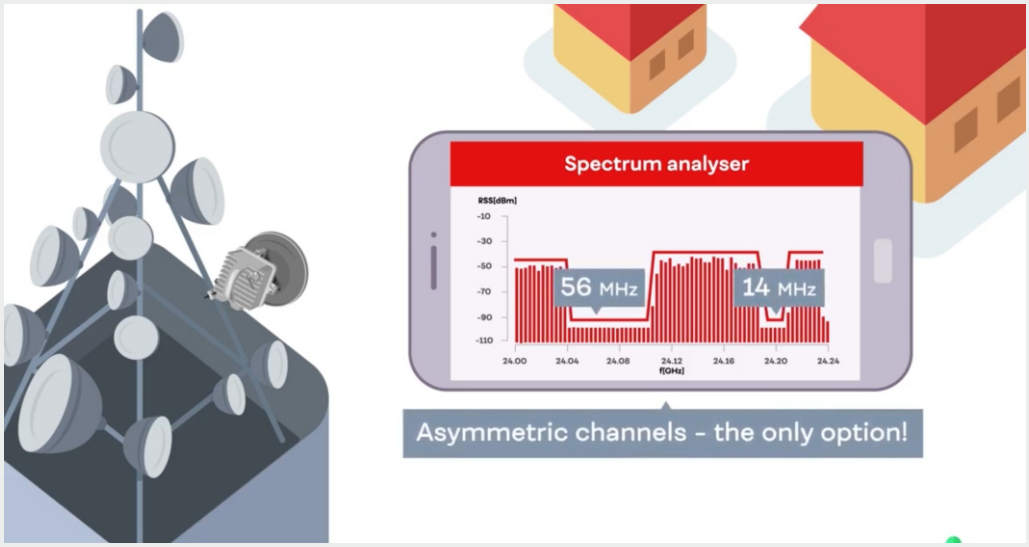
Efficient Spectrum Use

Maximizing User Traffic

Info sheet

As unlicensed bands like **17** and **24 GHz** increase in **popularity**, **spectral efficiency** becomes increasingly **relevant.** The total width of the frequency band is set, meaning the only way of operating **more links on a site** is to use microwave radios with the best spectral efficiency.

RAy3 offers narrow channels, asymmetry, a polarization switch offering SW defined locations in the band and faster spectrum analysis, together taking spectral efficiency to a whole new level!



Narrow Channels

RAy3 provides **12 different channel widths.** Starting from **3.5 MHz**, this is unique in the market. When you need to share spectrum among **many links on one site**, narrow channels become a high priority. They are **more immune to interference** and have **higher sensitivity**, so can also be used effectively over **longer distances.**

Asymmetric Channels

It is often the case that each side of a link has different amounts of spectrum available because of noise or when you need to **share spectrum among many links.** In such situations asymmetric channels is a great option, allowing you to set a different channel width and its location for each direction of transmission.

Polarization Switch

Most radios use **duplexers.** These are **HW dependent**, operating on a fixed frequency. Even with a narrow channel, you can't place it anywhere in the band. Their bandwidth (typ. **60 - 88 MHz**) makes them **inefficient** consuming high amount of spectrum on user traffic account.

In contrast, the **RAy3 polarization switch** is **SW dependent**; its **location** can be set **anywhere** in the band with a narrow bandwidth (typ. **18 - 24 MHz**) leaving more spectrum for user traffic and providing maximum flexibility.

