MikroTik RouterOS & RouterBoard Wireless features overview

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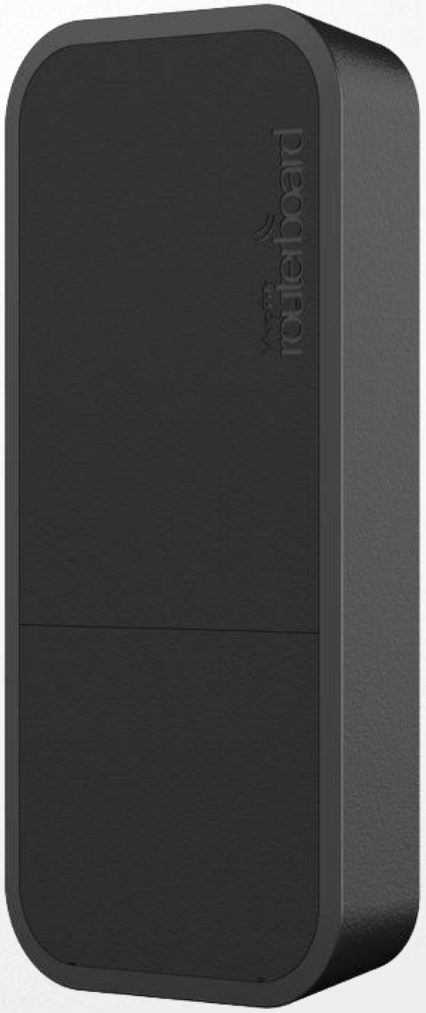
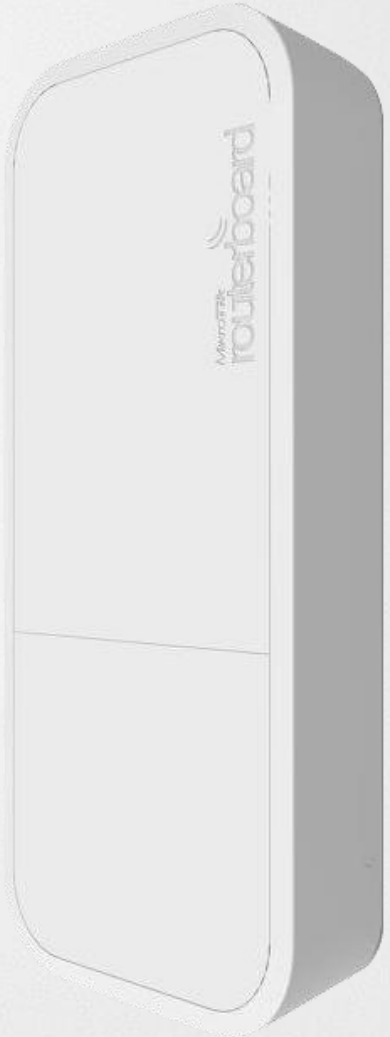
Overview

- Gift from MikroTik – wAP
- Wireless quick guide
- Wireless-rep package

wAP

Black and White edition





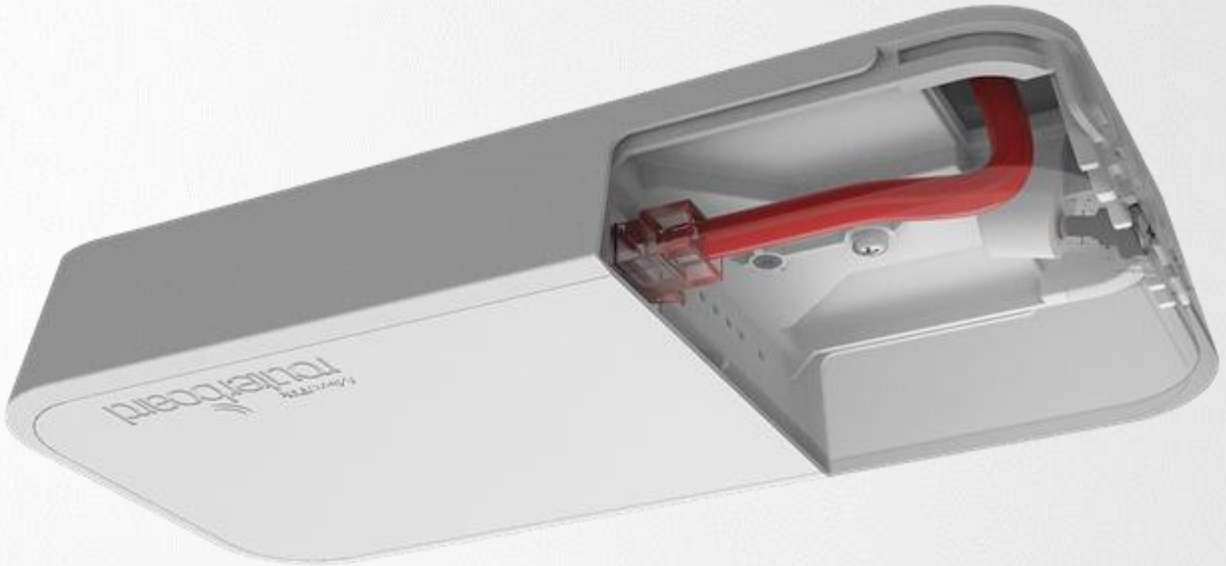
Specification

- CPU 650 MHz
- RAM 64 MB
- Flash 16 MB
- Wireless 802.11b/g/n dual-chain
- Gain 2dBi antennas
- Ethernet 10/100Mbps
- Voltage 11-57V
- Consumption up to 4W
- Operating Temperatures -40C to +70C
- Dimensions 185 x 85 x 30 mm

Features

- 2 chain Wireless radio
- Jack and PoE power option
- Wide input Voltage (11-57V)
- Supports 802.3af/at and Passive PoE
- Low Power Consumption
- High Operating Temperatures
- Suitable for indoor and outdoor
- Waterproof case design

Usage Cases



Use it on the ceiling!

