

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

(10) **Patent No.:** **US 6,545,990 B1**
 (45) **Date of Patent:** **Apr. 8, 2003**

(54) **METHOD AND APPARATUS FOR A SPECTRALLY COMPLIANT CELLULAR COMMUNICATION SYSTEM**

(75) Inventors: **Carlo Amalfitano**, Melbourne Beach, FL (US); **James A. Proctor, Jr.**, Indialantic, FL (US)

(73) Assignee: **Tantivy Communications, Inc.**, Melbourne, FL (US)

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

(21) Appl. No.: **09/467,353**

(22) Filed: **Dec. 20, 1999**

(51) **Int. Cl.**⁷ **H04B 7/216**

(52) **U.S. Cl.** **370/335; 370/342; 455/450**

(58) **Field of Search** **370/335, 342, 370/329, 341, 441; 455/450**

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,319,634 A	6/1994	Bartholomew et al.	370/18
5,956,345 A *	9/1999	Allpress et al.	370/480
6,044,073 A *	3/2000	Seshadri et al.	370/342
6,335,922 B1 *	1/2002	Tiedemann, Jr. et al. ...	370/335

FOREIGN PATENT DOCUMENTS

EP 0 701 337 A2 3/1996

OTHER PUBLICATIONS

Lim, et al., "Implementation Issues on Wireless Data Services in CDMA Cellular and PCS Networks," Gateway to the Twenty First Century. International Conference on Uni-

versal Personal Communications. 1996 5th IEEE International Conference on Universal Personal Communications Record (Cat. No. 96th8185), *Proceedings of ICUPC—5th International Confer.*, 2:582–585, XP00217205 1996, New York, NY, USA, IEEE, USA.

Azad, et al., "Multirate Spread Spectrum Direct Sequence CDMA Techniques," IEE Colloquium on Spread Communications Systems, GB, IEE, London, XP000570787, pp. 4–1–4–05, Apr. 15, 1994.

Jeong, et al., "Rate-Controlled Data Transmission for IS–95 CDMA Networks," IEEE Vehicular Technology Conference, US, New York, IEEE, vol. CONF. 47, XP000738626, pp. 1567–15714 May 1997.

* cited by examiner

Primary Examiner—Edward F. Urban

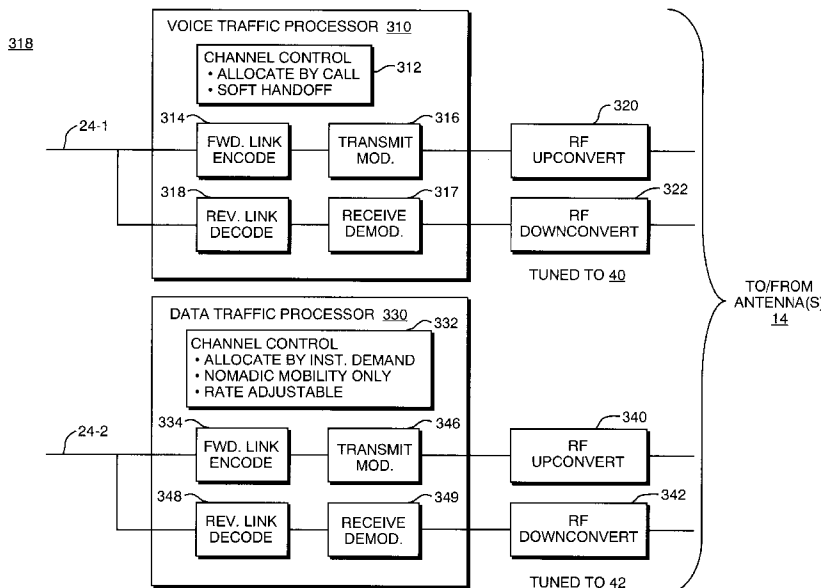
Assistant Examiner—Erika A. Gary

(74) *Attorney, Agent, or Firm*—Hamilton, Brook, Smith & Reynolds, P.C.

(57) **ABSTRACT**

A system for wireless data transmission that uses a channel bandwidth, channel separation, and radio frequency power spectrum which is compatible with existing deployments of wireless voice services. The transmitted waveforms are thus compatible with existing cellular networks. However, the time domain digital coding, modulation, and power control schemes are optimized for data transmission. Existing cellular network sites can thus be used to provide a high speed service optimized for wireless data traffic without the need for new radio frequency planning, and without interfering with existing voice service deployments.

