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(54) **METHOD, APPARATUS, AND SYSTEM FOR MITIGATING PILOT SIGNAL DEGRADATION BY EMPLOYING CELL-SPECIFIC PILOT SUBCARRIER AND COMMON PILOT SUBCARRIER TECHNIQUES IN A MULTI-CARRIER CELLULAR NETWORK**

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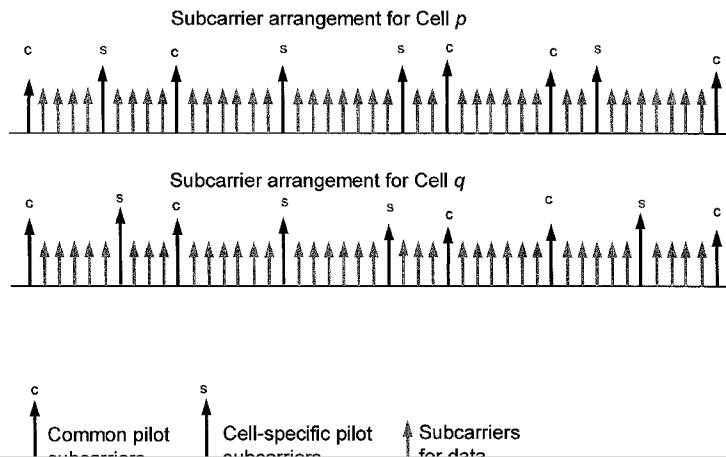
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H04J 3/06   (2006.01)

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USPC **370/350**; 370/331; 370/332; 370/324; 370/344; 370/319; 455/422.1; 455/552.1; 455/502; 455/561; 455/434

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See application file for complete search history.

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(57)   **ABSTRACT**

A multi-carrier cellular wireless network (**400**) employs base stations (**404**) that transmit two different groups of pilot sub-carriers: (1) cell-specific pilot subcarriers, which are used by a receiver to extract information unique to each individual cell (**402**), and (2) common pilots subcarriers, which are designed to possess a set of characteristics common to all the base stations (**404**) of the system. The design criteria and transmission formats of the cell-specific and common pilot subcarriers are specified to enable a receiver to perform different system functions. The methods and processes can be extended to other systems, such as those with multiple antennas in an individual sector and those where some subcarriers bear common network/system information.

38 Claims, 13 Drawing Sheets

Subcarrier arrangement for Cell *p*

Subcarrier arrangement for Cell *q*

c Common pilot subcarriers   s Cell-specific pilot subcarriers   Subcarriers for data

