



US006636603B1

(12) **United States Patent**
Milbrandt

(10) **Patent No.:** **US 6,636,603 B1**
(45) **Date of Patent:** **Oct. 21, 2003**

(54) **SYSTEM AND METHOD FOR DETERMINING THE TRANSMIT POWER OF A COMMUNICATION DEVICE OPERATING ON DIGITAL SUBSCRIBER LINES**

(75) Inventor: **Celite Milbrandt**, Austin, TX (US)

(73) Assignee: **Cisco Technology, Inc.**, San Jose, CA (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.

5,784,406	A	7/1998	DeJaco et al.
5,793,751	A	8/1998	Baker et al.
5,796,723	A	8/1998	Bencheck et al.
5,805,577	A	9/1998	Jain et al.
5,805,668	A	9/1998	Kim
5,822,374	A	10/1998	Levin
5,828,748	A	10/1998	Akhteruzzaman
5,841,841	A	11/1998	Dodds et al.
5,864,541	A	1/1999	Abu-Amara et al.
5,867,483	A	2/1999	Ennis, Jr. et al.
6,069,922	A *	5/2000	Dyke
6,091,713	A *	7/2000	Lechleider et al.
6,094,459	A *	7/2000	Kao et al.
6,549,568	B1 *	4/2003	Bingel

OTHER PUBLICATIONS

(21) Appl. No.: **09/364,775**

(22) Filed: **Jul. 30, 1999**

(51) **Int. Cl.**⁷ **H04M 1/00**; H04M 9/00

(52) **U.S. Cl.** **379/399.01**; 379/399.02;
375/222; 375/227; 370/255

(58) **Field of Search** 379/399.01, 399.02,
379/414, 416, 417; 455/67.1, 115, 226.1-226.3;
370/201, 252, 318; 375/219-222, 227

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,903,378	A	9/1975	Lee et al.
3,989,907	A	11/1976	Chambers, Jr.
5,117,417	A	5/1992	Danner
5,265,151	A *	11/1993	Goldstein
5,347,566	A	9/1994	Law et al.
5,390,239	A	2/1995	Morris et al.
5,430,793	A	7/1995	Ueltzen et al.
5,673,290	A	9/1997	Cioffi
5,678,198	A	10/1997	Lemson
5,701,292	A	12/1997	Chiussi et al.
5,751,802	A	5/1998	Carr et al.
5,778,049	A	7/1998	Young et al.

"Probing Techniques for Multiuser Channels with Power Control" by C. J. Hansen 1997.

* cited by examiner

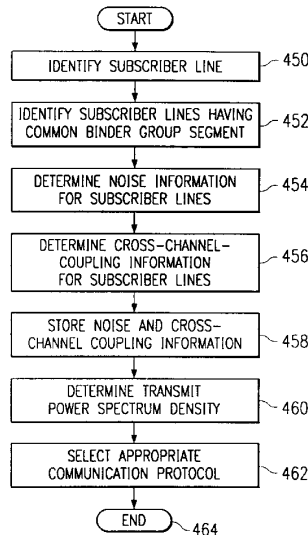
Primary Examiner—Duc Nguyen

(74) *Attorney, Agent, or Firm*—Baker Botts, L.L.P.

(57) **ABSTRACT**

A system for determining the transmit power of a communication device operating on a twisted pair subscriber line includes a communication server coupled to a first subscriber line and a second subscriber line. The communication server comprises a communication device that communicates a signal using the first subscriber line. A memory coupled to the communication server stores noise information and cross-channel-coupling information for the first subscriber line and the second subscriber line. A processor coupled to the memory determines the transmit power of the communication device based upon the noise information and the cross-channel-coupling information.

