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**Burke et al.**

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(54) **TRANSMIT PRE-CORRECTION IN A WIRELESS 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 390 days.

This patent is subject to a terminal disclaimer.

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**Related U.S. Application Data**

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(51) **Int. Cl.**  
**H04Q 7/20** (2006.01)

(52) **U.S. Cl.** ..... **455/450**; 455/67.14; 342/423; 375/357

(58) **Field of Classification Search** ..... 455/450, 455/67.11, 67.14, 423, 424, 425; 342/111, 342/129, 423, 430, 432, 444, 463; 375/296, 375/355, 356, 357

See application file for complete search history.

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*Primary Examiner*—Charles N Appiah

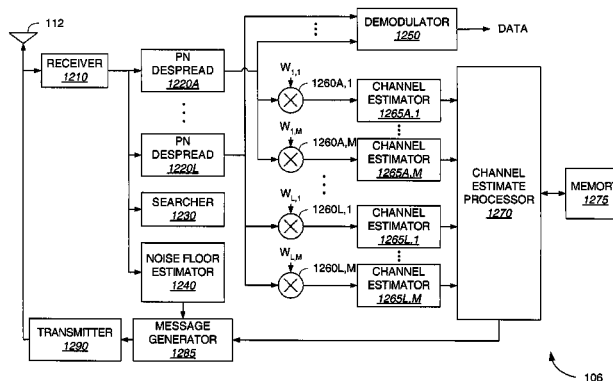
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(57) **ABSTRACT**

Techniques for pre-correction of transmit signals are disclosed. In one aspect, a transmit antenna array configurable to generate multiple transmit beams is deployed. The parameters for configuring the antenna array are computed in response to channel estimates and a noise floor estimate made at the receiver. Information is transmitted in accordance with the multiple transmit beams, delayed as necessary, such that the multipaths may arrive time-aligned an in-phase at the receiver. In another aspect, pre-RAKE pre-correction is deployed by calculating Wiener weights. In yet another aspect, space-time diversity is deployed for calculating tap values for FIR filters used in transmission on the transmit antenna array. In yet another aspect, space only pre-correction is deployed. Various other aspects are also disclosed. These aspects have the benefit of reducing the interference experienced at a receiver, resulting in increased capacity, increased data throughput, and other system benefits.

