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Cimini et al.

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[45] **Date of Patent:** **Jun. 22, 1999**

[54] **CLUSTERED OFDM COMMUNICATION SYSTEM**

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[21] Appl. No.: **08/730,430**

[22] Filed: **Oct. 15, 1996**

Related U.S. Application Data

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[51] **Int. Cl.⁶** **H04L 27/26**

[52] **U.S. Cl.** **370/208; 370/210; 370/343; 375/299; 375/347**

[58] **Field of Search** 370/203, 206, 370/208, 491, 210, 482, 204, 480, 343, 484; 375/261, 364, 344, 355, 347, 299; 455/101-104

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Primary Examiner—Chau Nguyen

[57] **ABSTRACT**

A multicarrier communication system for wireless transmission of blocks of data having a plurality of digital data symbols in each block. The communication system includes a device for distributing the digital data symbols in each block over a plurality of clusters, each of the clusters receiving one or more digital data symbols. The digital data symbols are encoded in each of the cluster; and modulated in each cluster to produce a signal capable of being transmitted over the sub-channels associated with each cluster. A transmitter thereafter transmits the modulated signal over the sub-channels. By distributing the modulated signal over a plurality of clusters, overall peak-to-average power (PAP) ratio is reduced during transmission and transmitter diversity is improved.