12 Claims, 6 Drawing Sheets



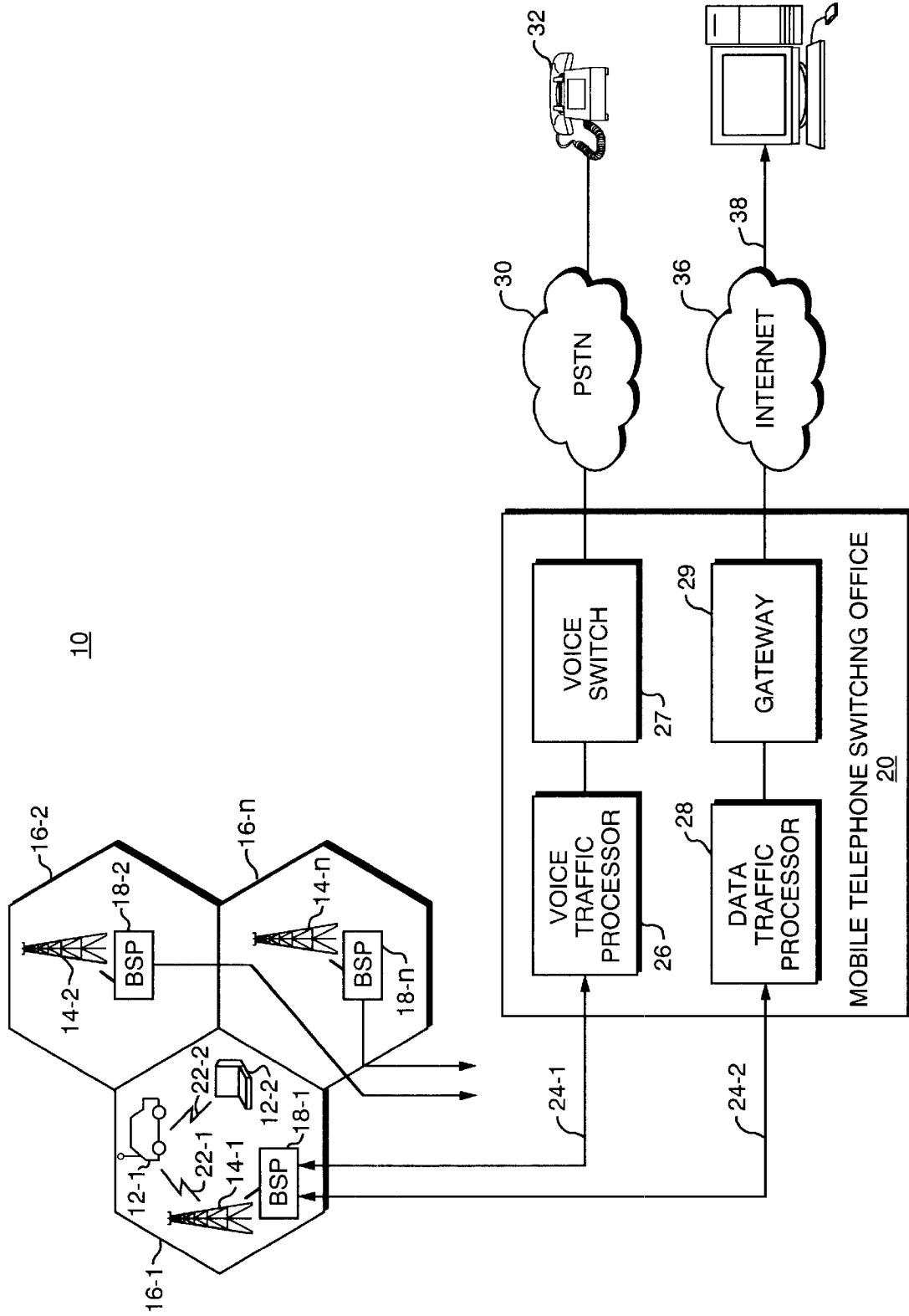


FIG. 1

