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**Lin et al.**

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(54) **CLOSED LOOP FEEDBACK IN MIMO SYSTEMS** 2002/0150109 A1\* 10/2002 Agee ..... 370/400  
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**H04B 7/02** (2006.01)

(52) **U.S. Cl.** ..... **375/267**

(58) **Field of Classification Search** ..... 375/267,  
375/347, 349, 358, 354, 357, 369, 372, 373,  
375/374, 215, 294, 327, 376; 700/53; 455/101,  
455/132-141, 69, 265, 180.3, 266; 370/328,  
370/395.62, 507, 503; 702/89; 713/375,  
713/400; 342/103

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See application file for complete search history.

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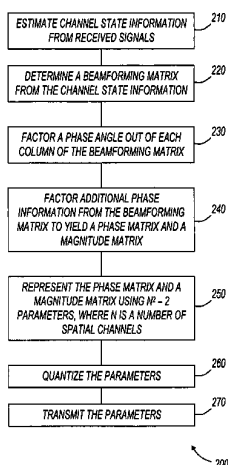
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(57) **ABSTRACT**

Feedback bandwidth may be reduced in a closed loop MIMO system by factoring non essential information out of a beam-forming matrix.

**16 Claims, 6 Drawing Sheets**



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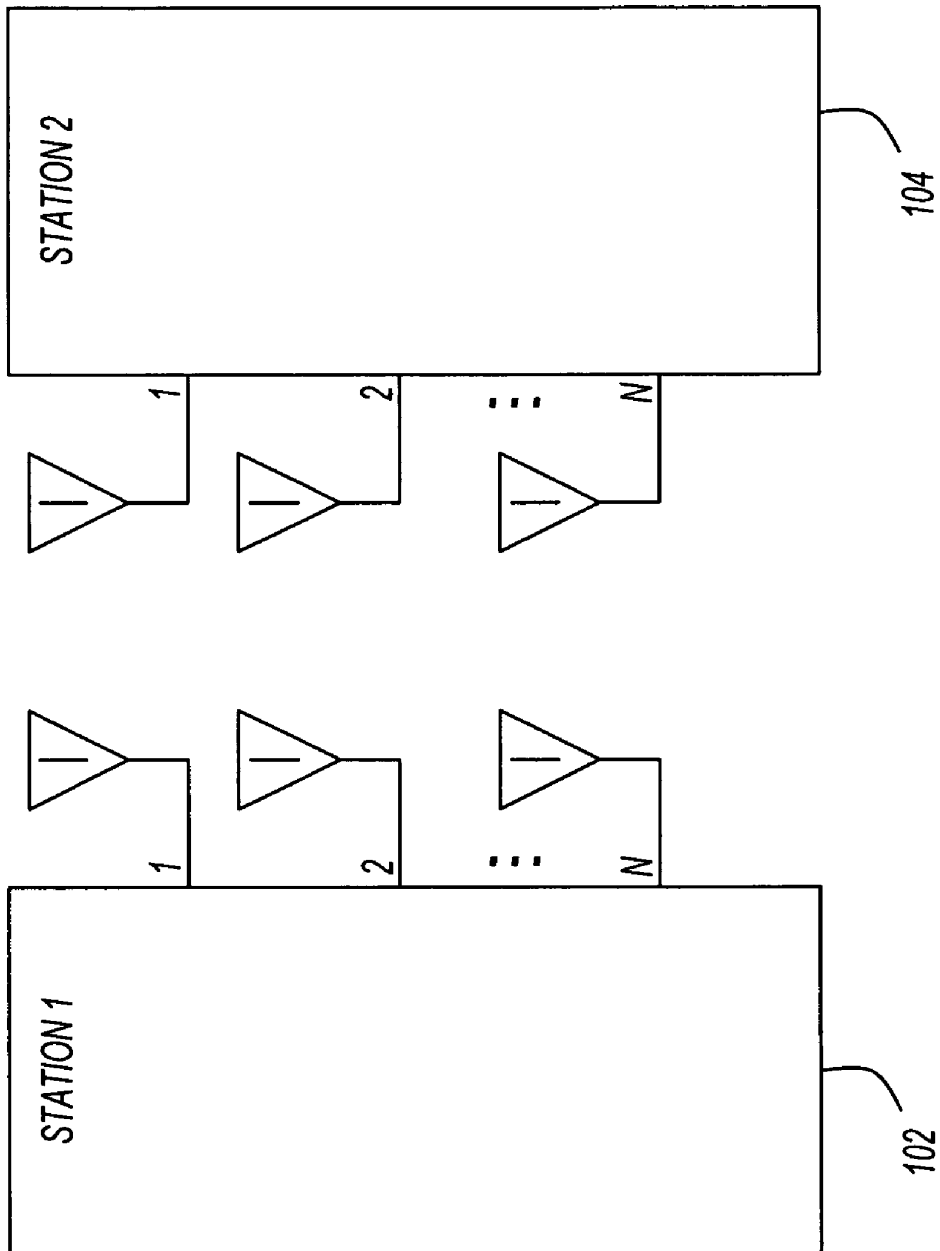


