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# United States Patent [19]

Baum et al.

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[45] Date of Patent: Sep. 1, 1998

[54] **MULTICARRIER REVERSE LINK TIMING SYNCHRONIZATION SYSTEM, DEVICE AND METHOD**

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[73] Assignee: **Motorola, Inc.**, Schaumburg, Ill.

[21] Appl. No.: **639,155**

[22] Filed: **Apr. 26, 1996**

[51] **Int. Cl.**[6] ..... **H04J 3/16**

[52] **U.S. Cl.** ..... **370/330**; 370/337; 370/344; 370/347; 370/350; 370/447; 455/69; 375/362

[58] **Field of Search** ..... 370/310, 321, 370/324, 337, 344, 345, 347, 348, 350, 330; 375/316, 340, 344, 354, 362, 365, 371, 375; 379/56, 58–61; 455/39, 49.1, 53.1, 54.1, 56.1, 67.1, 68, 69

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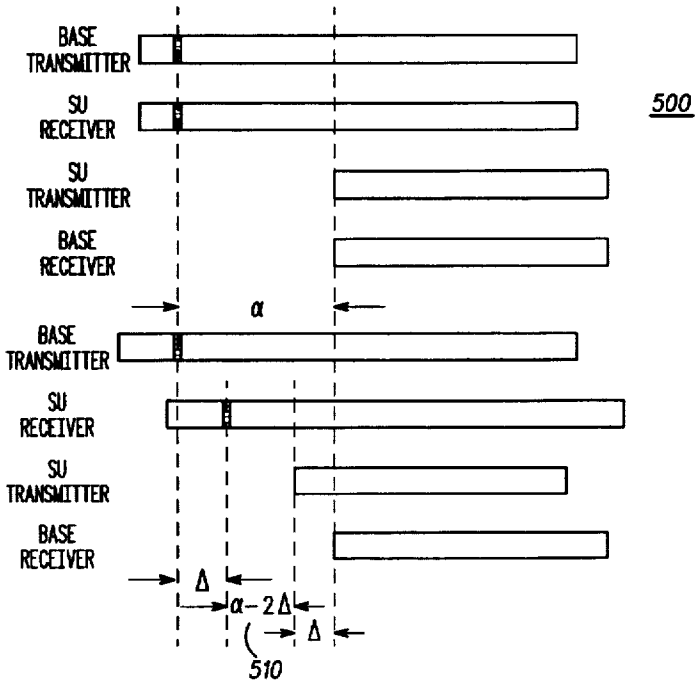
*Attorney, Agent, or Firm*—Darleen J. Stockley

[57] **ABSTRACT**

The present invention provides a communication system, device and method of reverse link symbol timing synchronization of transmited signals to facilitate reverse link timing synchronization. A base unit transmits a forward link signal, receives a reverse link signal, and determines a timing offset for signals received on a reverse link timing synchronization channel, wherein the reverse link synchronization channel comprises a plurality of adjacent reverse link carrier frequencies that are utilized by a multicarrier subscriber unit to facilitate reverse link symbol timing synchronization. A plurality of multicarrier subscriber units receive a forward link signal and transmit a reverse link symbol timing synchronization burst on a reverse link timing synchronization channel wherein the reverse link timing synchronization channel comprises a plurality of adjacent reverse link carrier frequencies that are utilized by each subscriber unit, and adjusts a timing reference for transmitting signals to facilitate reverse link timing synchronization.

