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(54) **SYSTEM AND METHOD FOR CONSTANT LOOP GAIN IN A CLOSED LOOP CIRCUIT**

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(52) **U.S. Cl.** **455/126**; 455/115.3; 455/127.2; 455/522; 455/345

(58) **Field of Search** 455/126, 127.1, 455/127.2, 67.11, 69, 226.1, 226.2, 12.1, 13.4, 91, 95–100, 107, 115.1, 115.3, 129, 522, 572, 574, 575.1, 345; 370/311, 316, 320, 342, 441; 330/129, 137, 289
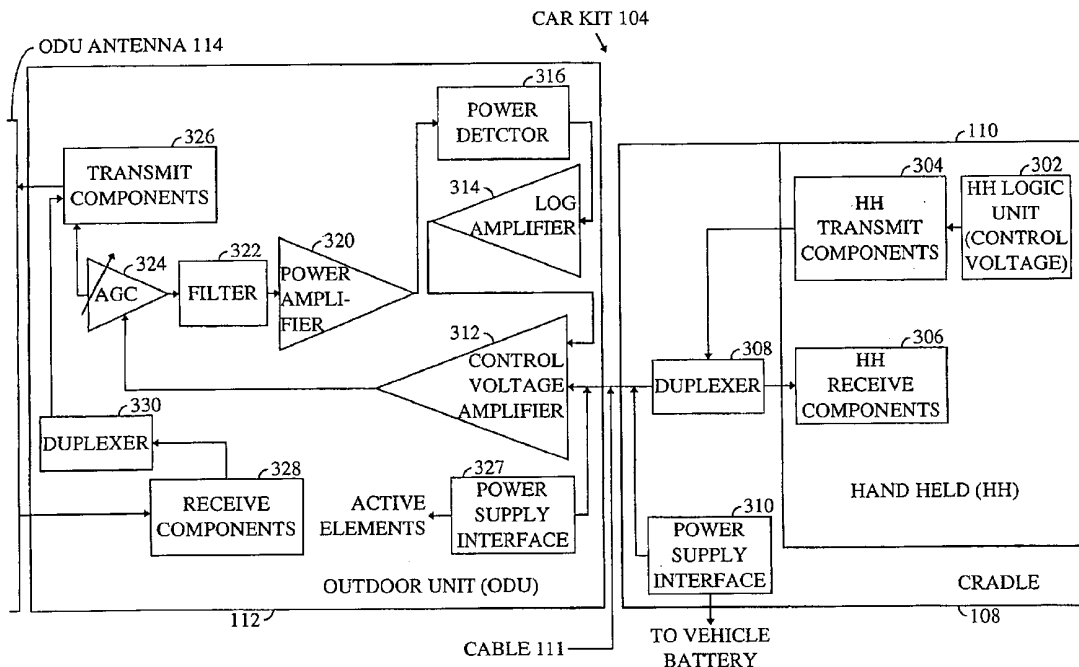
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(57) **ABSTRACT**

A system and method for controlling transmitted output power of outdoor antenna units coupled to hand held wireless devices. When the antenna unit is operating with wireless network technology it may also be referred to as an outdoor unit. Transmit power level of an information signal is controlled in the outdoor unit by obtaining a control voltage from the hand held unit. The control voltage is used by the outdoor unit, to adjust the power level of the transmitted information signal. The transmit power level is adjusted by the outdoor unit performing the following steps: (1) detecting the transmit power level of the antenna unit, (2) determining whether the transmit power level is equal to a control voltage, and (3) adjusting the transmit power level based on the control voltage if the transmit power level is not equal to the control voltage. The adjustment of the transmit power level is accomplished by a closed loop circuit that maintains a constant loop gain.