28 Claims, 5 Drawing Sheets



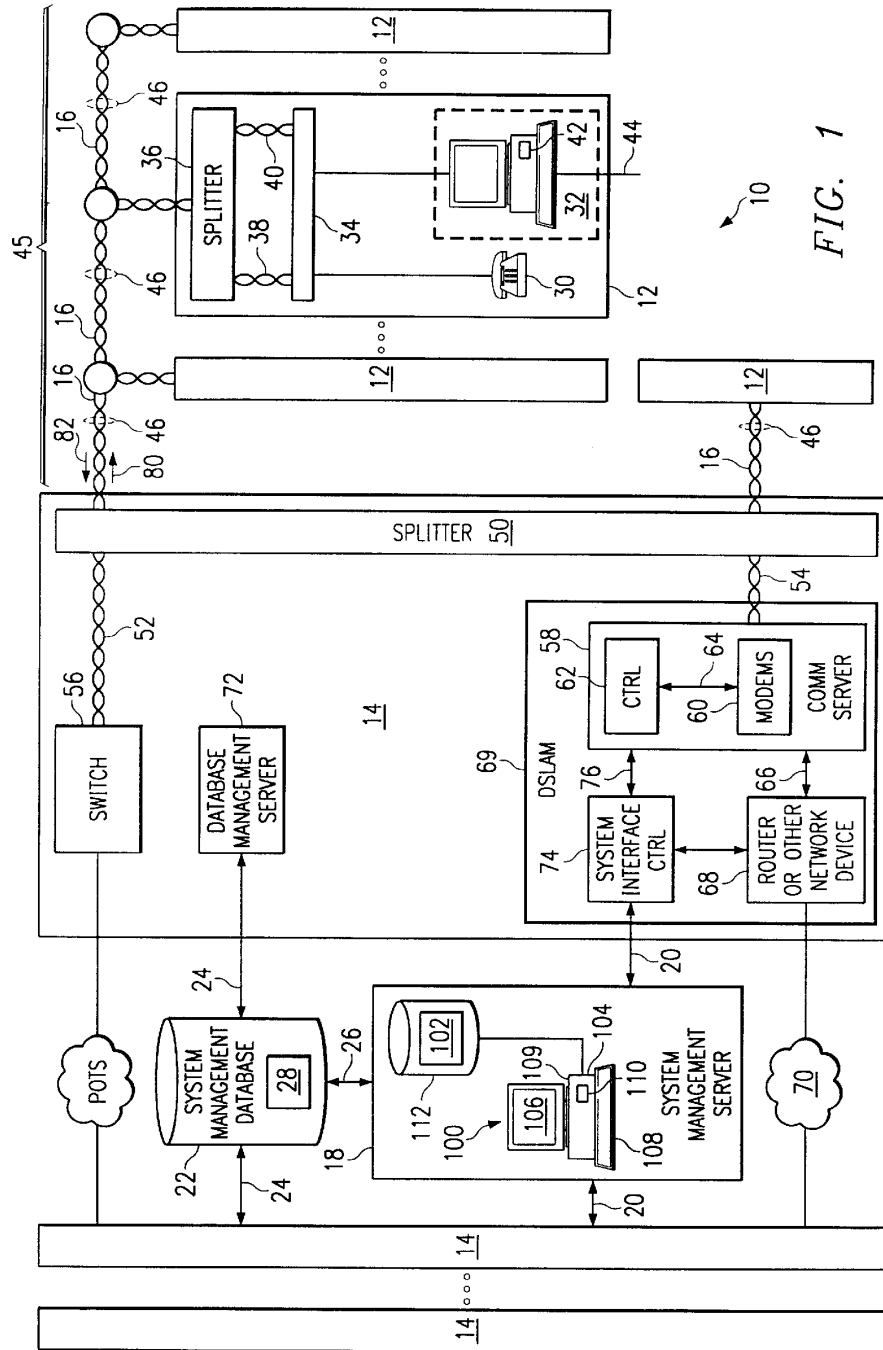


FIG. 1

FIG. 2

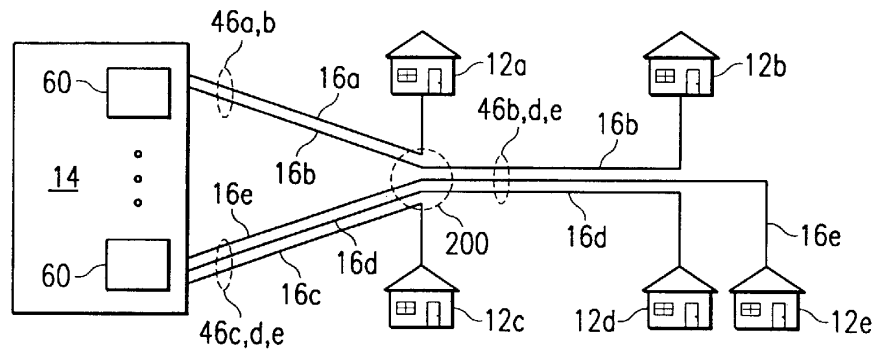


FIG. 4

400 ↙

COMMUNICATION DEVICE	SUBSCRIBER LINE	COMMUNICATION PROTOCOL	NUMBER OF CONNECTION ATTEMPTS
214-555-1234	214-555-3129	xDSL	2
214-555-9765	214-555-2199	xDSL	1
214-555-7069	214-555-2177	V.90	1
⋮	⋮	⋮	⋮
214-555-2163	214-555-8818	xDSL	3
214-555-3976	214-555-6255	xDSL	2