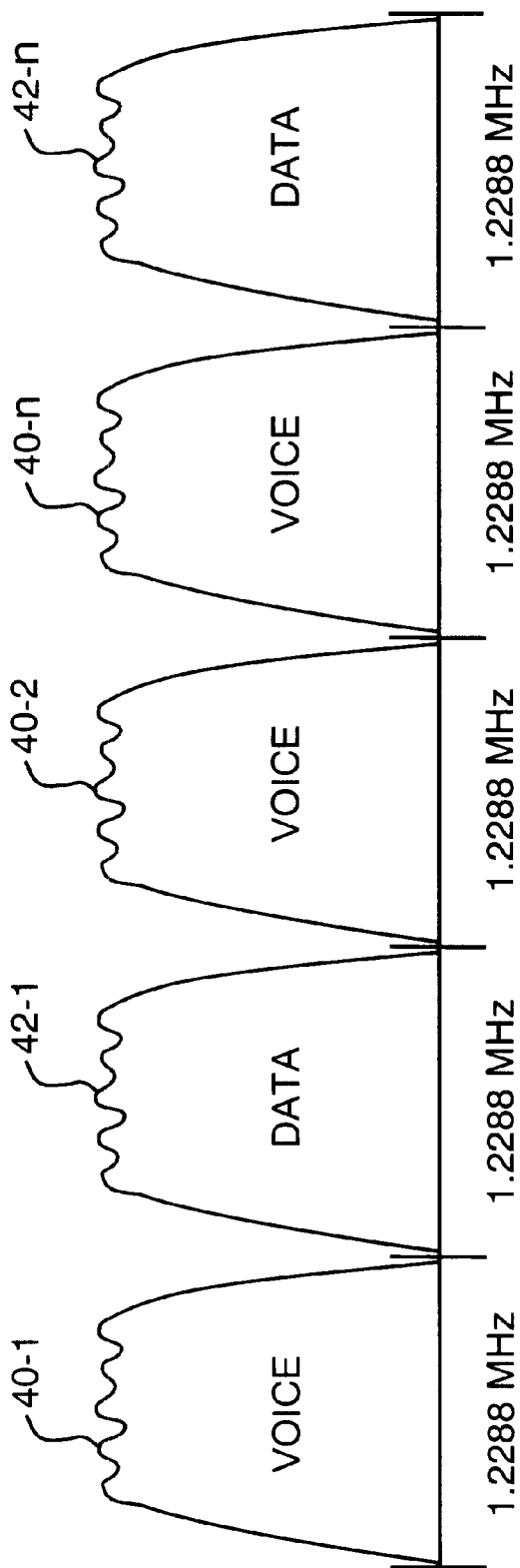


FIG. 2

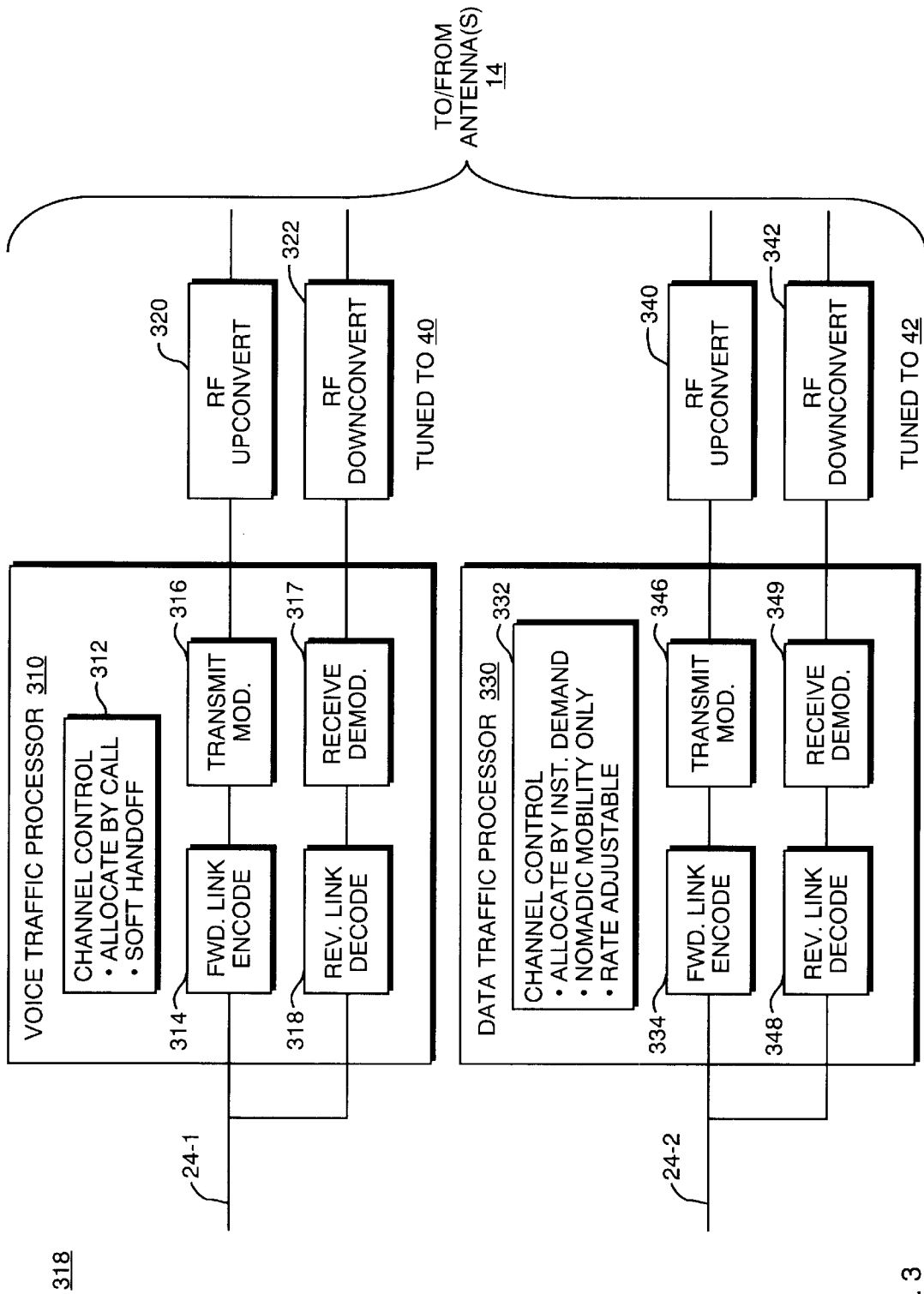


FIG. 3

412

