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Gilhausen et al.

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(54) **SYSTEM AND METHOD FOR GENERATING SIGNAL WAVEFORMS IN A CDMA CELLULAR TELEPHONE SYSTEM**

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Related U.S. Application Data

(63) Continuation of application No. 09/360,059, filed on Jul. 23, 1999, which is a continuation of application No. 08/441,895, filed on May 16, 1995, now Pat. No. 5,943,361, which is a continuation of application No. 07/825,147, filed on Jan. 24, 1992, now Pat. No. 5,416,797, which is a continuation of application No. 07/543,496, filed on Jun. 25, 1990, now Pat. No. 5,103,459.

(51) **Int. Cl.**⁷ **H04B 1/69**

(52) **U.S. Cl.** **375/141; 375/140**

(58) **Field of Search** **375/141, 130, 375/140, 142, 144, 220, 219; 370/320, 335, 342, 350**

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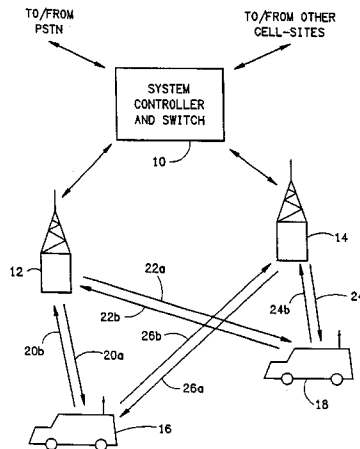
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(57) **ABSTRACT**

A system and method for communicating information signals using spread spectrum communication techniques. PN sequences are constructed that provide orthogonality between the users so that mutual interference will be reduced, allowing higher capacity and better link performance. With orthogonal PN codes, the cross-correlation is zero over a predetermined time interval, resulting in no interference between the orthogonal codes, provided only that the code time frames are time aligned with each other. In an exemplary embodiment, signals are communicated between a cell-site and mobile units using direct sequence spread spectrum communication signals. In the cell-to-mobile link, pilot, sync, paging and voice channels are defined. Information communicated on the cell-to-mobile link channels are, in general, encoded, interleaved, bi-phase shift key (BPSK) modulated with orthogonal covering of each BPSK symbol along with quadrature phase shift key (QPSK) spreading of the covered symbols. In the mobile-to-cell link, access and voice channels are defined. Information communicated on the mobile-to-cell link channels are, in general, encoded, interleaved, orthogonal signaling along with QPSK spreading.

14 Claims, 13 Drawing Sheets



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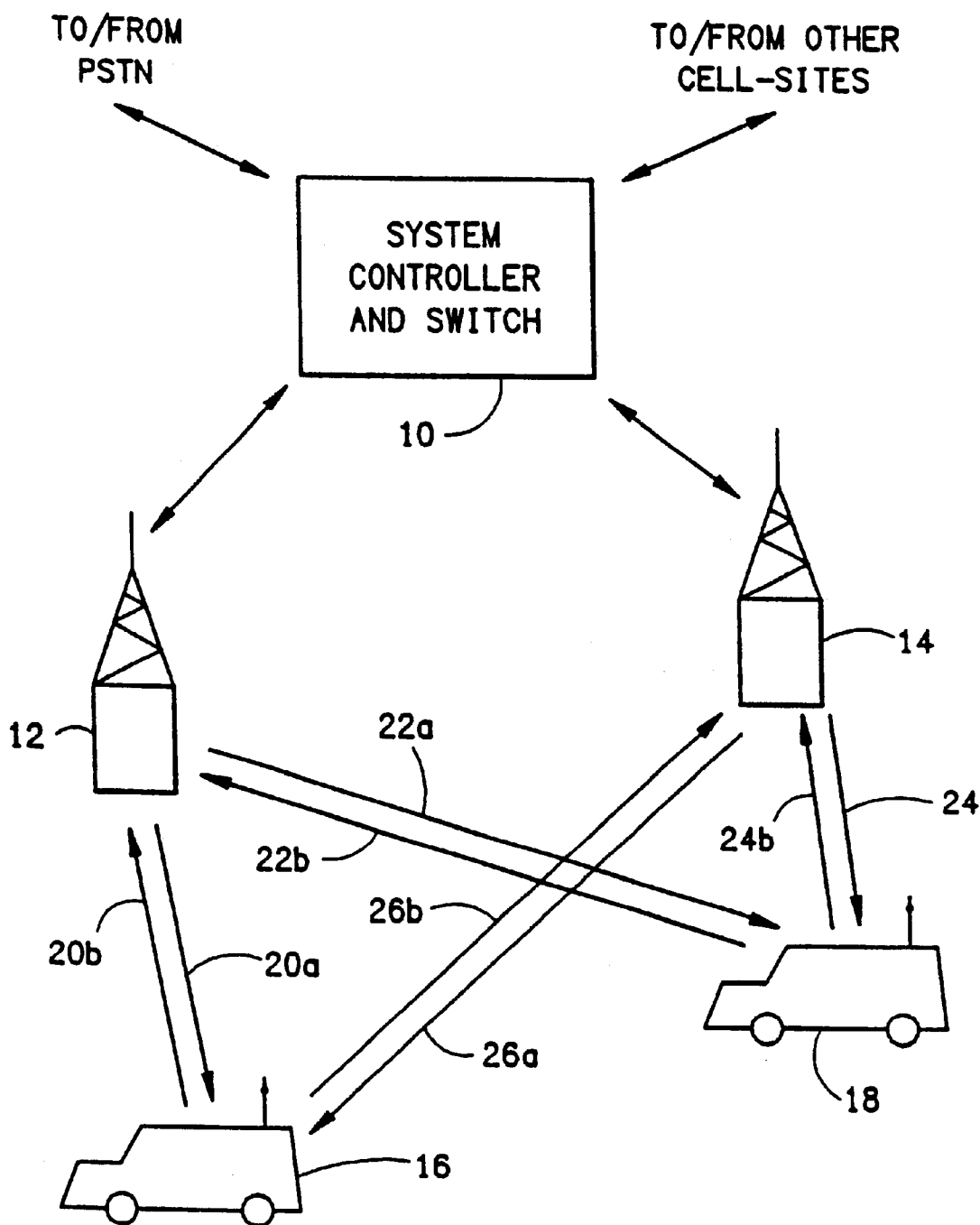


