LABORATORY OF ELECTRONICS AND TELECOMMUNICATIONS

1. KEY INDICATORS

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2. OBJECTIVES OF THE COURSE

The module aims at bringing the student to the knowledge of the level of hardware components / devices that make up a transmission and reception chain for different types of transmission techniques ranging from analog modulation to digital modulation passing through the standards UMTS, WLAN and Bluetooth.

3. ACQUIRED ABILITIES

It is expected that the student, at the end of the course, has a good knowledge of the process cause-effect that governs the functionalities of components and systems and their non-idealities. It is reasonable to expect that through the integration of hardware and software tools, the student will come to understand the fine line that exists between emulation, simulation and implementation.

4. PROGRAM OF THE COURSE

Two port networks characterizations Measurement of RF parameters in two ports active and passive networks (scattering and y parameters). Measurement of intermodulation coefficients and of the IIP3 coefficient.. Dependence of working point on the characteristic RF parameters. Mixers characterization Measurement of RF scattering parameters Measurement of intermodulation coefficients Compression point Oscillators characterization Measurement of oscillator dynamics Measurement of phase noise Measurement of interfering tone on the oscillator stability Measurement of jitter Characterization pf PLL behavioural parameters Modulations Spectral characterization of AM/FM modulation. The radio receiver. AM and FM demodulation. Spectral characterization of digital modulations (QAM, CPM) Characterization of the influence of noise interfering tones. Physical layer of WLAN Characterization and measurements of the parameters of the physical layer of WLAN 802.11 a,b,g. Spectral characterization of OFDM and CDMA.
Chanalization, and syncronization. Effect of amplifier saturation on the detection error. Effect of noise and of interfering tone. Emulation of multipath effect.

5. REFERENCES

Slides disponibili sul sito web e inviati per email a tutti gli studenti iscritti al corso.
Manuali dei dispositivi inviati per email a tutti gli studenti iscritti al corso

6. Course Website

http://151.100.120.244/personale/palma/LAB%20ET_palma/sommario.htm