



US007317894B2

(12) **United States Patent**
Hirose

(10) **Patent No.:** **US 7,317,894 B2**
(45) **Date of Patent:** **Jan. 8, 2008**

(54) **SATELLITE DIGITAL RADIO BROADCAST RECEIVER**

(75) Inventor: **Koji Hirose**, Setagaya-ku (JP)

(73) Assignee: **Kabushiki Kaisha Kenwood**, Tokyo (JP)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 288 days.

(21) Appl. No.: **10/781,726**

(22) Filed: **Feb. 20, 2004**

(65) **Prior Publication Data**

US 2004/0168193 A1 Aug. 26, 2004

(30) **Foreign Application Priority Data**

Feb. 26, 2003 (JP) 2003-048572

(51) **Int. Cl.**
H04H 1/00 (2006.01)

(52) **U.S. Cl.** **455/3.02**; 455/234.1; 455/250.1

(58) **Field of Classification Search** 455/3.01-3.02, 455/234.1, 232.1, 272, 277.1, 277.2, 226.1, 455/226.2, 67.11, 67.12, 133, 136; 725/68-71, 725/63-64

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

- 5,095,533 A * 3/1992 Loper et al. 455/249.1
- 5,301,352 A * 4/1994 Nakagawa et al. 725/71
- 5,319,673 A * 6/1994 Briskman 455/13.1
- 5,794,138 A * 8/1998 Briskman 455/344
- 5,966,186 A * 10/1999 Shigihara et al. 348/570
- 6,078,796 A * 6/2000 Ling 455/234.1
- 6,091,931 A * 7/2000 Ben-Efraim et al. 455/3.02

- 6,301,313 B1 * 10/2001 Gevorgiz et al. 375/340
- 6,484,042 B1 * 11/2002 Loke 455/234.1
- 6,498,927 B2 * 12/2002 Kang et al. 455/245.2
- 6,510,317 B1 * 1/2003 Marko et al. 455/428
- 6,549,774 B1 * 4/2003 Titlebaum et al. 455/427
- 6,557,029 B2 * 4/2003 Szymansky 455/13.1
- 6,584,090 B1 * 6/2003 Abdelgany et al. 455/82
- 6,735,416 B1 * 5/2004 Marko et al. 455/3.02
- 2001/0022821 A1 * 9/2001 Ichihara 375/345
- 2001/0041532 A1 * 11/2001 Tomasz et al. 455/3.02
- 2002/0025792 A1 * 2/2002 Isoda 455/234.1
- 2004/0229583 A1 * 11/2004 Ogino 455/3.01
- 2005/0124289 A1 * 6/2005 Coffin, III 455/3.02
- 2007/0004351 A1 * 1/2007 Dekker 455/127.1

* cited by examiner

Primary Examiner—Lana Le

(74) *Attorney, Agent, or Firm*—Eric J. Robinson; Robinson Intellectual Property Law Office, P.C.

(57) **ABSTRACT**

A satellite digital radio broadcast receiver has an integrated circuit including a first reception series for processing a satellite wave signal from a satellite and a second reception series for processing a ground wave signal from a repeater in order to receive both the satellite wave signal and the ground wave signal having the same broadcast contents and different modulation methods. The receiver has an automatic gain control unit for amplifying a signal from a single antenna at a variable gain amplifier, and in accordance with the level of a signal outputted from the variable gain amplifier, for controlling the gain of the variable gain amplifier; and a two-way distributor for distributing an output of the automatic control unit to two distribution outputs, wherein one distribution output of the two-way distributor is supplied to the first reception series of the integrated circuit and the other distribution output is supplied to the second reception series of the integrated circuit.