Spectrum Analyzer

RAy has a built-in spectrum analyzer, used to control spectrum jamming on the site. Improved in RAy3, it is now much **faster** (typ. **3 s**) allowing **parsing during normal operation.** Because of the polarization switch, the **entire band is always measured.**

Microwave link

- **1 Gbps / 24 GHz / 250 MHz**
- **713 Mbps / 17, 24 GHz / 200 MHz**
- **QPSK 16 – 4096 QAM**
- **3.5 – 112 MHz channels**
- **Asymmetric channels**
- **SyncEth, PTP**
- **1x ETH, 1x SFP, 1x USB**
- **Solar ready – 22W**
- **Each unit tested -30 to +55°C**
- **Full outdoor**
- **Easy installation**
- **Interference tolerant**
- **RAy Tools (Android, iOS)**

Applications

- **Backbone**
- **High-speed last mile**
- **LAN Extension**
- **Internet providers**
- **SCADA**

RACOM
www.racom.eu

Asymmetric Channels

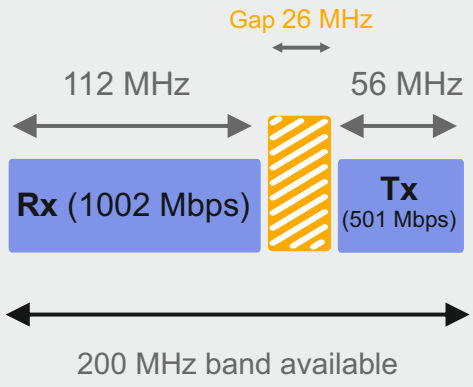
Set up Options

- Combination of all 12 channel widths (3,5 – 112 MHz)
- Combination of all 10 modulations (QPSK – 4096 QAM)

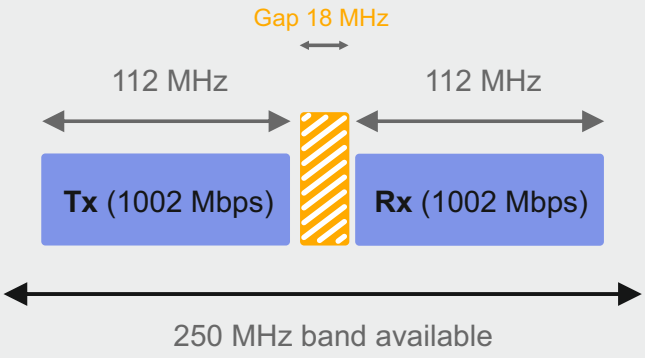
No HW limits, all SW defined

- Minimum gap between Tx & Rx channels
- Neighbouring unit channels can be touching (RAy3 meets standards for licensed bands)

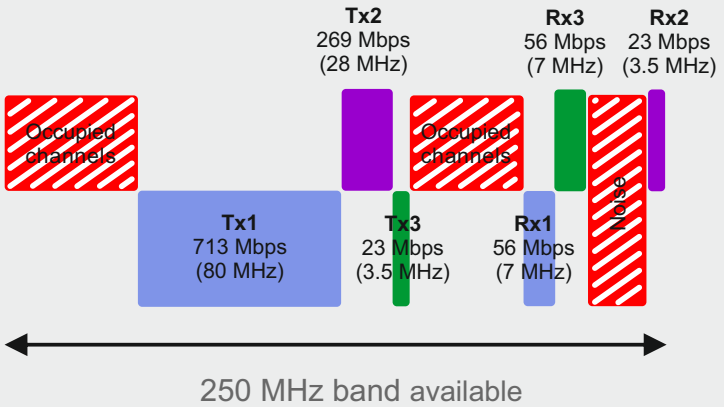
ASYMMETRICAL



SYMMETRICAL



BUSY SITE



”One of the features I like most from the Ray is the asymmetrical channel width configuration, which allow the user to fully use the spectrum, and adapt the channel to the user needs.”

Diego García
Product Manager at LANDATEL, Spain

”As user data demands for Internet downlink / uplink are mostly different in each direction, asymmetric channels in RAy are a great feature! These allow us to set up 1 Gbps / 500 Mbps even in 200 MHz bandwidth.”

Gergely Kálmán
CPO at AccessPoint, Hungary

“We can confidently deploy the RAy3 knowing that its flexibility will allow us to resolve any spectrum issues.”

Sunil Naik
CEO Cable AML, USA

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