**25 Claims, 4 Drawing Sheets**

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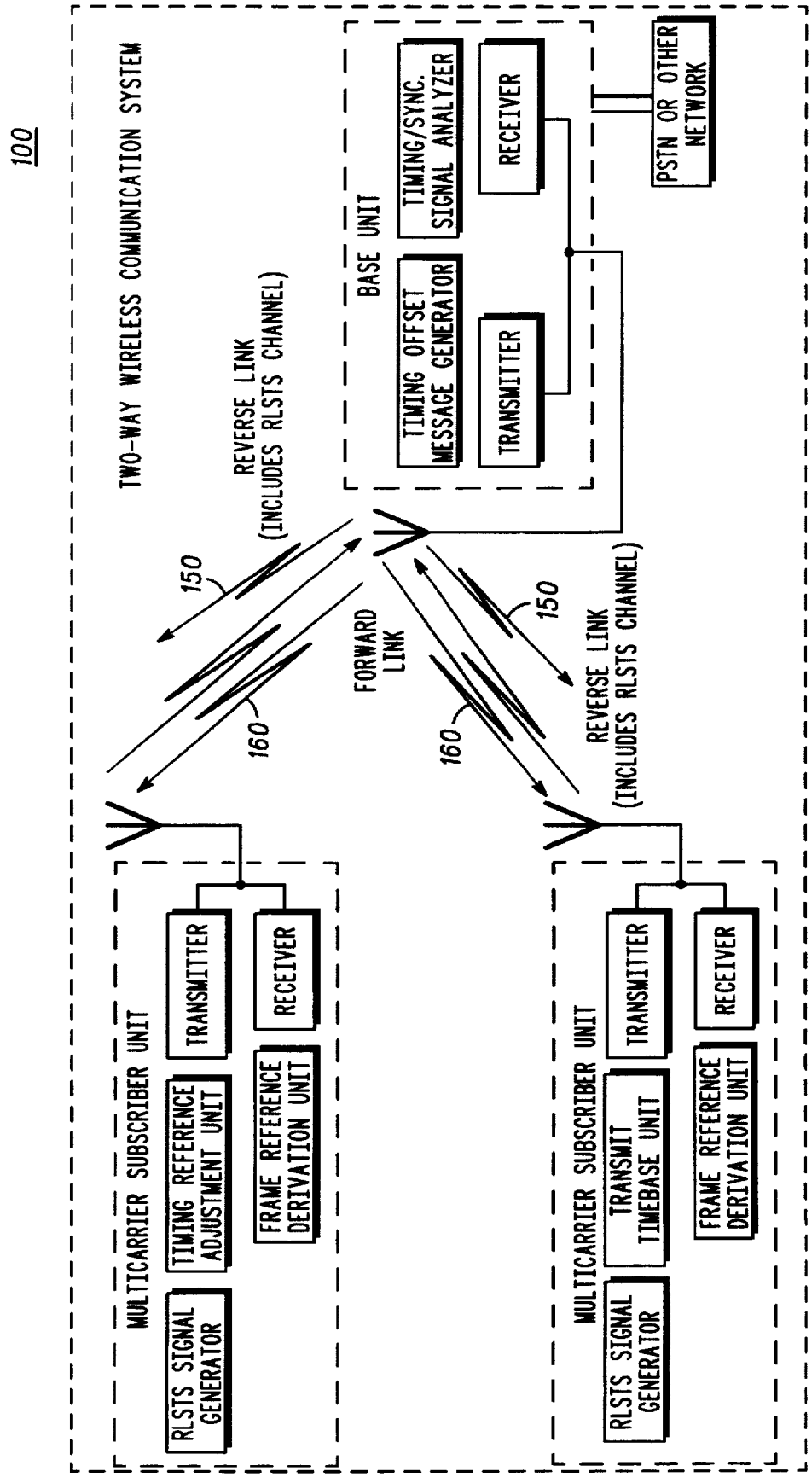


