



US007039358B1

(12) **United States Patent**
Shellhammer et al.

(10) **Patent No.:** **US 7,039,358 B1**
(45) **Date of Patent:** **May 2, 2006**

(54) **COEXISTENCE TECHNIQUES IN WIRELESS NETWORKS**

(75) Inventors: **Stephen J. Shellhammer**, Lake Grove, NY (US); **Jacob Sharony**, Dix Hills, NY (US); **Anthony D. Binso**, South Setauket, NY (US); **Sean A. Connolly**, Stony Brook, NY (US); **William Sackett**, Rocky Point, NY (US); **Joseph Cabana**, Centereach, NY (US); **Patrick Tilley**, Coram, NY (US); **Robert Beach**, Los Altos, CA (US)

(73) Assignee: **Symbol Technologies, Inc.**, Holtsville, NY (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 499 days.

(21) Appl. No.: **09/714,803**

(22) Filed: **Nov. 16, 2000**

Related U.S. Application Data

(60) Provisional application No. 60/175,262, filed on Jan. 10, 2000, provisional application No. 60/196,979, filed on Apr. 13, 2000.

(51) **Int. Cl.**
H04B 7/00 (2006.01)

(52) **U.S. Cl.** **455/41.2; 455/426.1**

(58) **Field of Classification Search** **455/41.1-41.3, 455/561, 414.1, 414.4, 454, 462, 463, 554.1, 455/554.2, 552.1, 426.1, 426.2, 435.1-435.3, 455/448, 450, 466, 560, 556.1, 90.1; 343/701, 343/702**

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,610,386 A * 3/1997 Ball et al. 235/462.44

6,023,241 A *	2/2000	Clapper	342/357.13
6,047,165 A *	4/2000	Wright et al.	455/66.1
6,326,926 B1 *	12/2001	Shoobridge et al.	343/702
6,377,608 B1 *	4/2002	Zyren	375/132
6,414,643 B1 *	7/2002	Cheng et al.	343/702
6,452,910 B1 *	9/2002	Vij et al.	370/310
6,477,378 B1 *	11/2002	Halminen	455/450
6,526,264 B1 *	2/2003	Sugar et al.	455/84
6,529,584 B1 *	3/2003	Ravago et al.	379/67.1
6,531,985 B1 *	3/2003	Jones et al.	343/702
6,560,443 B1 *	5/2003	Vaisanen et al.	455/73

FOREIGN PATENT DOCUMENTS

EP 1119137 * 7/2001

* cited by examiner

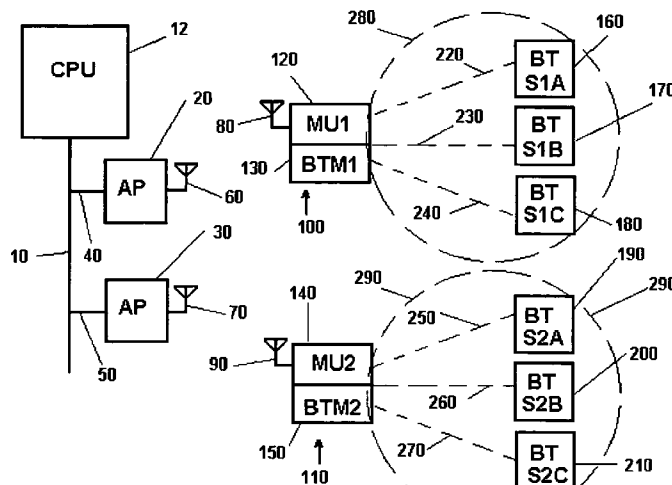
Primary Examiner—Charles Craver

(74) *Attorney, Agent, or Firm*—Baker Botts LLP

(57) **ABSTRACT**

Techniques are provided for frequency coordination among two different wireless network protocols, such as the IEEE 802.11 and Bluetooth protocols, operating in proximity with one another. Coordination is accomplished by the use of a first radio transceiver operating in accordance with a first communication protocol (which may be the 802.11 protocol) and using a frequency band (which may be the 2.4 GHz band), a base station connected to a wired network and operating in accordance with the first communication protocol, a second radio transceiver operating in accordance with a second communication protocol (which may be the Bluetooth protocol) and using the frequency band, and a coordinator associated with the base station for, in turn, activating the first radio transceiver, deactivating the first radio transceiver, activating the second radio transceiver, and deactivating the second radio transceiver.

