



US007280580B1

(12) **United States Patent**
Haartsen

(10) **Patent No.:** **US 7,280,580 B1**
(45) **Date of Patent:** **Oct. 9, 2007**

(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

(75) Inventor: **Jacobus C. Haartsen**, Hardenberg (NL)

FOREIGN PATENT DOCUMENTS

(73) Assignee: **Telefonaktiebolaget LM Ericsson (publ.)**, Stockholm (SE)

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

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

* cited by examiner

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

Primary Examiner—Curtis Odom
(74) *Attorney, Agent, or Firm*—Potomac Patent Group PLLC

(22) Filed: **Oct. 15, 1999**

(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**

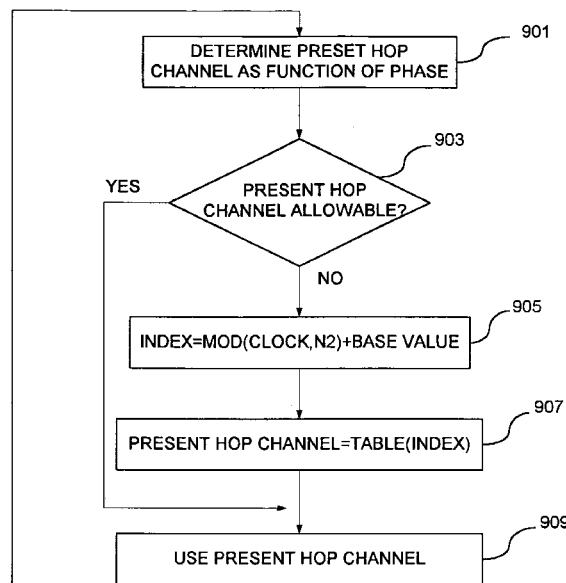
See application file for complete search history.

(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



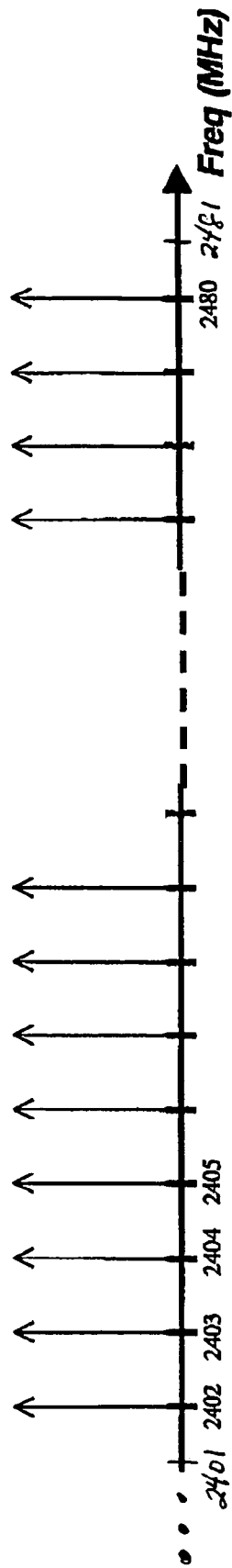


FIGURE 1

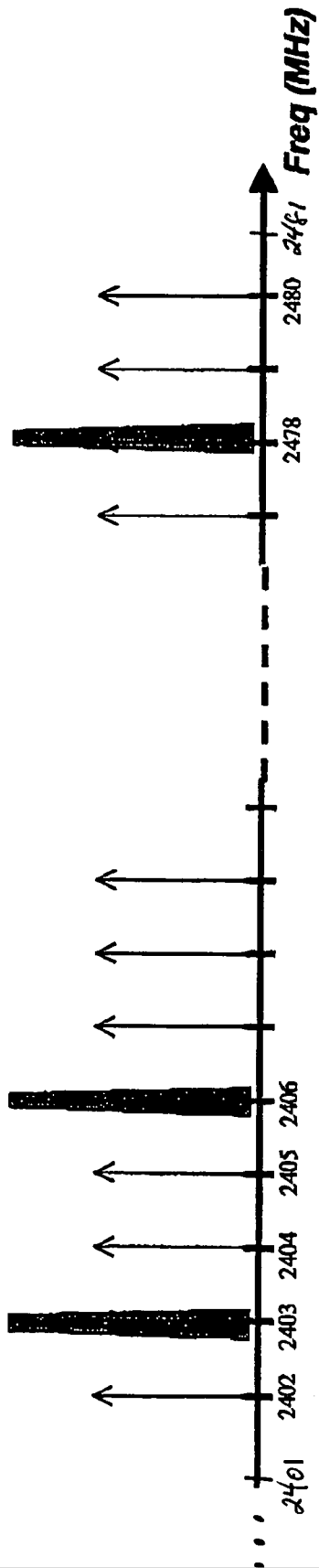


FIG. 2(a)