FIG. 1

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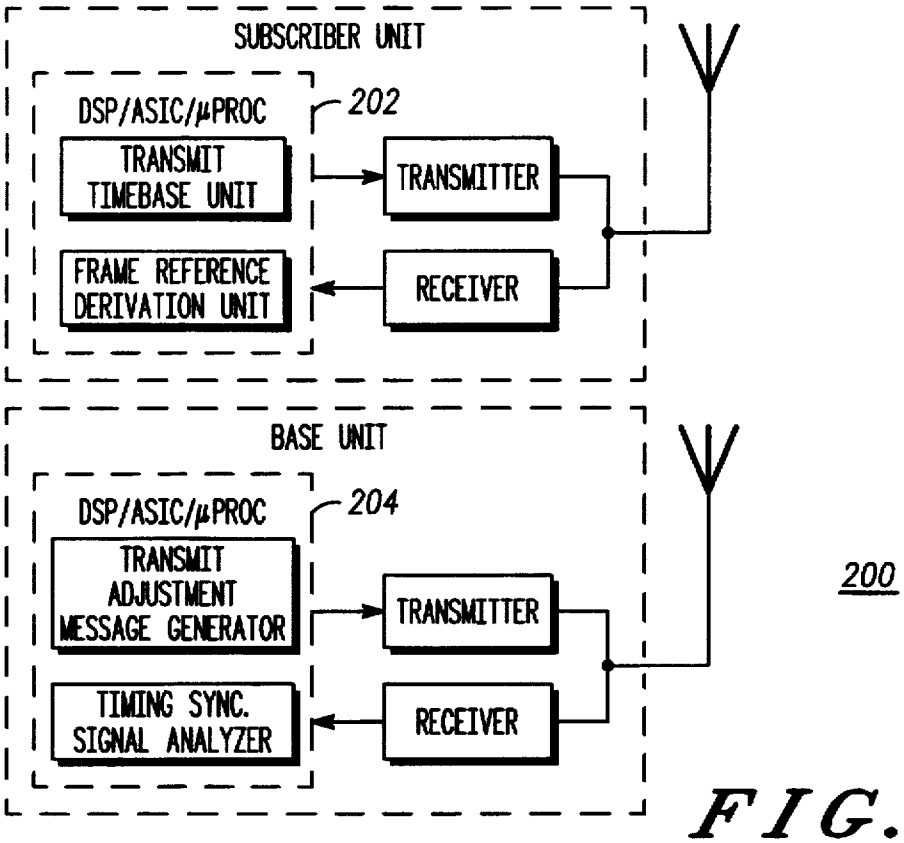


