



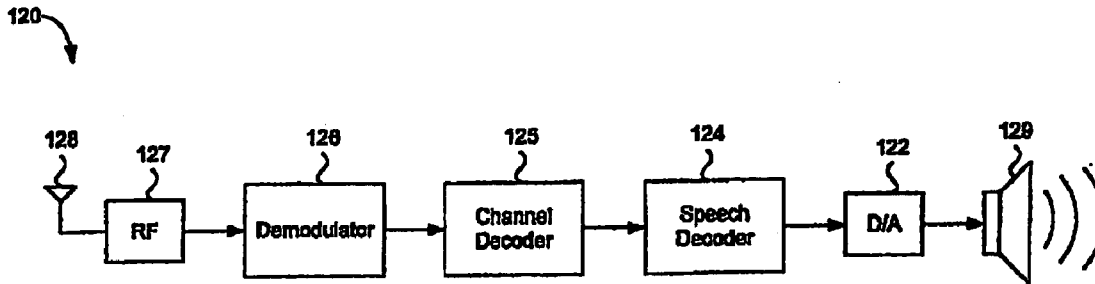
US 20060147063A1

(19) **United States**(12) **Patent Application Publication**
Chen(10) **Pub. No.: US 2006/0147063 A1**(43) **Pub. Date: Jul. 6, 2006**(54) **ECHO CANCELLATION IN TELEPHONES
WITH MULTIPLE MICROPHONES**No. 11/065,131, filed on Feb. 24, 2005, which is a
continuation-in-part of application No. 11/018,921,
filed on Dec. 22, 2004.(75) Inventor: **Juin-Hwey Chen**, Irvine, CA (US)

Correspondence Address:

**STERNE, KESSLER, GOLDSTEIN & FOX
PLLC
1100 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005 (US)****Publication Classification**(51) **Int. Cl.**
H04B 1/00 (2006.01)
H04M 9/08 (2006.01)
(52) **U.S. Cl.** **381/119; 379/406.01**(73) Assignee: **Broadcom Corporation**, Irvine, CA(21) Appl. No.: **11/239,351**(22) Filed: **Sep. 30, 2005****Related U.S. Application Data**(63) Continuation-in-part of application No. 11/215,304,
filed on Aug. 31, 2005, which is a continuation-in-
part of application No. 11/135,491, filed on May 24,
2005, which is a continuation-in-part of application(57) **ABSTRACT**

The present invention is directed to a telephone equipped with multiple microphones that provides improved performance during operation of the telephone in a speaker-phone mode. For example, the multiple microphones can be used to improve voice activity detection, which in turn, can improve echo cancellation. In addition, the multiple microphones can be configured as an adaptive microphone array and used to reduce the effects of (i) room reverberation, when a near-end user is speaking, and/or (ii) acoustic echo, when a far-end user is speaking.