31 Claims, 4 Drawing Sheets



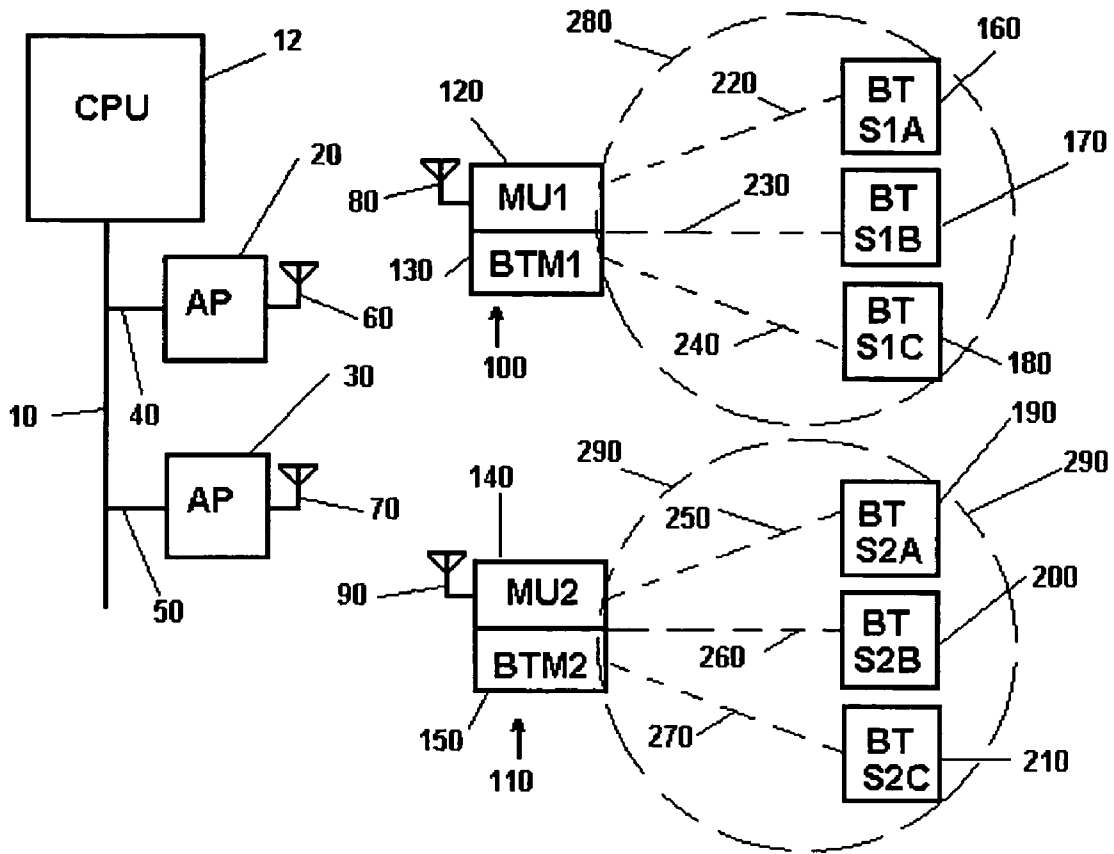


FIG. 1

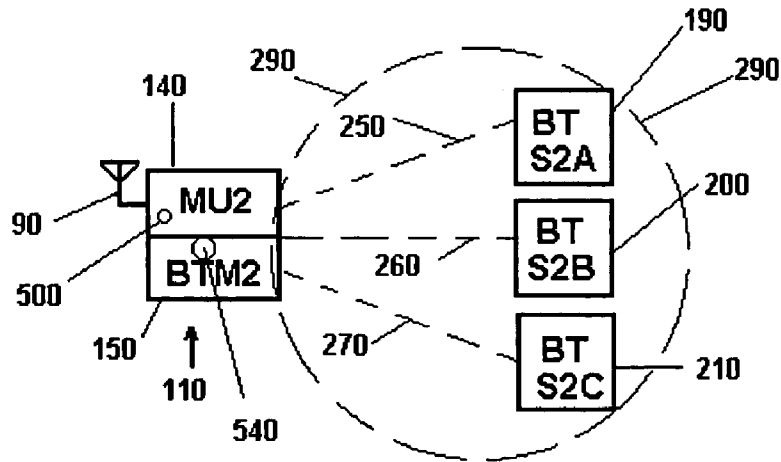


