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[54] **APPARATUS AND METHOD FOR ECHO CHARACTERIZATION OF A COMMUNICATION CHANNEL**

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[58] **Field of Search** **379/410, 411, 379/406; 370/32.1, 32; 364/724.18, 724.19**

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[57] **ABSTRACT**

An apparatus for echo characterization or measurement includes a frequency domain adaptive filter for converging a plurality of filter coefficients based upon transmit and receive frequency domain transforms. The frequency domain adaptive filter preferably determines least mean square differences between estimated receive frequency domain transforms and the respective corresponding actual receive frequency domain transforms. The apparatus also preferably includes an echo characterization output portion for generating an echo characterization value for the communications channel. The echo characterization value may be one or both of echo path loss and echo delay. The apparatus preferably includes a gain normalization portion operatively connected to the adaptive filter for generating normalized gains of respective filter coefficients based upon spectral power of the respective transmit frequency domain transforms. Moreover, the apparatus also preferably includes a gain normalization weighting portion operatively connected to the gain normalization portion for weighting the normalized gains based upon frequency. An associated method is also disclosed.

39 Claims, 8 Drawing Sheets