402
404
406
408

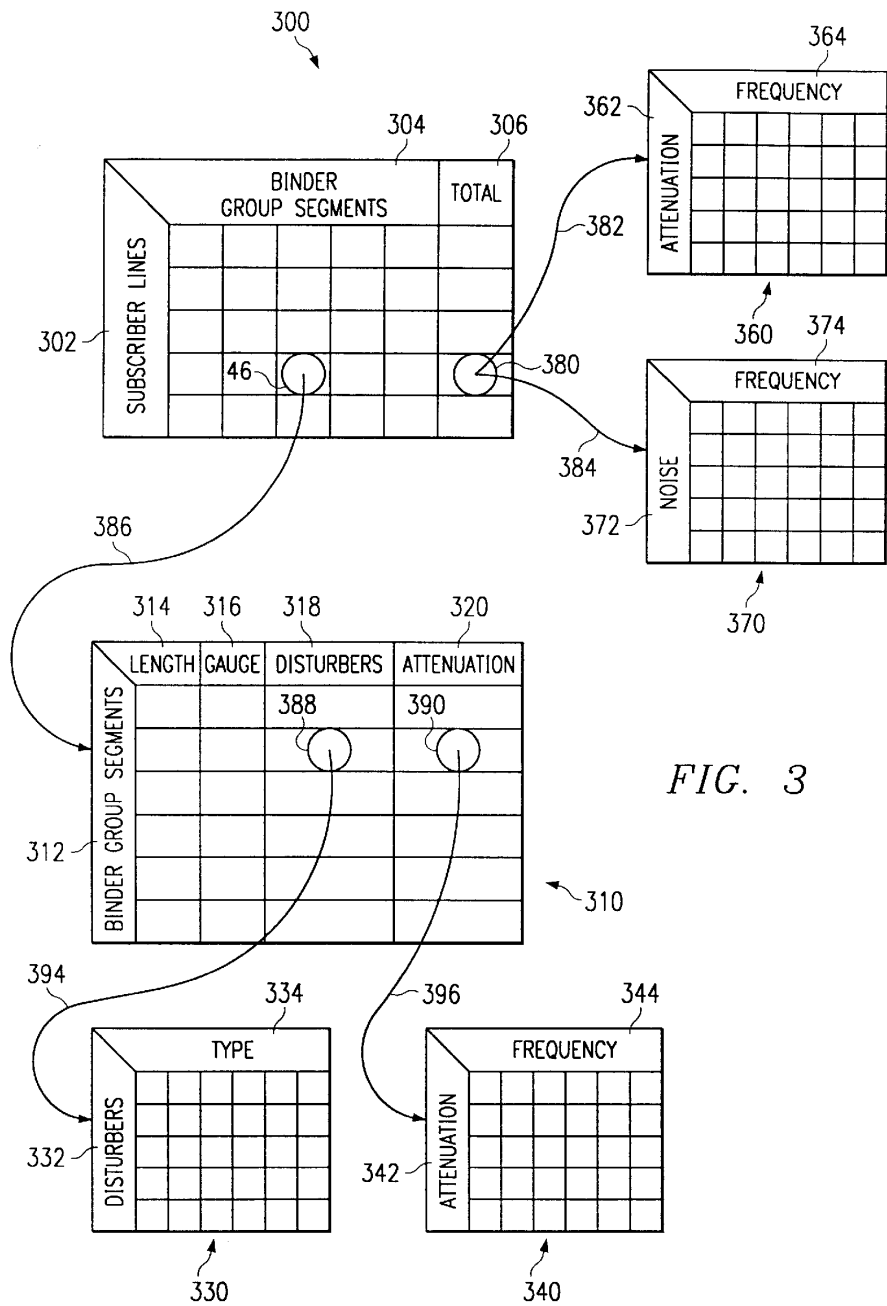


FIG. 3

FIG. 5

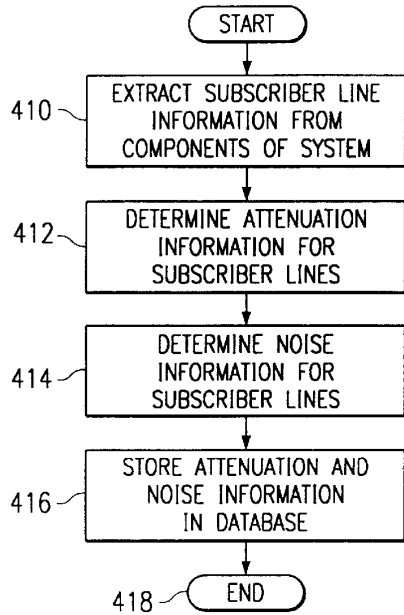


FIG. 6

