPP client configuration
- LTE interface configuration
- GPS support on LTE modem
- RouterBOARDs with modem support
- wAP LTE kit and its usage cases
- Supported 3G/4G(LTE) modems

Different modem types

- USB modem

- Mini-PCIe modem



USB modem

- Advantages
  - Small/portable
  - Works with almost any USB port
  - Sometimes subsidised by provider
- Disadvantages
  - Sometimes requires external USB power supply
  - Low gain antennas built-in
  - Usually no external antenna connector avaliable
  - Hard to mount or hide as it is an external device

Mini-PCIe modem

- Advantages
  - Great for integrated solutions
  - External antenna support
  - Usually better driver support
- Disadvantages
  - Requires board with mini-PCIe USB support
  - Higher cost than USB modem

Modem interfaces

- PPP emulation
  - Wide list of supported modems
  - PPP emulation speed limit of approx. 25Mbps
- Ethernet emulation
  - No limitation of the speed like in PPP emulation
  - Small list of supported modems

PPP client configuration

- USB port needed
  - ‘/port print’
- PPP client located in ‘/interface ppp-client’
- Data and Info channels for modem communications
  - Some modems have only one active channel
- Dial-on-demand setting is enabled by default

LTE interface configuration

- LTE interface can be used for 2G/3G/4G modems if they support Ethernet emulation driver
- LTE interface configuration located in ‘/interface lte’
- Two options for configuration (depends on modem)
  - WEB interface configuration located on the LTE interface gateway IP where the main configuration like APN,PIN and other options are set
  - Direct configuration on the LTE interface in the RouterOS

LTE network-mode and band setting

- Network-mode setting allows to enable/disable the GSM, 3G or LTE mode
  - Some of the modems do not allow to customize this option
  - Some of the modems support higher technology preffered option. Example:
    - Using “3G,LTE” mode modem will use LTE mode as preffered
- Band setting allows to customize allowed LTE bands
  - Not all of the modems support this feature
  - Only LTE bands are changed (GSM and 3G bands are not changed)

LTE interface IP address

- LTE interface IP address/default-gateway is added depending on the LTE model:
  - For most of the LTE modems the IP address/default-gateway is added by using DHCP-Client on the LTE interface
  - For a few LTE modems like SXT LTE the IP address/default-gateway is added directly from the LTE interface without DHCP-Client
- SXT LTE also supports the IPv6 address on the LTE interface

SMS on LTE interface

- Starting from RouterOS v6.37 it is possible to send and receive SMS on LTE modems
- SMS feature allows to send custom status messages and execute scripts on the router by receiving SMS messages
- Some limitations/requirements applies:
  - Sending and receiving SMS will only work when LTE interface is in Running state (connected to cellural network)
  - SMS tool supports only “GSM 7” encoding for SMS messages

GPS support on LTE modem

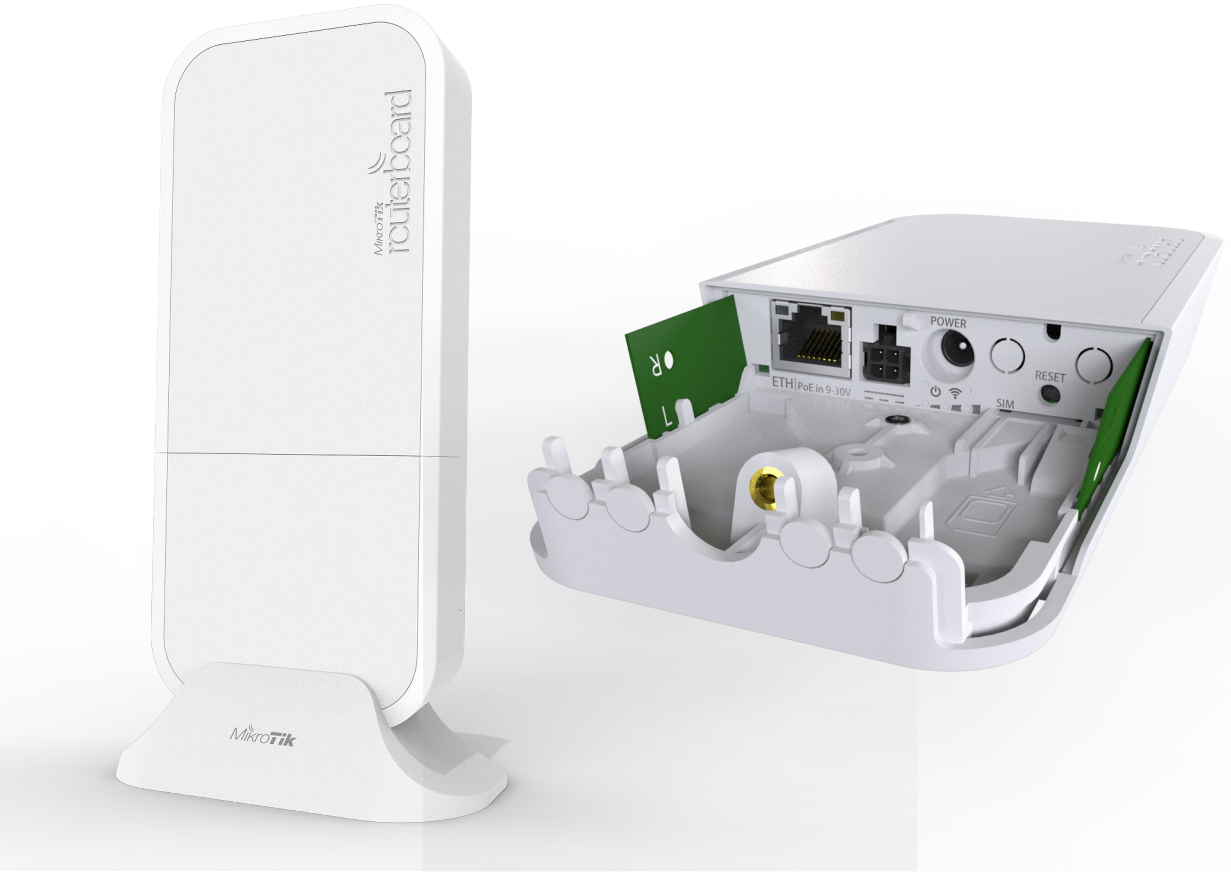
- Some LTE modems support GPS function
- Supported GPS interface from LTE modem will be recognized as USB port which can be used for GPS tool
- Some GPS modems require specific AT init-string command to start GPS on the LTE modem
  - Configuration on the ‘init-string’ command is located in the ‘System→GPS’ menu

