

(54) **TRIPLY REDUNDANT INTEGRATED NAVIGATION AND ASSET VISIBILITY SYSTEM**

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G01C 21/00 (2006.01)

(52) **U.S. Cl.** **701/213; 701/220; 455/456.1; 455/560**

(58) **Field of Classification Search** **701/213, 701/220, 214; 342/450; 455/456.1, 457, 455/560; G01C 21/00**

See application file for complete search history.

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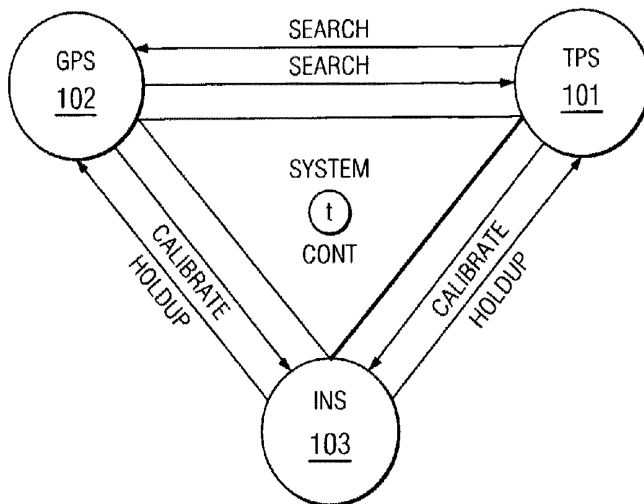
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(57) **ABSTRACT**

Methods and apparatus are described for a navigation system. A method includes providing a global positioning system fix having a plurality of tracking parameters; providing a theater positioning system fix; monitoring the plurality of tracking parameters for predetermined conditions; and, when the predetermined conditions are met, sending a notifying signal and switching to the theater positioning system fix as a primary fix. An apparatus includes a system controller; a global positioning system receiver coupled to the system controller; a radio frequency locating receiver coupled to the system controller; and an operator interface coupled to the system controller.

25 Claims, 18 Drawing Sheets



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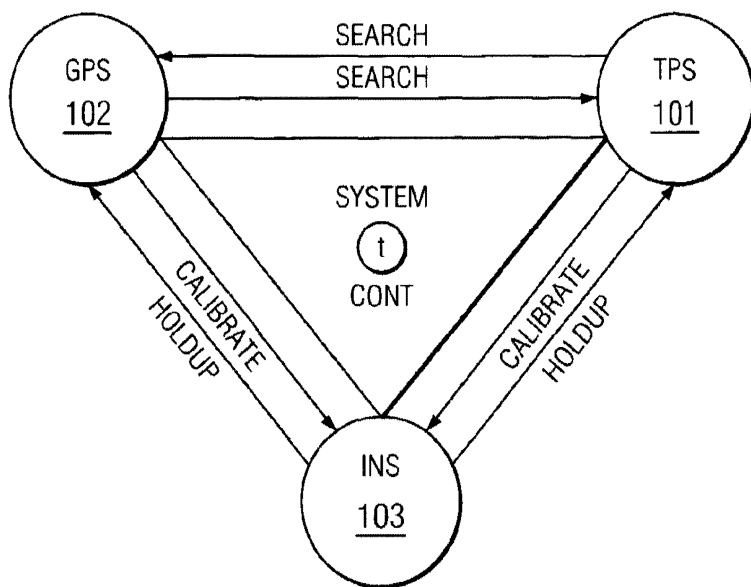