8 Claims, 6 Drawing Sheets

MOBILE PHONE SYSTEM 102

WIRELESS COMMUNICATIONS NETWORK

128

SATELLITE

116

SATELLITE ANTENNA

118

120

GATEWAY

DIGITAL LINK

122

PSTN/ OTHER NETWORKS

RECIPIENT NETWORK INTERFACE DEVICE

126

ODU ANTENNA

OUTDOOR UNIT

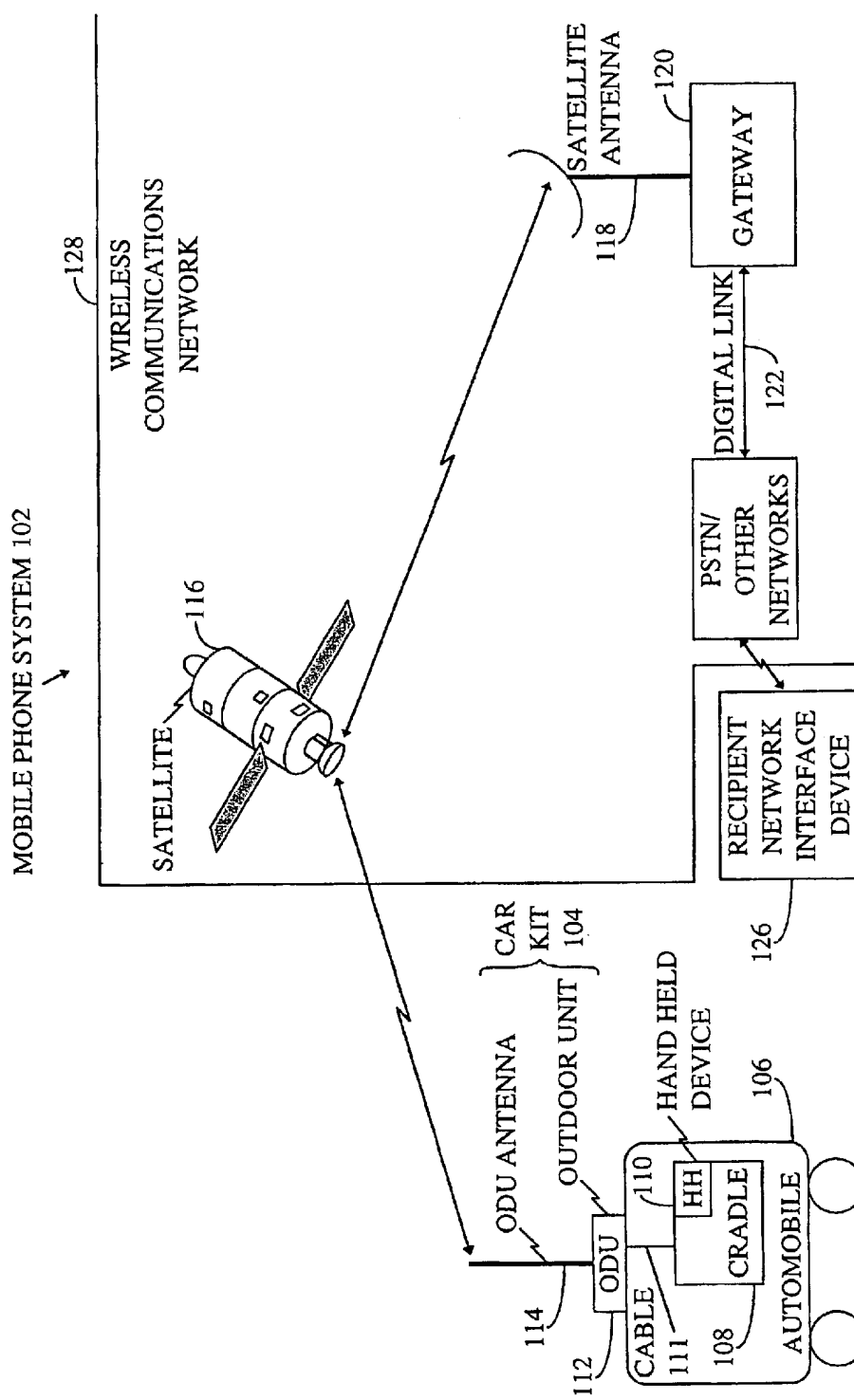CAR KIT 104

114

ODU

112

CABLE
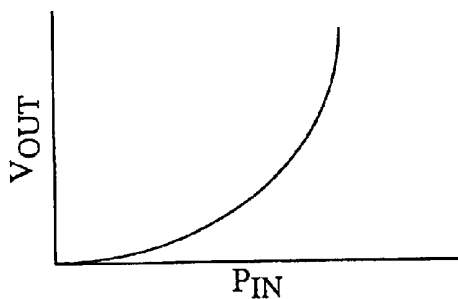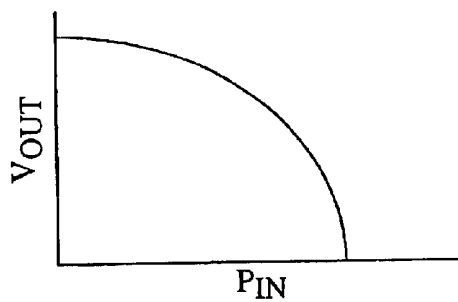
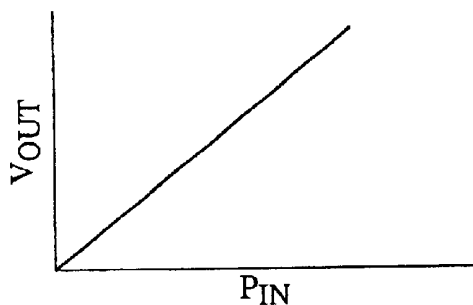111