**44 Claims, 17 Drawing Sheets**



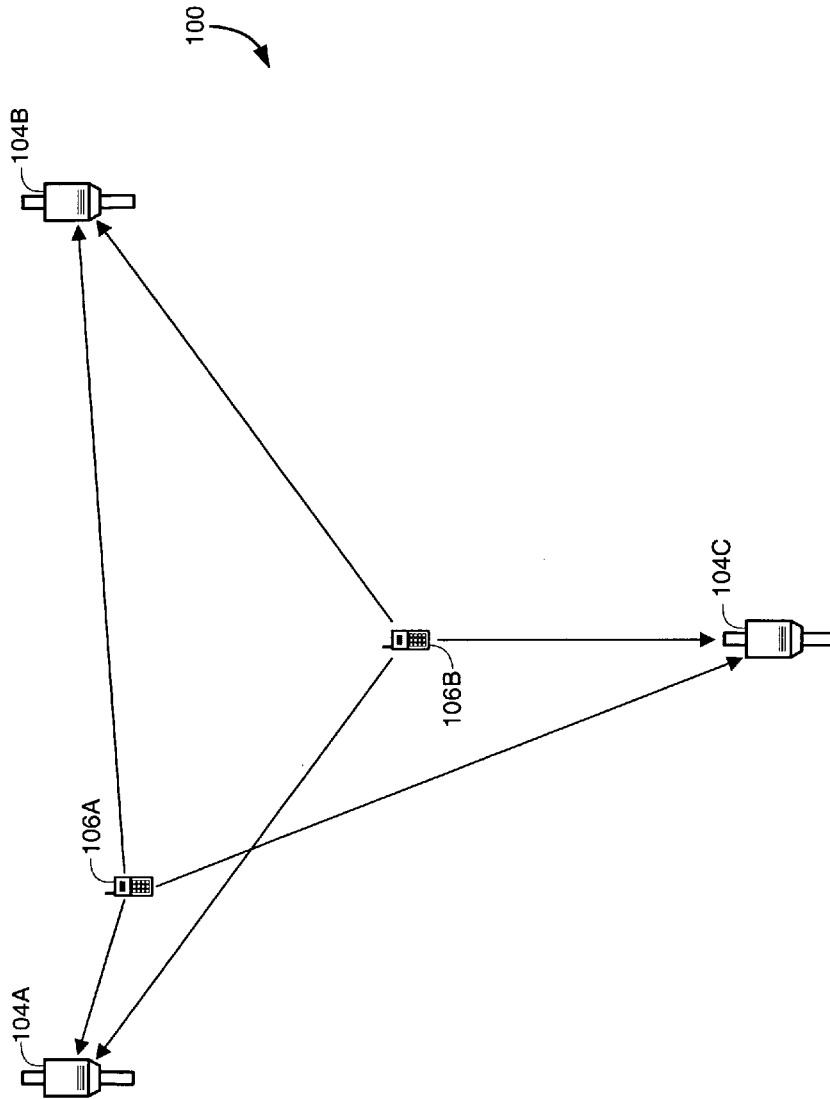


FIG. 1

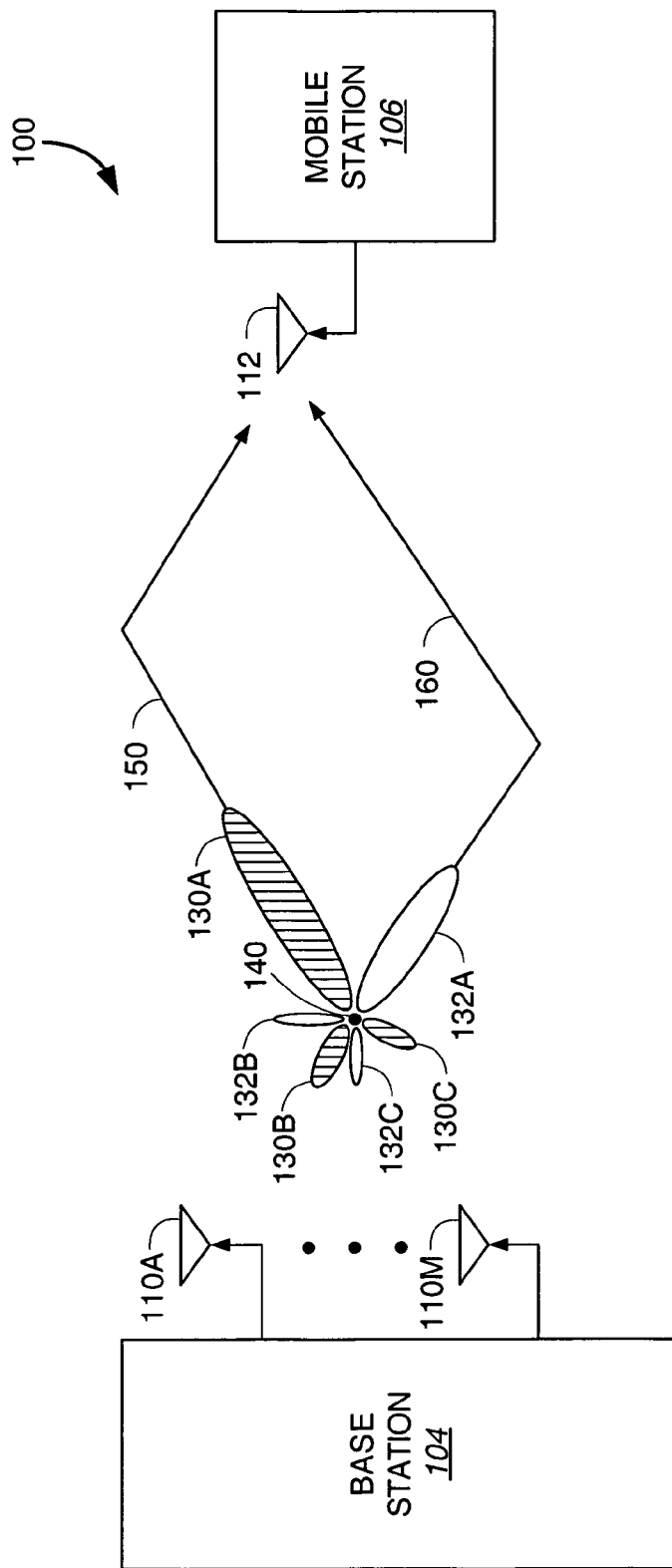


FIG. 2

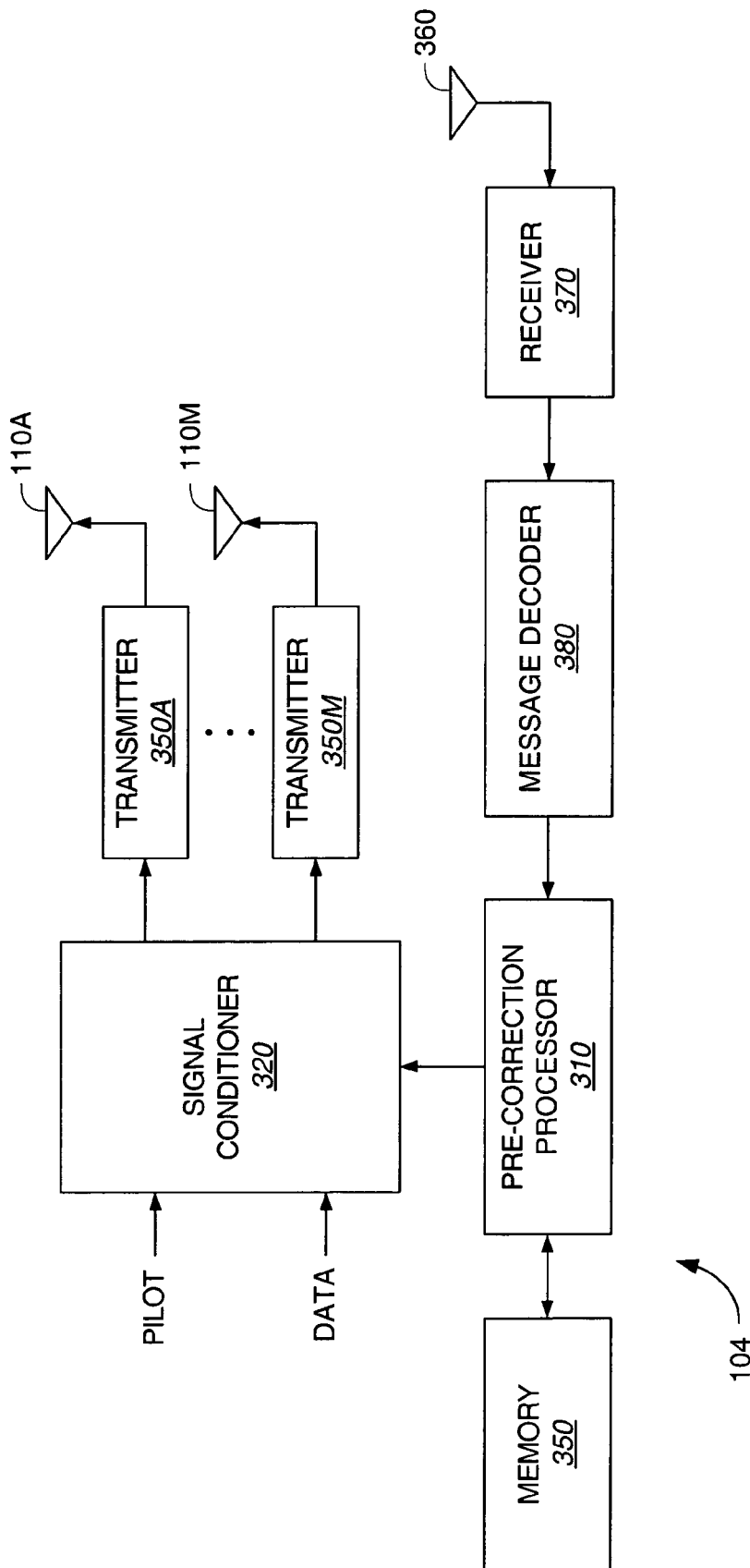


FIG. 3

