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

Ametys 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,

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- 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 enveloppe 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

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