

Wireless Coexistence

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What is “Wireless Coexistence”?

- How well can wireless devices (or systems) perform in a shared environment?
 - Frequency, time, or space
- Focus on the wireless communications link



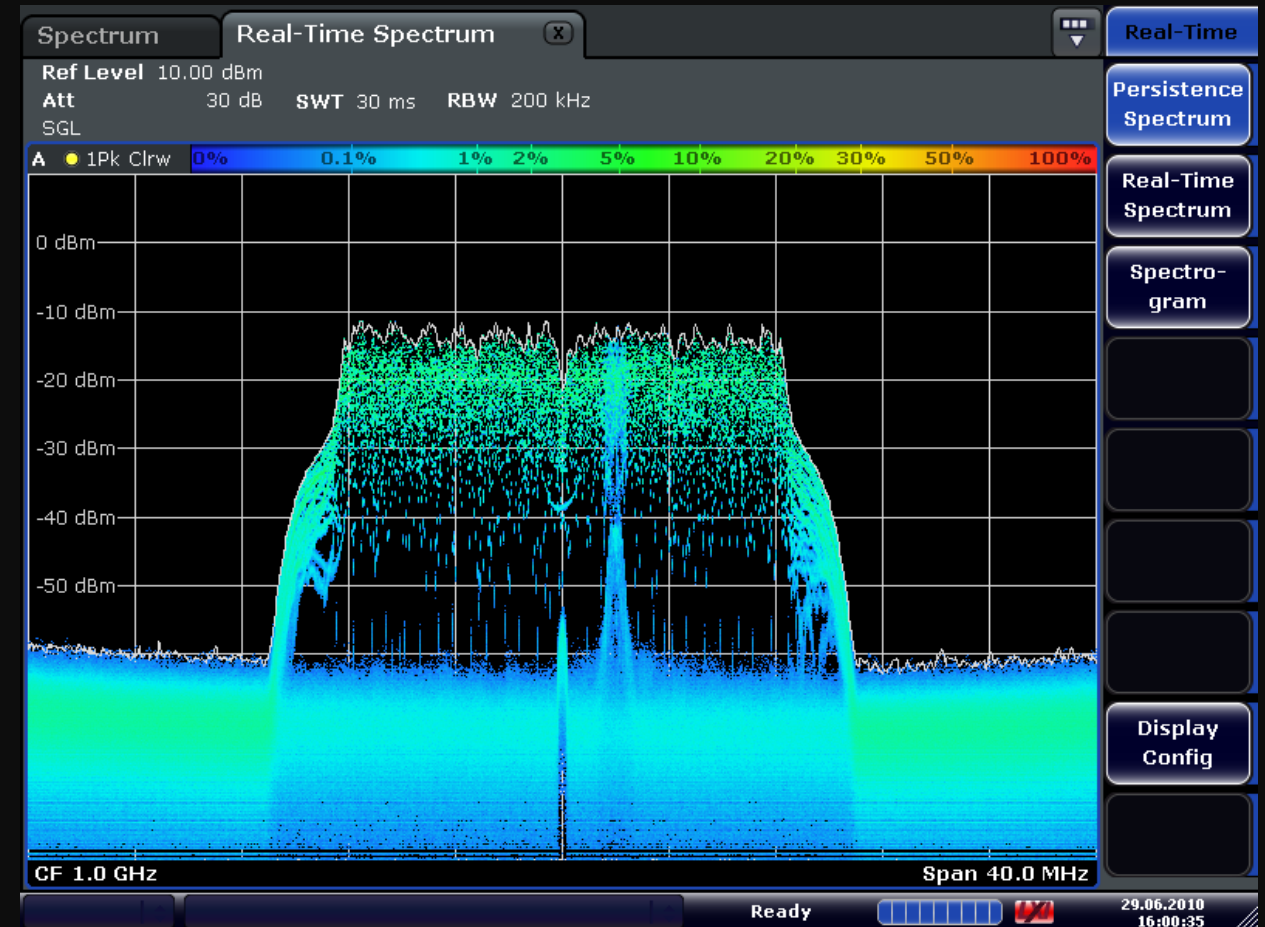
What is “Wireless Coexistence”?