RouterBOARDs with modem support

- All RouterBOARDs with mini-PCIe slots support modems except RB800
- All RouterBOARDs with USB ports support USB modems except boards where the USB port is used only for powering
- If modem is locked up it is possible to reset the power for it via RouterOS
- RouterBOARDs that support “USB power reset” feature:

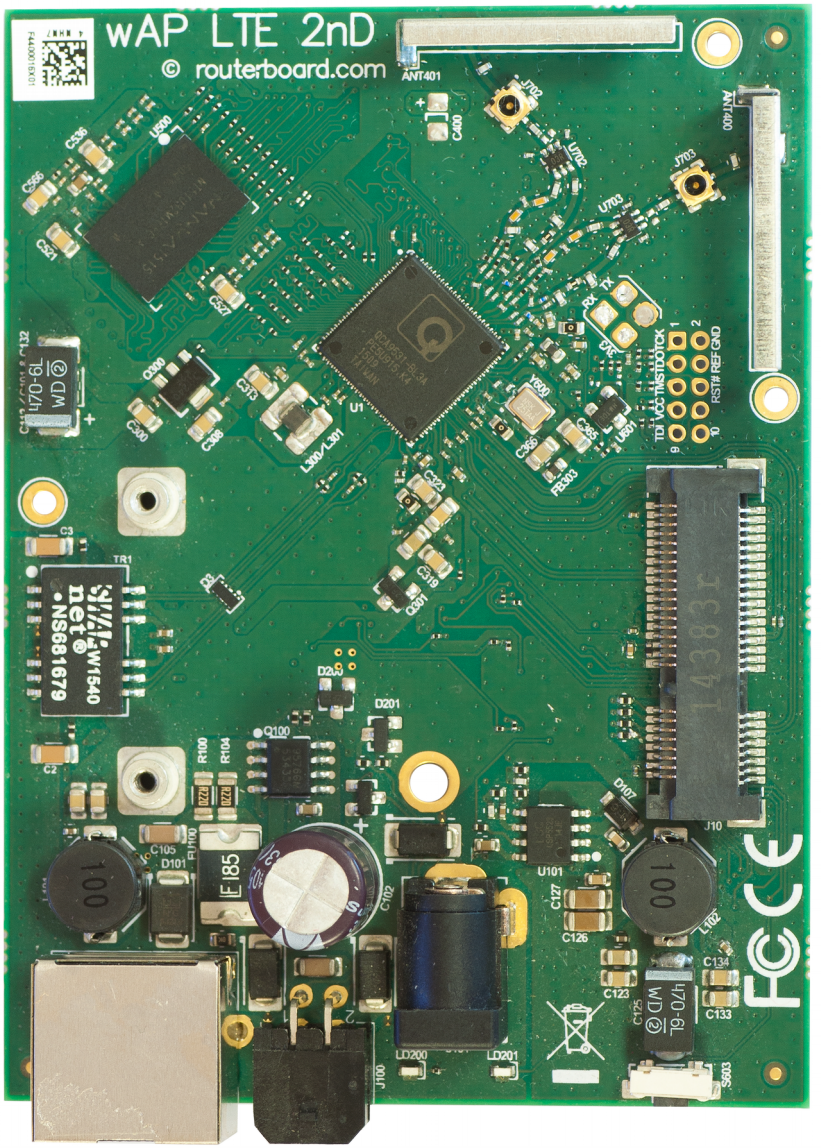
  https://wiki.mikrotik.com/wiki/Manual:USB_Features