42 Claims, 7 Drawing Sheets

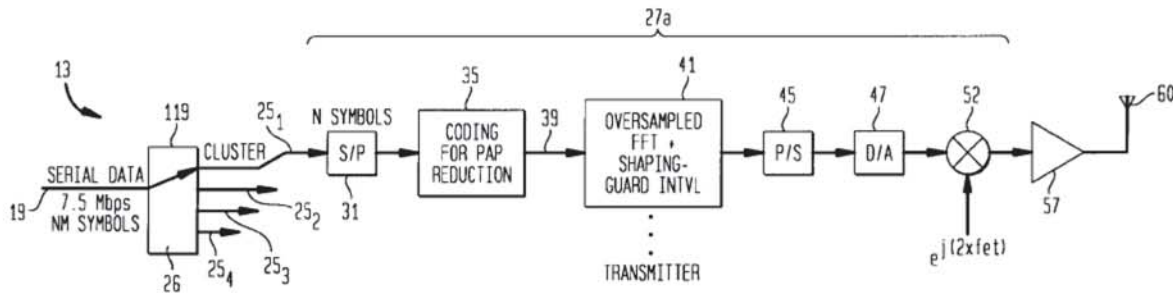


FIG. 1A

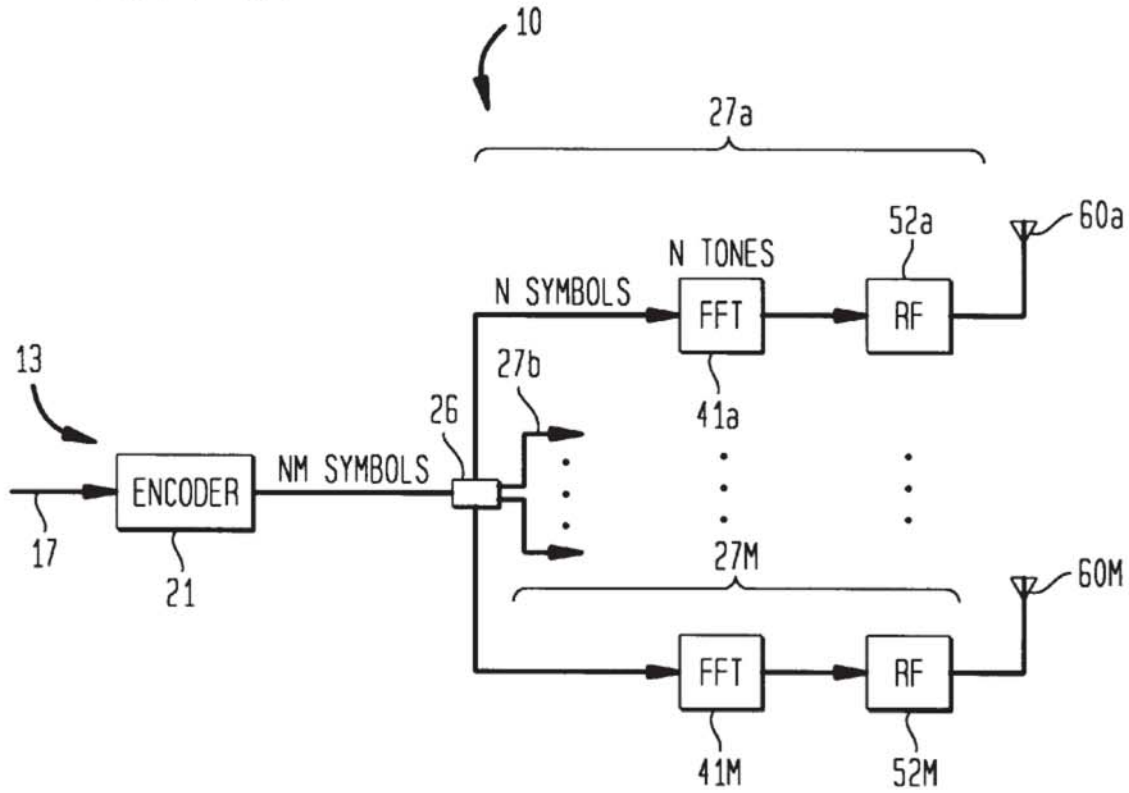


FIG. 1B

