

(12) **United States Patent**
Vijayan et al.

(10) **Patent No.:** **US 7,221,680 B2**
(45) **Date of Patent:** **May 22, 2007**

(54) **MULTIPLEXING AND TRANSMISSION OF MULTIPLE DATA STREAMS IN A WIRELESS MULTI-CARRIER COMMUNICATION SYSTEM**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 61 days.

(21) Appl. No.: **10/932,586**

(22) Filed: **Sep. 1, 2004**

(65) **Prior Publication Data**

US 2005/0058089 A1 Mar. 17, 2005

Related U.S. Application Data

(60) Provisional application No. 60/499,741, filed on Sep. 2, 2003, provisional application No. 60/559,740, filed on Apr. 5, 2004.

(51) **Int. Cl.**
H04B 7/216 (2006.01)

(52) **U.S. Cl.** **370/441; 370/335; 370/342**

(58) **Field of Classification Search** **370/431, 370/310.2, 335, 342, 441, 330, 208**

See application file for complete search history.

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Primary Examiner—Chi Pham

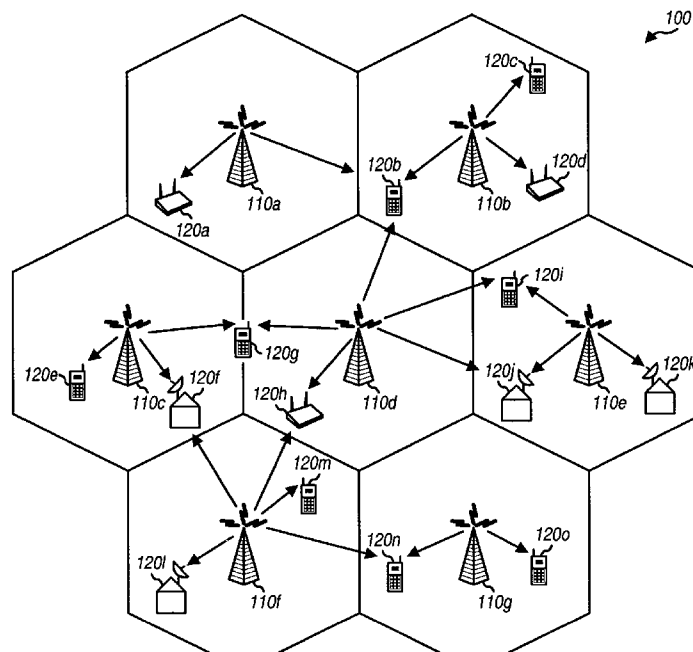
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(57) **ABSTRACT**

Techniques for multiplexing and transmitting multiple data streams are described. Transmission of the multiple data streams occurs in “super-frames”. Each super-frame has a predetermined time duration and is further divided into multiple (e.g., four) frames. Each data block for each data stream is outer encoded to generate a corresponding code block. Each code block is partitioned into multiple sub-blocks, and each data packet in each code block is inner encoded and modulated to generate modulation symbols for the packet. The multiple subblocks for each code block are transmitted in the multiple frames of the same super-frame, one subblock per frame. Each data stream is allocated a number of transmission units in each super-frame and is assigned specific transmission units to achieve efficient packing. A wireless device can select and receive individual data streams.

