

United States Patent [19]

Leyendecker

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[54] **FREQUENCY SELECTIVE PREDISTORTION IN A LINEAR TRANSMITTER**

[75] Inventor: **Robert Richard Leyendecker**, Blaine, Wash.

[73] Assignee: **Glenayre Electronics, Inc.**, Charlotte, N.C.

[21] Appl. No.: **852,390**

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[51] Int. Cl.⁶ **H03F 1/26**

[52] U.S. Cl. **330/149; 455/126**

[58] Field of Search **330/2, 129, 136, 330/149; 455/126**

[56] **References Cited**
U.S. PATENT DOCUMENTS

5,193,224	3/1993	McNicol et al.	455/126
5,732,333	3/1998	Cox et al.	455/126
5,748,678	5/1998	Valentine et al.	330/149 X

FOREIGN PATENT DOCUMENTS

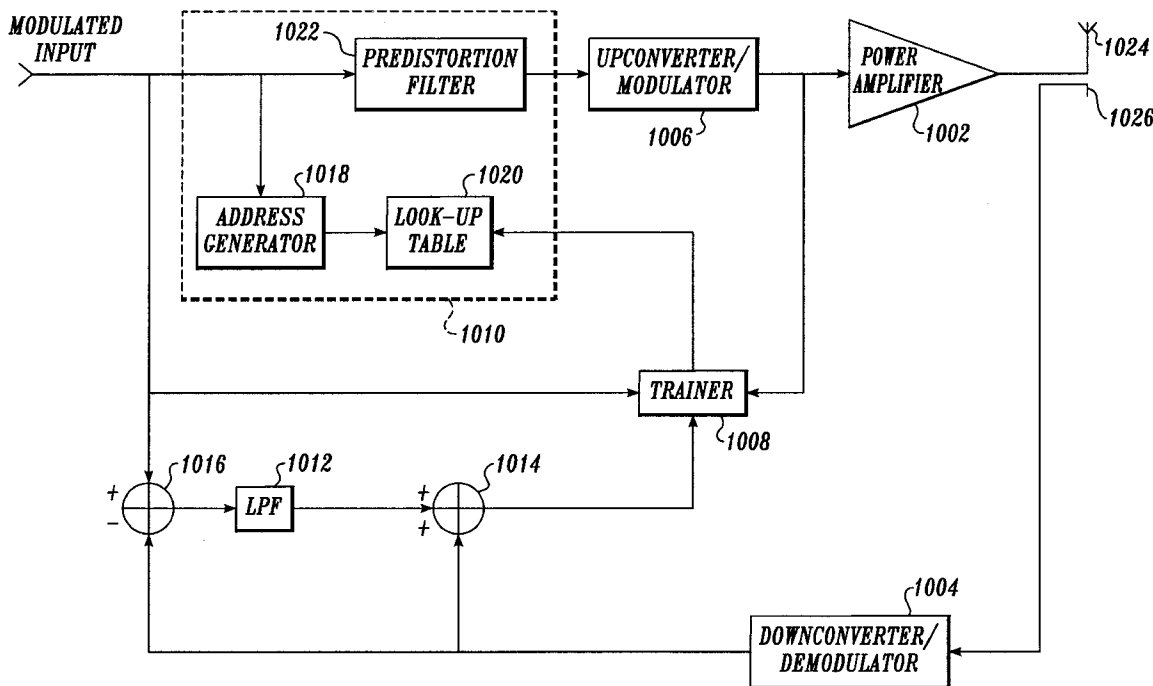
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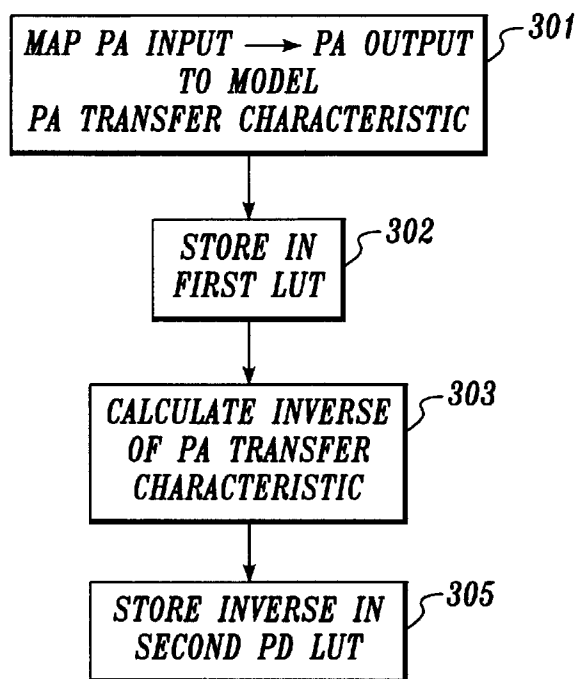
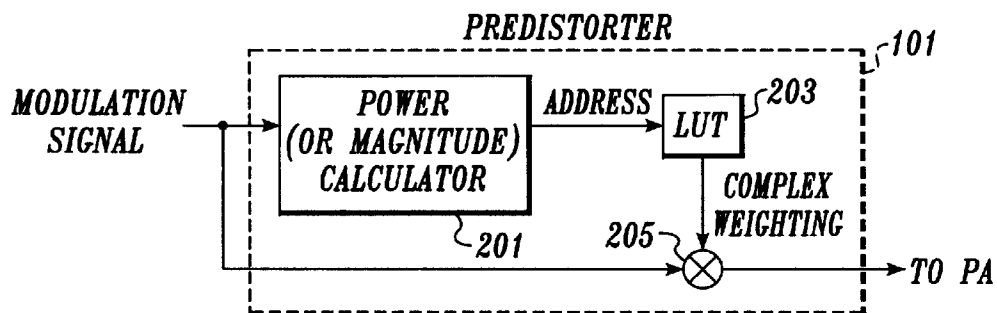
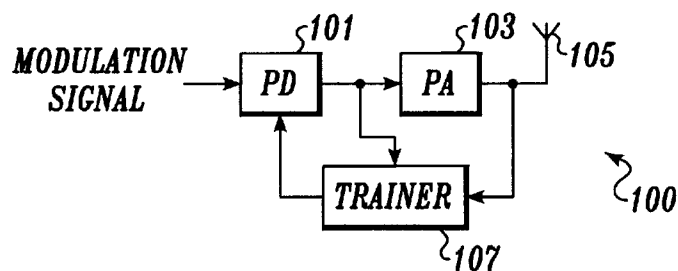
Primary Examiner—Steven Mottola

