



US007340017B1

(12) **United States Patent**
Banerjee

(10) **Patent No.:** **US 7,340,017 B1**
(45) **Date of Patent:** **Mar. 4, 2008**

(54) **SYSTEM AND METHOD FOR FINGER MANAGEMENT IN A RAKE RECEIVER**
(75) Inventor: **Debarag N. Banerjee**, Sunnyvale, CA (US)
(73) Assignee: **National Semiconductor Corporation**, Santa Clara, CA (US)
(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 899 days.

6,625,197 B1 *	9/2003	Lundby et al.	375/130
6,697,417 B2 *	2/2004	Fernandez-Corbaton et al.	375/147
6,731,676 B2 *	5/2004	Rick et al.	375/148
7,184,457 B2 *	2/2007	Schmidl et al.	375/130
2002/0006158 A1 *	1/2002	Schmidl et al.	375/150
2002/0045443 A1 *	4/2002	Hunzinger	455/421
2002/0094017 A1 *	7/2002	Wang	375/144
2003/0072390 A1 *	4/2003	Corbaton et al.	375/316
2003/0142730 A1 *	7/2003	Lin	375/147
2004/0057538 A1 *	3/2004	Sathiavageswaran et al.	375/350

* cited by examiner

(21) Appl. No.: **10/209,650**

Primary Examiner—Jean B. Corrielus

(22) Filed: **Jul. 30, 2002**

(57) **ABSTRACT**

(51) **Int. Cl.**
H04B 1/00 (2006.01)
(52) **U.S. Cl.** **375/348; 375/349**
(58) **Field of Classification Search** 375/148, 375/147, 205, 150, 149, 130, 140, 142, 267, 375/347, 349; 455/421, 456
See application file for complete search history.

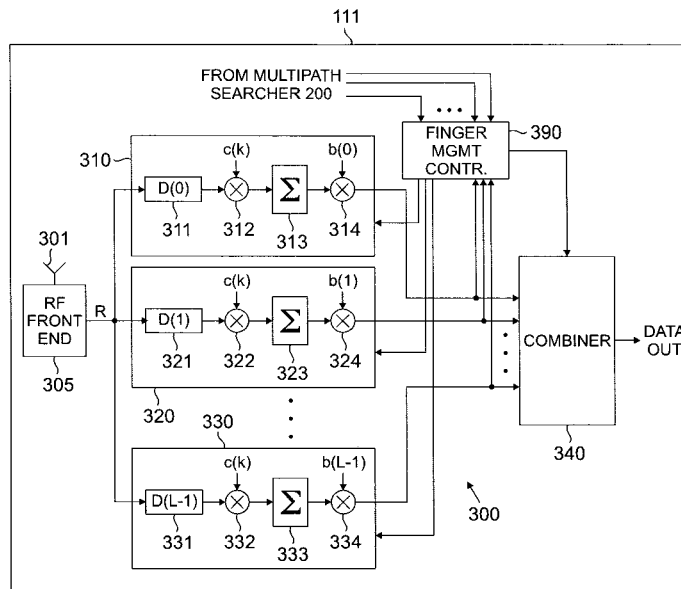
In a RAKE receiver capable of detecting and combining a plurality of multipath signals, a controller for managing the assignment of the plurality of multipath signals to fingers of the RAKE receiver. The controller determines a phase difference between a selected multipath signal and a first multipath signal assigned to a first finger of the RAKE receiver and does not assign the selected multipath signal to a second finger of the RAKE receiver unless the phase difference is greater than one-half chip. If the phase difference is less than one-half chip, the controller assigns the stronger of the selected multipath signal and the first multipath signal to the first finger of the RAKE receiver. If the finger power falls below a certain threshold, the finger internal states (viz. channel estimate and delay estimate) are maintained while the output of the finger is not processed. If the finger power exceeds the threshold anytime within a specified time interval, the normal activities of the finger are restored. If the power remains lower than the threshold for that time period, the finger is deactivated.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,471,497 A *	11/1995	Zehavi	375/142
5,490,165 A *	2/1996	Blakeney et al.	370/335
6,078,611 A *	6/2000	La Rosa et al.	375/147
6,249,680 B1 *	6/2001	Wax et al.	455/456.2
6,269,075 B1 *	7/2001	Tran	370/206
6,320,898 B1 *	11/2001	Newson et al.	375/144
6,345,078 B1 *	2/2002	Basso	375/349
6,377,614 B1 *	4/2002	Yamashita	375/149
6,408,039 B1 *	6/2002	Ito	375/347
6,532,222 B1 *	3/2003	Rege et al.	370/335
6,618,434 B2 *	9/2003	Heidari-Batani et al. ...	375/148