FIG. 1

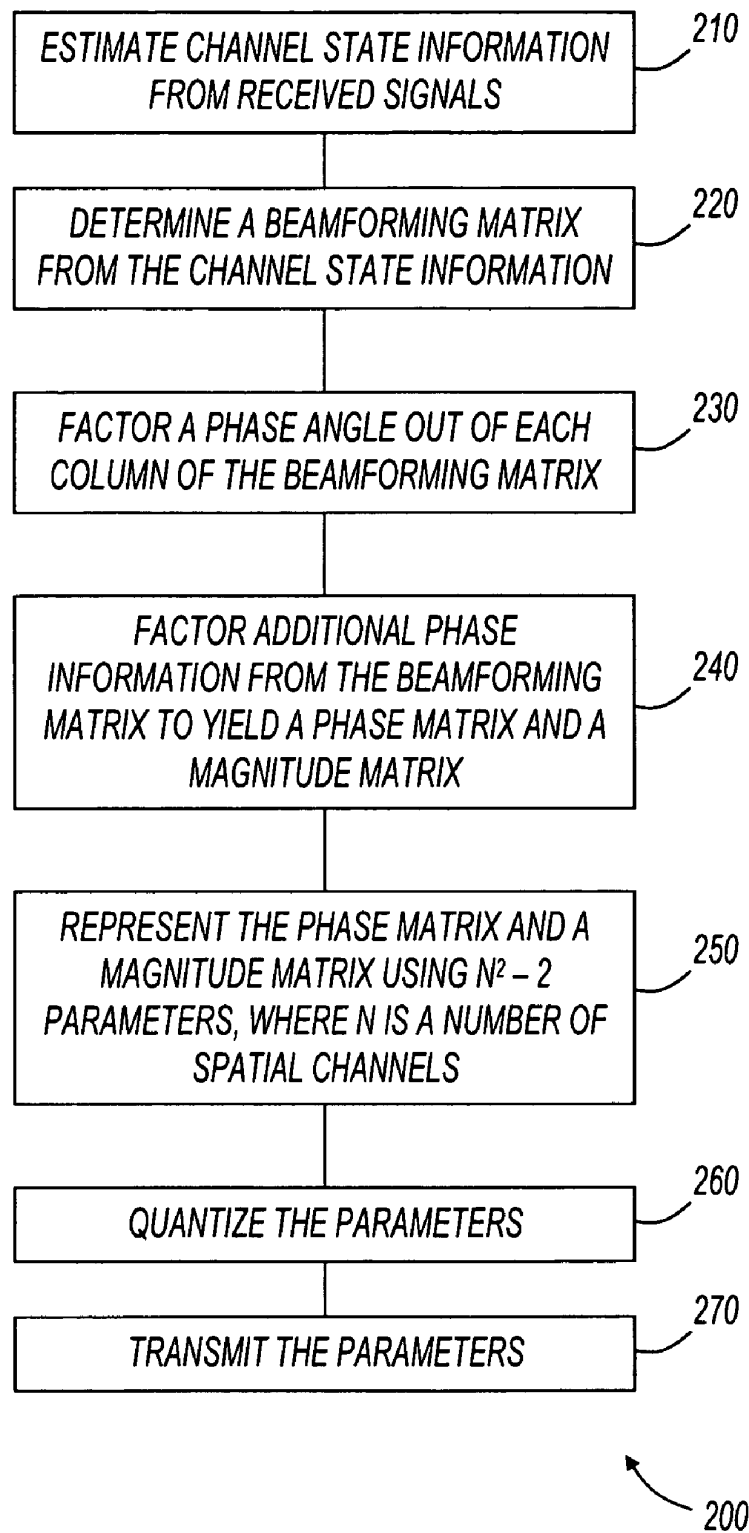


FIG. 2

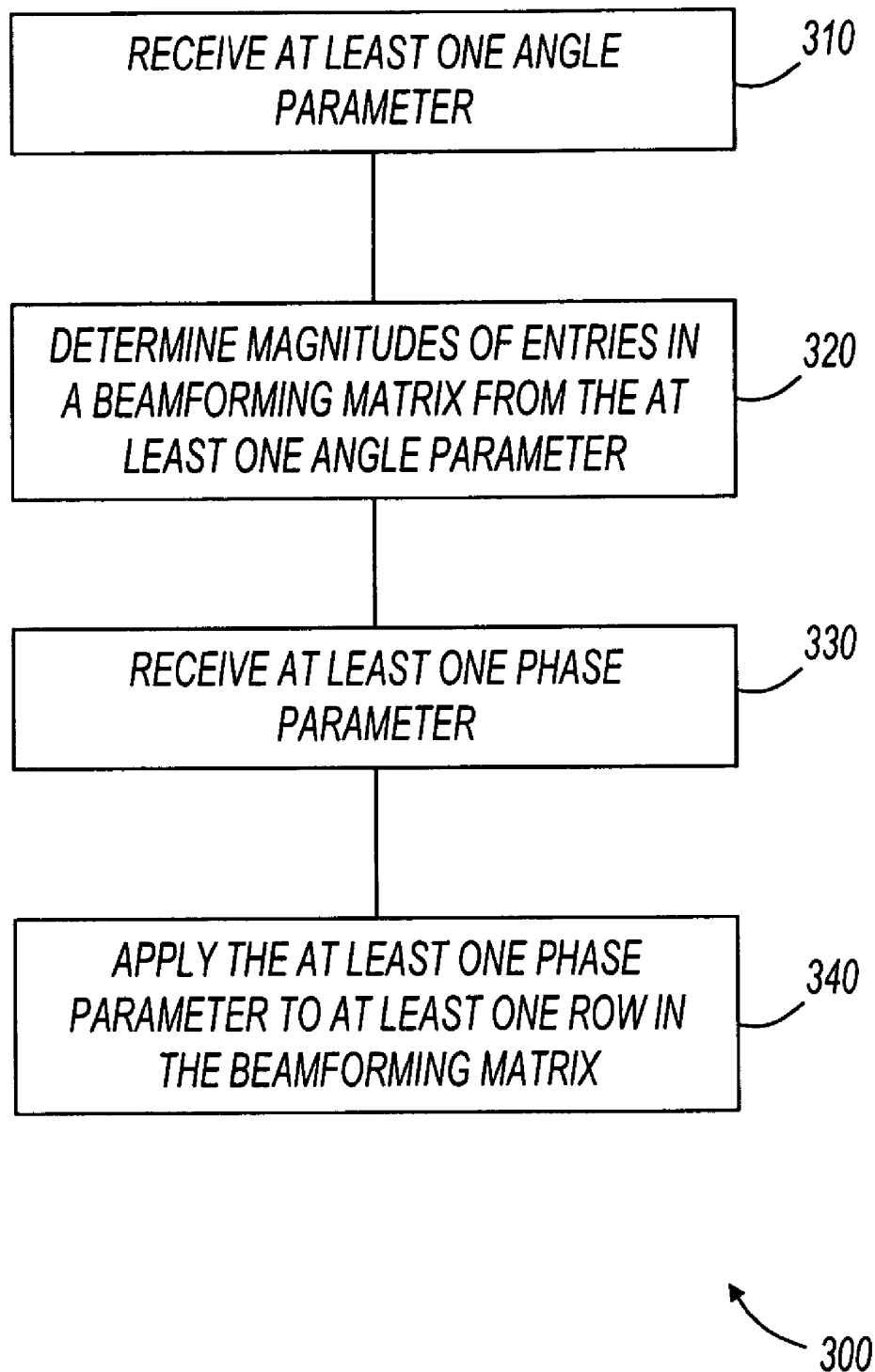


FIG. 3

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