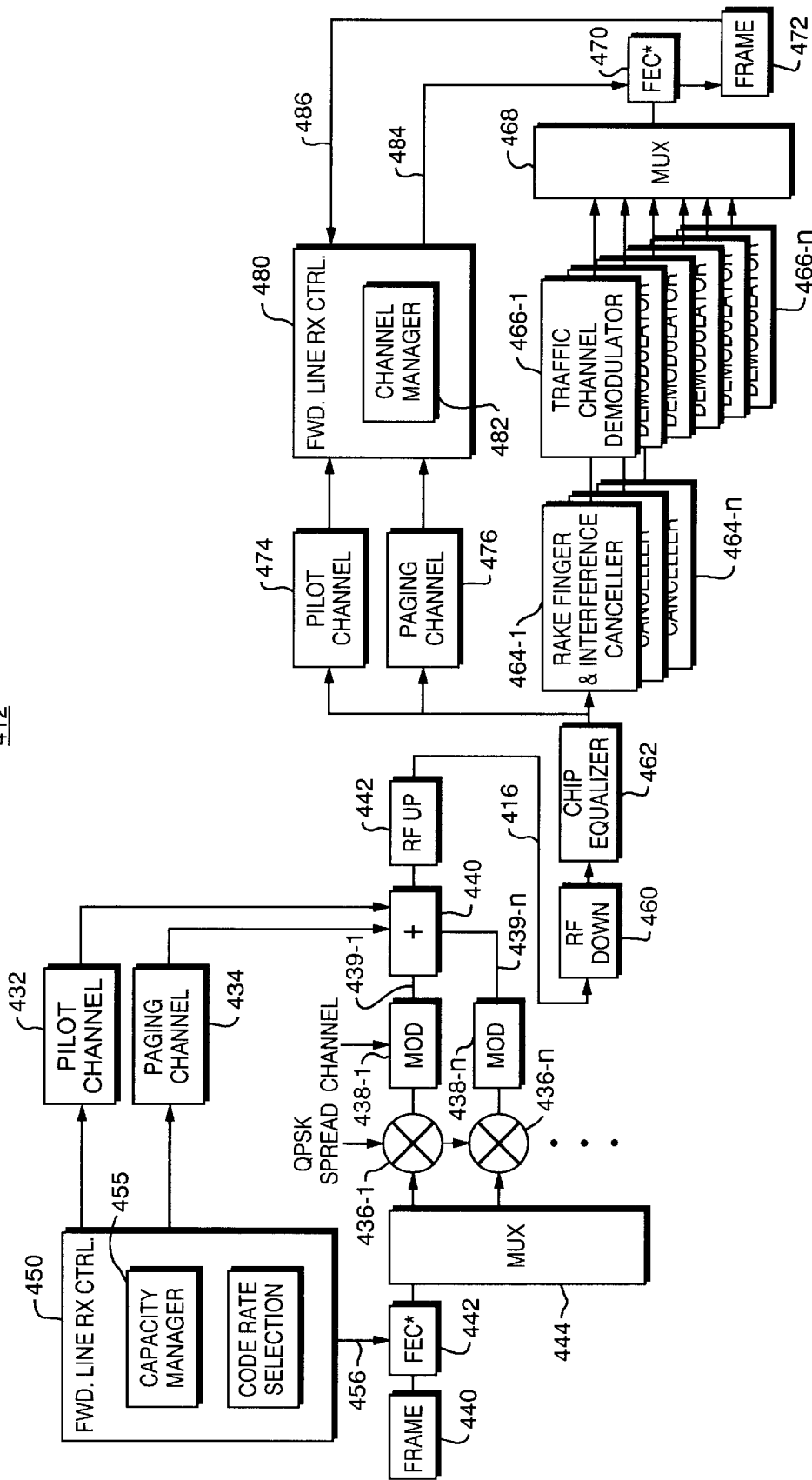


FIG. 4

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.