2 Claims, 8 Drawing Sheets

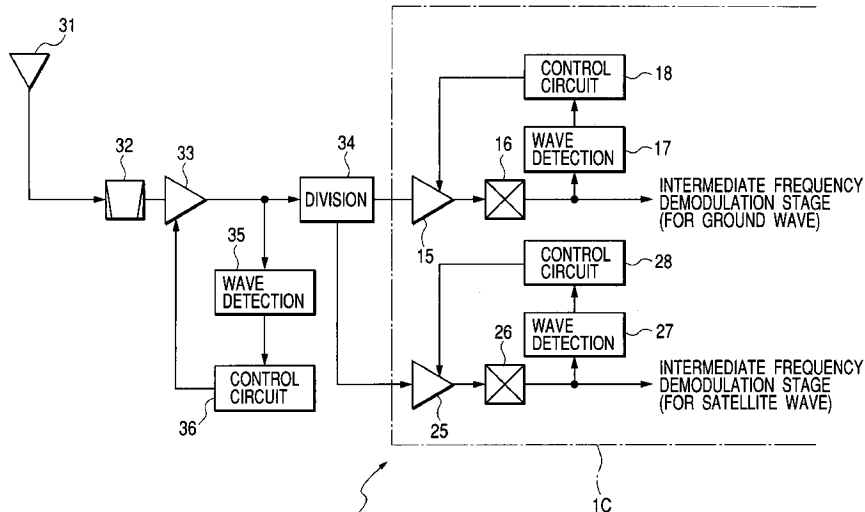


FIG. 1

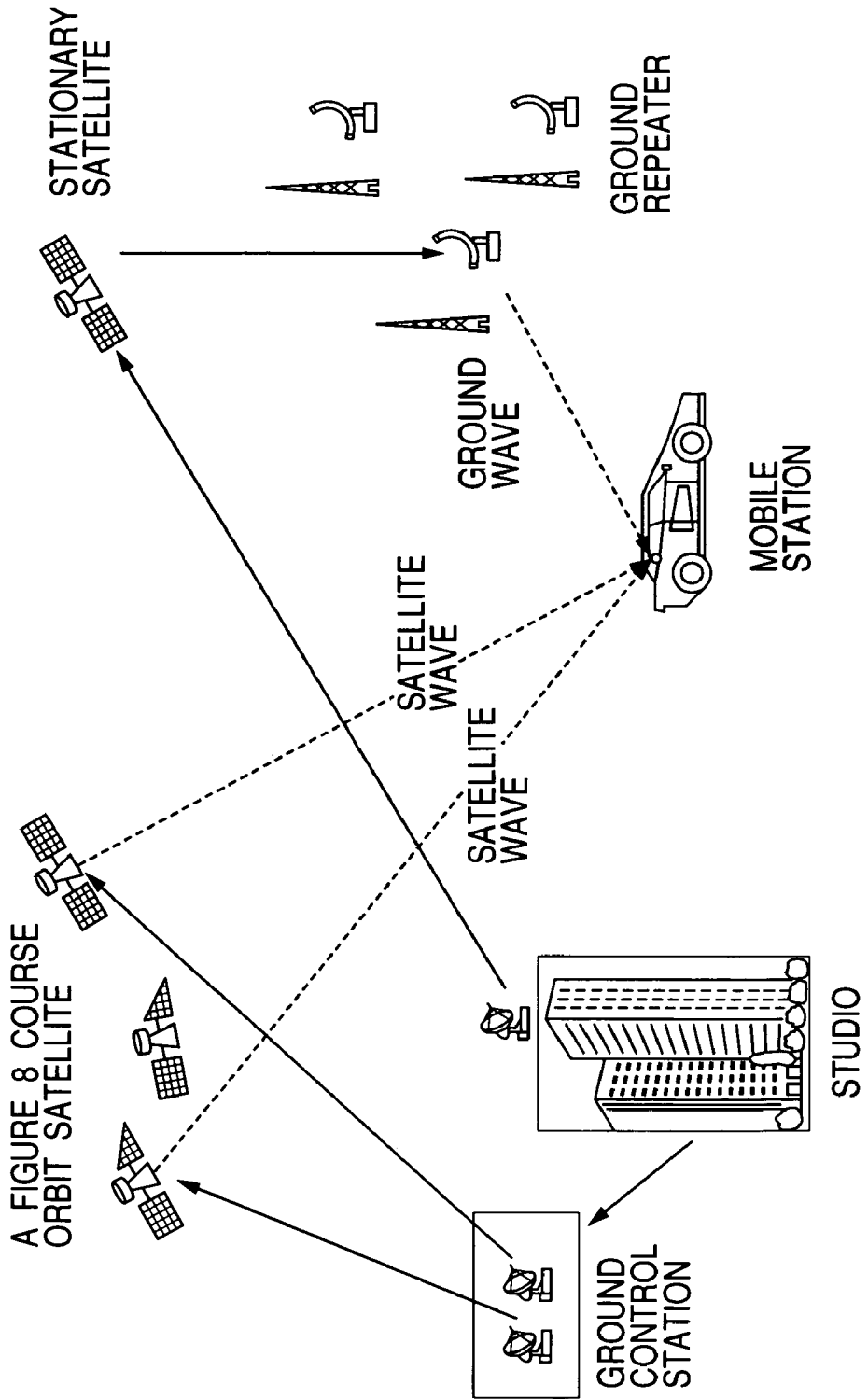


