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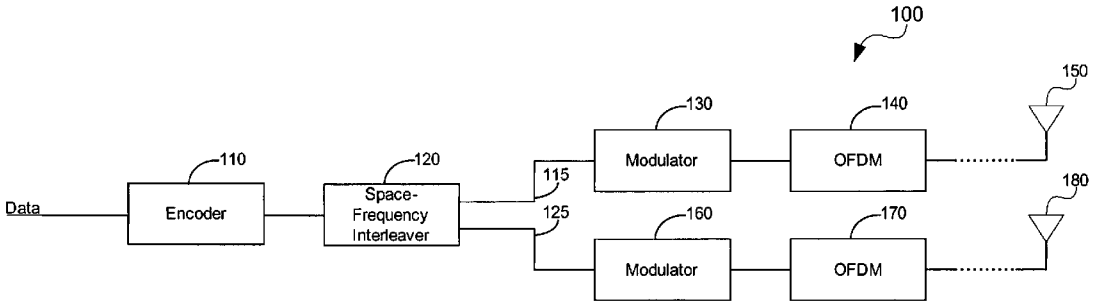
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[Continued on next page]

(54) Title: ITERATIVE CHANNEL AND INTERFERENCE ESTIMATION WITH DEDICATED PILOT TONES FOR OFDMA



(57) Abstract: Estimation of channel characteristics and interference level in a time-varying multi-carrier multi-user systems is carried out concurrently. To perform the estimation, a multitude of data symbols and dedicated pilot symbols are transmitted over the channel. Next, an initial estimate value is selected for the interference level. The initial estimate value for the interference level is used together with the received pilot symbols to provide a first estimate of the channel. The first estimate of the channel is used to determine a new updated value for the interference level, which in turn, is used to update the value of the first estimate of the channel iteratively. The iterations continue until the iteratively updated values of the interference level and channel satisfy predefined limits. The data symbols and the final updated value of the channel are subsequently used to proviEstimation of channel characteristics and interference level in a time-varying multi-carrier multi-user systems is carried out concurrently. To perform the estimation, a multitude of data symbols and dedicated pilot symbols are transmitted over the channel. Next, an initial estimate value is selected for the interference level. The initial estimate value for the interference level is used together with the received pilot symbols to provide a first estimate of the channel. The first estimate of the channel is used to determine a new updated value for the interference level, which in turn, is used to update the value of the first estimate of the channel iteratively. The iterations continue until the iteratively updated values of the interference level and channel satisfy predefined limits. The data symbols and the final updated value of the channel are subsequently used to provide a second estimate for the channel. A MMSE approach is followed where channel estimates and noise variance in an OFDM system are iteratively updted.

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