35 Claims, 15 Drawing Sheets



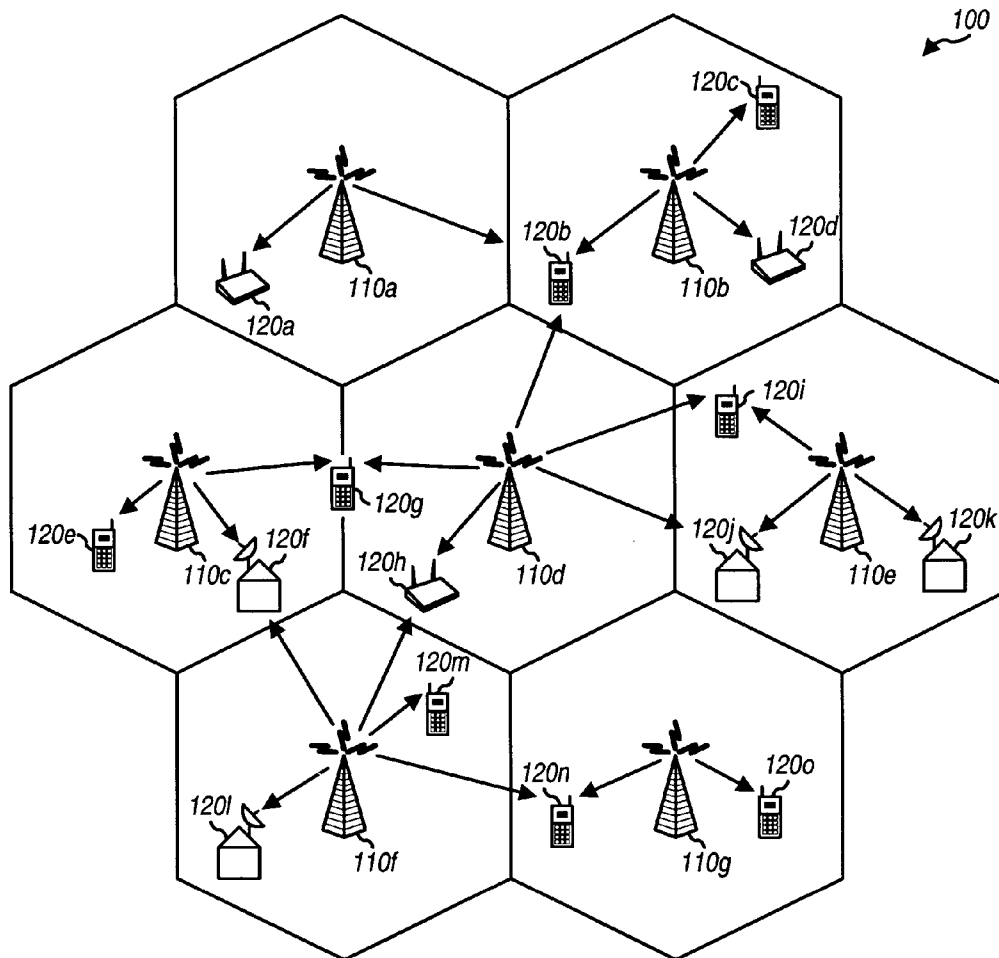


FIG. 1

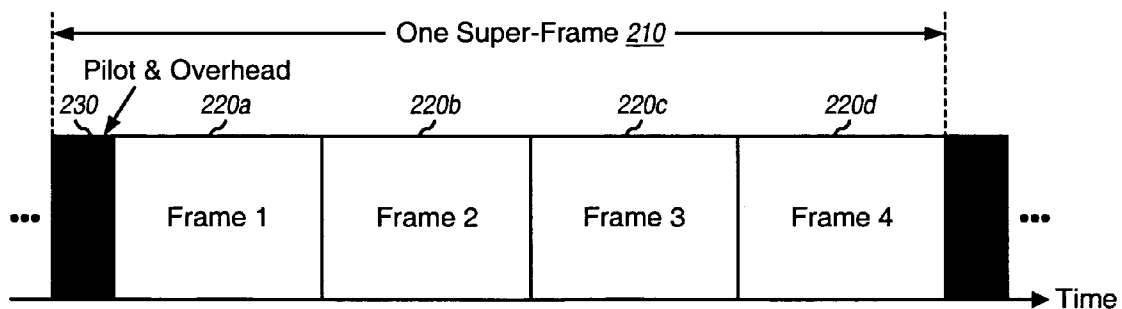