wAP LTE kit



- wAPR-2nD board with case
- mini-PCIe LTE modem card
- 2 built-in LTE antennas in the case for LTE modem
- Table stand for case

wAPR-2nD



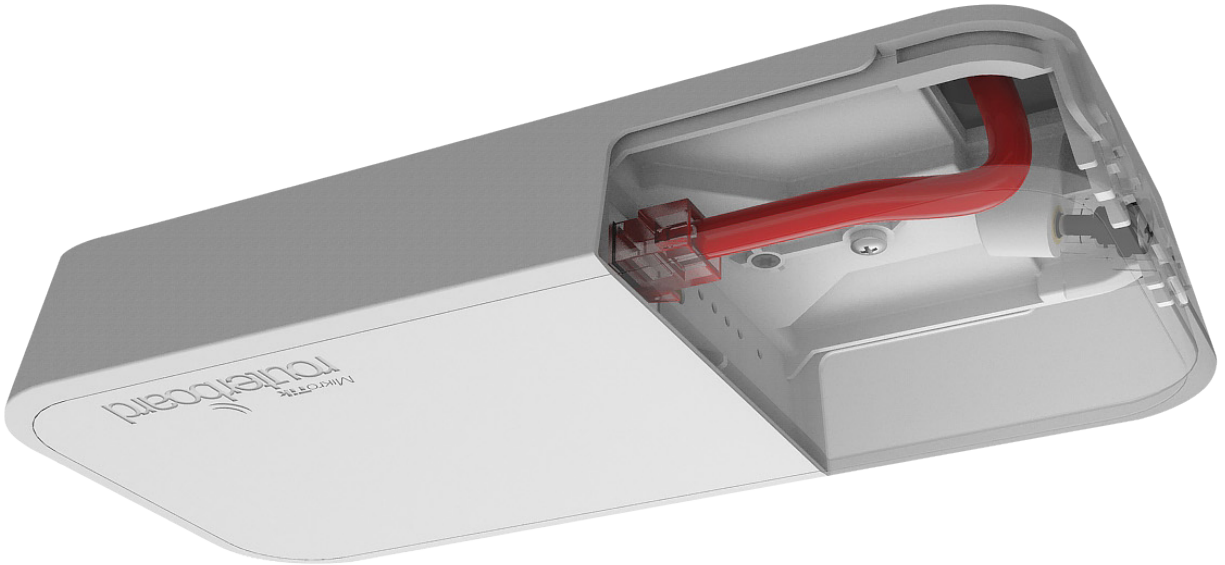
wAP LTE features

- 2 chain 2.4Ghz wireless radio built-in
- Mini-PCIe slot for LTE modem
- miniSIM slot for LTE modem
- 2 integrated antennas in case for LTE interface
- Jack, PoE, 4-pin automotive power option
- Supports passive PoE
- High operating temperatures
- Suitable for indoor, outdoor and mobile operation
- Weatherproof case design

wAPR-2nD specification

- CPU 650MHz
- RAM 64 MB
- Flash 16 MB
- Wireless 802.11b/g/n dual-chain
- One Mini-PCIe slot for LTE modem
- 2dBi gain antennas for 2.4ghz wireless
- 2-4.5dBi gain antennas for LTE
- Ethernet 10/100Mbps
- Voltage 11-30V
- Consumption up to 7W
- Operating temperatures -40 to +60C
- Dimenstions 185 x 85 x 30 mm

Usage cases - mobile



Use it on the ceiling inside a car, bus or train

- wAP LTE kit comes bundled with all the necessary things to be mounted on ceiling
- Cable breakout provides ability to run cable through the ceiling

Usage cases - wall

Use it on the wall

- Wall mounting is easy thanks to the provided drill template and screw anchor.
- Everything is included

Usage cases - table

Use it on the table

- Use special plastic stand to place it on the table at home or office

Supported LTE modems

- RouterOS supported Mini-PCIe LTE modules:

  https://wiki.mikrotik.com/wiki/Supported_Hardware
- MikroTik will provide bundle “wAP LTE kit” with a Mini-PCIe LTE module and antenna mounted together:
  - LTE module will be different depending on the region as LTE supported bands are not the same in each region

Suggestions?
Feature requests?

For more information on “wAP LTE kit” please talk to MikroTik staff at the wireless table

Thank you!