FIG. 2

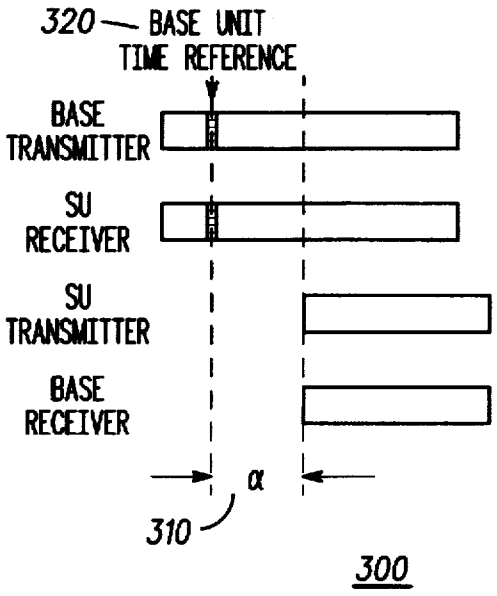


FIG. 3

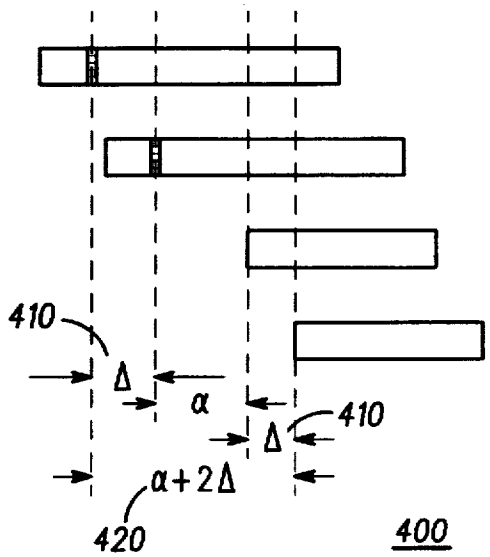


FIG. 4

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FIG. 5