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

Usage Cases

Use it on the wall!

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

New wAP ac

- CPU 720 MHz
- RAM 64 MB
- Flash 16 MB
- Wireless 802.11b/g/n dual-chain
- Wireless 802.11a/n/ac triple-chain
- Gain 2dBi antennas
- Ethernet 10/100/1000Mbps
- Voltage 11-57V with 802.3at POE
- Consumption up to 12W
- Operating Temperatures -30C to +70C
- Dimensions 185 x 85 x 30 mm

Wireless quick guide

Wireless modes

Station modes:

- station
- station-bridge
- station-wds

AP modes:

- AP-bridge
- bridge
- wds-slave

Other modes are available!

Router as station

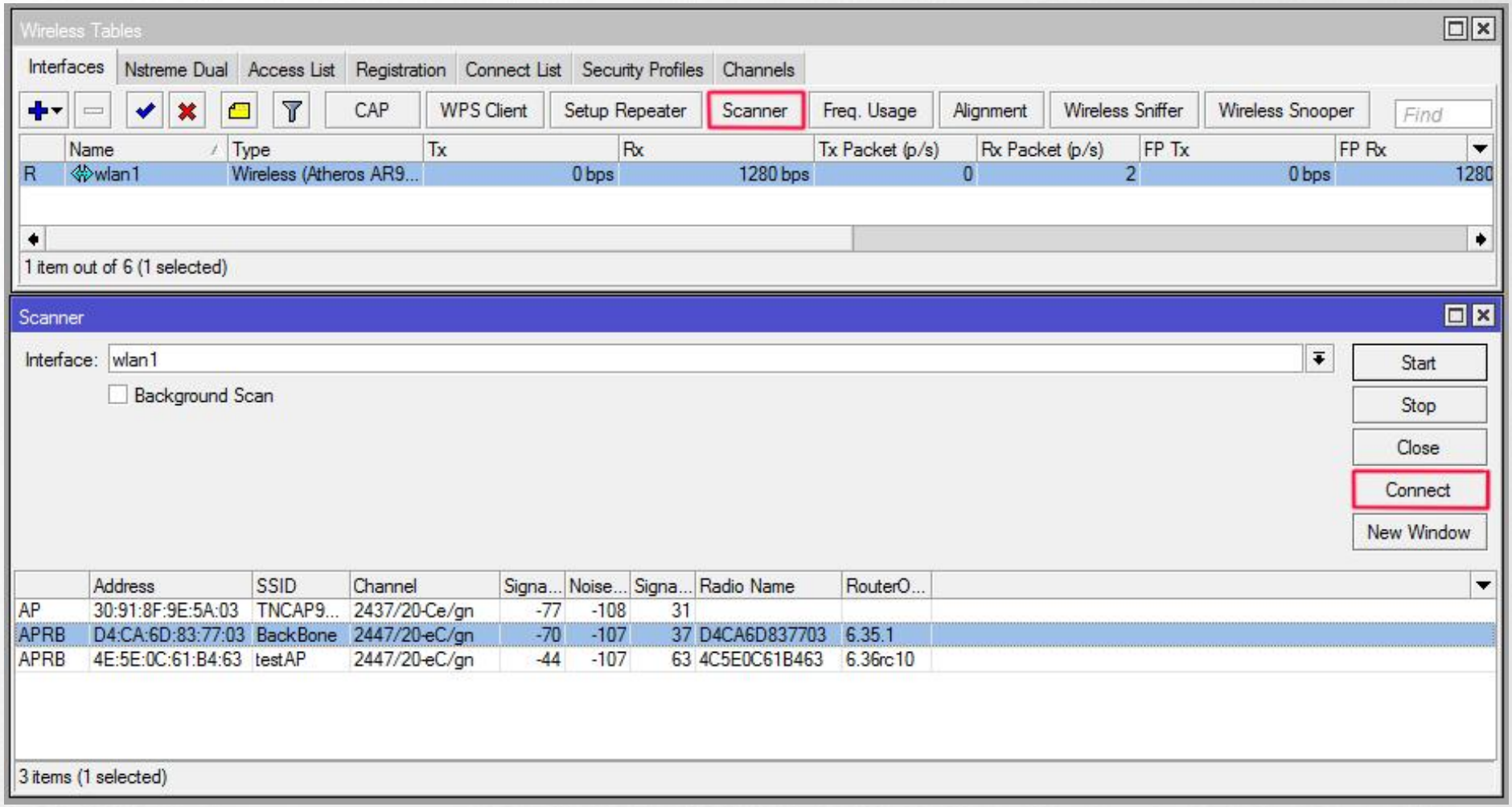
Configure wireless settings manually to connect to any access point.

- Configure security profiles (authentication-type, mode, key)
- Configure wireless settings (station mode,frequency, band, SSID)

Or use wireless scan feature.

