RFI CANCELLATION IN VDSL SYSTEMS USING A NOVEL COMPLEX (WedAmPO1)

Author(s) :

Fernando Hugo Gregorio (Helsinki University of Technology, Finland)
Juan Edmundo Cousseau (Universidad Nacional del Sur, Argentina)
Timo Laakso (Helsinki University of Technology, Finland)

Abstract :

A complex−allpass−based multiple notch IIR filter is proposed to suppress Radio Frequency Interference (RFI) that affect VDSL systems. A notch filter realization based on complex allpass cascaded second−order sections is presented and evaluated in this paper. Two different algorithms, using the Recursive Prediction Error (RPE) method and an alternative (similar to the Steiglitz−McBride) method, are proposed to update the adaptive notch filter coefficients. Simple stochastic gradient algorithms can be obtained using allpass cascaded second−order sections whose regressors are formed by orthogonal functions which is not the case for the conventional complex cascade realization. Comparisons with other multiple−notch realizations evaluating convergence rate and residual interference levels are included. The novel structure using RPE method reach the lowest residual interference level with the fastest convergence rate. Furthermore using the novel techniques stability check is not necessary reducing their implementation complexity.

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