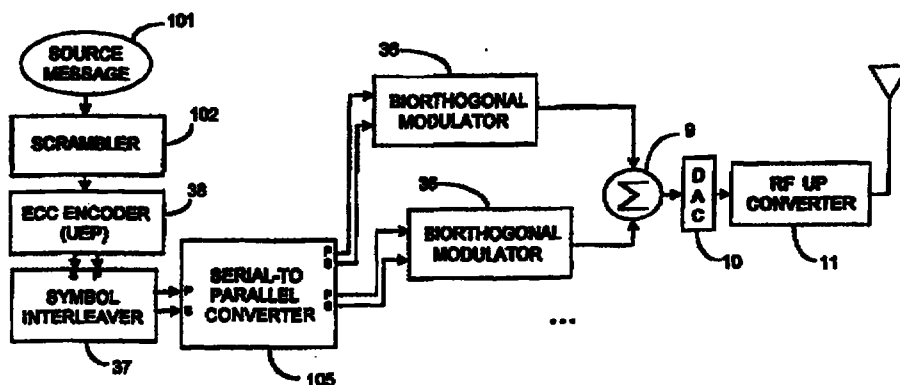


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(54) Title: SYSTEM AND METHOD FOR MULTIPLEXING A SPREAD SPECTRUM COMMUNICATION SYSTEM**(57) Abstract**

A method and system are provided for the synchronous transmission and reception of multiplexed digital signals such as spread spectrum. The system uses biorthogonal modulation (36) of a plurality of orthogonal signals, preferably wideband, together with simultaneous orthogonal multiplexing. The method is found to significantly mitigate the cross-correlation interference that is caused by the interaction between the multiplexed signals. The system transmits a lesser number of multiplexed orthogonal signals than would be required in the corresponding antipodal system, thereby reducing the cross-correlation interference, while maintaining the same information throughput. The bit error rate of the system is reduced. The method combines aspects of unequal error protection (UEP) error correction coding (ECC) (38) with a receiver architecture for biorthogonal signals.