27 Claims, 6 Drawing Sheets



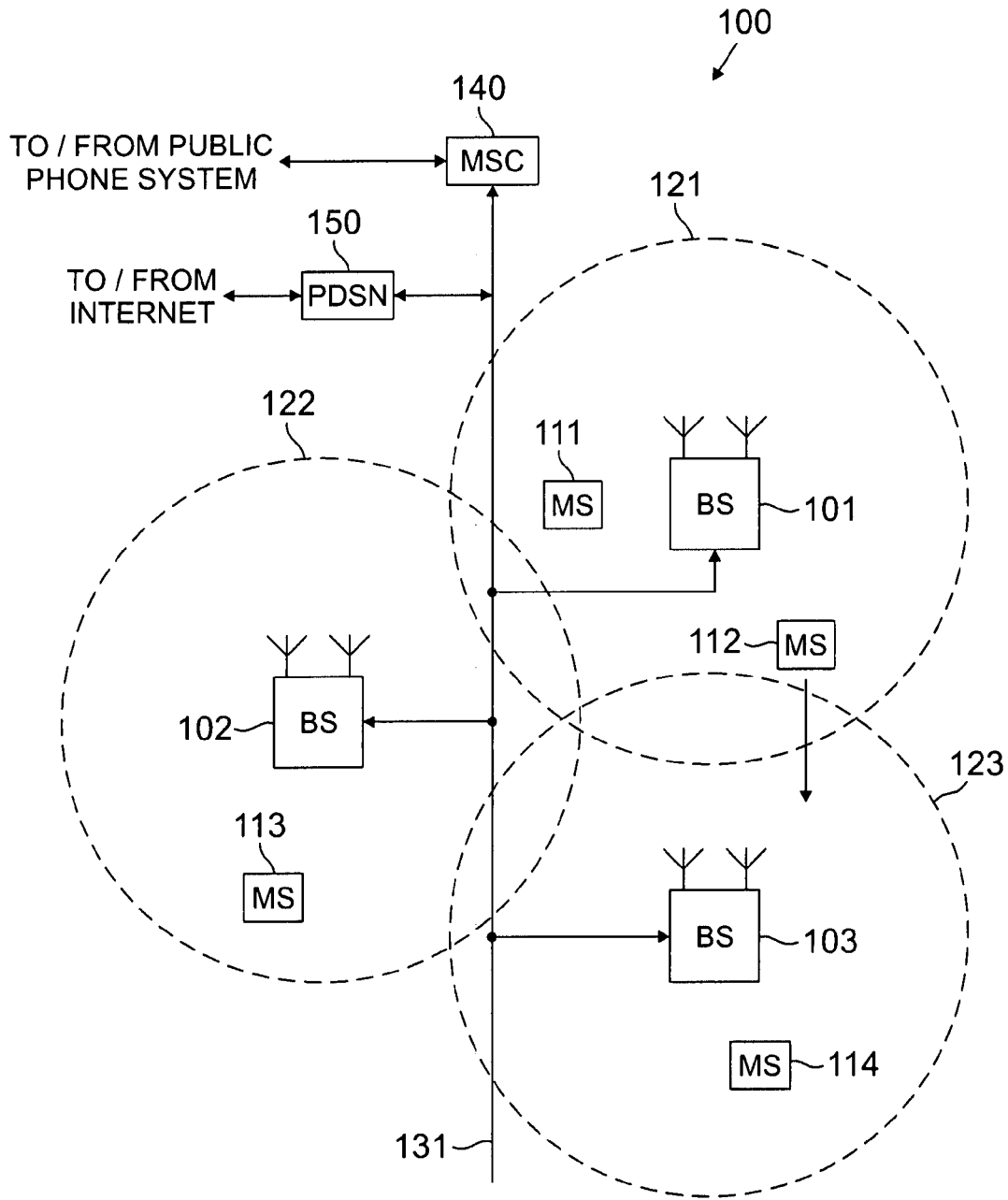