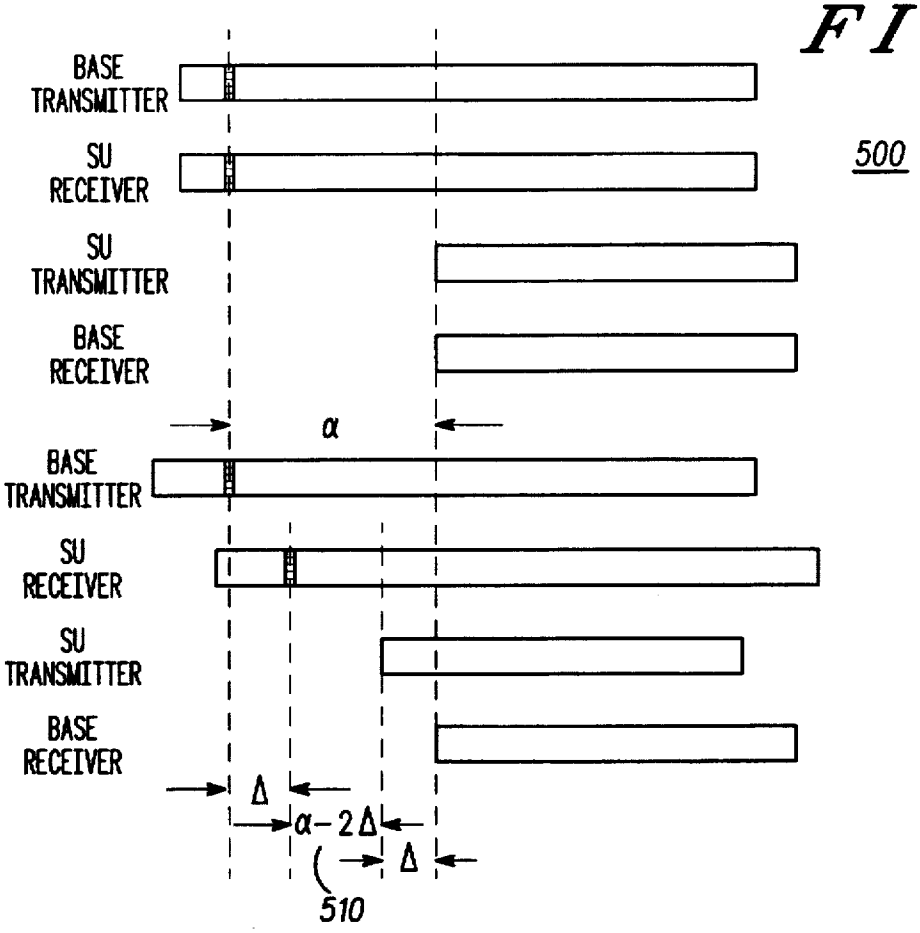


FIG. 6

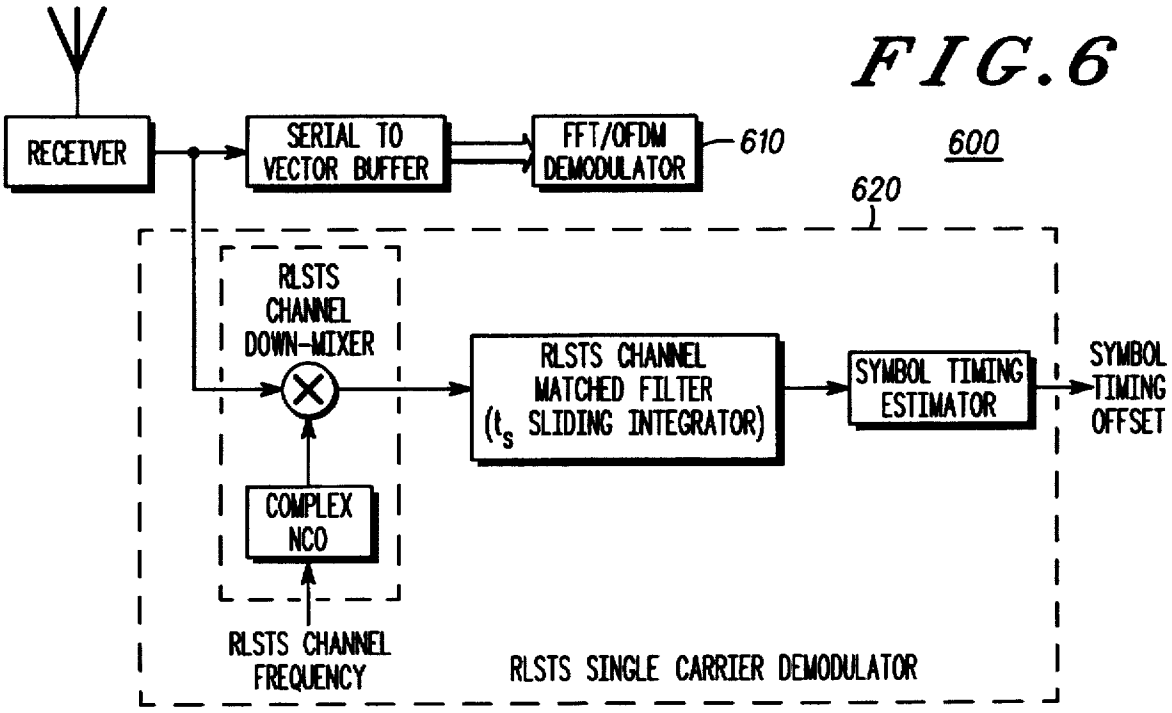


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FIG. 7

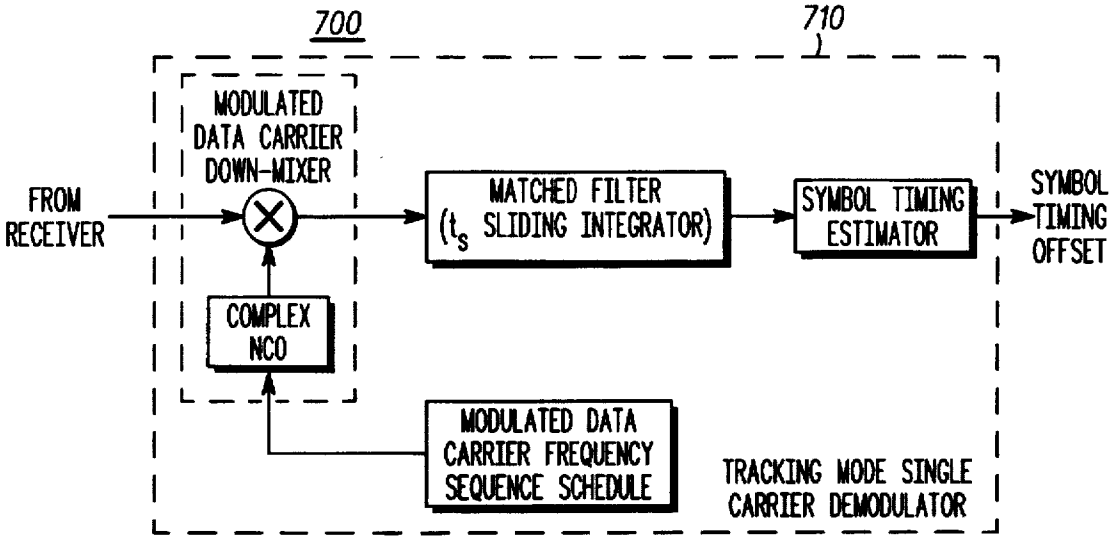



