

Télécommunications



Component

École Nationale
Supérieure
d'Électrotechnique
d'Électronique
d'Informatique
d'Hydraulique
et des
Télécommunications

In brief

- **plugin.odf-inp:PLUGINS_ODF_COURSE_NBHOURS_TXT:** 7 lectures, 4 sessions of exercises, 11 sessions of practical work, 5 sessions of project
- **Code:** N6EN02A

Presentation

Objectives

- To be able to explain the role of the different elements in a communication channel allowing to transmit a digital information.
- To be able to analyze a basic digital transmission channel (modulation/demodulation on a Additive white Gaussian noise channel) in terms of spectral and power efficiencies.
- To be able to implement basic digital transmission channels, to compare and optimize them in terms of spectral and power efficiencies.

Description

- 1- Role of the different elements in a communication channel allowing to transmit a digital information.
- 2- Generation of a signal allowing to transmit a binary information (digital modulation) :
 - for a baseband transmission,

- for a transmission on a carrier frequency (ASK, PSK, QAM modulations),
 - notion of spectral efficiency.
- 3- Basic modulation for the transmission channel.
- 4- Definition of an optimized digital demodulator :
- power efficiency,
 - interference between symbols and Nyquist criterion,
 - matched filtering.
- 5- Bit error rate computation.
- 6- Notion of complex envelope and equivalent lowpass channel for transmissions on carrier frequencies.
- 7- Example of a basic digital transmission channel : DVB-S physical layer.

Pre-requisites

Bases on signal processing

Useful info

Place

➤ Toulouse