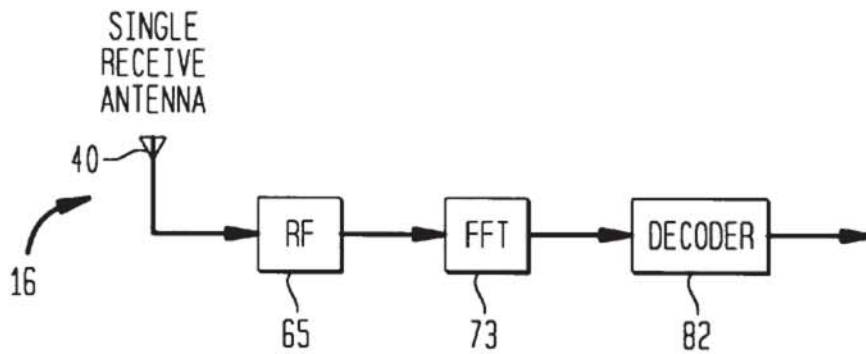


FIG. 2

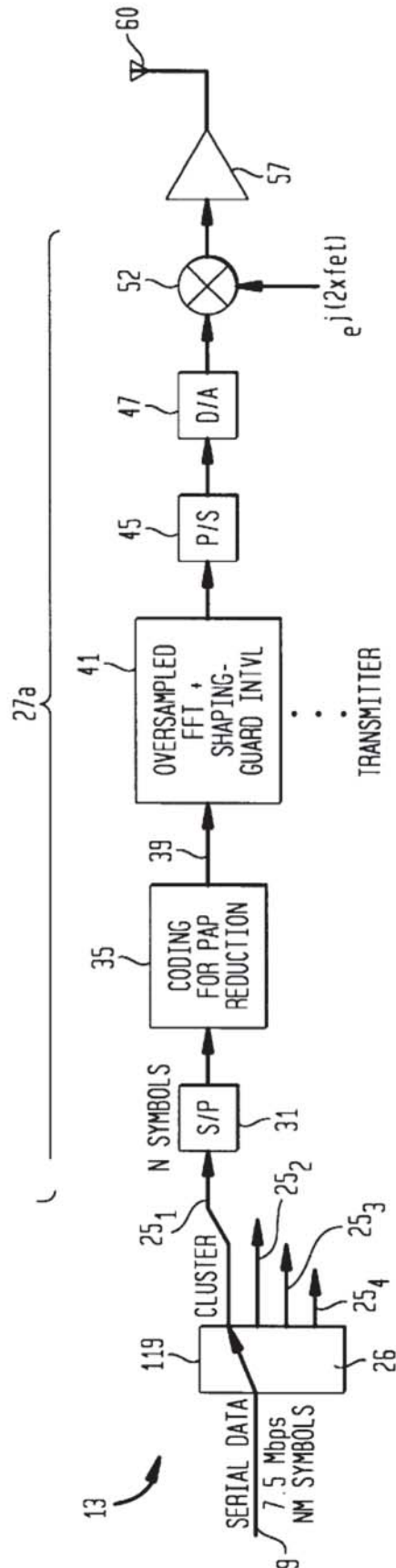


FIG. 3

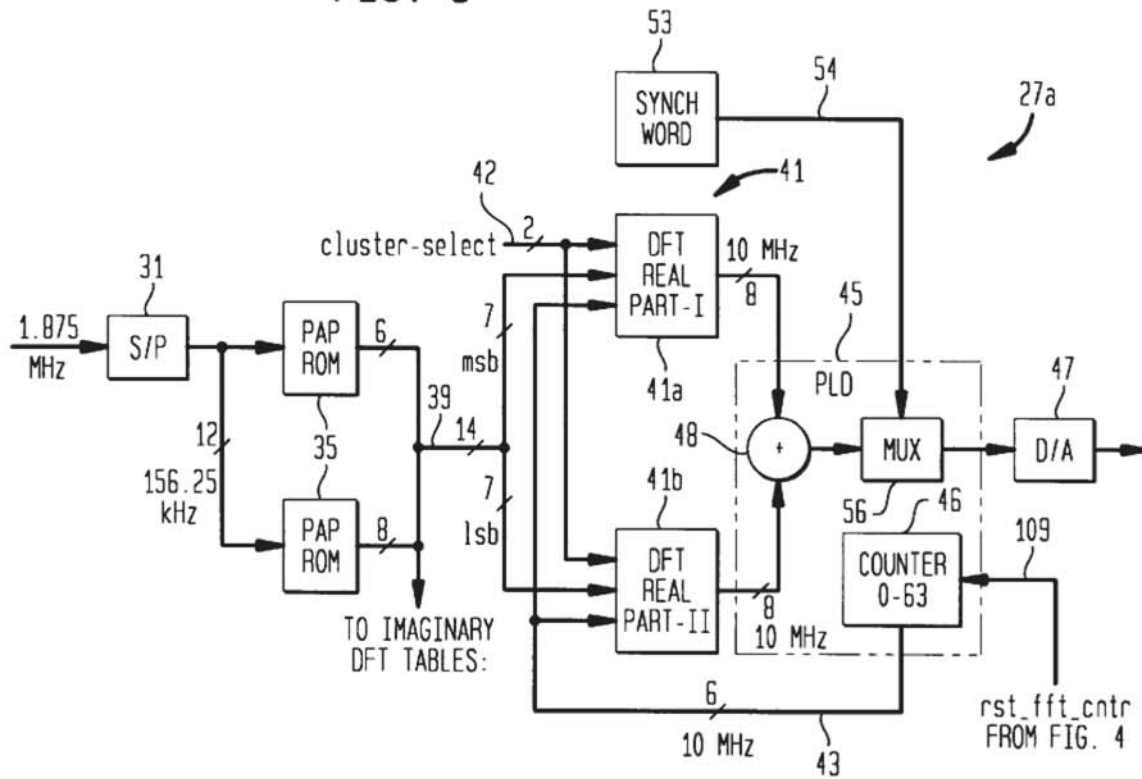


FIG. 4