Attorney, Agent, or Firm—Christensen O'Connor Johnson & Kindness PLLC

[57] **ABSTRACT**

A system for linearly transmitting an amplified output signal using predistortion is disclosed. The system uses a straight inverse modeling scheme to more easily and accurately determine the inverse of the distortion caused by a power amplifier of a RF transmitter. The direct inverse modeling scheme of the present invention indexes the LUT using the modulated input signals instead of the potentially noisier output signals, which helps to increase the accuracy of the predistortion. The predistorter system stores complex coefficients in the LUT, which are then used as the tap weights of a digital filter implementing the predistorter. Finally, the trainer uses a modified version of the power amplifier output signal. The modified power amplifier output signal has the in-band distortion removed from the power amplifier output signal.

21 Claims, 11 Drawing Sheets




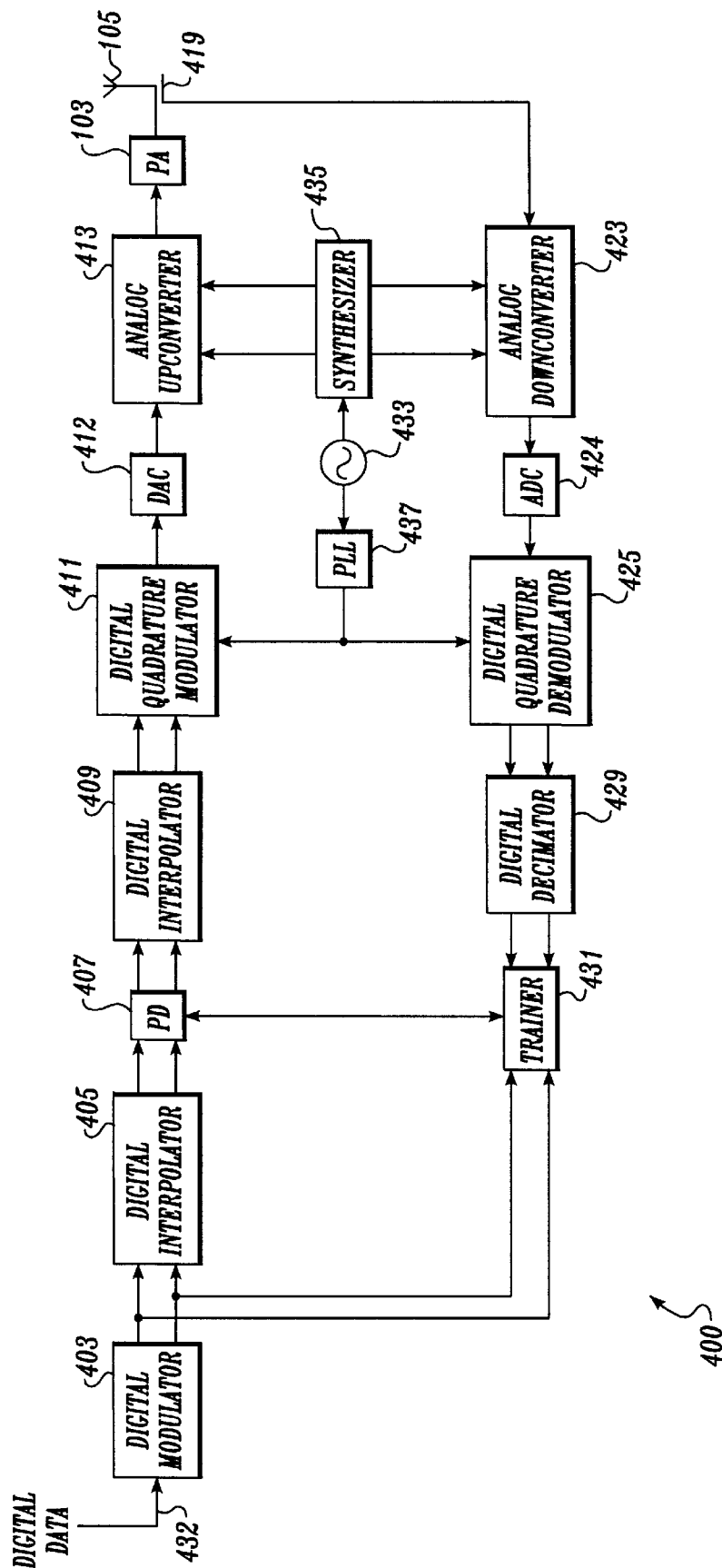
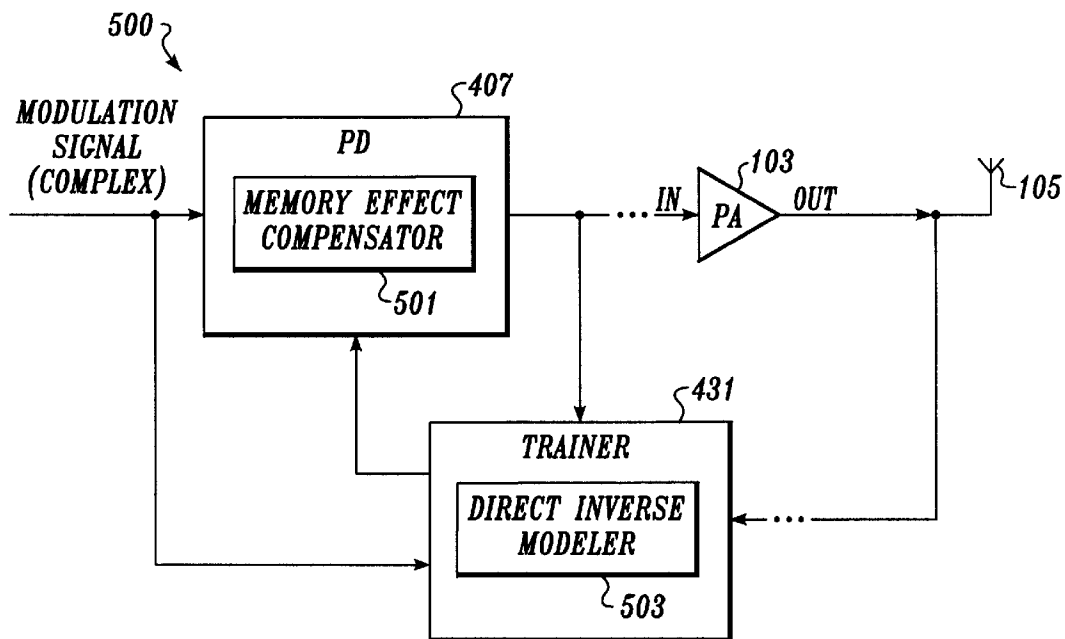
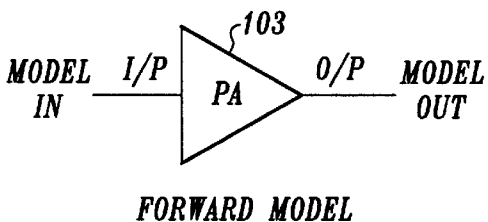
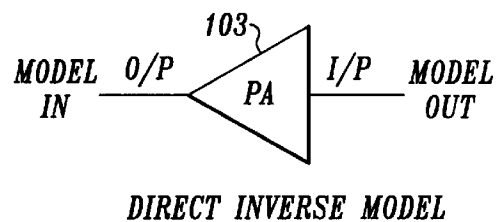
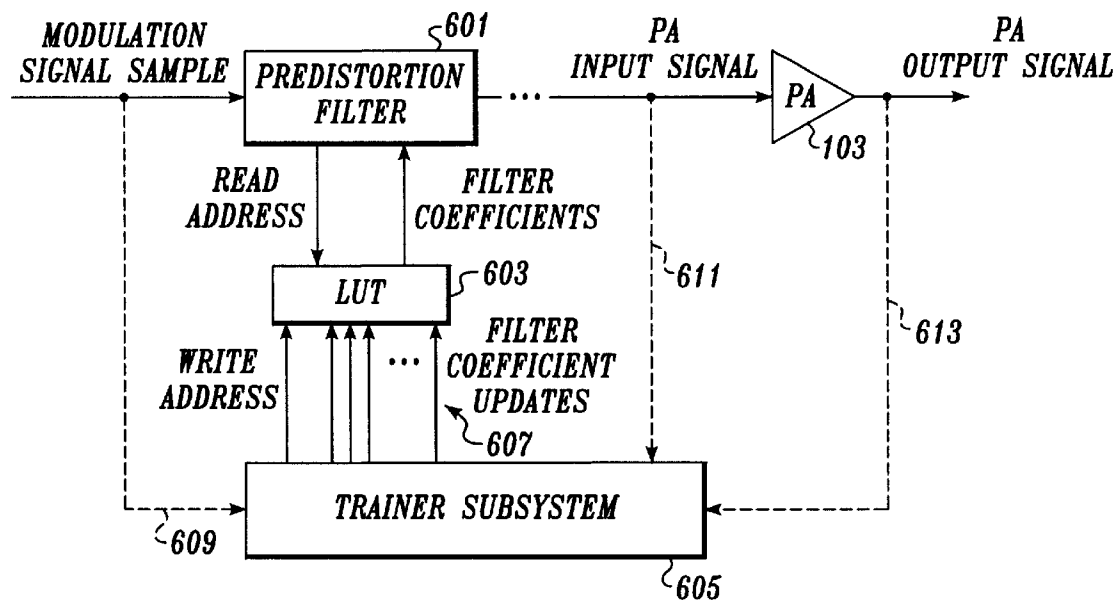
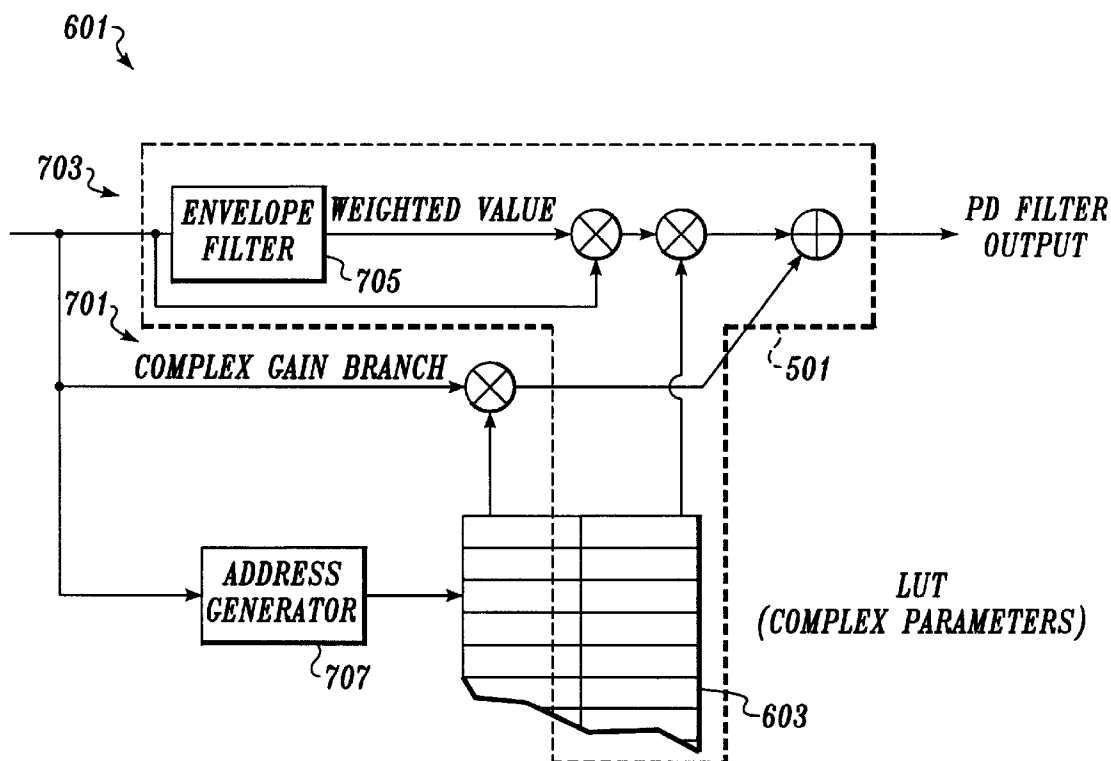


Fig. 4

*Fig. 5**Fig. 5A**Fig. 5B*

*Fig. 6**Fig. 7*

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