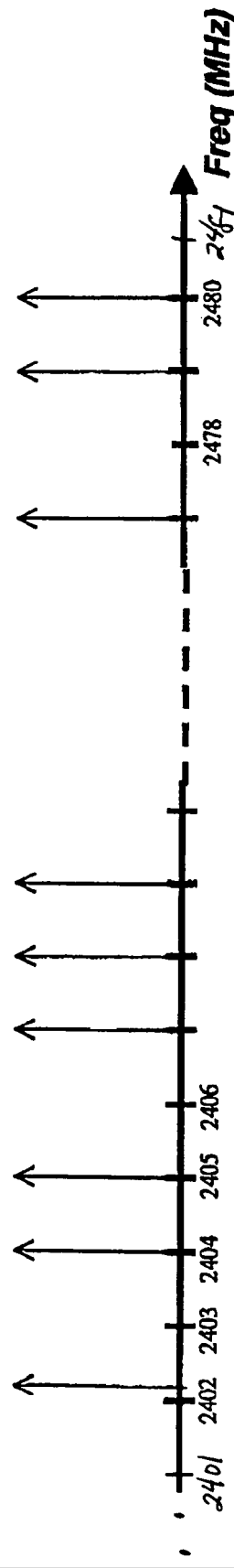


FIG. 2(b)

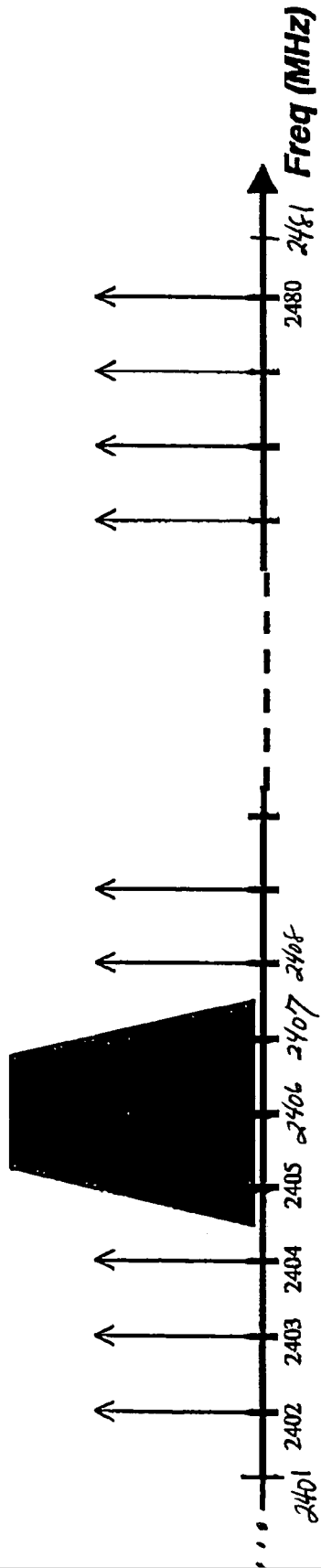


FIG. 3(a)

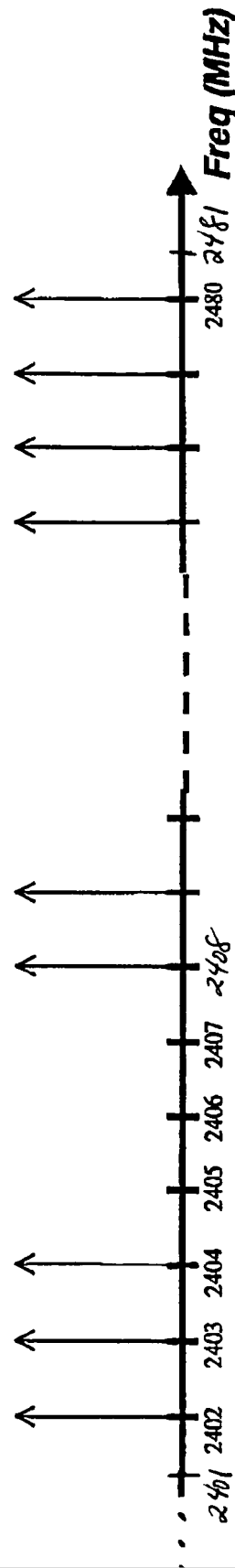


FIG. 3(b)