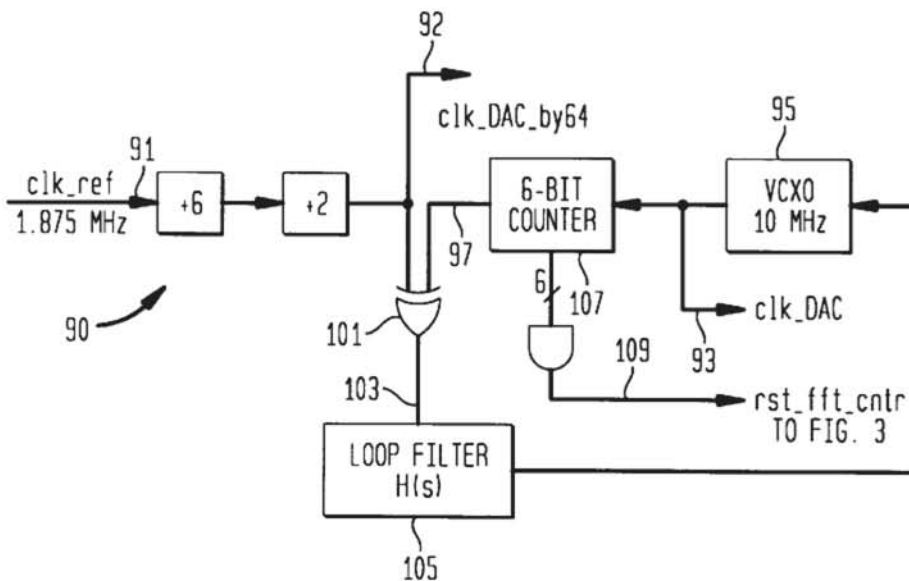
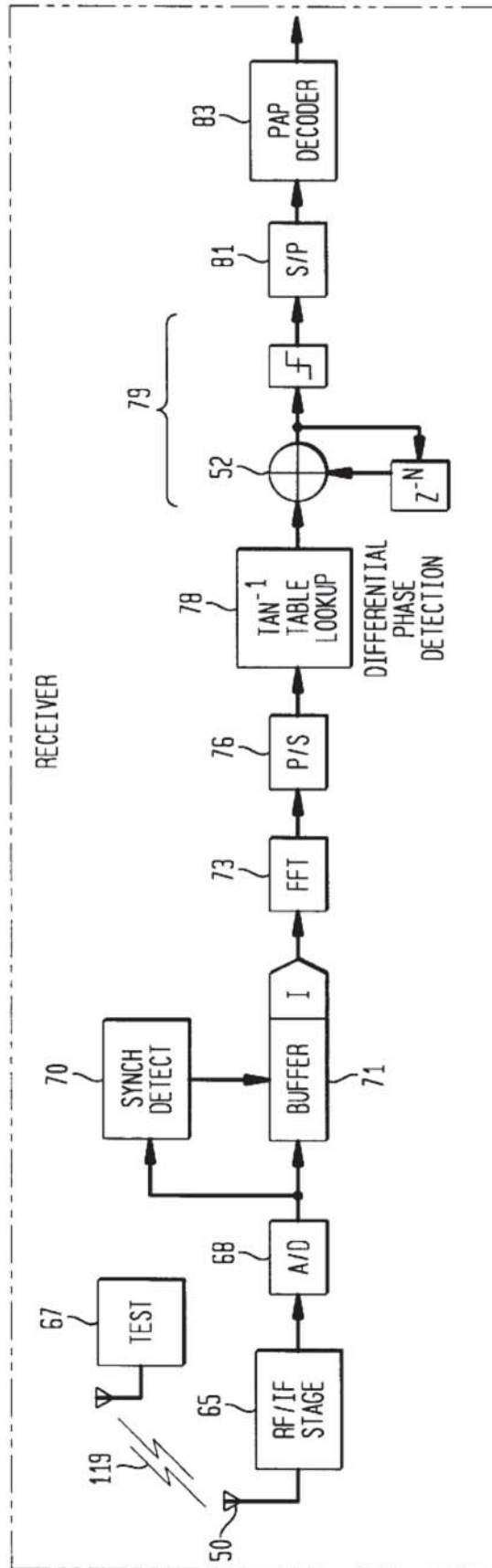


FIG. 5



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