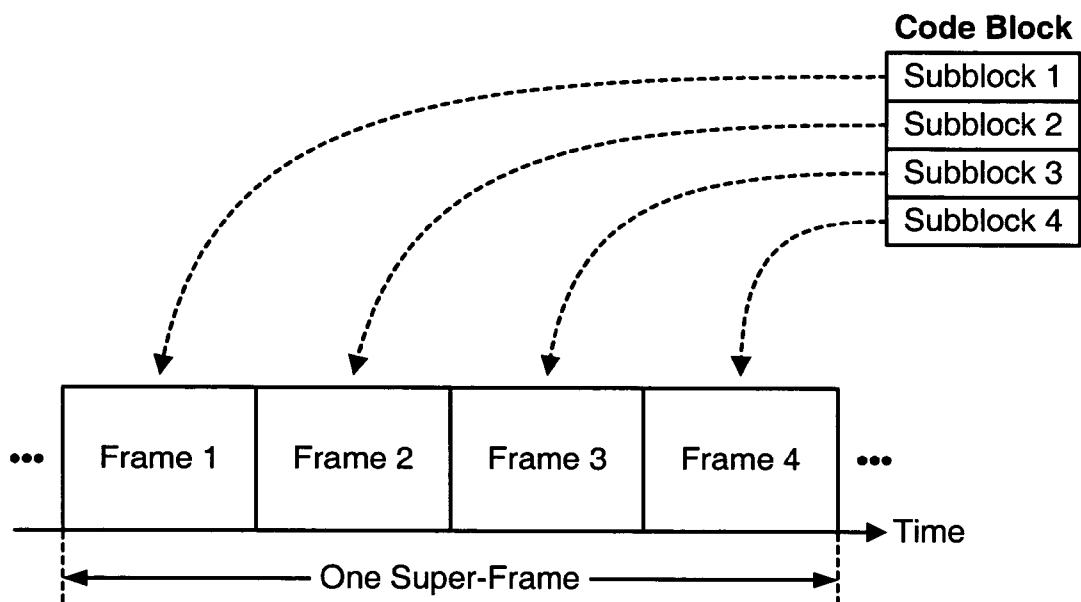
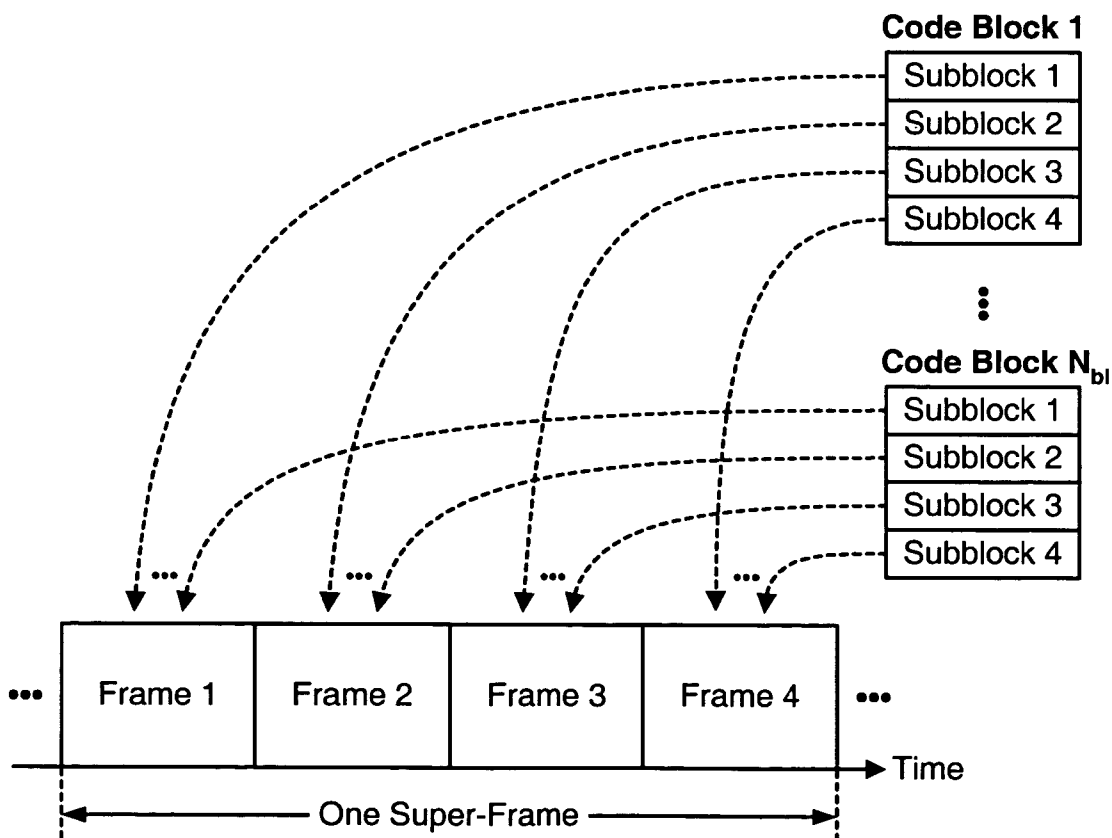