FIG. 2

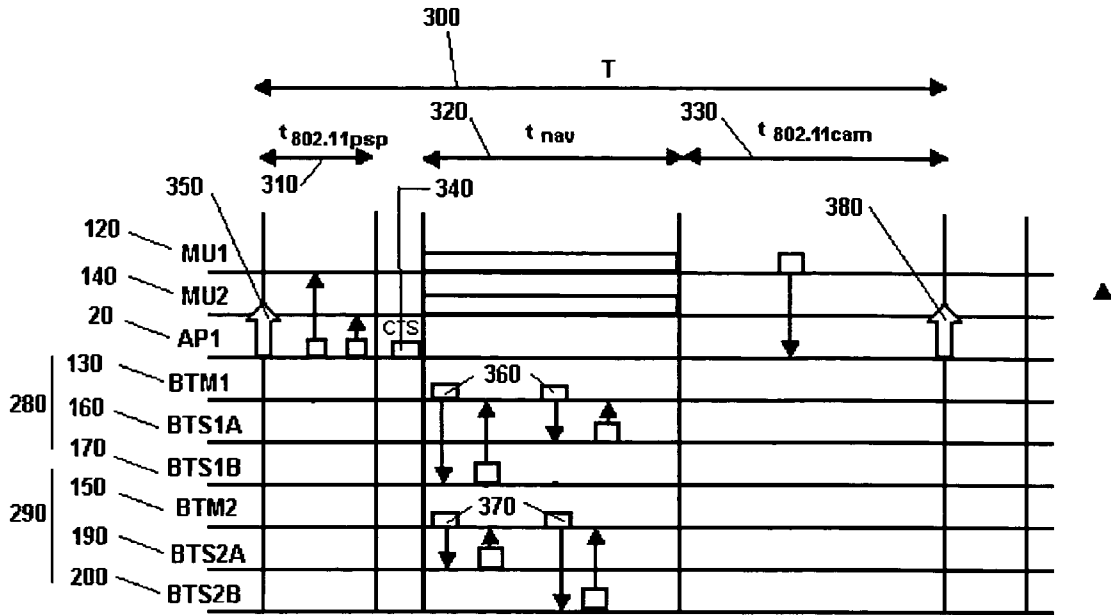


FIG. 3

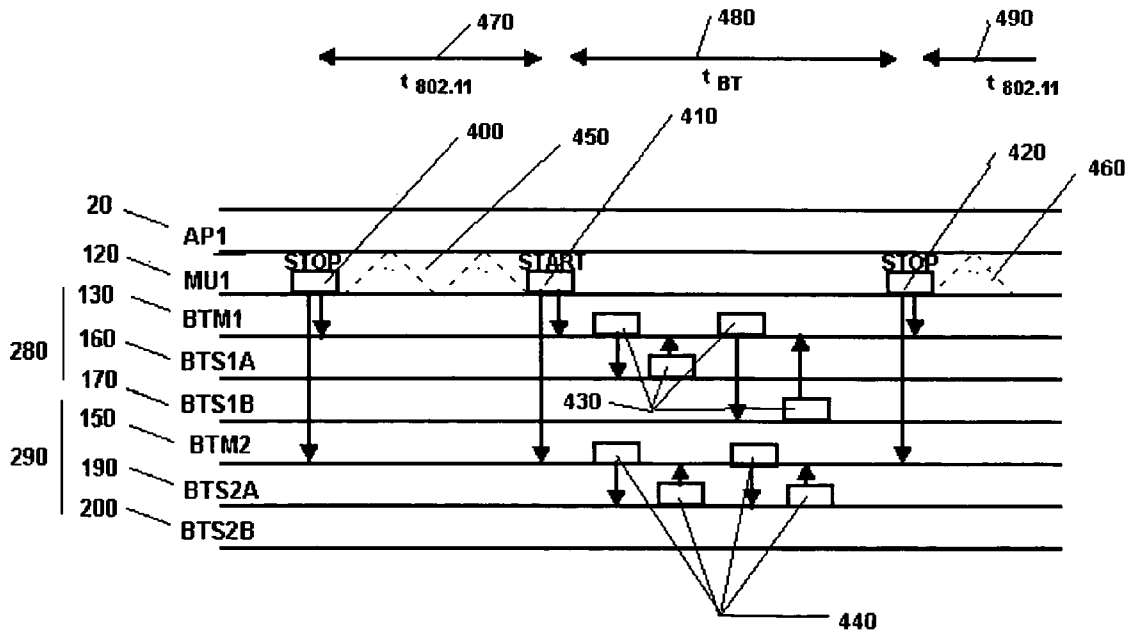


FIG. 4

