



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

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(54) **MULTI-CARRIER COMMUNICATIONS WITH GROUP-BASED SUBCARRIER ALLOCATION**

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(51) **Int. Cl.**<sup>7</sup> ..... **H04B 7/00**; H04B 1/38; H04Q 7/20; H04M 1/00; H04J 11/00

(52) **U.S. Cl.** ..... **455/450**; 455/69; 455/447; 455/448; 455/561; 455/550.1; 370/208

(58) **Field of Search** ..... 375/133, 135, 375/260, 267; 370/203, 208, 210, 482, 484, 431, 319-321, 328, 329, 332, 342, 344, 345; 455/69, 434, 455, 463, 422.1, 447-450, 452.1, 452.2, 453, 42, 500, 512, 513, 102-105

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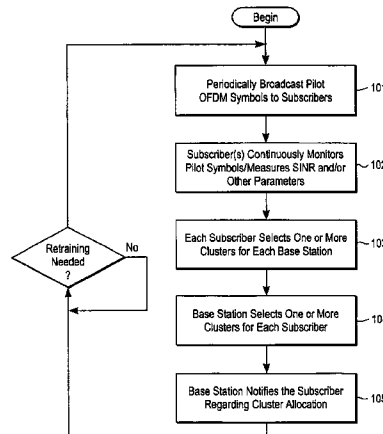
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(57) **ABSTRACT**

A method and apparatus for subcarrier selection for systems is described. In one embodiment, a method for subcarrier selection for a system employing orthogonal frequency division multiple access (OFDMA) comprises partitioning subcarriers into groups of at least one cluster of subcarriers, receiving an indication of a selection by the subscriber of one or more groups in the groups, and allocating at least one cluster in the one or more groups of clusters selected by the subcarrier for use in communication with the subscriber.

**119 Claims, 7 Drawing Sheets**



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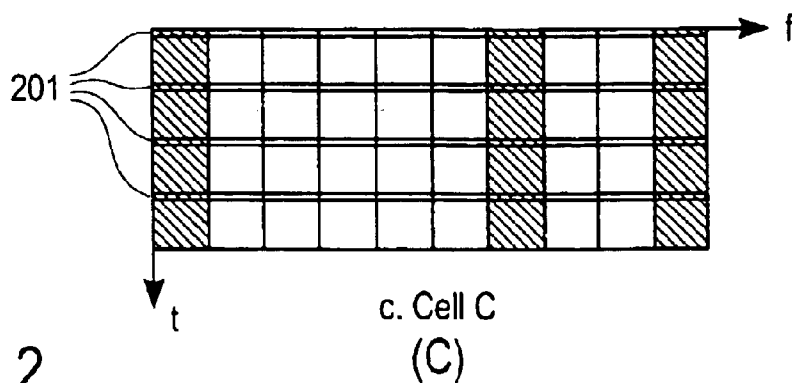
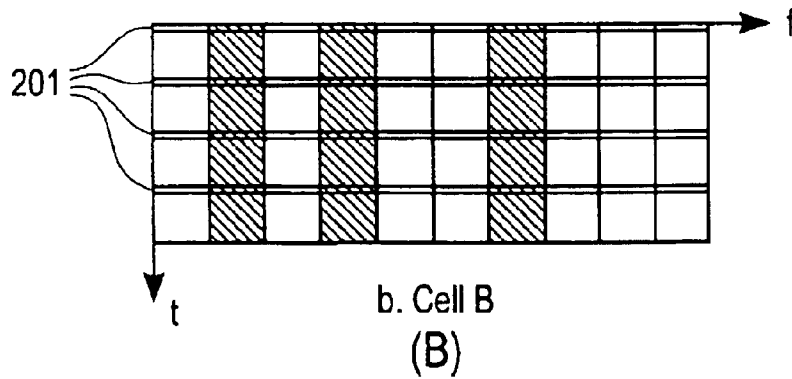
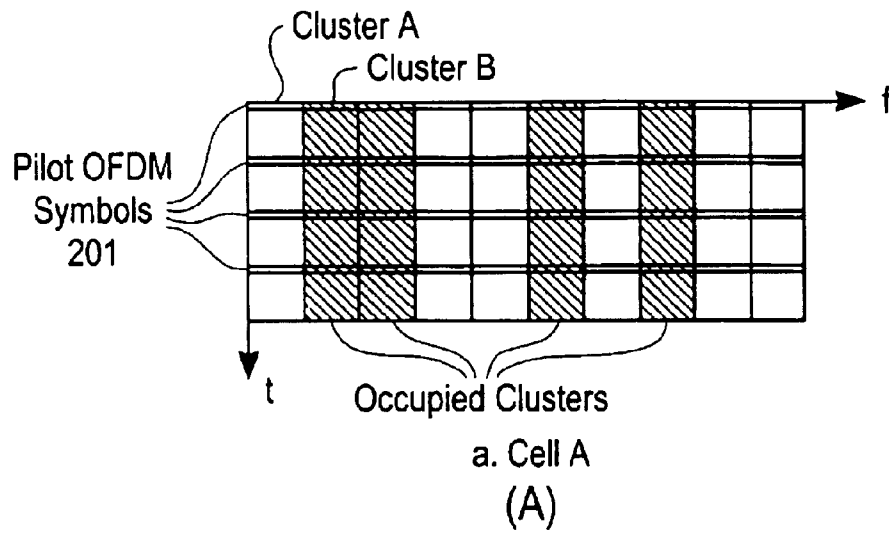
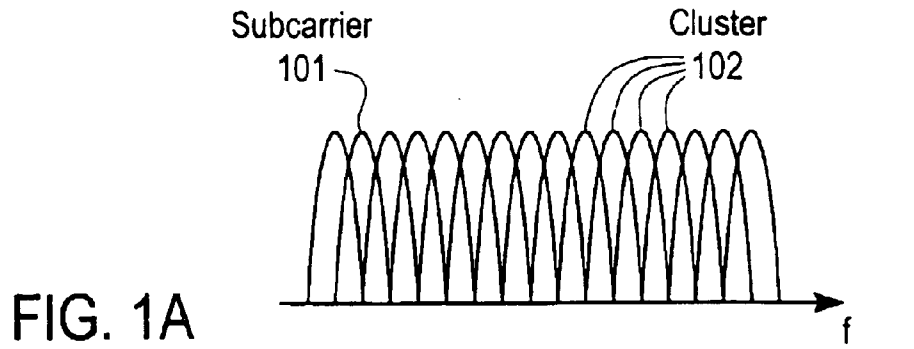