IPR PETITION
US RE48,371

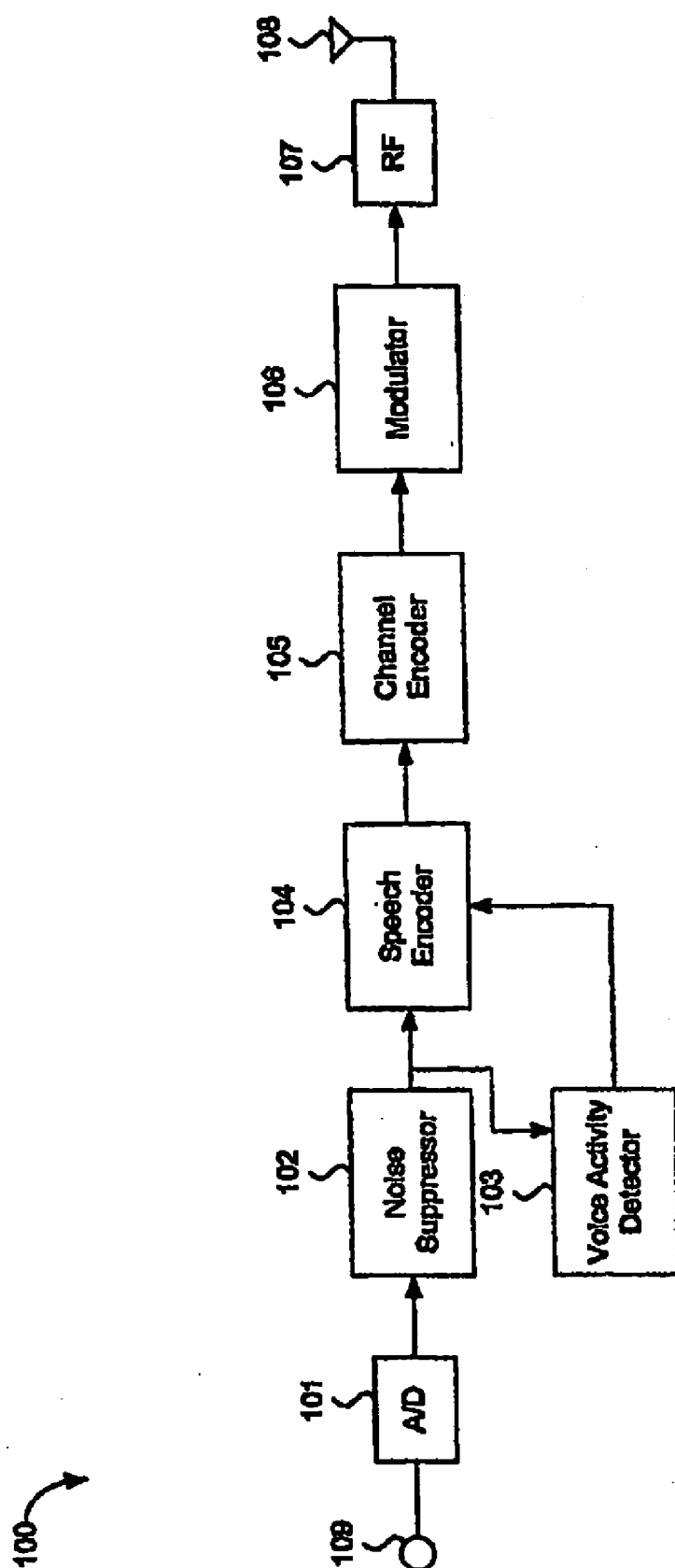


FIG. 1A

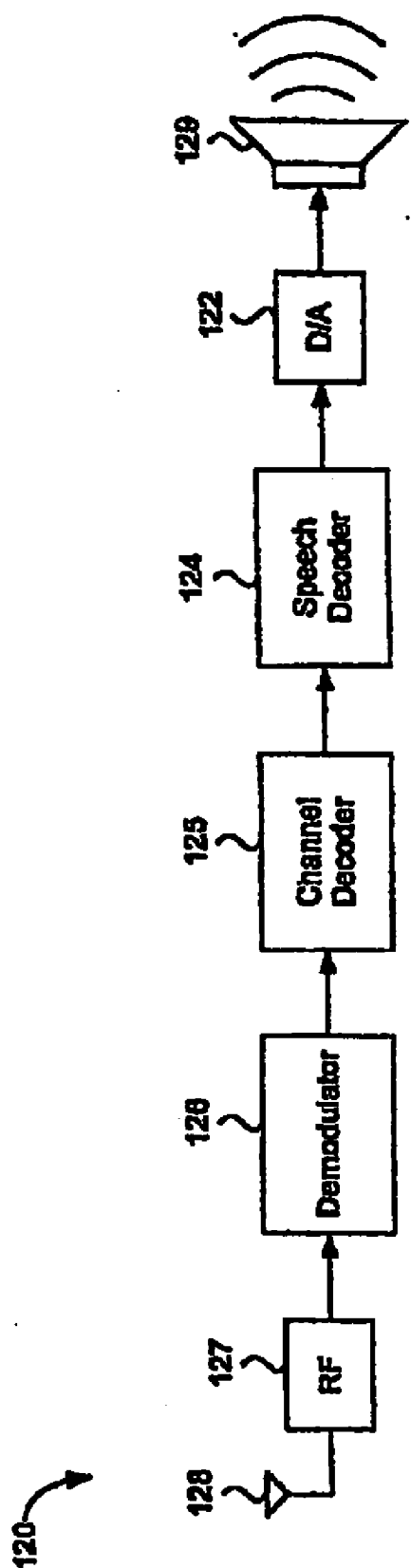


FIG. 1B