Wireless scan

Fastest way to connect to AP

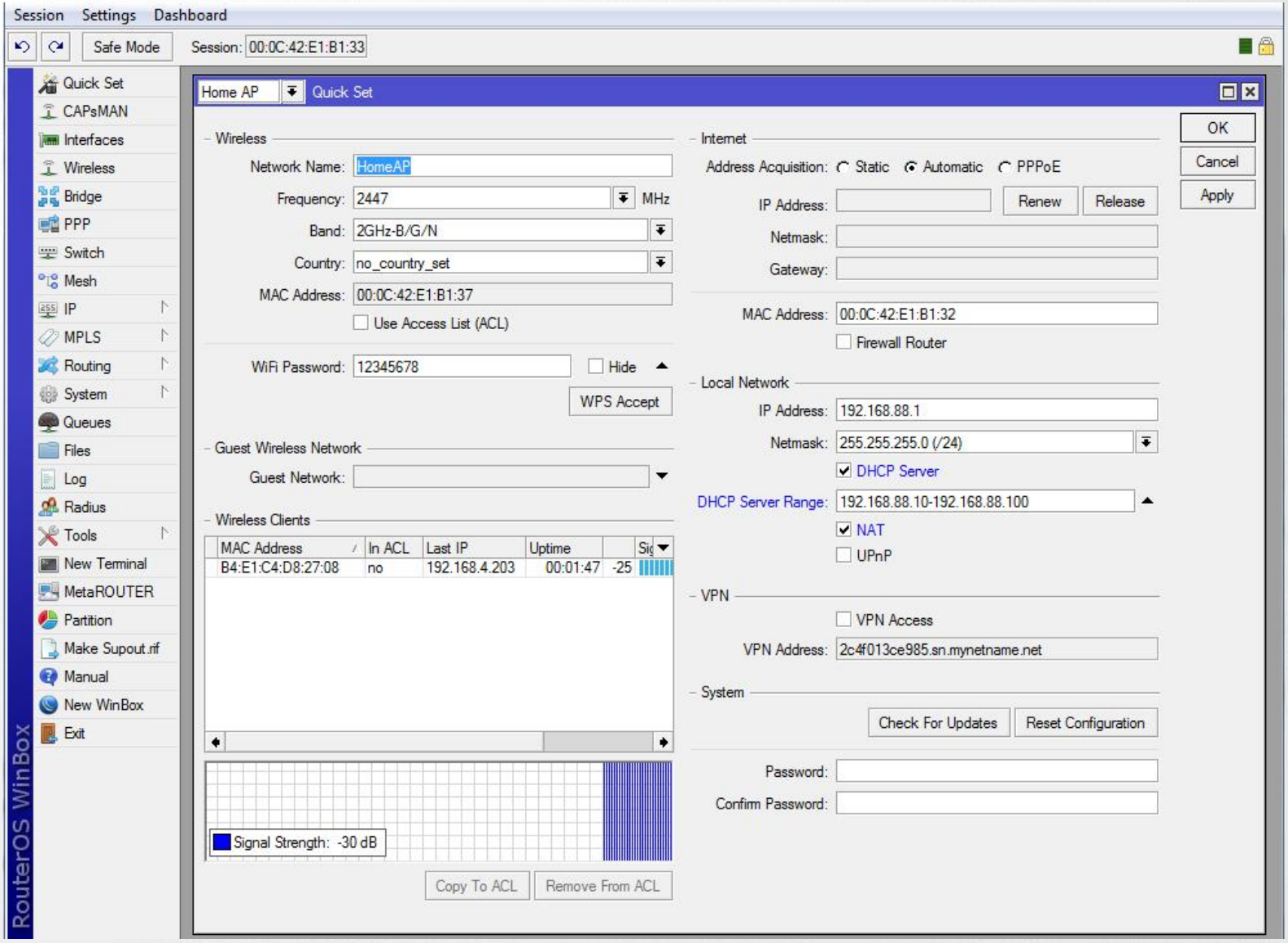


Create AP using Quickset

Quickset allows you to configure wireless with few steps:

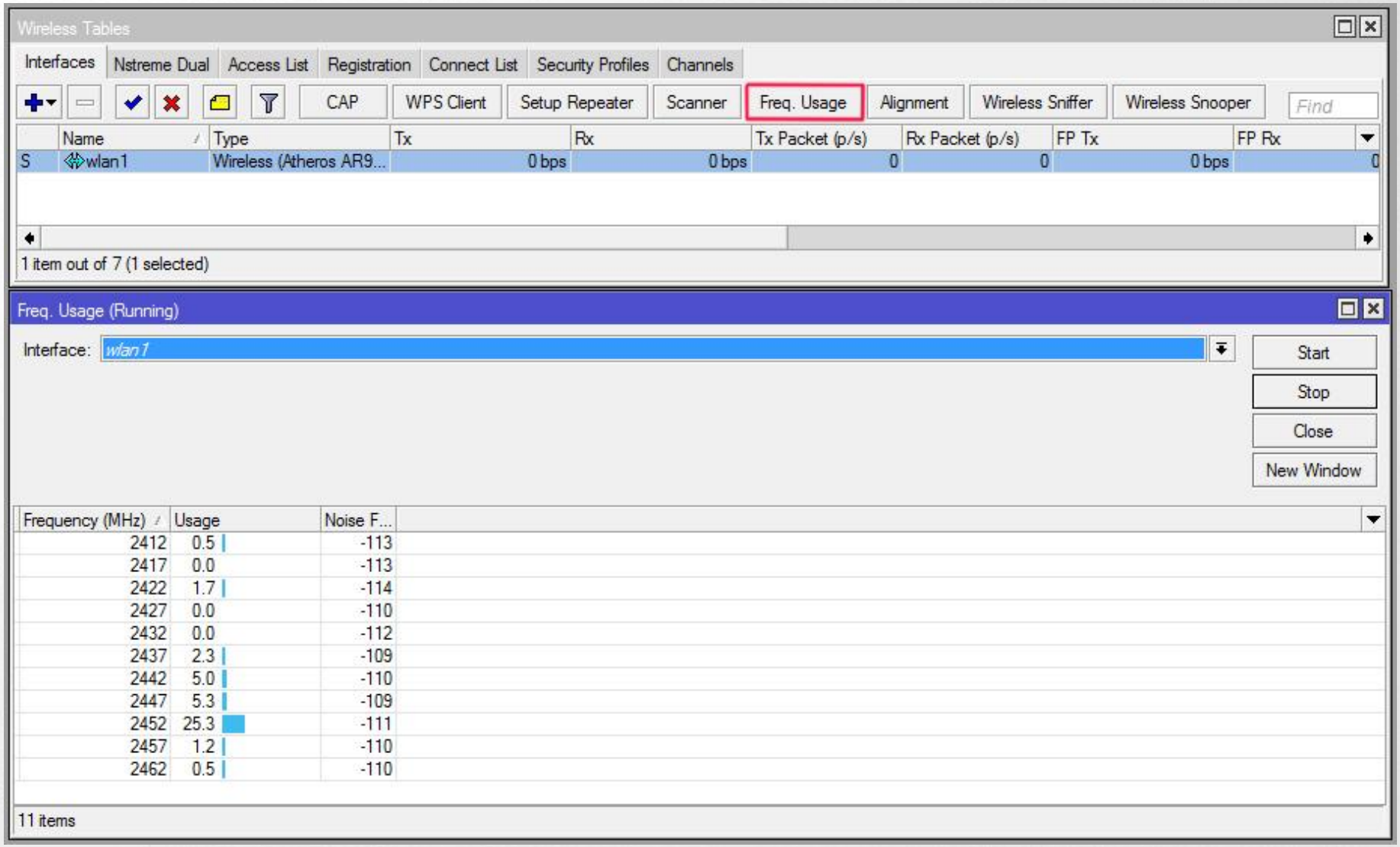
- CAP
- CPE
- Home AP
- PTP Bridge
- Wisp AP

Quickset


Session Settings Dashboard
Safe Mode
Session: 00:0C:42:E1:B1:33
RouterOS WinBox
Quick Set
CAPsMAN
Interfaces
Wireless
Bridge
PPP
Switch
Mesh
IP
MPLS
Routing
System
Queues
Files
Log
Radius
Tools
New Terminal
MetaROUTER
Partition
Make Supout.rif
Manual
New WinBox
Exit
Home AP
Quick Set
OK
Cancel
Apply
Wireless
Network Name: HomeAP
Frequency: 2447 MHz
Band: 2GHz-B/G/N
Country: no_country_set
MAC Address: 00:0C:42:E1:B1:37
Use Access List (ACL)
WiFi Password: 12345678
Hide
WPS Accept
Guest Wireless Network
Guest Network:
Wireless Clients
MAC Address
In ACL
Last IP
Uptime
B4:E1:C4:D8:27:08 no 192.168.4.203 00:01:47 -25
Signal Strength: -30 dB
Copy To ACL
Remove From ACL
Internet
Address Acquisition: Static Automatic PPPoE
IP Address:
Renew
Release
Netmask:
Gateway:
MAC Address: 00:0C:42:E1:B1:32
Firewall Router
Local Network
IP Address: 192.168.88.1
Netmask: 255.255.255.0 (/24)
DHCP Server
DHCP Server Range: 192.168.88.10-192.168.88.100
NAT
UPnP
VPN
VPN Access
VPN Address: 2c4f013ce985.sn.mynetname.net
System
Check For Updates
Reset Configuration
Password:
Confirm Password:

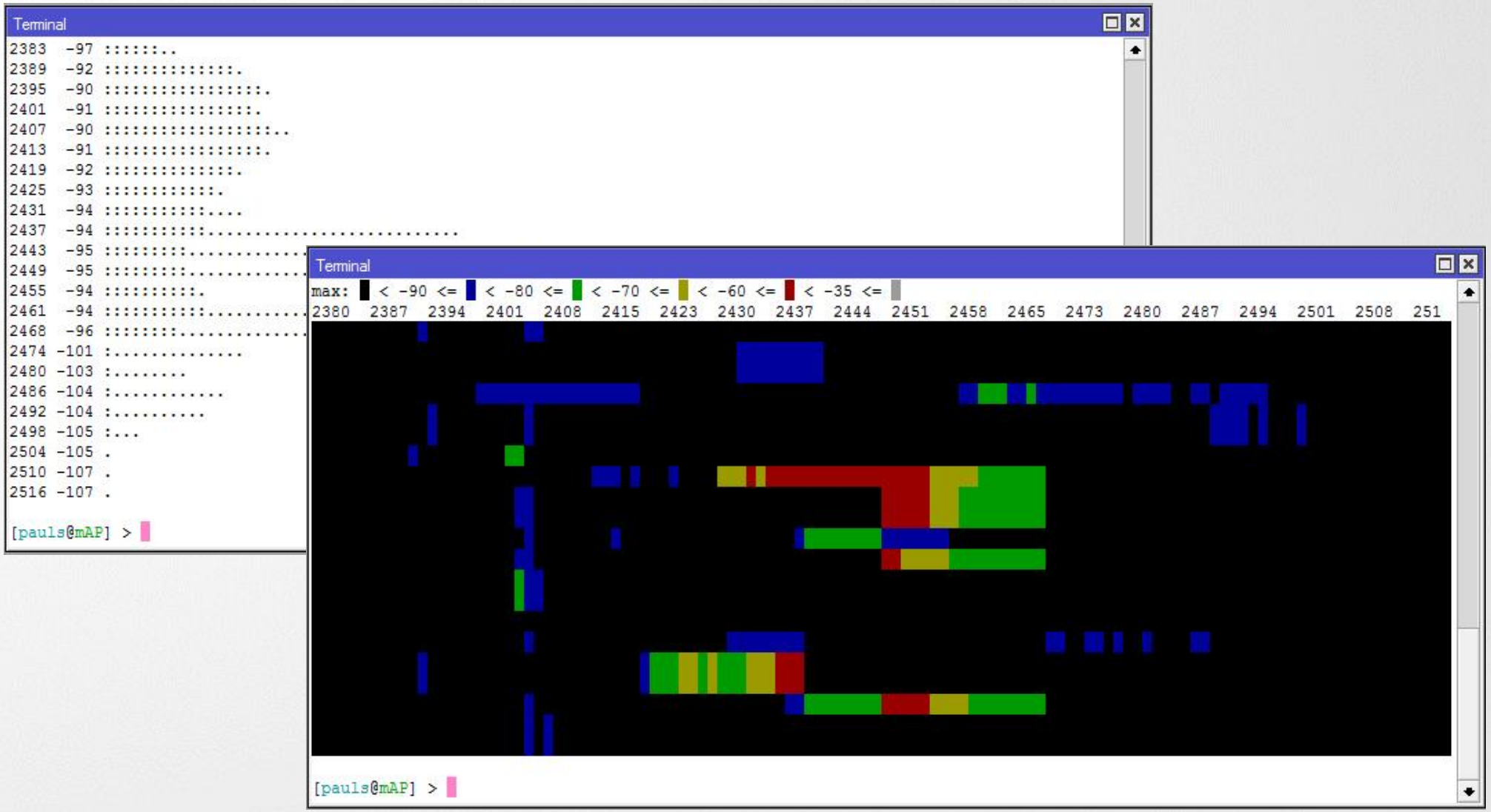
Frequency scan

Use scan tool, to find the best frequency



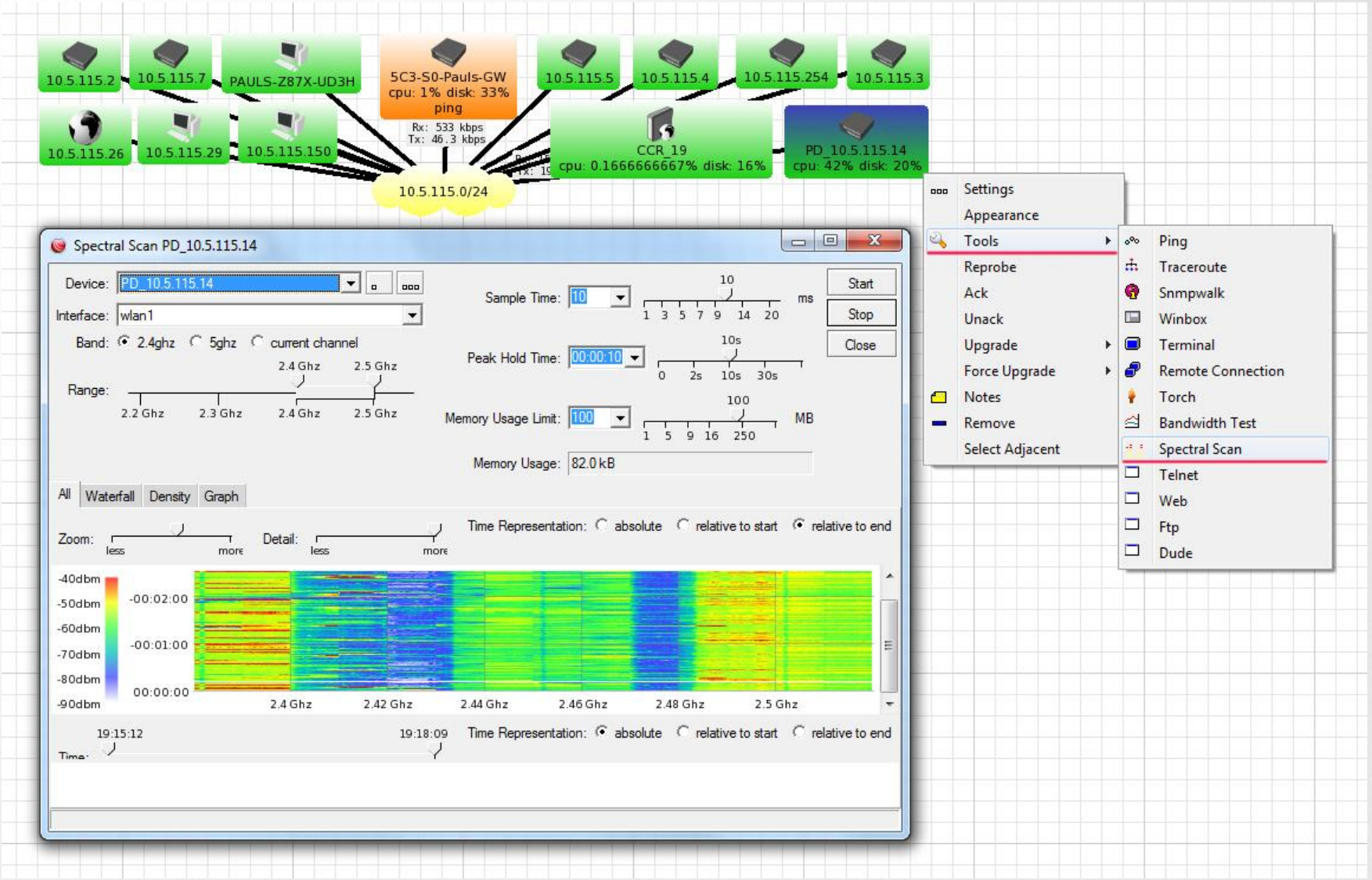
CLI wireless scan

Use terminal to check used frequencies



Dude

Scan wireless from Dude



Results

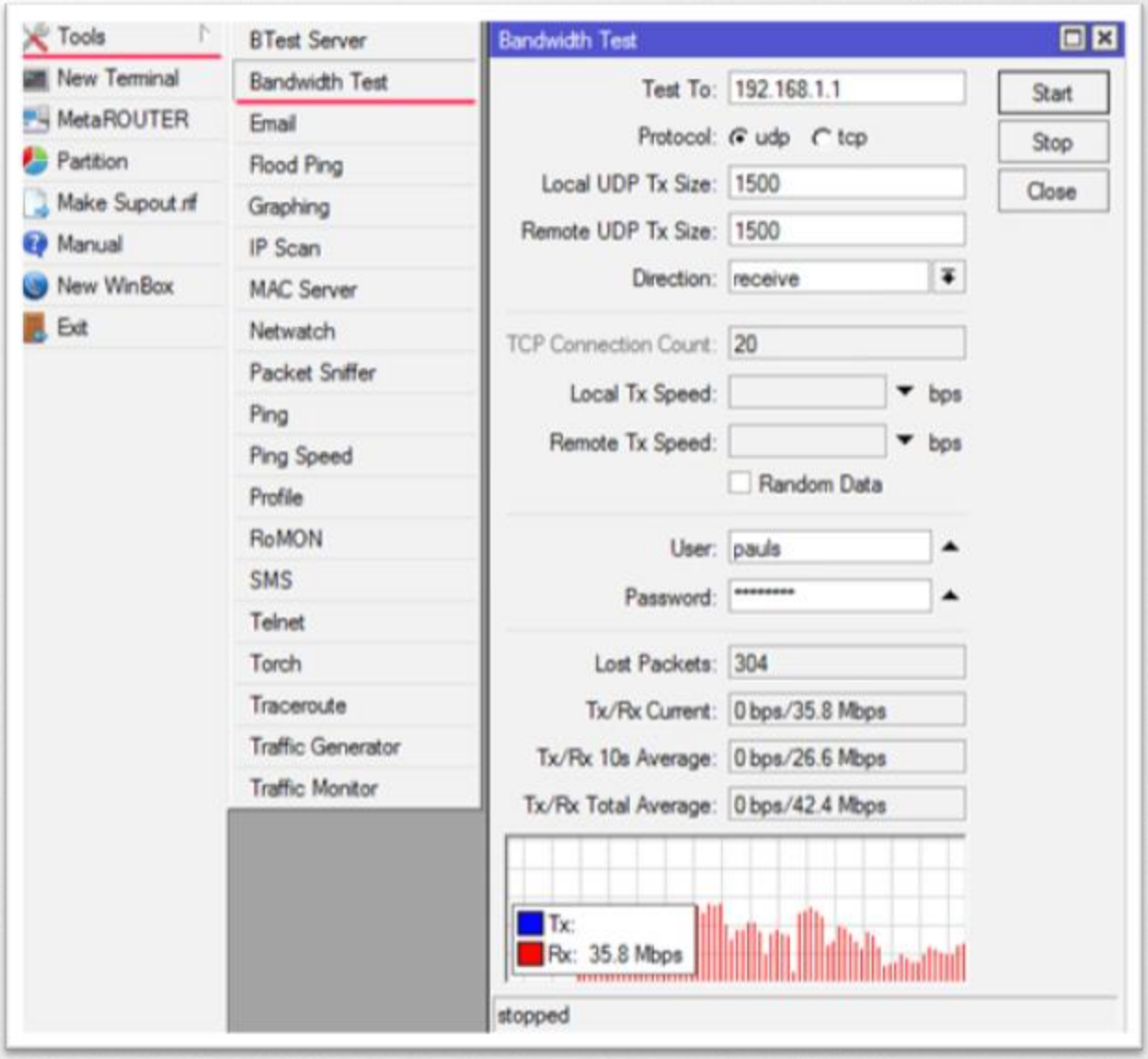
Compare troughput in different frequencies

Performance test: Date: 2016_05_05 11:24:08 RouterBOARD_3011UiAS-2HnD SN:5BFB0436E82D

Freq	Rx	Tx	ccq	rxc	txc	sig	txs
2357	42.41	3.875	6.6	51.35	6.6	-37.7	-37.55
2377	0.87	28.765	38.6	9.05	38.6	-44.45	-41.8
2397	5.555	0.69	21.6	39.25	21.6	-38.4	-37
2417	80.025	80.07	88.35	94.75	88.6	-33.9	-33.95
2437	4.645	75.305	63.75	54.5	63.8	-38.15	-37.9
2457	62.285	78.845	54.4	74.4	54.4	-38.7	-40.3
2477	65.485	36.92	33.65	83.4	33.65	-36.85	-35.05
2497	0	0	0	0	0	0	0
2517	80.015	79.61	90.45	65.9	90.45	-39.05	-38.3