- Similar to many groups of people talking in a room
 - How well can people communicate?
 - Are they getting the information they need?
 - Everyone is following rules of etiquette
 - There can still be problems communicating
 - How significant are the problems?
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Technobabble

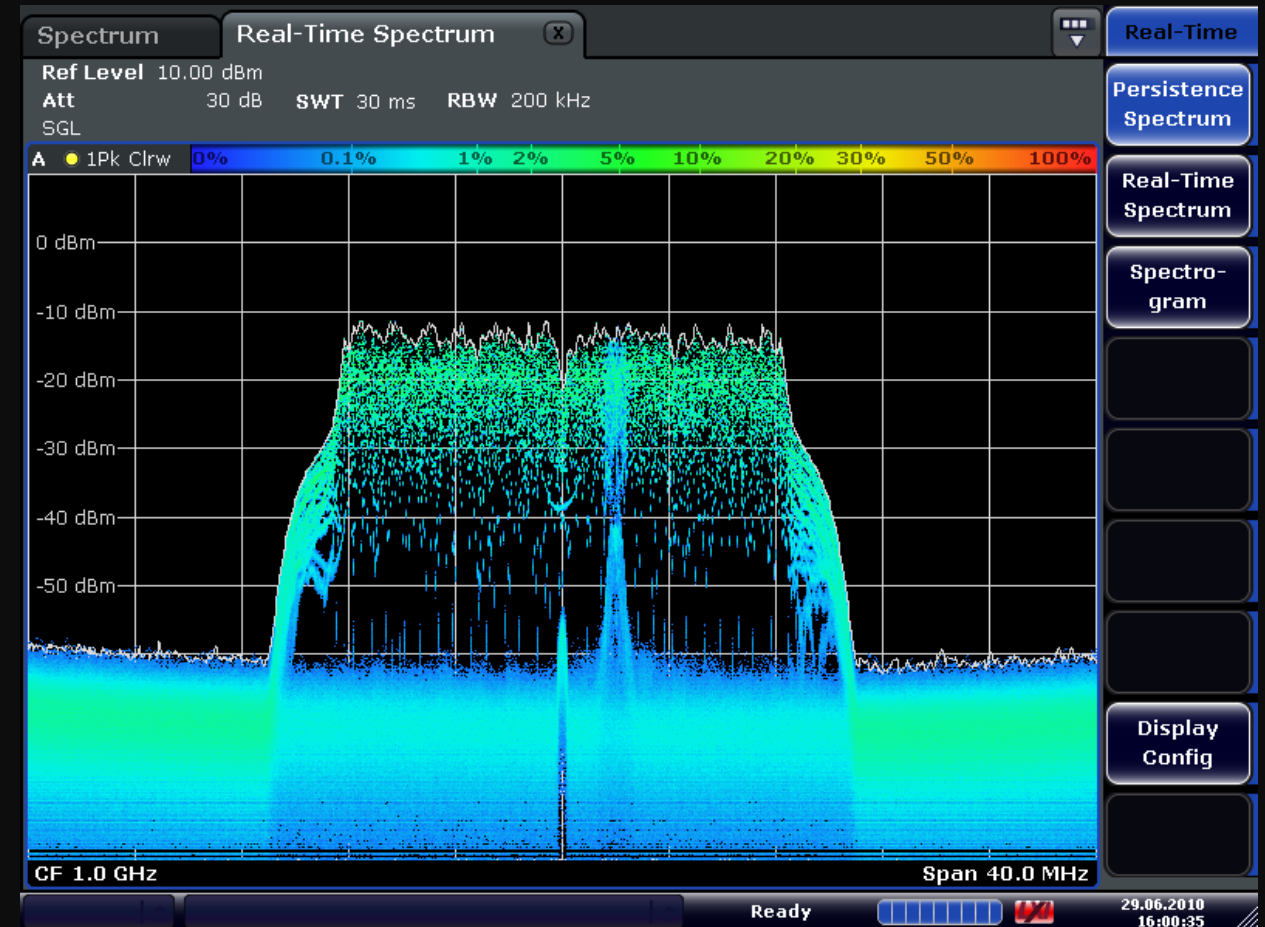
Wireless coexistence can be defined as the ability of one system to perform a task in a given shared environment where other systems have an ability to perform their tasks and may or may not be using the same set of rules – IEEE 2016



Technobabble

Coexistence implies measuring the mutual interaction between multiple communications systems simultaneously – NIST 2015

- **Measure of satisfactory** wireless system performance
- Different applications of wireless systems may have **different measures** of satisfactory performance



Considerations

- Is there even a problem?
 - Anecdotal evidence indicates problems are already occurring
 - As automation in mining increases so will the use of wireless technologies
 - As wireless technology evolves chances of problems grow
 - When a problem occurs
 - Injury or fatality is a real concern
 - Time consuming and expensive to troubleshoot
 - Problem may be unresolvable without replacing a system
 - Proactive approach to understand the mutual interaction of wireless systems
 - Some tools exist for solving coexistence challenges and evaluating performance before problems occur in the field
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Parting comment

Wireless systems always work...
until they don't



NIOSH Mining Program
www.cdc.gov/niosh/mining