

EN313 : Power management

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ECTS credits :

1.00

Evaluation :

S1: CC x1; S2: rep(S1) x1

Number of hours :

Lecture : 13.00

Teacher(s) :

KERHERVE Eric

Title :

Power management

Abstract :

Teacher: P. ARNO from STEricsson

Energy Management for Efficient RF Power amplifiers

Much of the commercial growth of wireless technology in recent decades can be attributed to mobility. Today, suppliers of cellular communication services develop new applications (Internet, videos, games…) largely exceeding the simple voice communication.

These services require high rate transmissions based on digital modulations that generate complex signals with non constant phase and envelope.

Unfortunately, these signals are strongly sensitive to the linearity of the power amplifier (PA): the output stage of the transmitter that interfaces with the antenna.

As a result, the requirement on RF PA is rather stringent in many different areas, such as high output power level and high linearity.

Moreover, the PA has a strong effect on the mobile phone battery life and talk-time because it increases dramatically the total power consumption. The optimization of both PA power efficiency and linearity are two opposite objectives which require carrying out a compromise when designing amplifiers.

The goal of efficiency improvement in RF PAs has been explored over the years. A number of techniques, such as the power tracking, the envelope tracking and the polar architecture, have been proposed.

The purpose of this presentation is to introduce power management techniques for mobile devices and to explore techniques to realize highly efficient transmitter. Advantages and drawbacks of different dynamic power supply techniques will be also analyzed.