FIG. 1

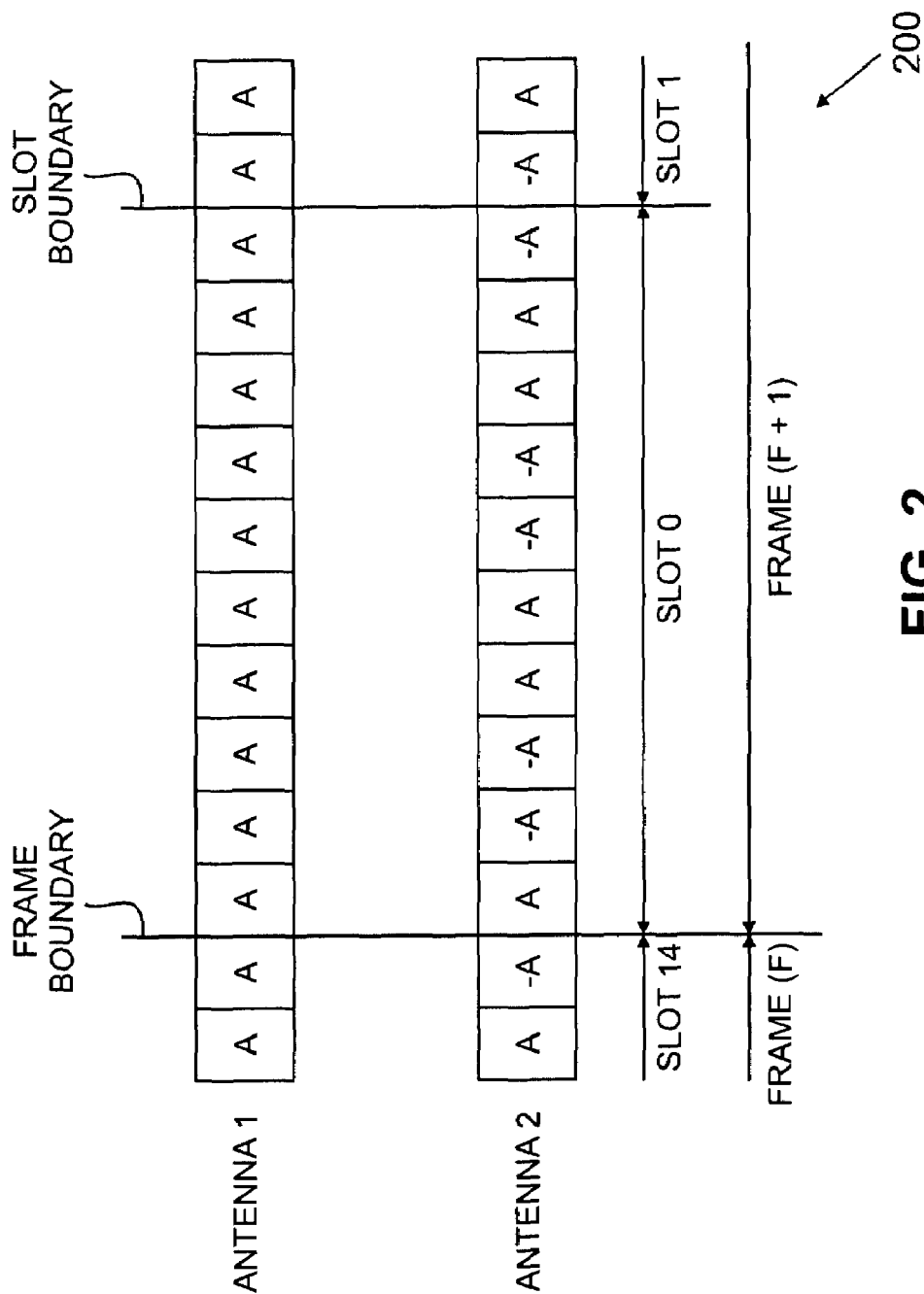


FIG. 2