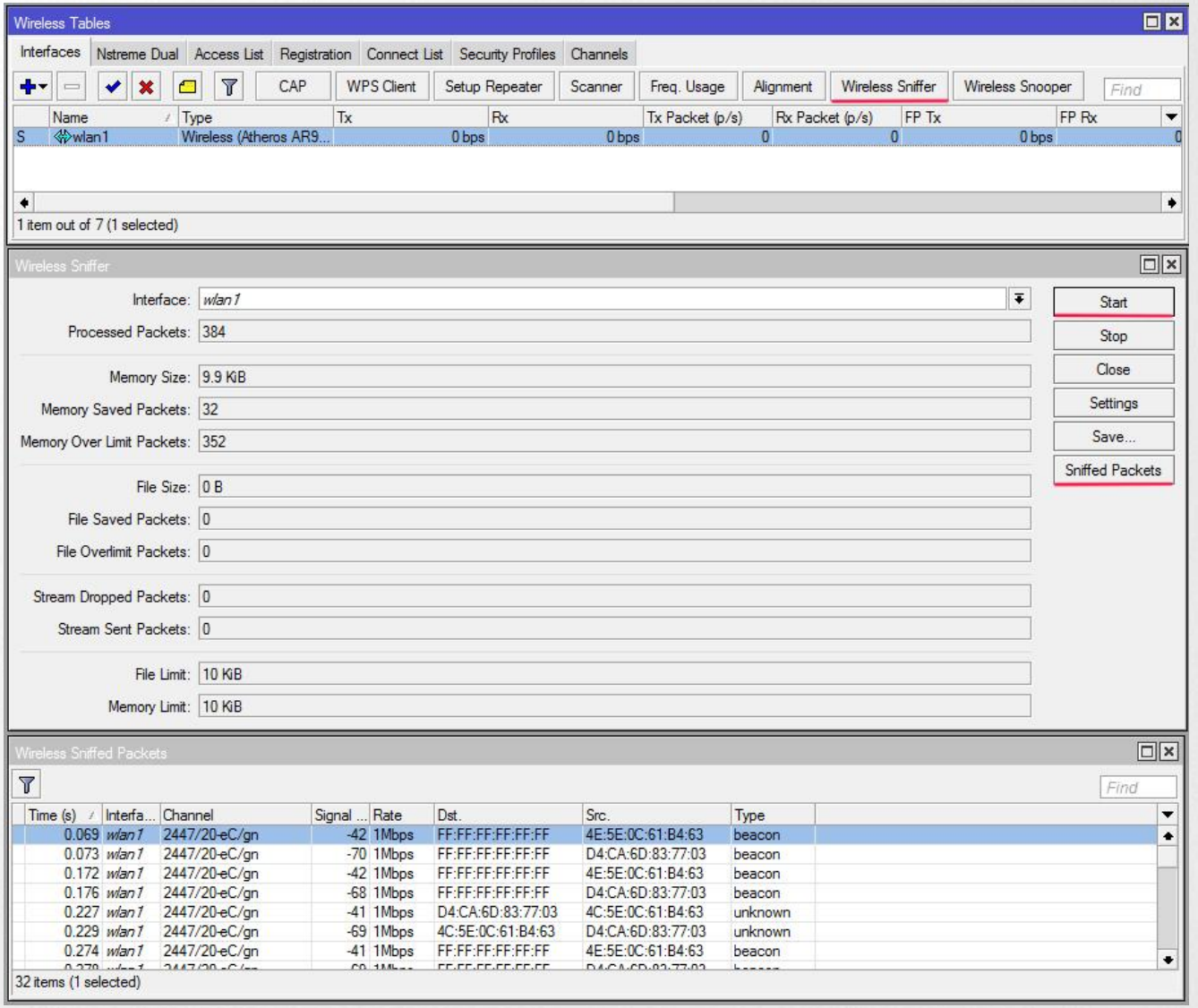
Test troughput

Measure troughput between wireless devices



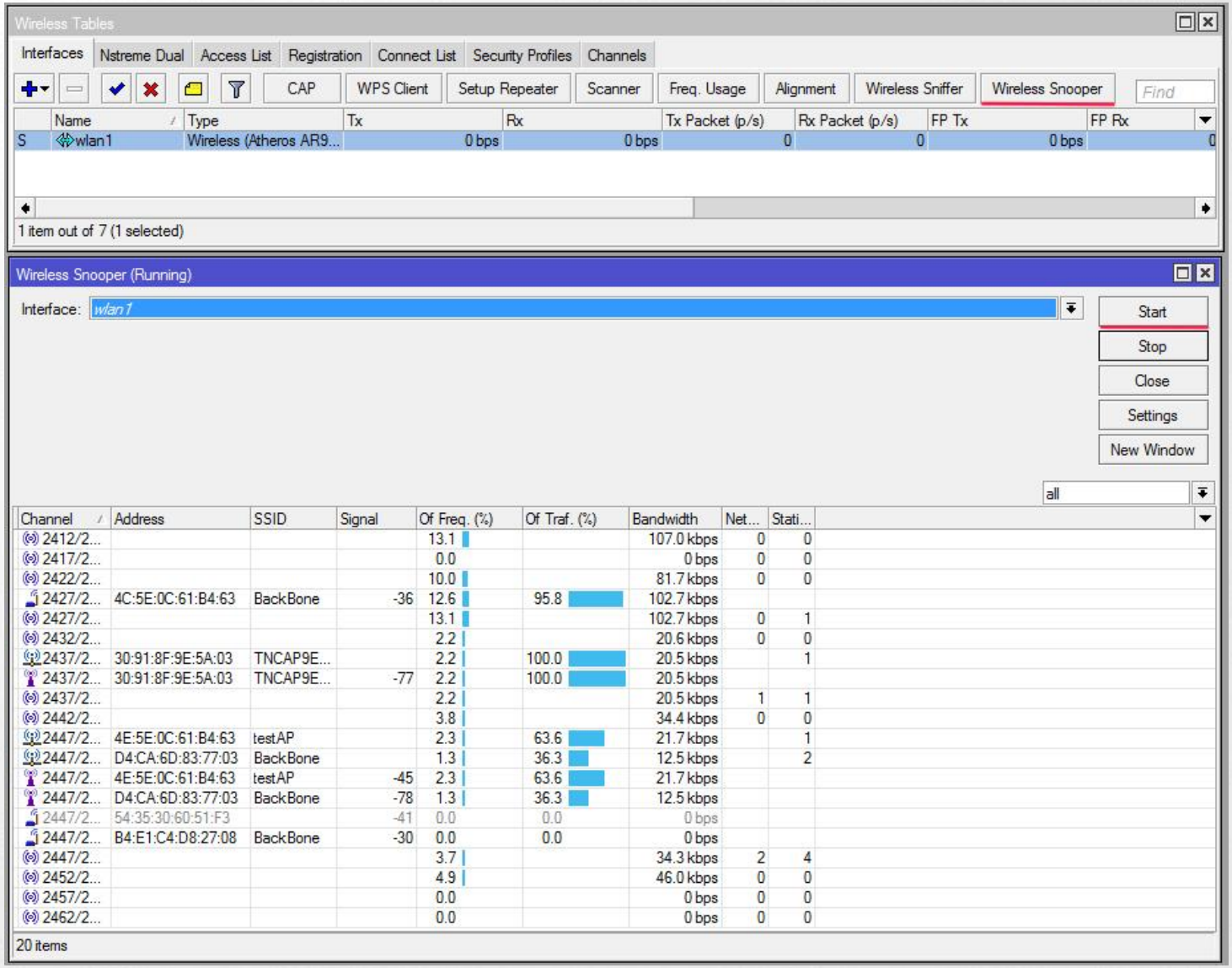
Wireless sniffer

Capture frames & packets



Wireless snooper

Monitor frequency usage



Wireless-rep package

Wireless-rep package

- Repeater setup
- Background scan
- Virtual Wireless Interfaces
- WPS client
- New Wireless Scan features
- Scan-list Step support
- Station Roaming support
- G/N band support
- CAPsMAN additional settings enabled
- CAPsMAN Rates support

Repeater Setup

- Allow to receive signal from the AP and repeat the signal using the same physical interface locally for connecting other clients
- Allows to extend wireless service for the wireless clients
- Steps that this setup command does:
  - Configure wireless interface to connect to the AP
  - Create a Virtual AP interface
  - Create Bridge interface
  - Adds both (main and virtual) interfaces to bridge ports

Background Scan

- Supported for 802.11 protocol only
- Working conditions
  - Wireless interface should be enabled
  - For AP mode – when operating on fixed channel
  - For Station mode – when connected to AP
- Supported also on Virtual interfaces
  - Scan is only performed in channel where master interface is running

Virtual Wireless Interfaces

- Supported for 802.11 protocol only
- Virtual AP and Client interface can be added on the same physical interface
- Multiple Virtual Wireless interfaces can be added
- Background scan is supported on Virtual Wireless Interfaces and is only performed in channel where master interface is running

WPS Client Support

- Allows wireless client to get Pre-Shared Key configuration of the AP that has WPS Server enabled
- Gets information from any WPS Server running or can be specified to get only with specific SSID or MAC address
