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(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)

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(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

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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.
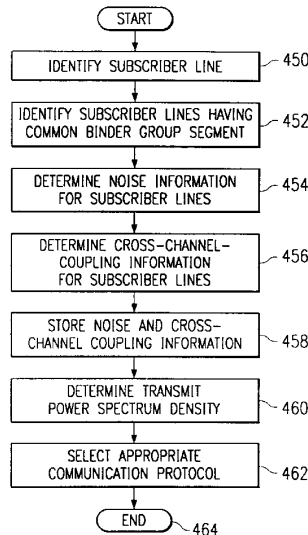
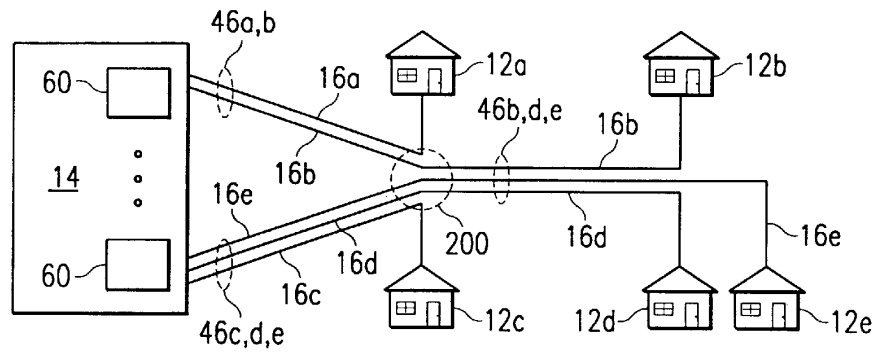**28 Claims, 5 Drawing Sheets**

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

START

410 — EXTRACT SUBSCRIBER LINE INFORMATION FROM COMPONENTS OF SYSTEM

412 — DETERMINE ATTENUATION INFORMATION FOR SUBSCRIBER LINES

414 — DETERMINE NOISE INFORMATION FOR SUBSCRIBER LINES

416 — STORE ATTENUATION AND NOISE INFORMATION IN DATABASE

418 — END

FIG. 6

START

IDENTIFY SUBSCRIBER LINE — 450

IDENTIFY SUBSCRIBER LINES HAVING COMMON BINDER GROUP SEGMENT — 452

DETERMINE NOISE INFORMATION FOR SUBSCRIBER LINES — 454

DETERMINE CROSS-CHANNEL-COUPLING INFORMATION FOR SUBSCRIBER LINES — 456

STORE NOISE AND CROSS-CHANNEL COUPLING INFORMATION — 458

DETERMINE TRANSMIT POWER SPECTRUM DENSITY — 460

SELECT APPROPRIATE COMMUNICATION PROTOCOL — 462

END — 464

FIG. 7

START

RECEIVE REQUEST TO DETERMINE DATA RATE CAPACITY OF SELECTED SUBSCRIBER LINE — 500

RETRIEVE ATTENUATION INFORMATION FOR SELECTED SUBSCRIBER LINE — 510

RETRIEVE NOISE INFORMATION FOR SELECTED SUBSCRIBER LINE — 512

— 502

DETERMINE SIGNAL-TO-NOISE RATIOS OF SELECTED SUBSCRIBER LINE — 520

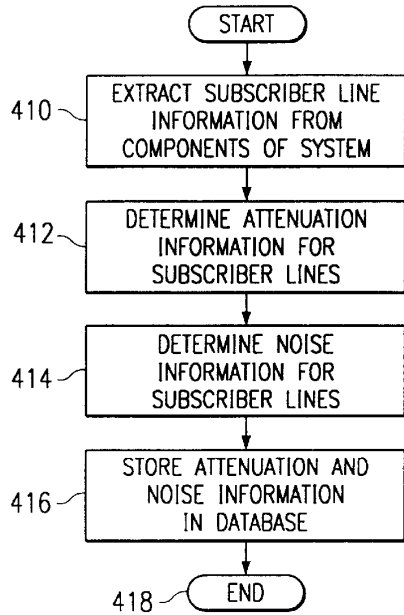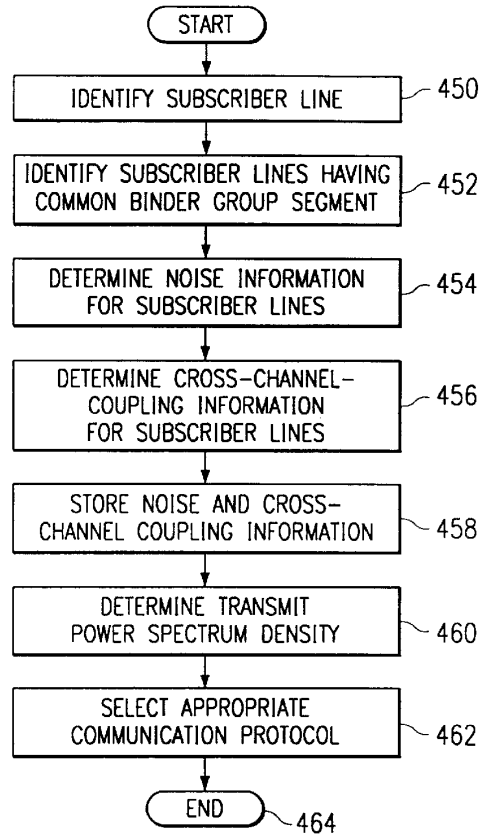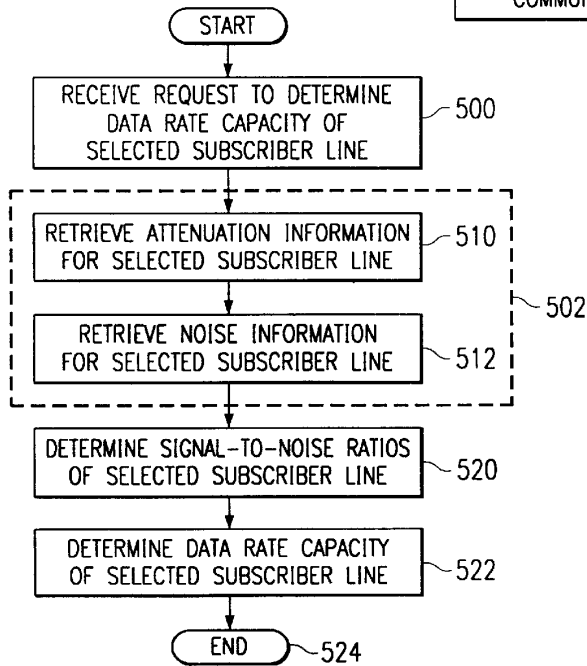DETERMINE DATA RATE CAPACITY OF SELECTED SUBSCRIBER LINE — 522

END — 524

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