FIG. 2

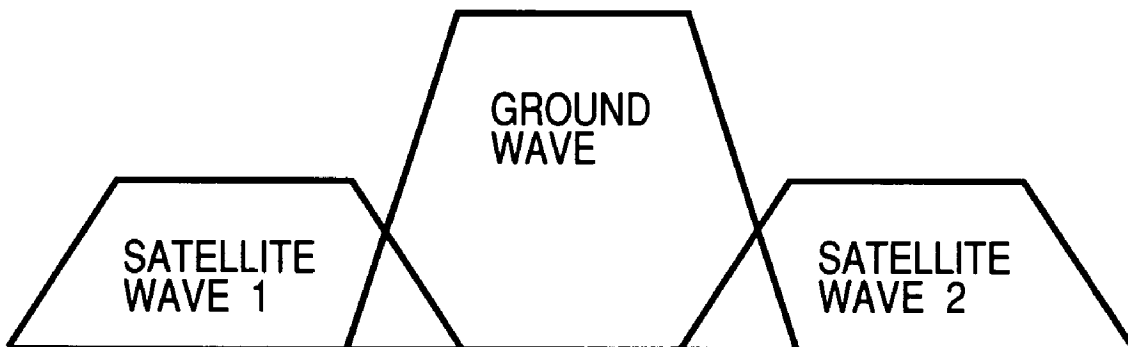


FIG. 3
PRIOR ART

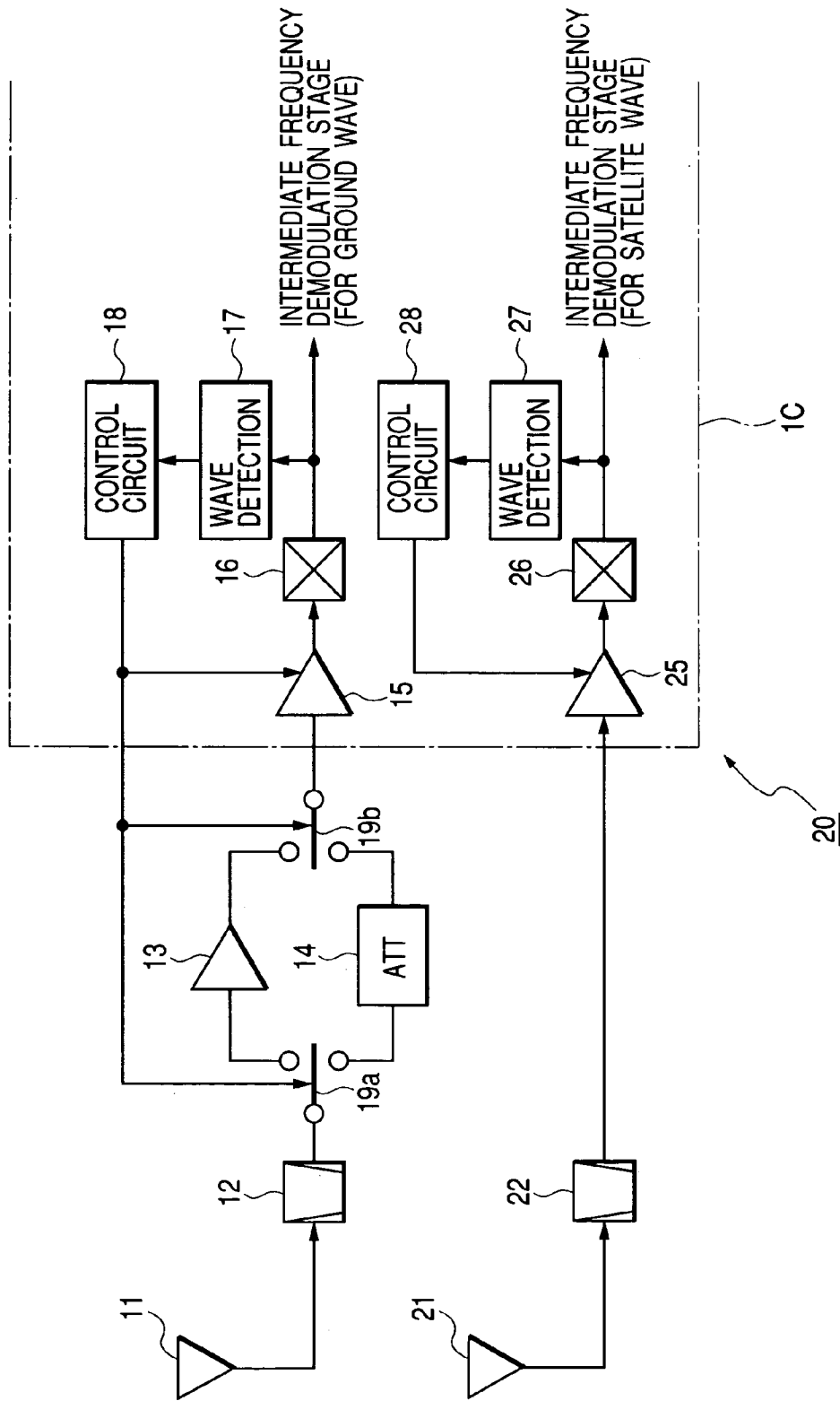