FIG. 8

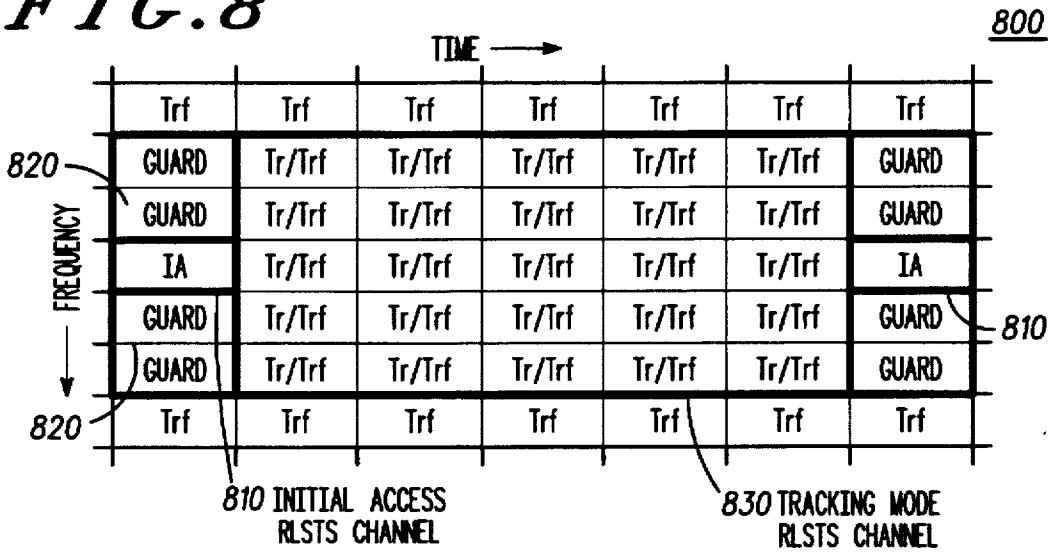
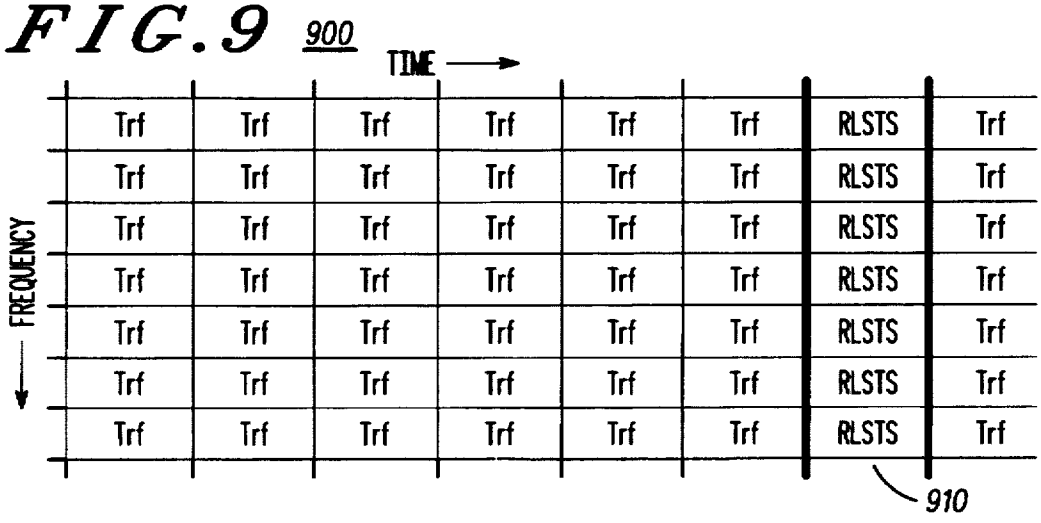



FIG. 9

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