

Section D. Leaflet

Title of the experiment:

AGILE - Enabling Agile Spectrum Adaptation in Commercial WLAN Deployments

Name of organisation and logo:

GRIDNET S.A.



Goal of Experiment:

The goal of our experiment was to conduct a systematic evaluation of our spectrum adaptive 802.11 based system (AGILE) under a vast variety of experimental configurations, in order to characterize its ability to improve spectrum efficiency and network performance of 802.11 links under spectrum congestion and interference conditions.

Main challenge(s) of Experiment/Extension:

The main challenges of deploying our experiments include:

- Increased heterogeneity and wide range of required hardware platforms
- Complexity in establishing wireless links with specific channel conditions (topologies, signal strengths, etc.)
- Difficulty in configuring multiple complex experimental scenarios including heterogeneous devices that need to be centrally managed

Description of setup of Experiment/Extension:

In this experiment, we employed the AGILE spectrum adaptive 802.11 based system to characterize its ability to improve spectrum efficiency and network performance of 802.11 links under varying spectrum congestion and interference conditions, caused by a wide range of interference sources.

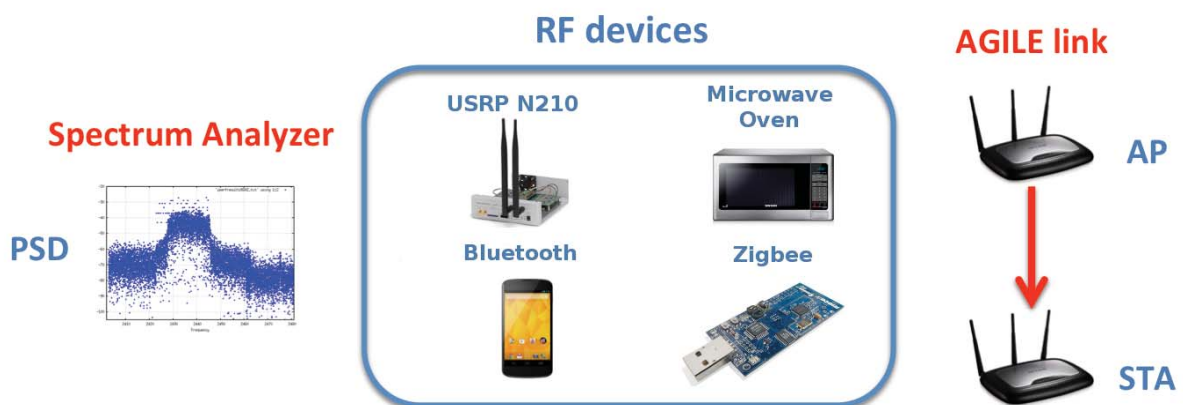


Figure 14 Characterizing the impact of Interference on commercial 802.11 devices

through the AGILE approach

Main results:

The ability of the AGILE approach to detect various interference sources and characterize their impact on network performance of 802.11 links is highlighted in the following figures.

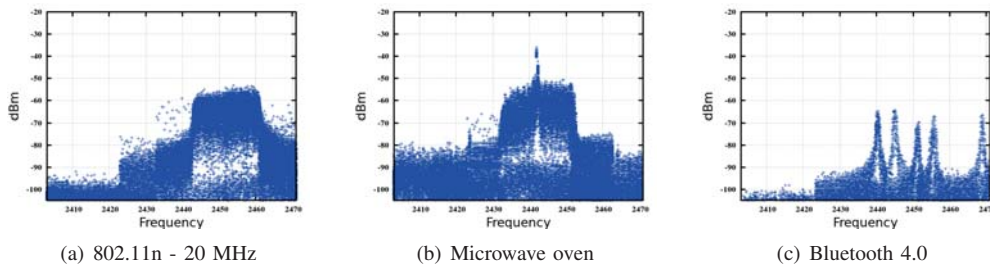


Fig. 14: Detection of interfering signals generated by different RF devices

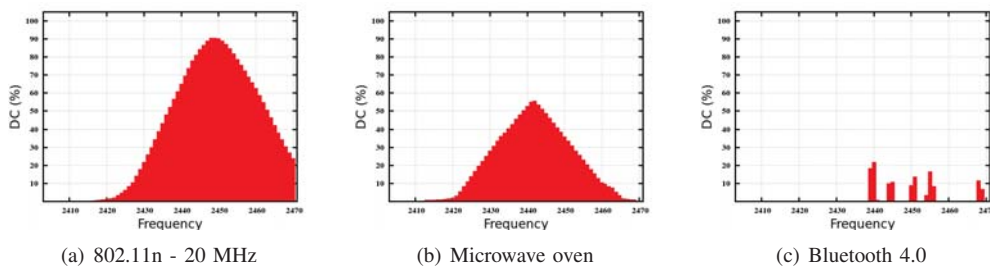


Figure 15 Characterization of the interference impact as caused by each different RF device

Conclusions:

The WiSHFUL systems and facilities offered us the following advantages:

- Unique availability and heterogeneity of hardware platforms
- Great flexibility in establishing wireless links of specific channel conditions
- Unified framework for controlling a wide range of wireless devices with ease
- Rapid deployment and evaluation of our custom spectrum adaptation solution

Feedback:

Thanks to the software tools and hardware provided to us by WiSHFUL, we were able to configure complex experiments including a wide range of totally heterogeneous wireless technologies through a unified common interface.