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Haartsen

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(54) **HOP SEQUENCE ADAPTATION IN A FREQUENCY-HOPPING COMMUNICATIONS SYSTEM**

5,832,026 A 11/1998 Li
5,848,095 A 12/1998 Deutsch
5,870,391 A 2/1999 Nago
5,898,733 A 4/1999 Satyanarayana
6,480,721 B1* 11/2002 Sydon et al. 455/464

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FOREIGN PATENT DOCUMENTS

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EP 0182762 A1 5/1986
WO WO99/09671 2/1999
WO WO99/19993 4/1999

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* cited by examiner

(21) Appl. No.: **09/418,562**

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(57) **ABSTRACT**

(51) **Int. Cl.**
H04B 1/00 (2006.01)

A hop channel is selected for use in a channel hopping communication system that includes a sequence of hop channels, wherein the sequence comprises a set of forbidden hop channels and a remaining set of allowable hop channels. Selection involves selecting a hop channel from the sequence as a function of a present phase. If the selected hop channel is an allowable hop channel, then the selected hop channel is used for communication during the present phase. If the selected hop channel is a forbidden hop channel, then a time-varying parameter is used to select a substitute hop channel from the set of allowable hop channels. The substitute hop channel is then used for communication during the present phase. The time-varying parameter may, for example, be a clock value. With this strategy, the resultant hopping sequence is identical to the original hopping sequence whenever the original sequence calls for an allowable hop channel. In all other cases, a substitute hop channel is dynamically selected from the set of allowable hop channels.

(52) **U.S. Cl.** **375/138; 375/132**
(58) **Field of Classification Search** **375/200, 375/202, 130-153, 267; 455/450, 464; 370/338, 370/333, 330**

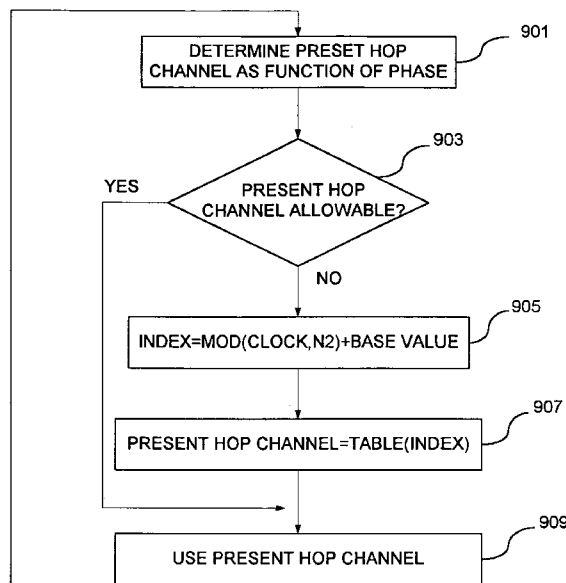
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,023,103 A 5/1977 Malm
4,476,566 A * 10/1984 Dent 375/132
4,606,040 A 8/1986 David et al.
4,716,573 A * 12/1987 Bergstrom et al. 375/132
4,780,885 A * 10/1988 Paul et al. 375/267
5,307,348 A 4/1994 Buchholz et al.
5,323,447 A * 6/1994 Gillis et al. 455/464
5,408,496 A 4/1995 Ritz et al.
5,515,369 A 5/1996 Flammer, III et al.
5,619,493 A 4/1997 Ritz et al.
5,737,358 A 4/1998 Ritz et al.
5,809,059 A 9/1998 Souissi et al.