FIG. 2

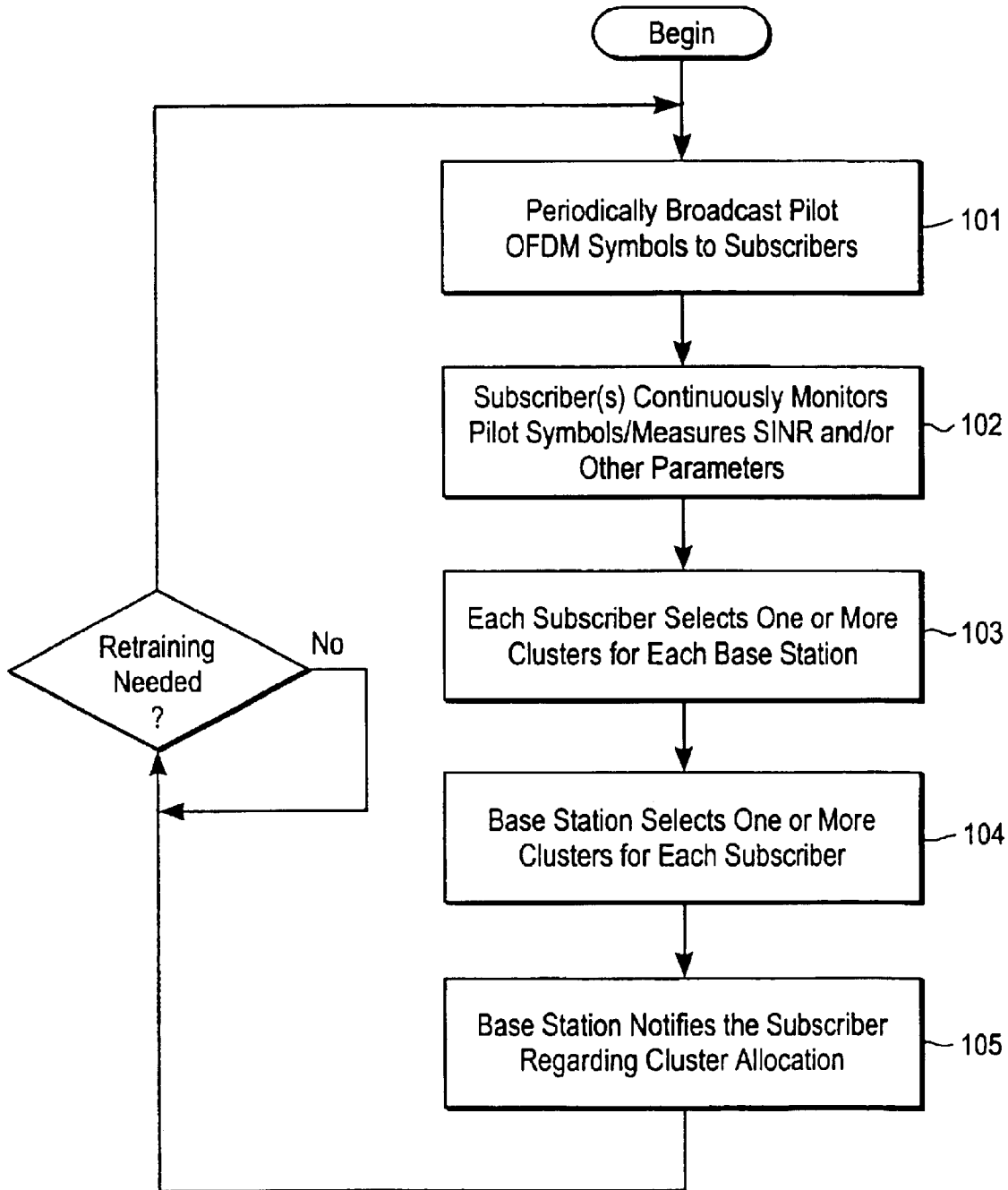


FIG. 1B

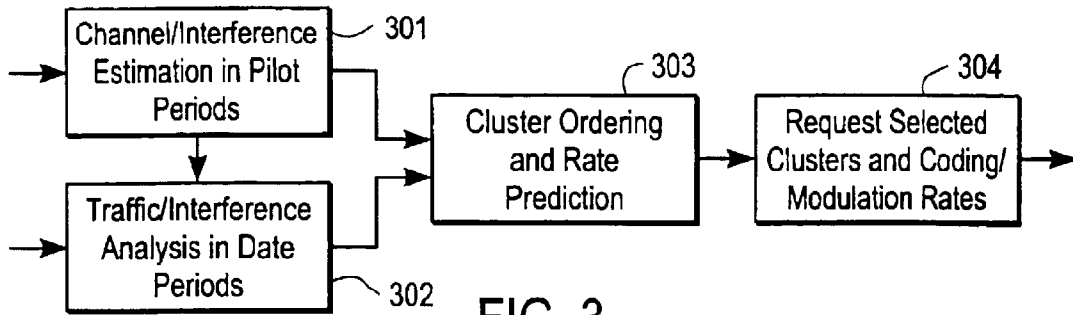


FIG. 3

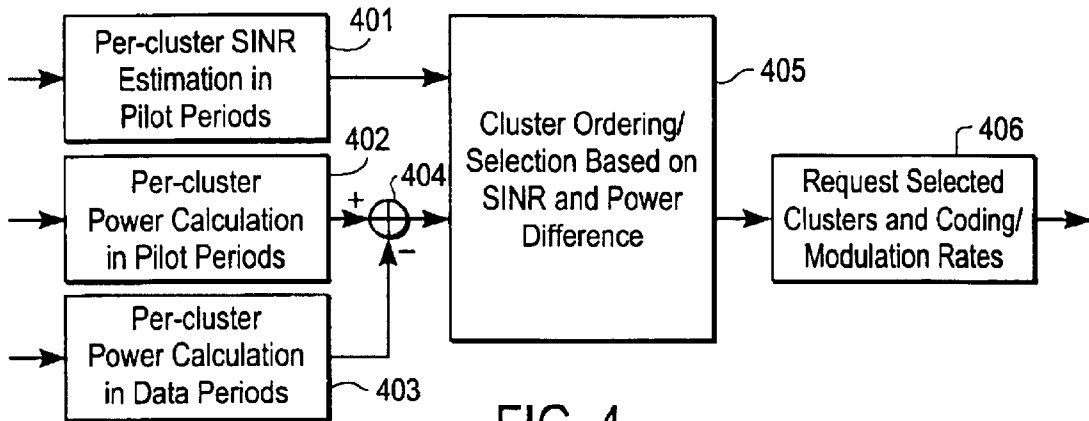


FIG. 4