110

HH

CRADLE

108

HAND HELD DEVICE

106

AUTOMOBILE

FIG. 1

FIG. 2A

FIG. 2B

FIG. 2C

FIG. 2D

FIG. 2E

FIG. 3

BEGIN

404

DETERMINE THE
TYPE/RATE OF DATA TO
BE TRANSMITTED

406

FOR THE PARTICULAR TYPE
OF DATA TO BE
TRANSMITTED, DETERMINE
THE REQUIRED TRANSMIT
POWER LEVEL OF THE
INFORMATION SIGNAL

408

SEND THE REQUIRED
TRANSMIT POWER LEVEL
TO ODU

410

ODU ADJUSTS THE TRANSMIT
POWER LEVEL OF ITS
INFORMATION SIGNAL

412

TRANSMIT COMPONENTS IN
ODU TRANSMIT THE
INFORMATION SIGNAL AT
THE APPROPRIATE TRANSMIT
POWER LEVEL

END

FIG. 4

DOCKET ALARM
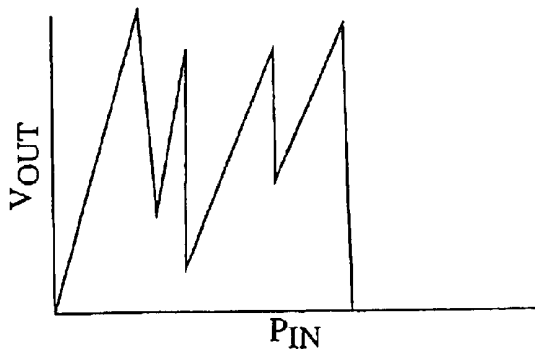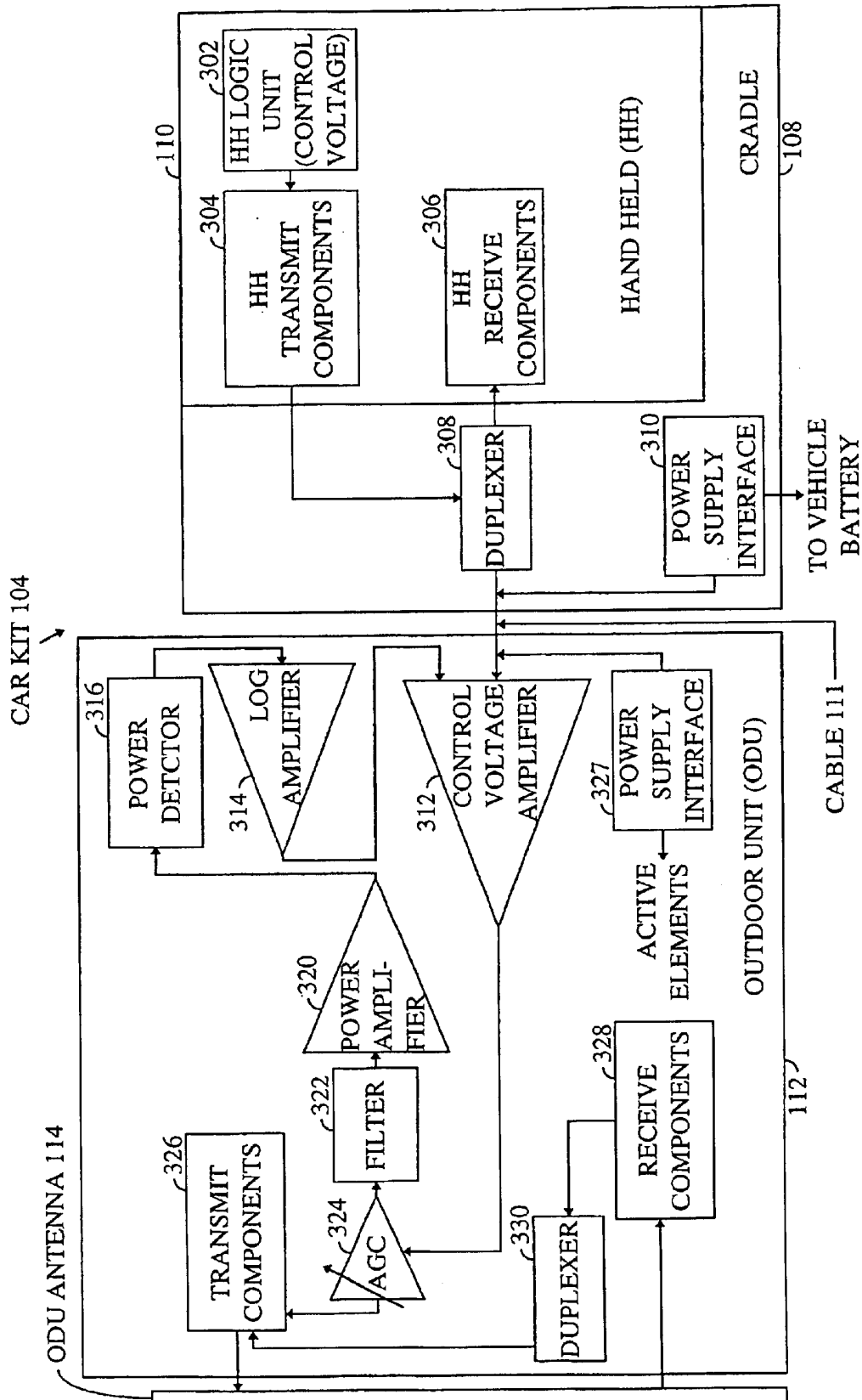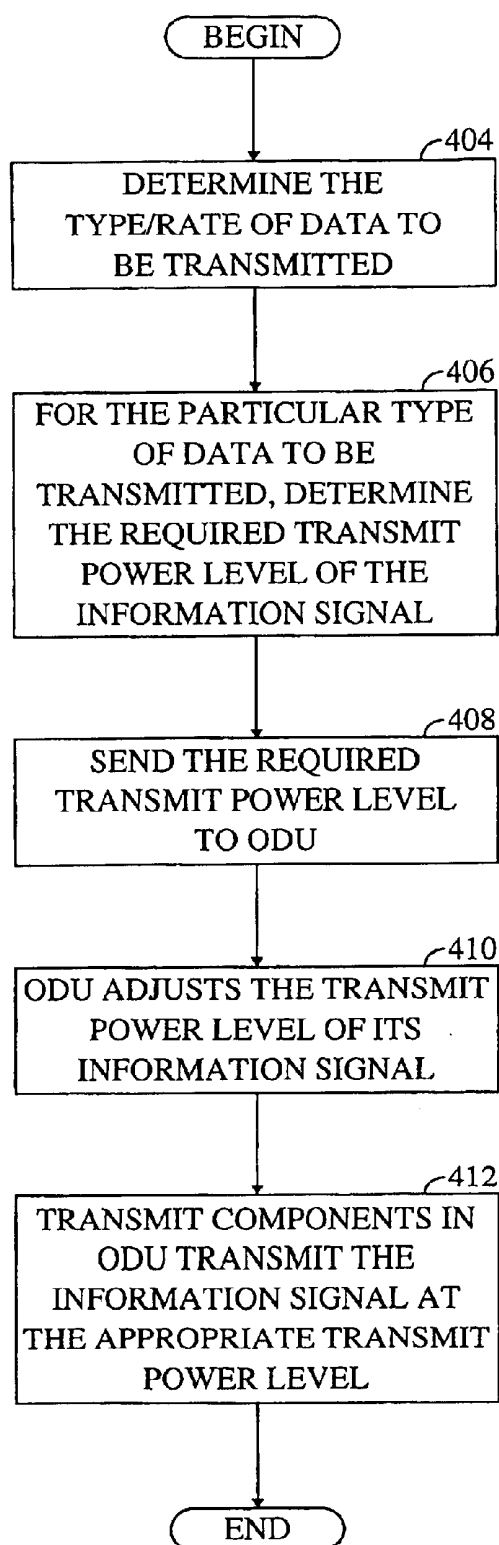
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