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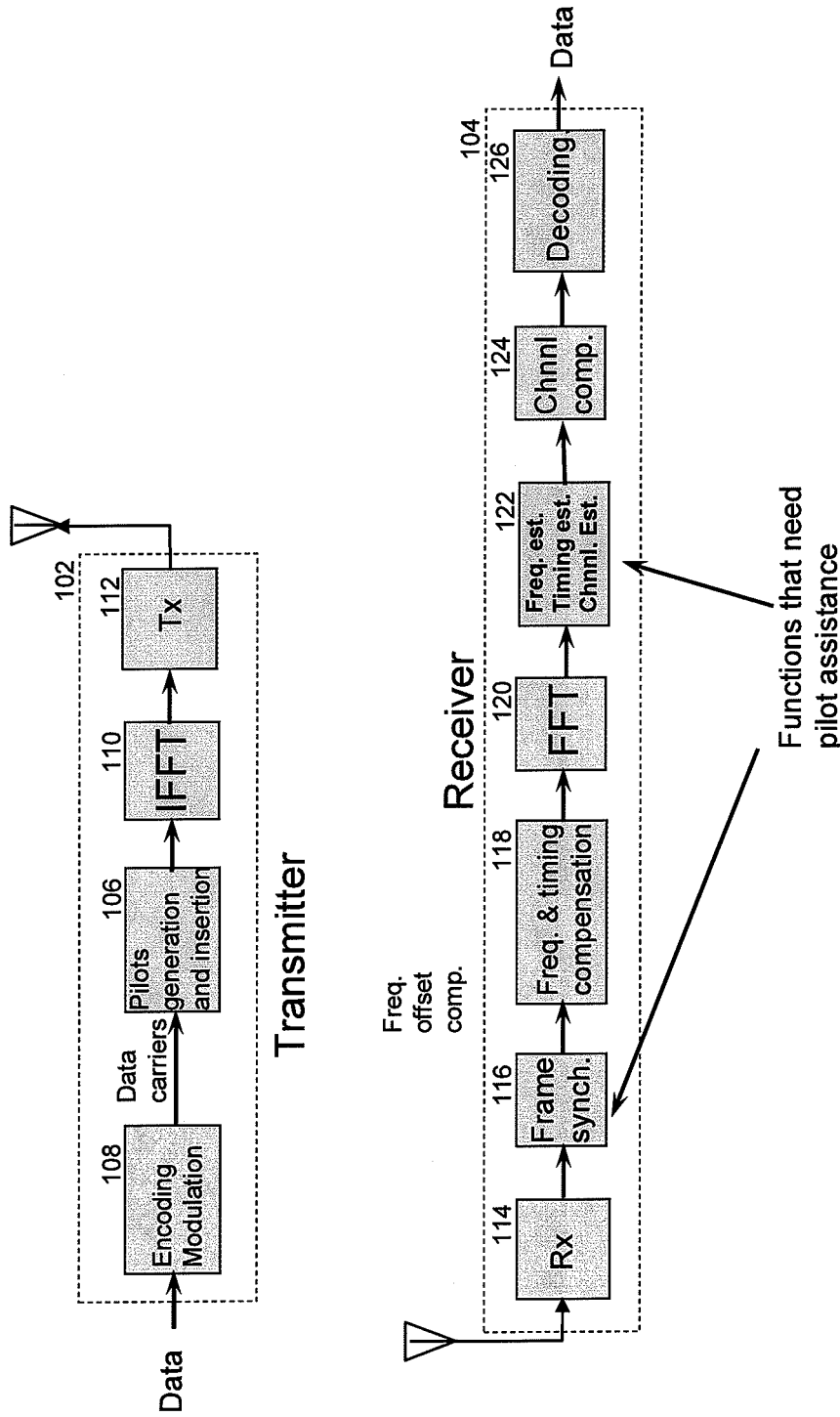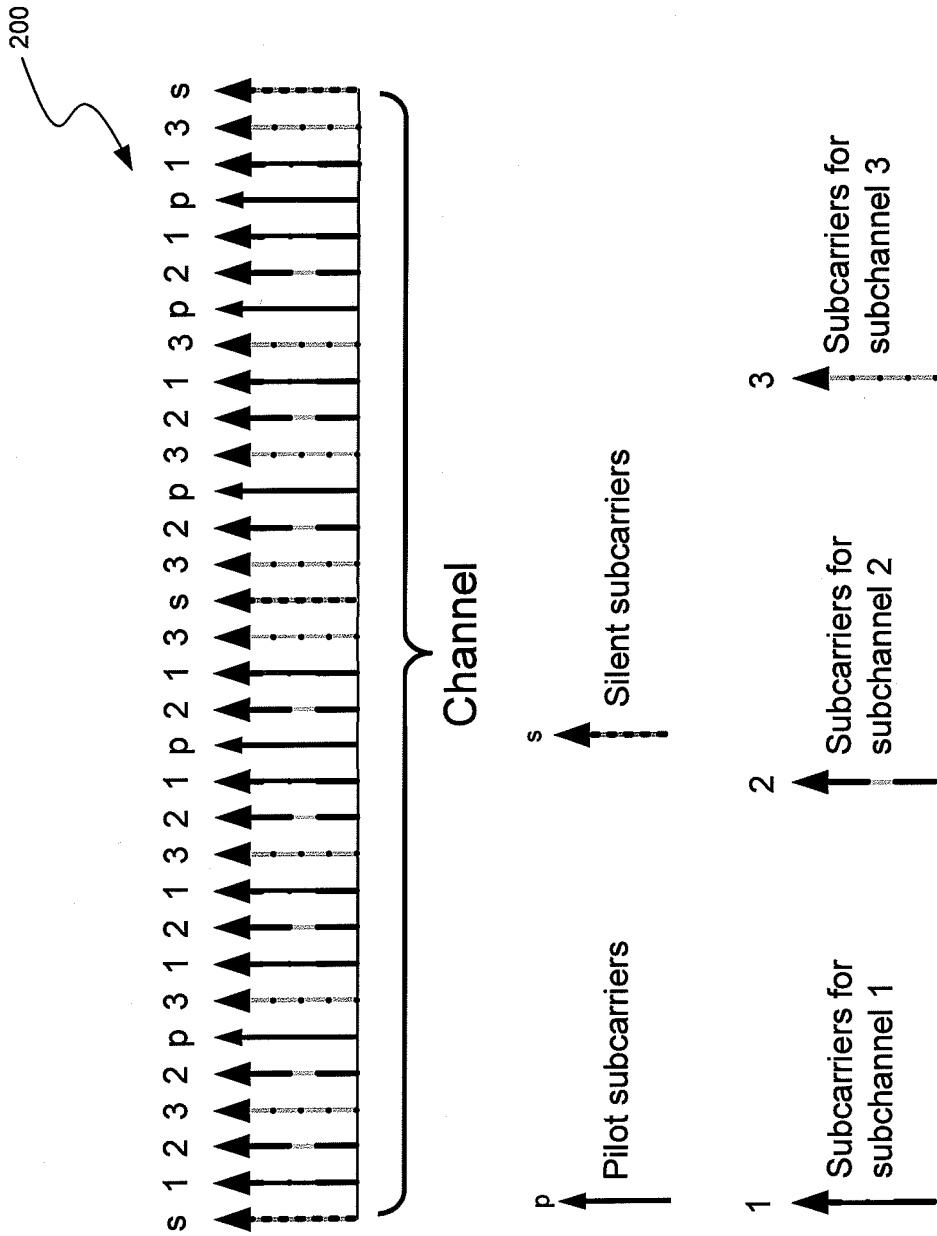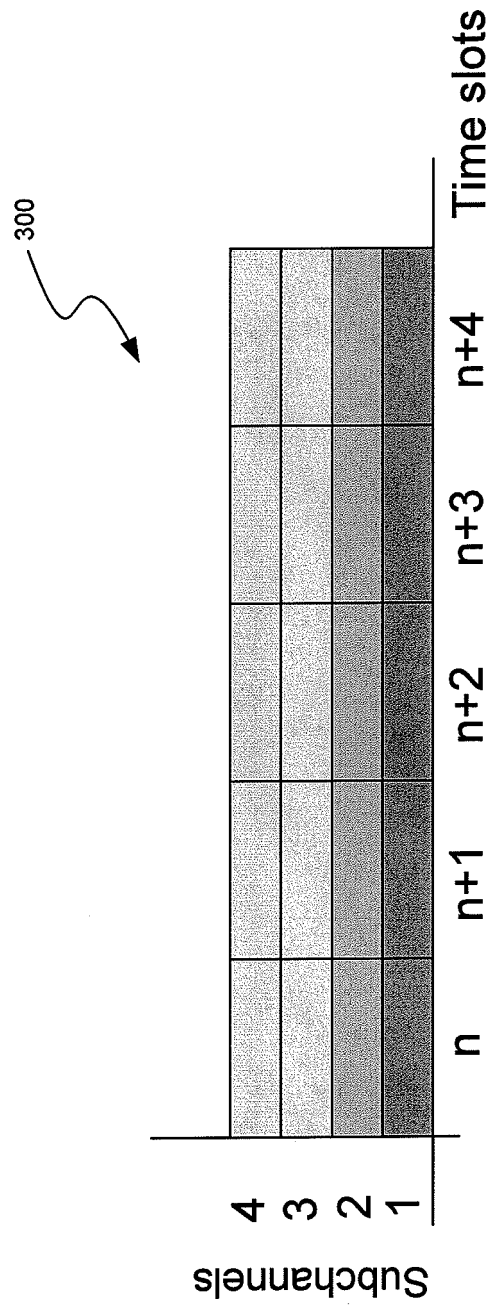
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FIG. 1

FIG. 2

FIG. 3

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