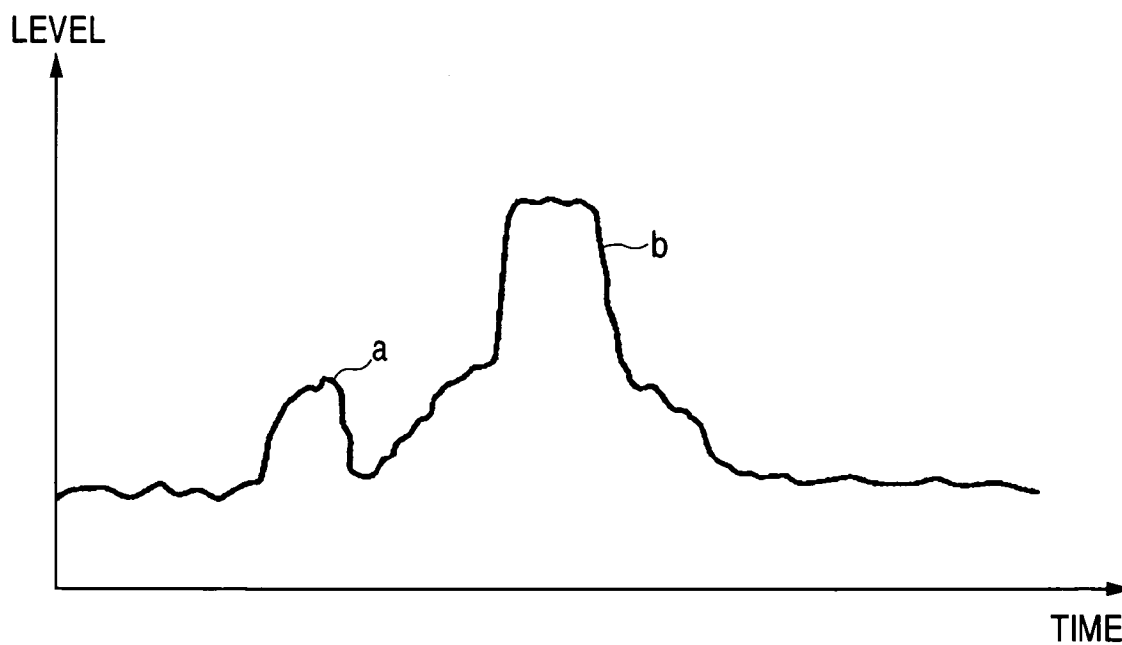


FIG. 4



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.