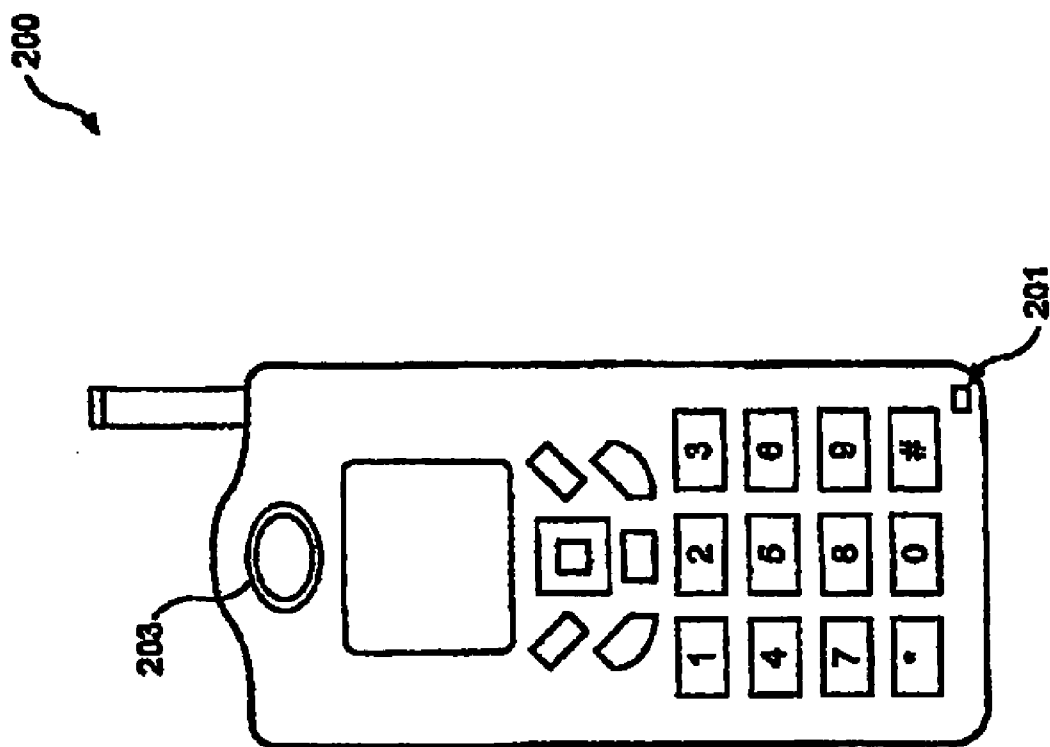


FIG. 2

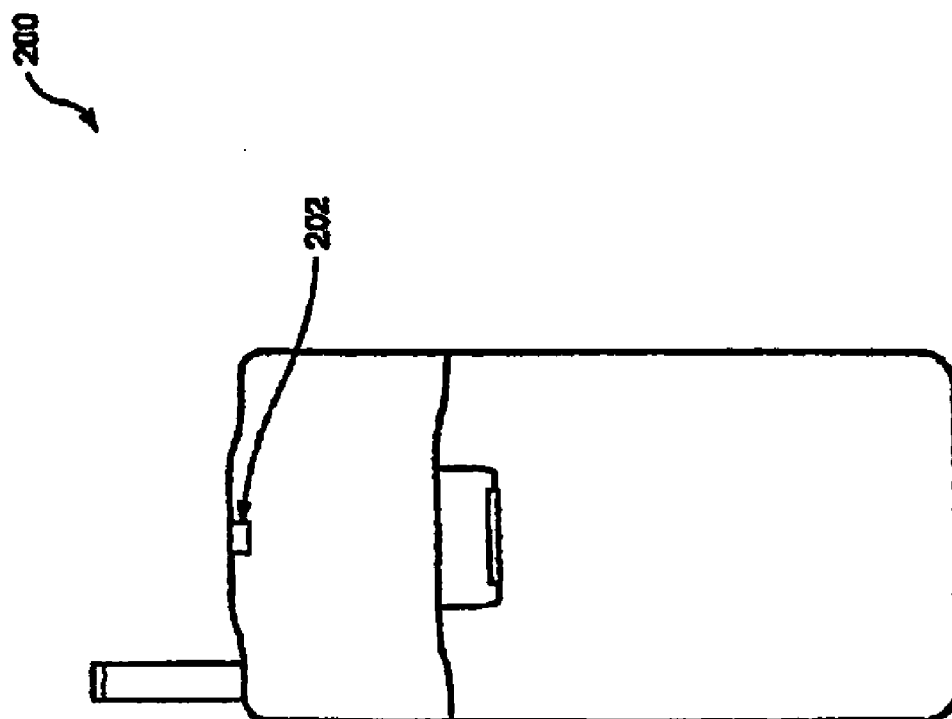


FIG. 3

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.