42 Claims, 15 Drawing Sheets



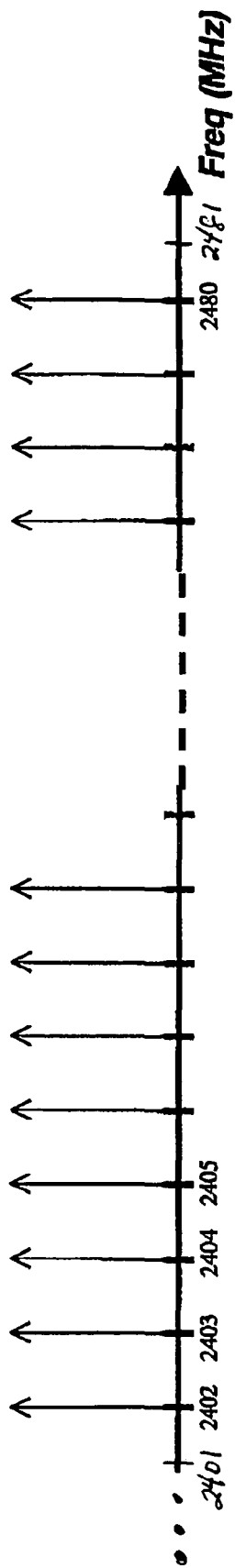


FIGURE 1

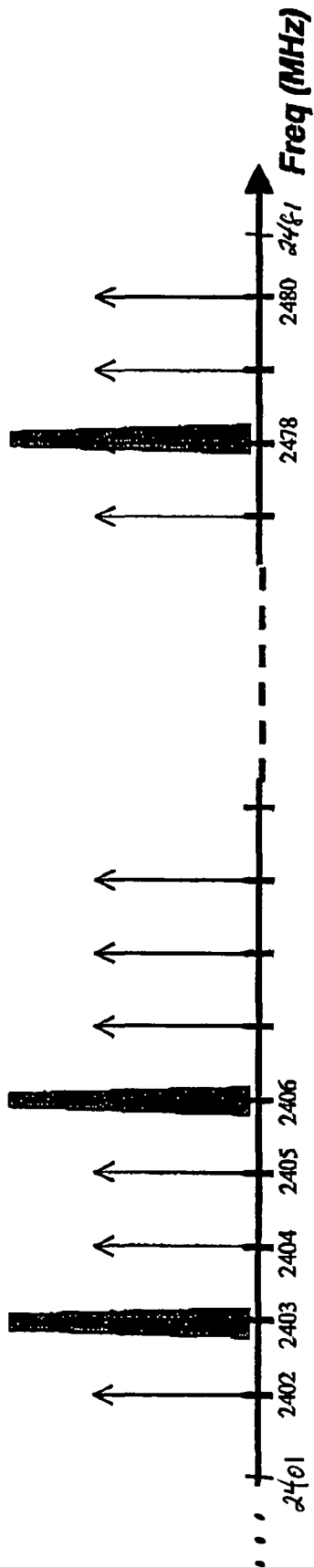


FIG. 2(a)

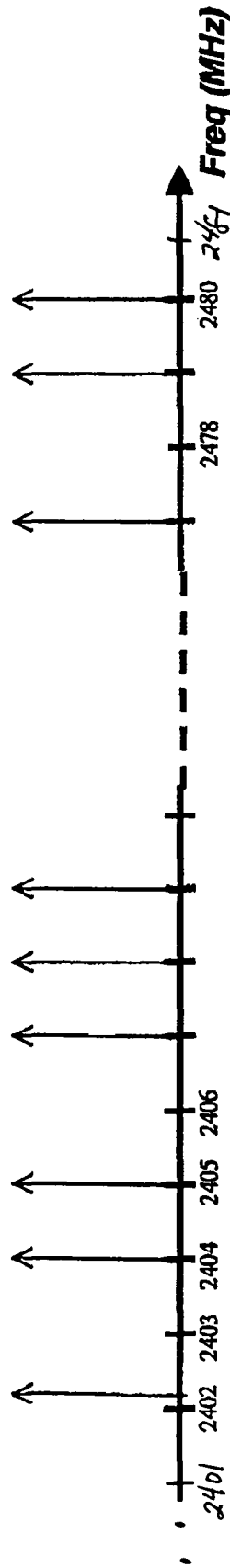


FIG. 2(b)

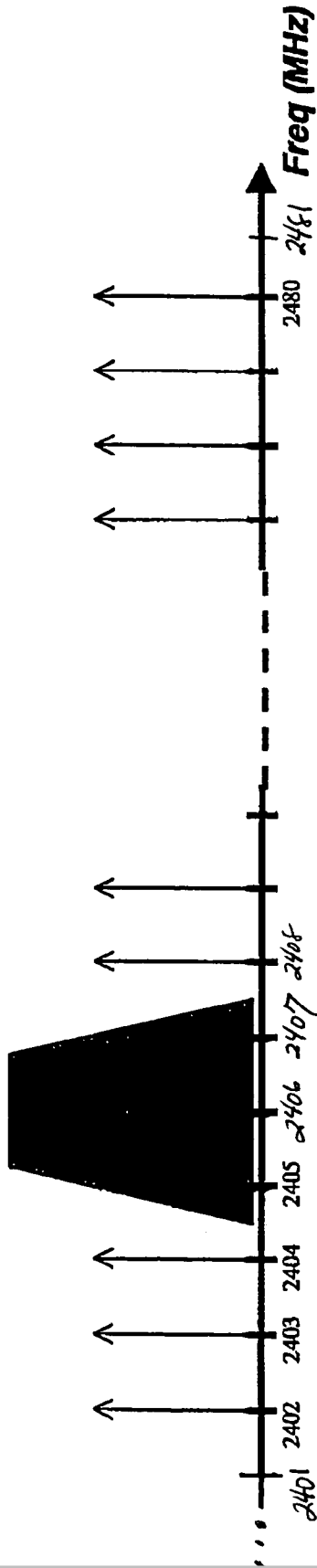


FIG. 3(a)