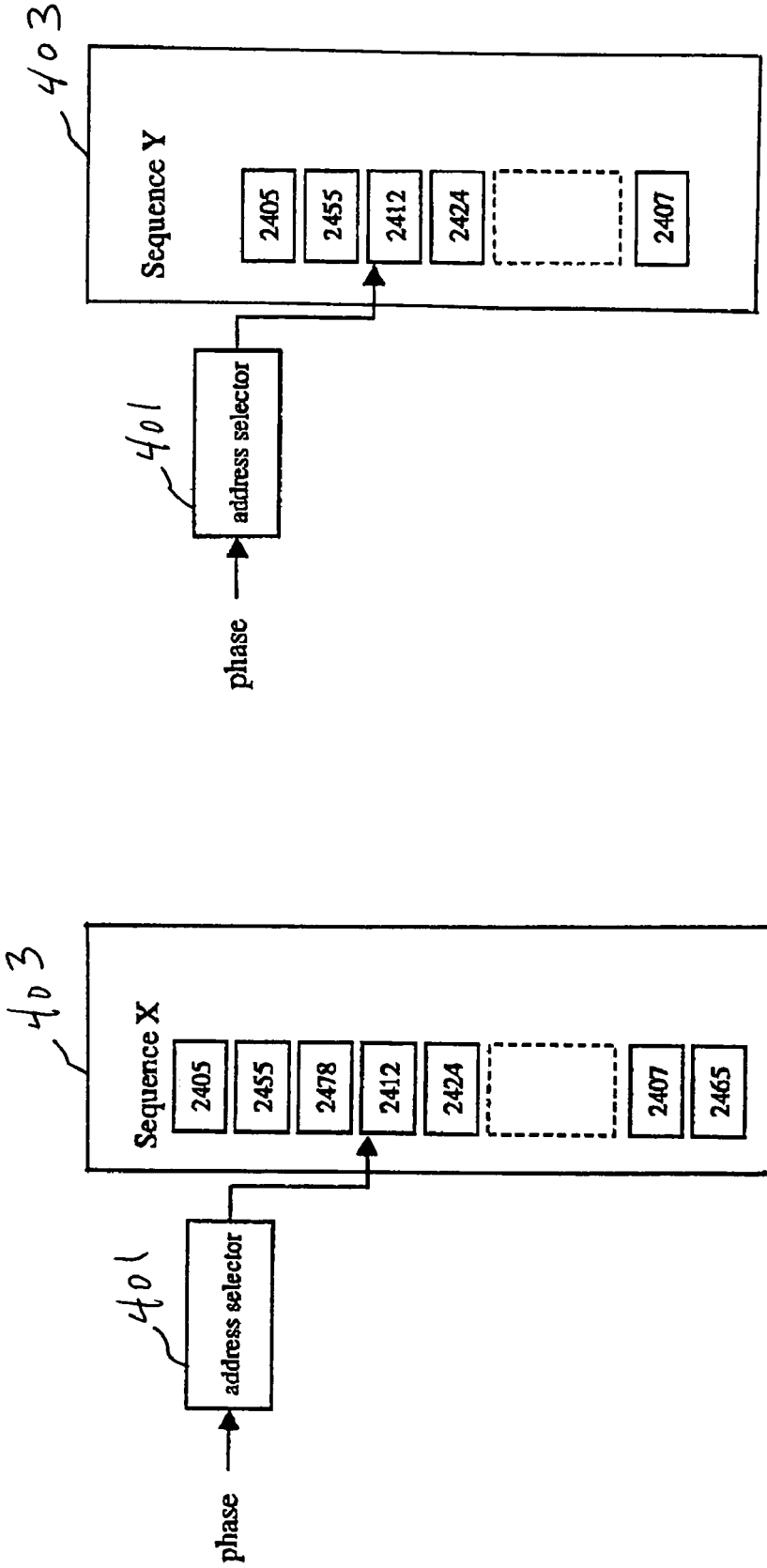


FIG. 4(b)
(PRIOR ART)

FIG. 4(a)
(PRIOR ART)

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.