- Received configuration is shown on the screen and can be also saved to a new wireless security profile

Wireless Scan features

- Scan to file
  - Allows to save the scan results in a CSV format file
  - Supported with background scan
- Scan Round setting
  - Allows to do full scan of the scan-list and then stop scanning
  - Useful for remote scans on the clients
  - Supported with background scan as well

Scan-list Step feature

- Scan-list Step feature allows to make compact scan-list entries
- To make scan-list from 5500-5700 with 20mhz step now you need just one entry:
  - Scan-list=5500-5700:20
  - In system it will create scan-list with such frequencies: 5500,5520,5540,5560,5580,5600,5620,5640,5660, 5680,5700

Station Roaming support

- Supported for 802.11 protocol only
- While connected to AP station does periodic background scans to look for a better AP
- When a better AP is found station roams to the new AP
- Time intervals between scans becomes shorter when signal becomes worse
- Time intervals between scans becomes longer when signal becomes better

G/N Band Setting

- Regular Wireless Interface and CAPsMAN supports '2ghz-g/n' band setting
  - basic-rates – 6-54Mbps
  - supported – 6-54Mbps
  - ht-basic-mcs – None
  - ht-supported-mcs – 0-23

CAPsMAN Settings

- CAPsMAN now supports the following settings:
  - distance – default value is 'indoors'
  - hw-retries
  - hw-protection-mode
  - frame-lifetime
  - disconnect-timeout

CAPsMAN Rates support

- CAPsMAN supports Rates configuration tab:
  - Basic – B and A/G basic-rates
  - supported – B and a/G supported data-rates
  - ht-basic-mcs – N basic-rates
  - ht-supported-mcs – N supported data-rates
  - vht-basic-mcs – AC basic rates
  - vht-supported-mcs – AC supported data-rates

Sugessesions ?

Feature requests?

THANK YOU!