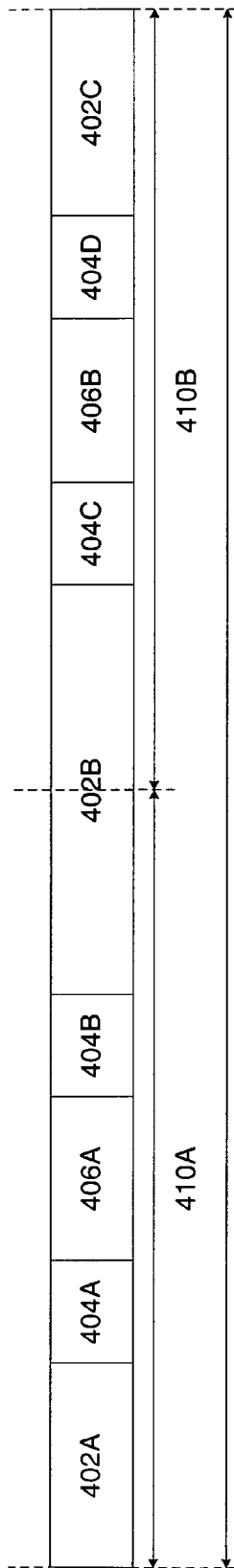


FIG. 4A

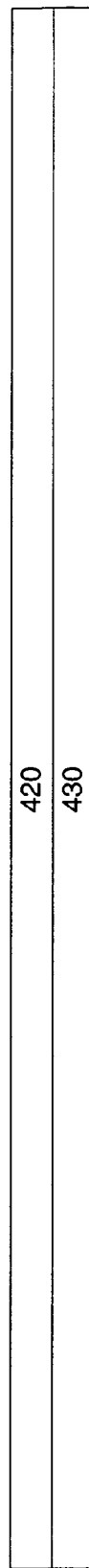


FIG. 4B

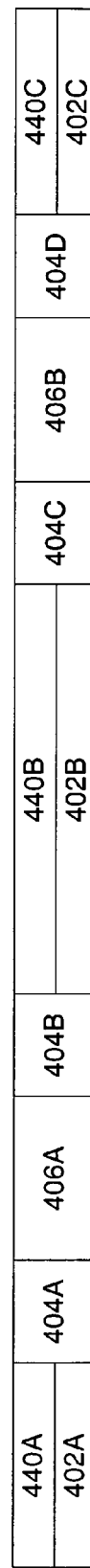


FIG. 4C

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