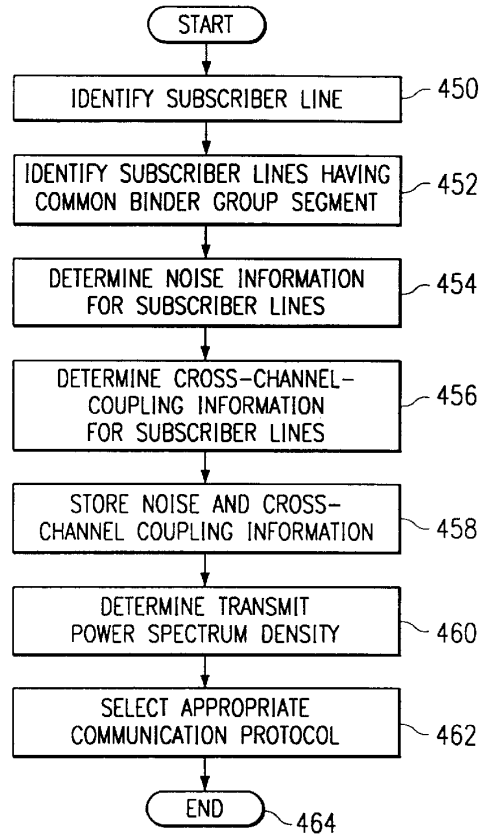
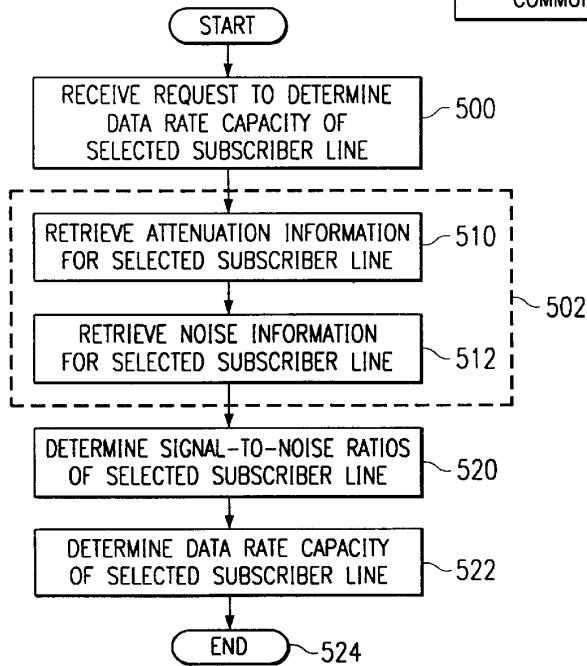


FIG. 7



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.