

## **A Novel Uniform Discrete Multitone Transceiver with Power-Allocation for Digital Subscriber Line**

A novel Uniform Discrete Multitone (DMT) transceiver is proposed, utilizing a wavelet packet based filter bank transmultiplexer in conjunction with a DMT transceiver. The proposed transceiver decomposes the channel spectrum into subbands of equal bandwidth. The objective is to minimize the bit error rate (BER), which is increased by channel-noise amplification. This noise amplification is due to the Zero-Forcing equalization (ZFE) technique. Quantization of the channel-noise amplification is presented, based on post-equalization signal-to-noise ratio (SNR) and probability of error in all subbands of the Uniform DMT system. A modified power loading algorithm is applied to allocate variable power according to subband gains. A BER performance comparison of the Uniform DMT with variable and uniform power-loading and with a conventional DMT system in a Digital Subscriber Line (DSL) channel is presented.