FIG. 1

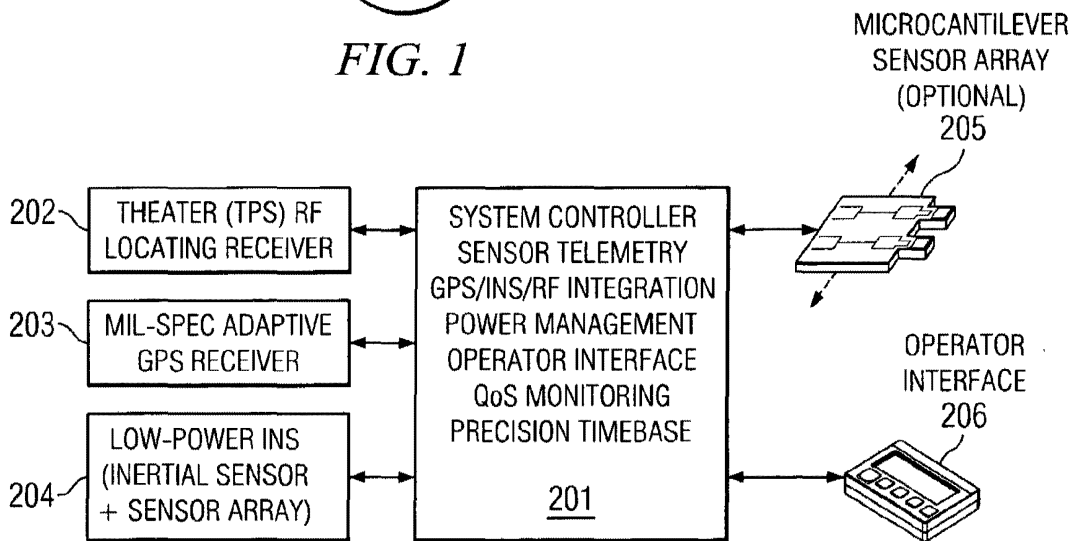


FIG. 2

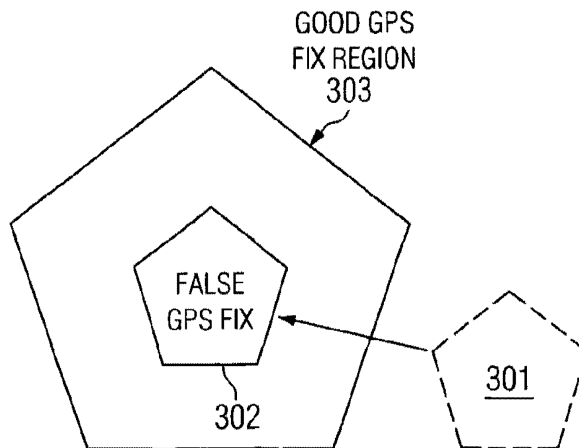


FIG. 3

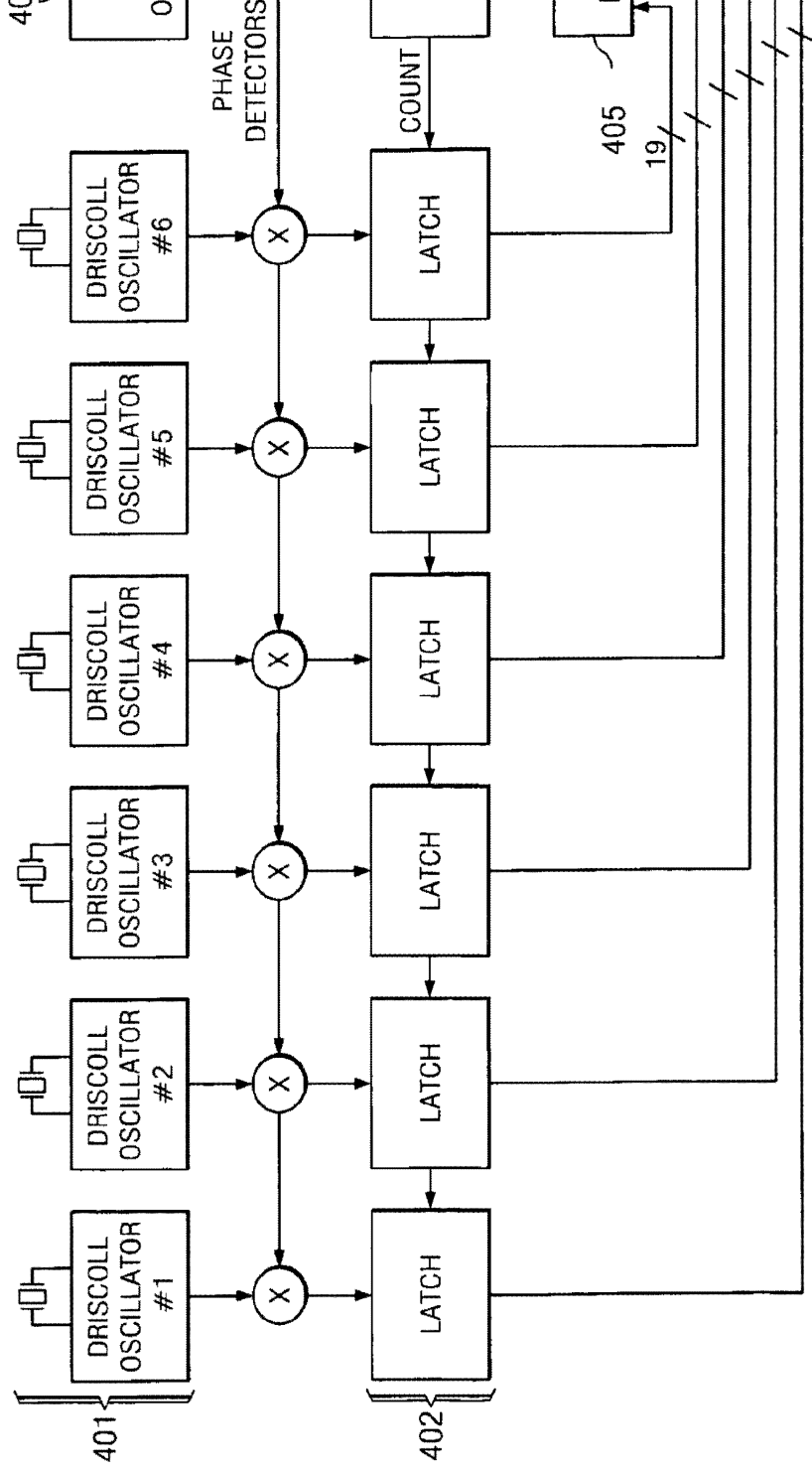
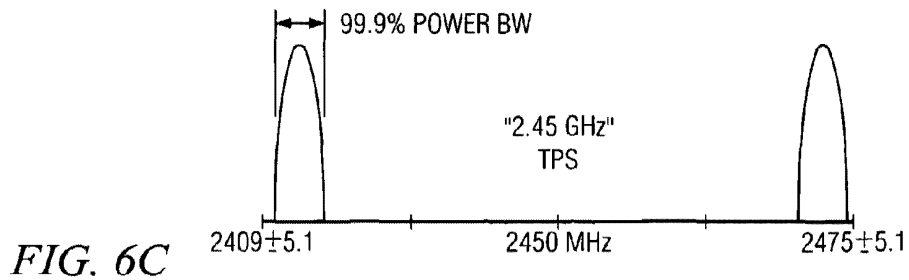