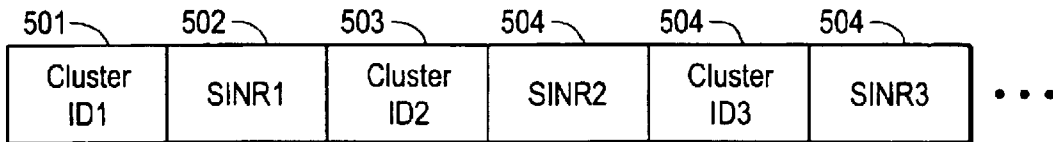


FIG. 5

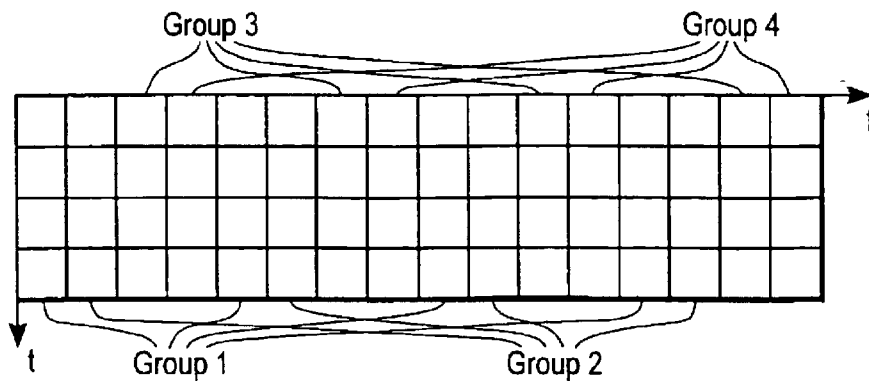


FIG. 6

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