

# Introducing Wireless Technology

## What is RF all about?

This 2 day course gives an introduction into the field of wireless technology, its possibilities and limitations. It is dedicated to people who want to learn how to use the advantages of wireless transmission in their fields of work. Newcomers to the wireless industry as well as professionals in management, sales or marketing will get the basic knowledge required to use wireless technology efficiently. No background in radio frequency technology is required.

Particular attention is paid on the tuition of immediately applicable knowledge. The principles of wireless transmission systems are explained avoiding off-putting extensive mathematics, their application is illustrated on practical examples.

## The Course Schedule:

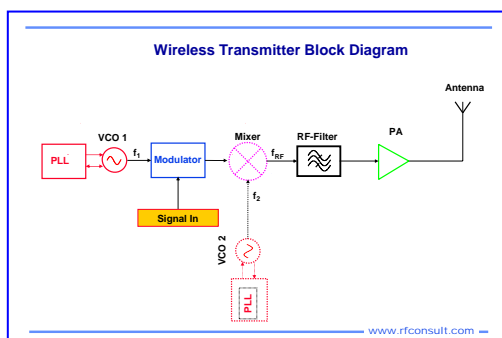
### Day one

#### *The payload: What do we transmit?*

- Signal features
- Voice and video signals
- Compression and error correction

#### *Basic Vocabulary*

- Frequency and wavelength
- Transmit power and receiver sensitivity
- The use of the electromagnetic spectrum
- What is dB and dBm?

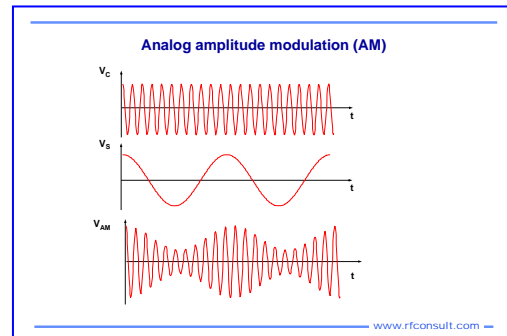


#### *The Wireless Communication System*

- Block diagram
- Function and importance of selected parts
- Impedance, transmission lines and matching
- Noise and the tradeoff between bandwidth and sensitivity

### ***Modulation and Multiple Access techniques***

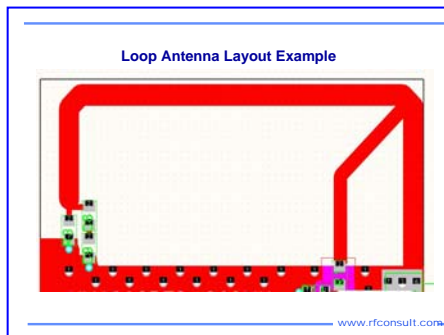
- Analog modulation (AM, FM, PM)
- Digital modulation (ASK, FSK, PSK)
- Advantages, disadvantages, comparison
- Multiple access: how can devices coexist?
- Requirements to the transmission protocol



## **Day two**

### ***Antennas and Propagation: How far can I get?***

- Basic antenna principles and their behaviour in different environments
- Antenna parameters
- Simple path loss models and distance prediction
- Propagation in a non-ideal environment

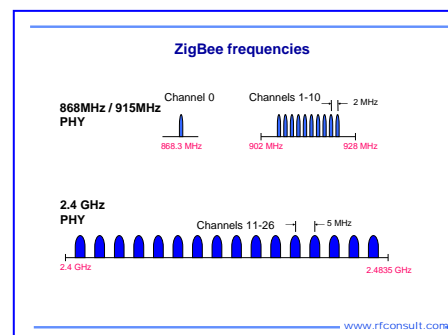


### ***Cellular Phone Systems***

- 1<sup>st</sup> generation analog systems
- GSM- the second generation
- 3G systems

### ***Short Range, Industrial and Home Control Applications***

- Wireless LAN
- Bluetooth as a cable replacement
- ZigBee and IEEE 802.15.4 for control and sensor networks
- The power of proprietary solutions



The participants will be provided with an extensive set of lecture notes.

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