

1. Publishable summary

The activities carried out during the 3rd reporting period of the POF-PLUS project are described in detail in Deliverable D-MAN-3.8 “Report on POF-PLUS final results”, which has been submitted in parallel to this Periodic report. We thus ask the Project Officer and the Reviewers to refer to D-MAN-3.8 for a detailed description of the technical work carried out in the third year of the project.

We give in the following only a very concise summary of the main technical results achieved during the third year.

- Main results in WP-SPECS:
 - At the end of the project period, a comparison among the obtained results and the initial specification produced by WP-SPECS in the first semester of the project has been performed and resumed in D-SPECS-2.1 “Final report on technical activities”.
- Main results in WP-OSA:
 - Transmitters, receivers and ribbon cables have been selected for the activity on parallel optics, to reach the target of 4x2.5Gbps transmission. Specific work was done on the usability of the connectors. The results have been summarized in D-OSA-4.1 “Final report on optical transmitters and receivers for parallel optics”, released in month 30.
 - The activity on WDM over POF has seen a reduced effort, in agreement with the project reviewers, since the results obtained in the first part of the project have evidenced this technology being not as promising as expected; the effort has been concentrated on new fiber gratings. The final results have been summarized in D-OSA-5.1 “Final report on POF WDM filters”, released in month 30.
 - Despite the fact that tasks OSA-1 and OSA-2 had officially ended at month 24, the choice of reducing the effort on WDM over POF has set some resources free to continue activities on high-performances transmitters and receivers; in particular, new 3-Quantum-Well RC-LEDs produced by partner Firecomms and new green LEDs acquired by provider NICHIA have been tested.
 - Improvement of the fiber ribbon connector, developed during the second year, and the design of a pre-molded lead frame package for transceivers have been achieved during this period. An extensive reliability study of cables to be used in conjunction with the Optolock interface and of the ribbon cable with the new connector have been performed. The results of these activities have been summarized in D-OSA-3.1 “Usable and low cost optical interfaces and connectors” in month 36.
- Main results in WP-FIBER:
 - The results of the different options investigated for the optimization of the POF cable for in-home installation have been resumed in D-FIBRE-1.1 “Final report on the optimization of POF cables”, released at month 30. Among the different types of cable developed, one solution in particular seems to be really promising and complying to the specifications set by the telecom operators.
 - Testing activities of several type of multi-core fibers have been performed, even after the official end of the WP. The production process of the 4-fiber ribbon has

been improved. The results have been summarized in D-FIBRE-2.1 “Final report of POF for parallel optics solutions”, released at month 30.

- Main results in WP-PHY:
 - A new equalizer chip for the mixed digital-analog solution 1Gbps system has been designed. Moreover, the project has put most of its effort on the fully-digital 1Gbps system, obtaining a fully working independent prototype with clock-recovery, able to transmit a 1,25Gbps line rate over 50m of POF with reasonable system margin. Preliminary investigation about duo-binary transmission has been performed. The results are resumed in the D-PHY-2.1 “Final report on 1Gbps POF transceivers” in month 36.
 - New multi-core fibers have been tested, such as the 19-core MC-POF SMCK-1000, and comparisons among DMT and NRZ modulation formats have been performed. Interesting results have been obtained transmitting up to 10Gbps on multi-core fiber, while a 4x2,5Gbps transmission has been achieved using a 4-fiber ribbon cable, adopting the parallel transmission approach. The results are part of D-PHY-3.1 “Final report on multi-Gbps” in month 36.
 - UWB-over-POF at 480Mbps has been demonstrated over 50m of fiber, including and intermediate 2,5m wireless link, and the results are part of D-PHY-4.1 “Final report on UWB radio-over-POF” in month 36.
- Main results in WP-DISS:
 - A total of 33 peer-reviewed papers have been accepted for conference presentation or scientific journal publications.
 - The partners have participated in 9 conferences and scientific topical meetings.
 - Two exhibition booth were present at the OFC/NOFEC conference, held in Los Angeles in march.
 - Last but not least, the most important POF-PLUS achievements have been collected in a book titled “POF-PLUS handbook” that will be published by the end of June 2011.
- Main result in WP-DEMO:
 - An exhaustive demonstration has been held in the France Telecom premises. Extensive prototype characterization and test in terms of system performance have been carried out by partner Telecom Italia. A demonstration room with all the final prototypes developed during the course of the project has been set in the Telecom Italia Laboratory premises, in Torino. The activities are summarized in D-DEMO-1.1 “Report on POF-PLUS final demonstrators”.

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