FIG. 2

**FIG. 3A****FIG. 3B**

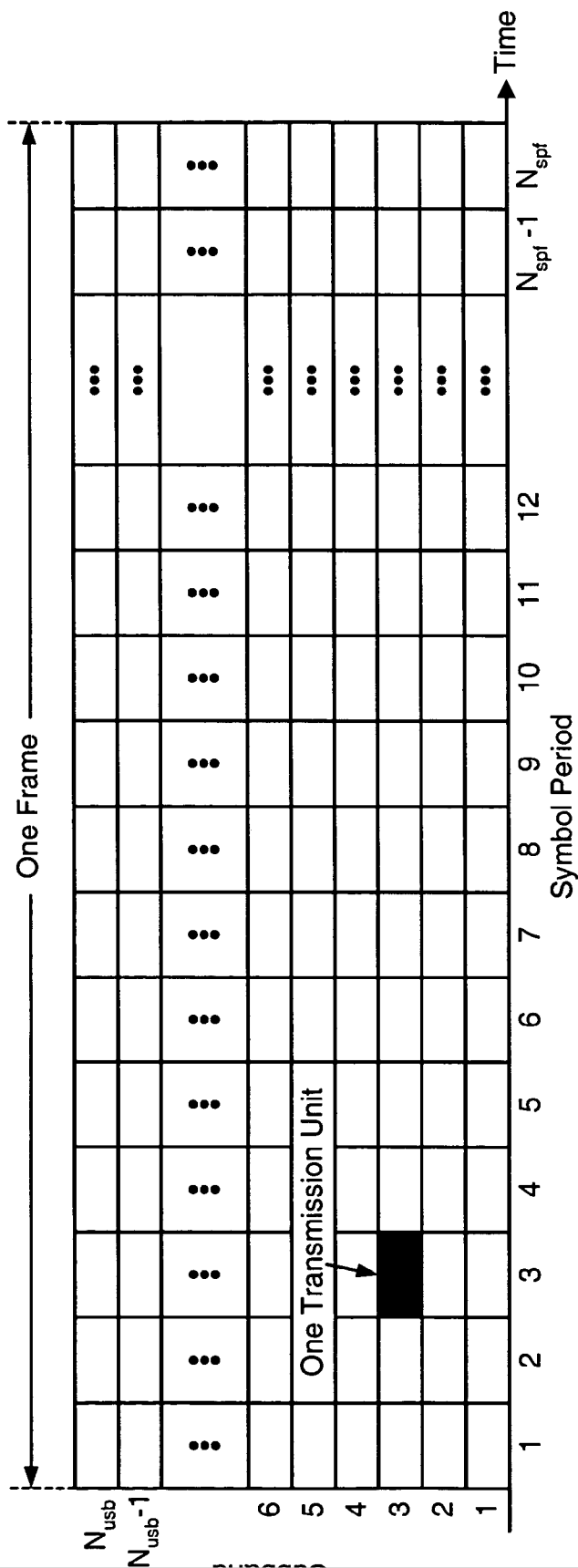


FIG. 4

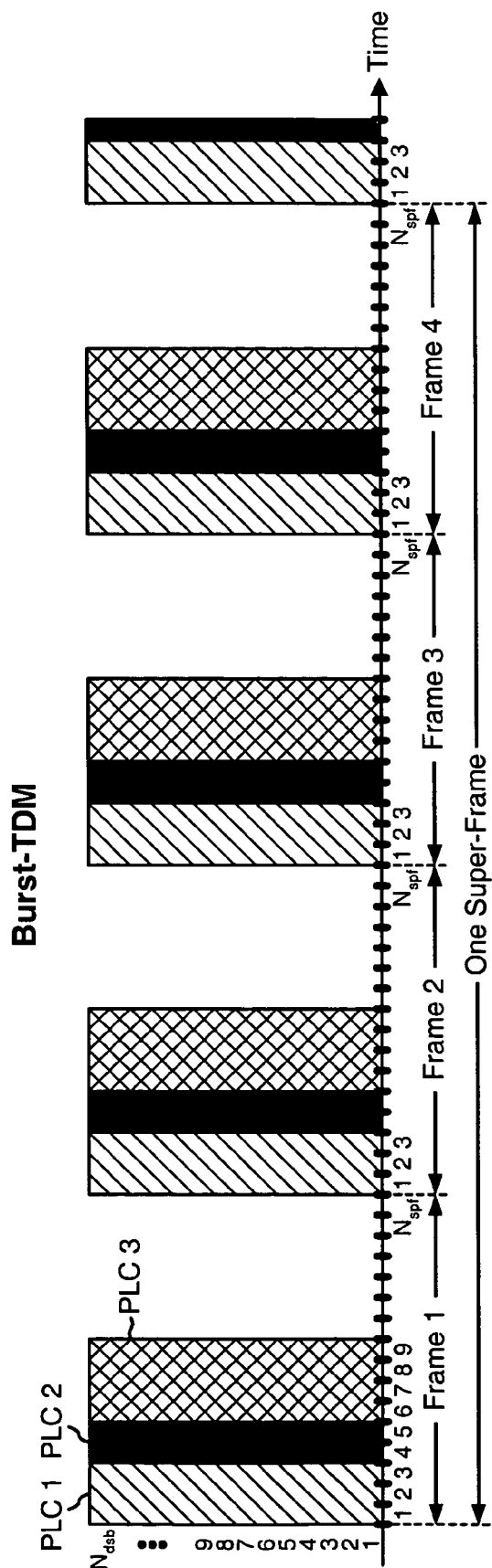


FIG. 5A

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