Télécoms Working Group

COHDEQ40

COHerent Detection of QPSK 40Gb/s

SYSTEM@TIC PARIS-REGION Pôle de compétitivité

Objectives

Project COHDEQ 40 intends to demonstrate the potential of coherent detection associated with Digital Signal Processing for next generation high density 40Gb/s WDM systems optimized for transparency and flexibility. Key integrated optoelectronics components and specific algorithms will be developed and system evaluation performed

Projects plans & deliverables:

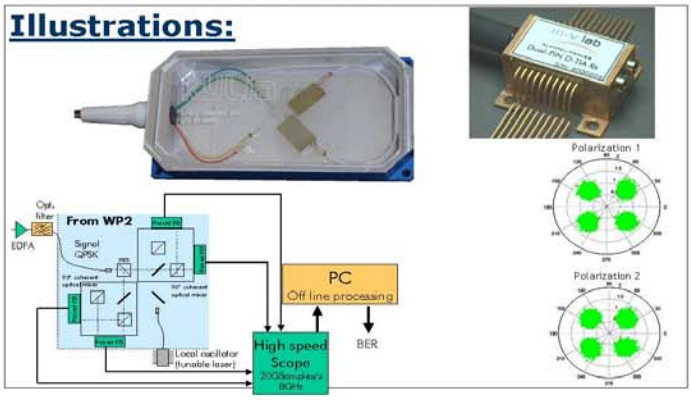
The current challenges for the project are :

- provide hardware elements for realization of QPSK and coherent detection….
- develop algorithm for coherent detection of advanced modulation format (QPSK, PDM QPSK)
- Test system performance of advanced formats associated with coherent detection in optical transmission test bed and evaluate the cost benefit at network level.

Major phases of the project:

Pre-development of key opto-electronic elements (modulator, clocked-driver, coherent mixer, Twin-photodiode with TIA) for QPSK transmission and detection.
System evaluation of QPSK associated with coherent detection and comparison with conventional techniques (differential detection).
Propose algorithms including evaluation and optimization (ready for FPGA implementations)

Illustrations:



Status / achievements:

COHDEQ40 started in January 2007. Specifications of transmitter/receiver have been done.
First experimental tests have already been performed with "non fully optimized" algorithms. Successful transmission of 40Gb/s PDM QPSK over long distances and impairment mitigation (chromatic dispersion, PMD, narrow optical filtering).

Business model

Coordinator: Alcatel-Lucent France

Partners: Alcatel Thales III V Lab
GET-INT, IRISA, Kylia, Photline, XLIM

Durations: 3 years

Global budget: ~ 3.2 M€

Funding: ~ 1.3 M€
(ANR and System@tic)

Contact:
Gabriel Charlet
Alcatel-Lucent France
+33 1 69 63 10 42
gabriel.charlet@alcatel-lucent.fr