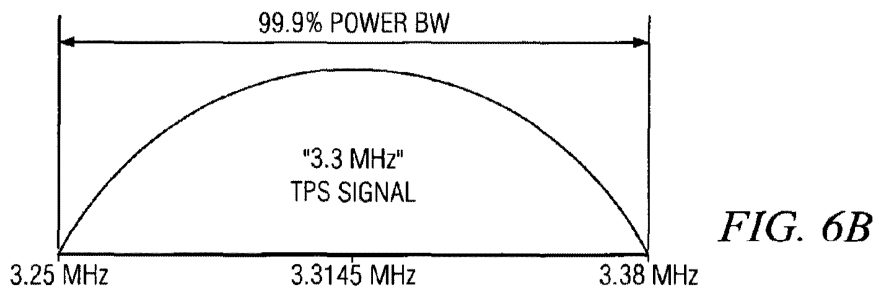
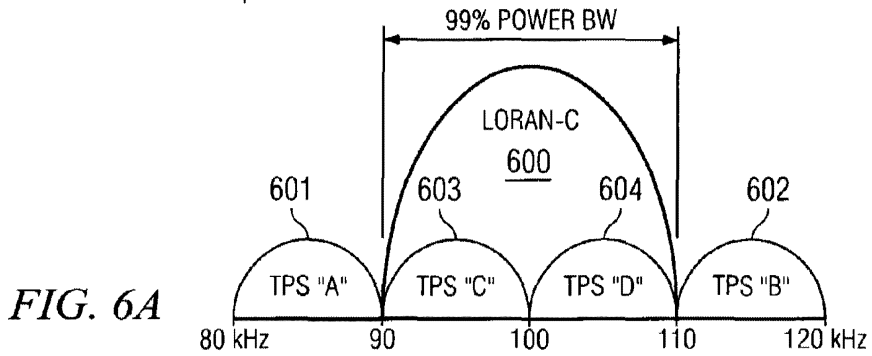
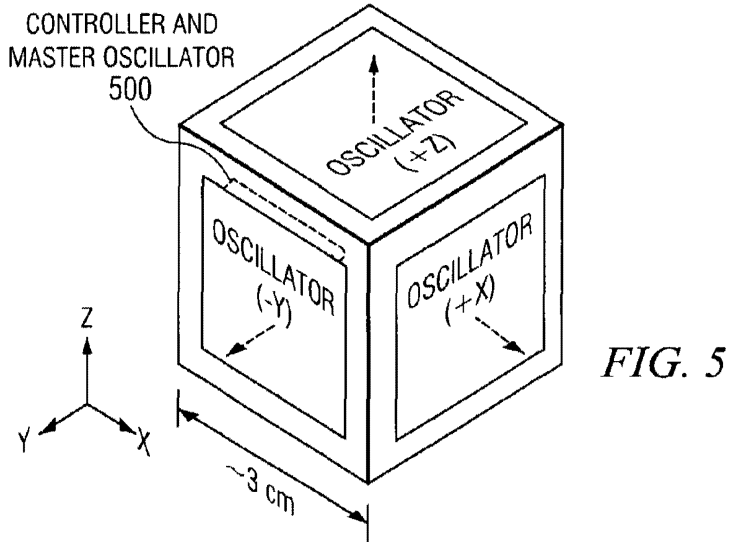


FIG. 4



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