FIG. 1

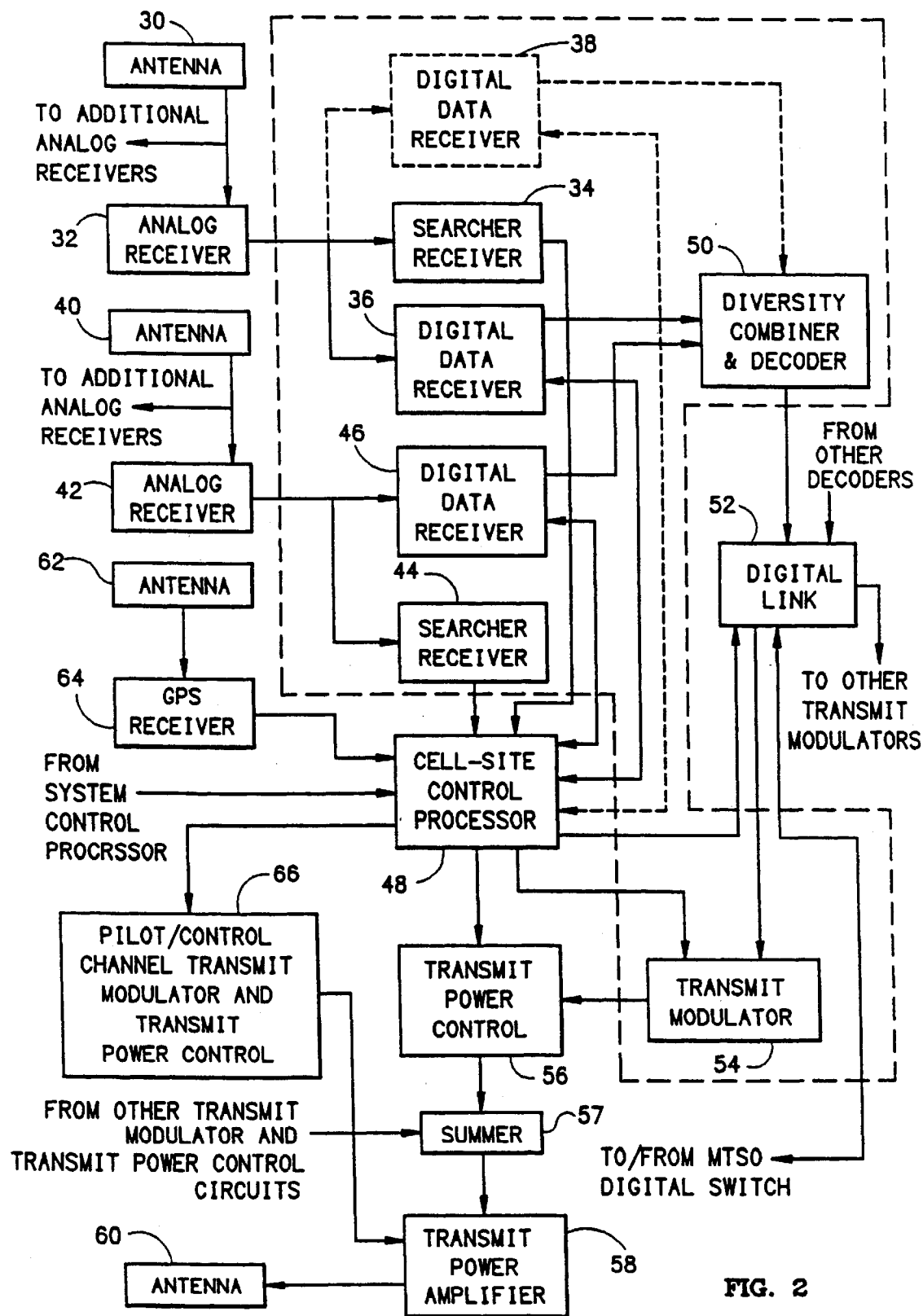


FIG. 2

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