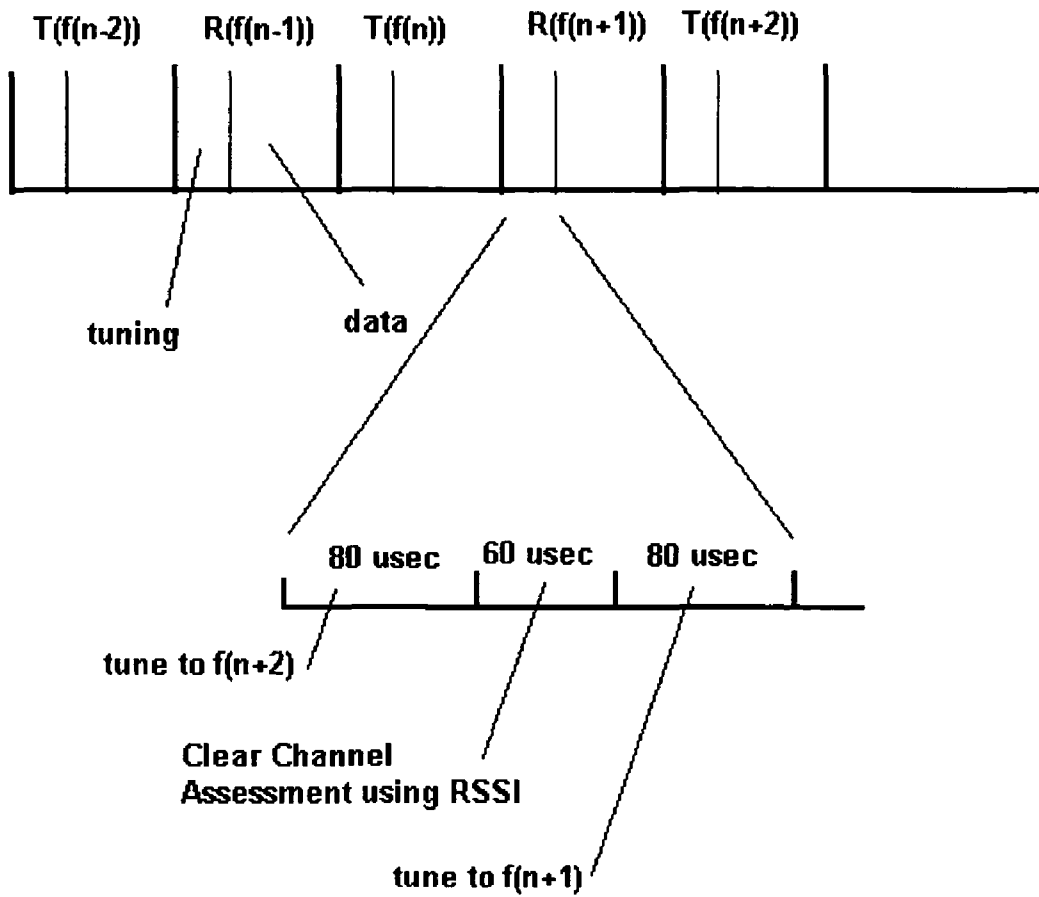


FIG. 5

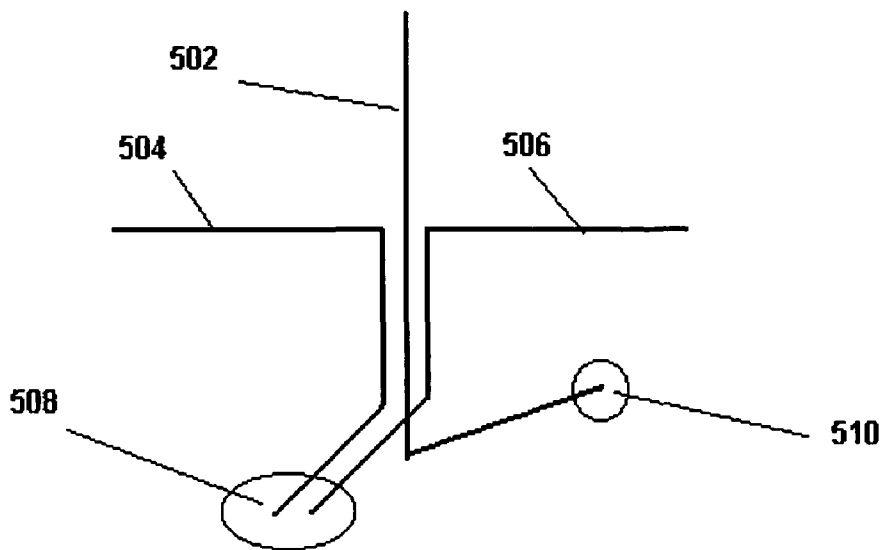


FIG. 6

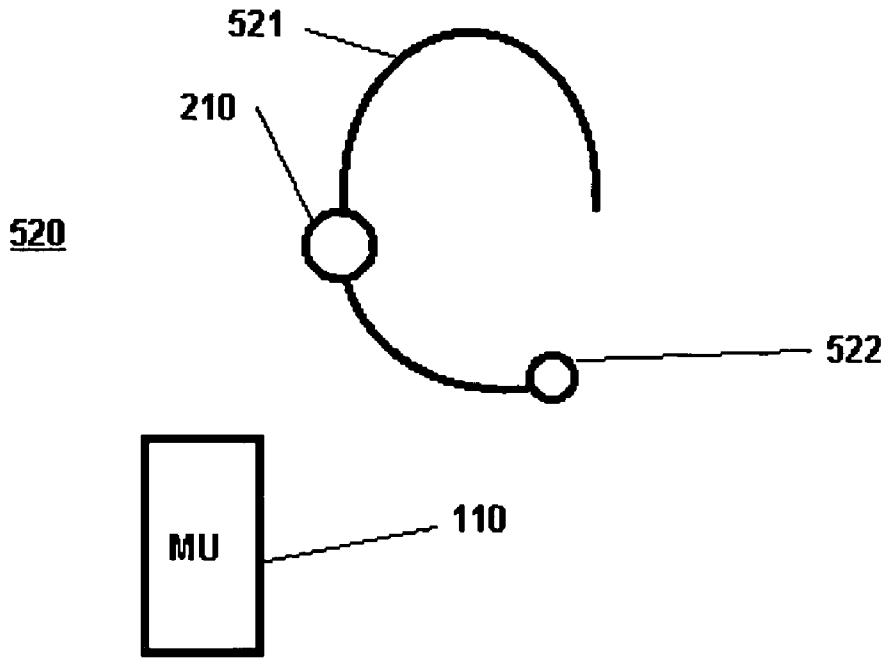


FIG. 7

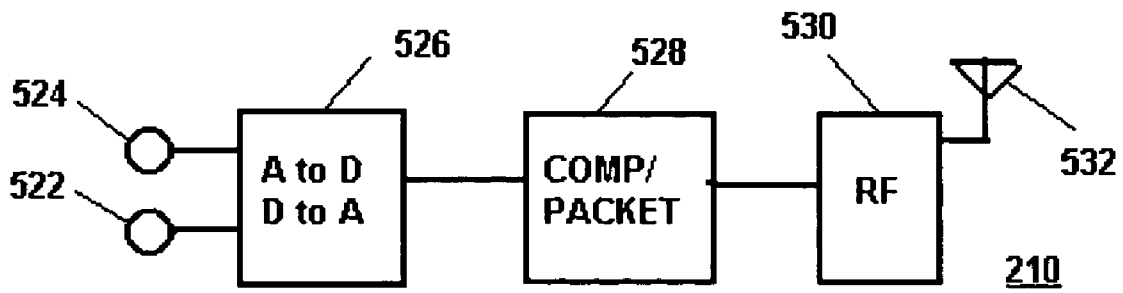


FIG. 8

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.