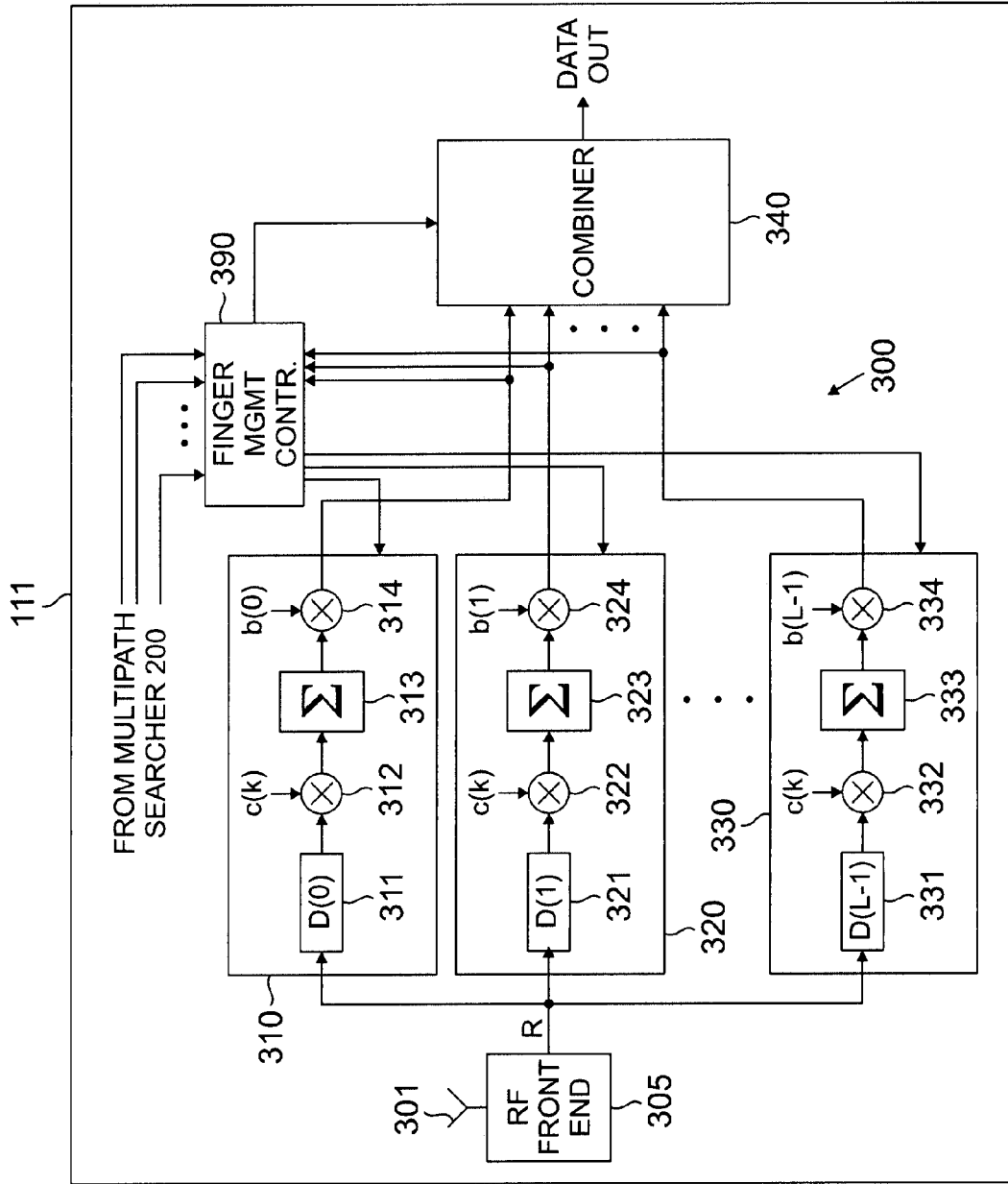


FIG. 3

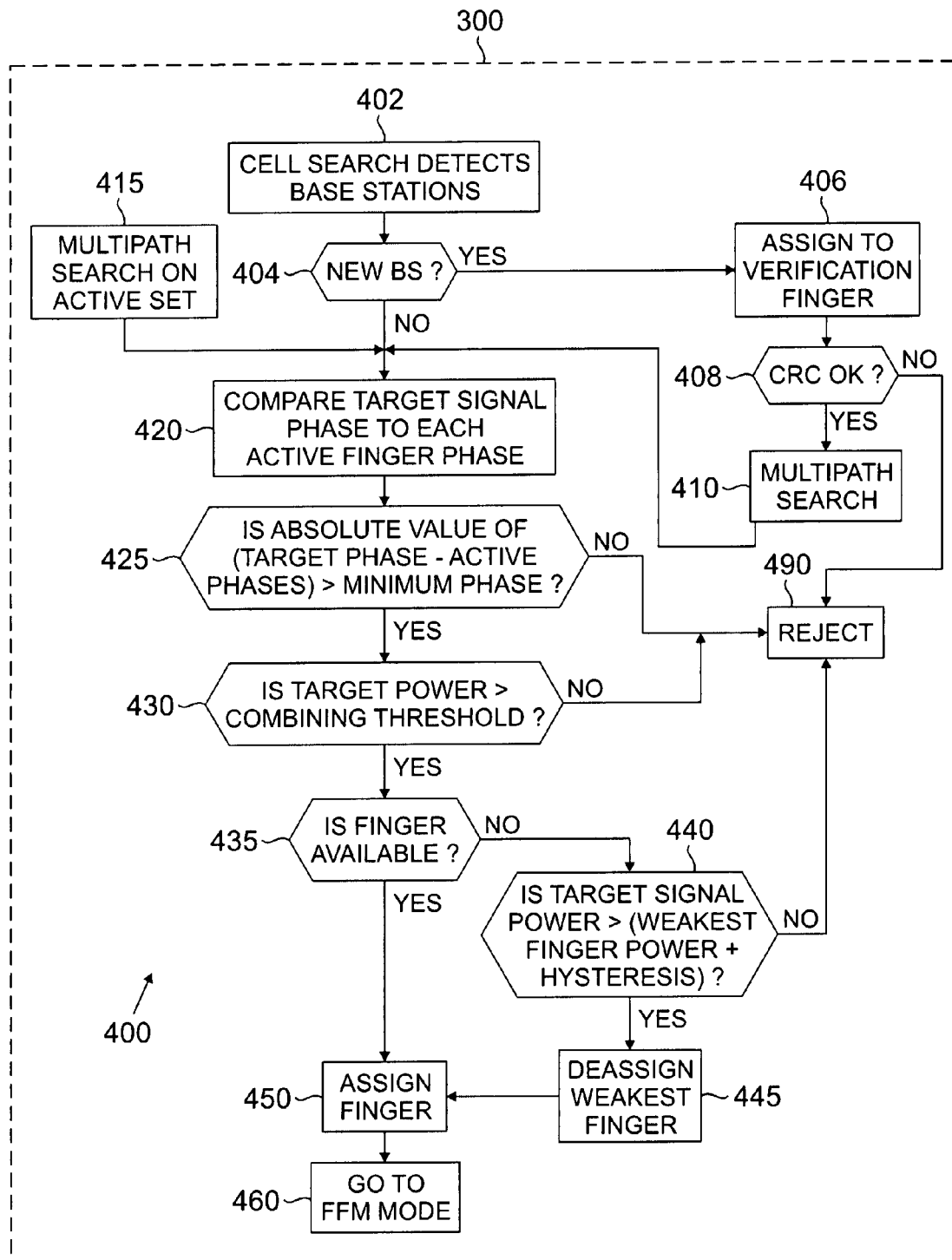


FIG. 4

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.