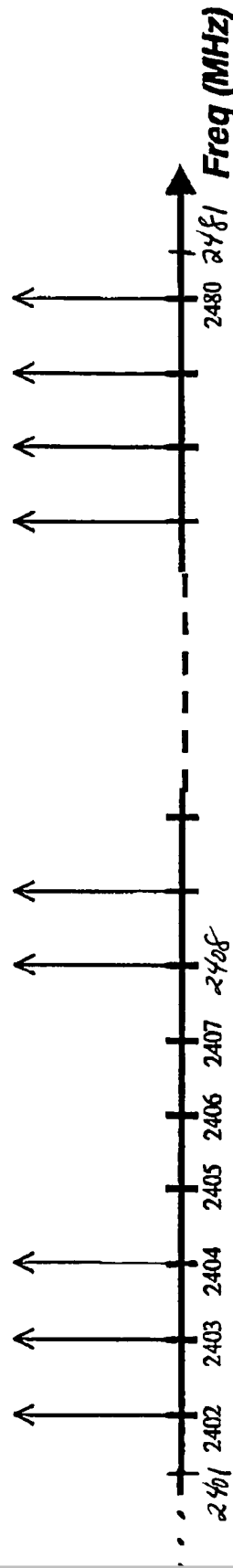


FIG. 3(b)

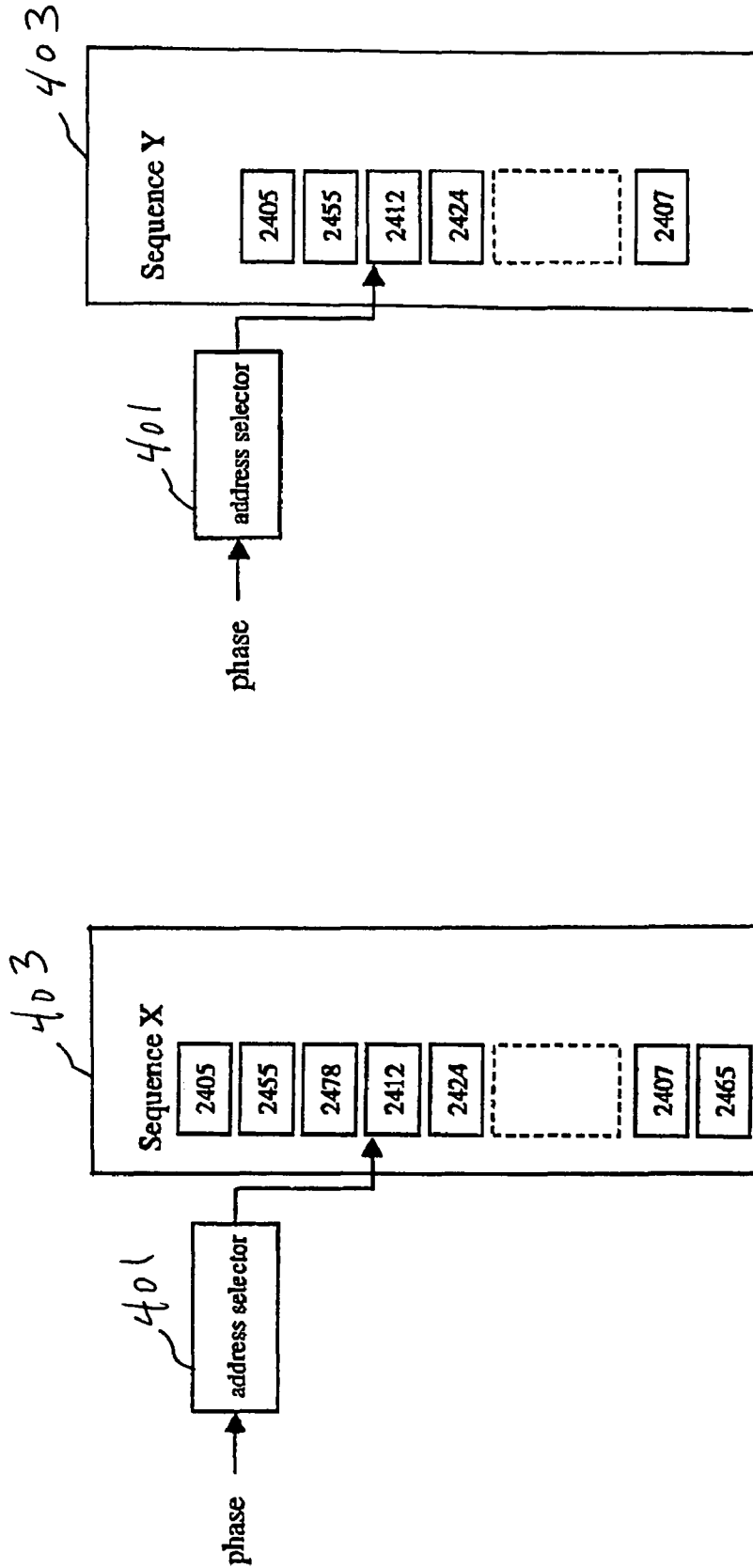


FIG. 4(b)
(PRIOR ART)

FIG. 4(a)
(PRIOR ART)

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