5. Conclusion

Low overhead training symbol based estimation (TS-EST) of the Jones channel matrix is proposed. With fewer than 40 training symbols, tap adaptation of a butterfly equalizer can be started in DD mode. The proposed scheme is experimentally verified for 28 Gbaud PDM-QPSK and PDM-16QAM and found to achieve superior convergence speed compared to standard algorithms. Also, the proposed TS-EST algorithm is verified to be tolerable to large phase noise and high fiber nonlinearity scenarios. Finally, we also showed by simulation that the superior speed and simplicity of the TS-EST algorithm can also be beneficial for tracking fast polarization transients if four training symbols are periodically sent during steady-state operation with an overhead as low as 0.57%.