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Hanna et al.

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(54) **SIMULTANEOUS SIGNAL ATTENUATION MEASUREMENTS UTILIZING CODE DIVISION MULTIPLEXING**

(75) Inventors: **D. Alan Hanna**, Boulder, CO (US); **Mark A. Norris**, Boulder, CO (US)

(73) Assignee: **Datex-Ohmeda, Inc.**, Madison, WI (US)

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(52) **U.S. Cl.** **702/74**; 702/79
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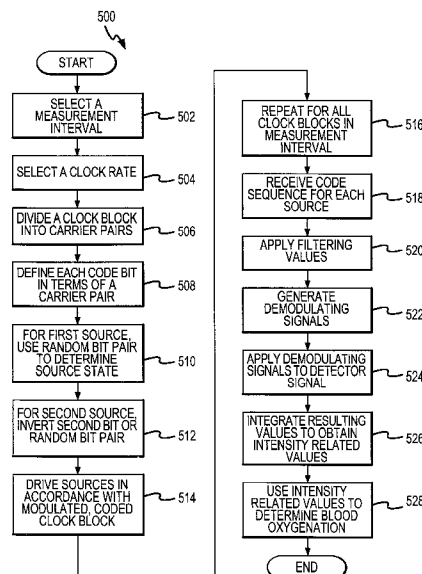|				
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Primary Examiner—Marc S. Hoff
Assistant Examiner—Craig Steven Miller
(74) *Attorney, Agent, or Firm*—Marsh Fischmann & Breyfogle LLP

(57) **ABSTRACT**

A pulse oximeter **(100)** includes two or more light sources **(102)** for transmitting optical signals through an appendage **(103)** of patient. The sources **(102)** are operated to transmit code division multiplexed (CDM) signals. That is, the sources **(102)** are driven by drives **(104)** in response to signals from a digital processing unit **(116)** such that the sources **(102)** are modulated using different code sequences. The code sequences are preferably non-periodic and may be orthogonal to one another. The use of such CDM signals provides certain advantages related to noise reduction.
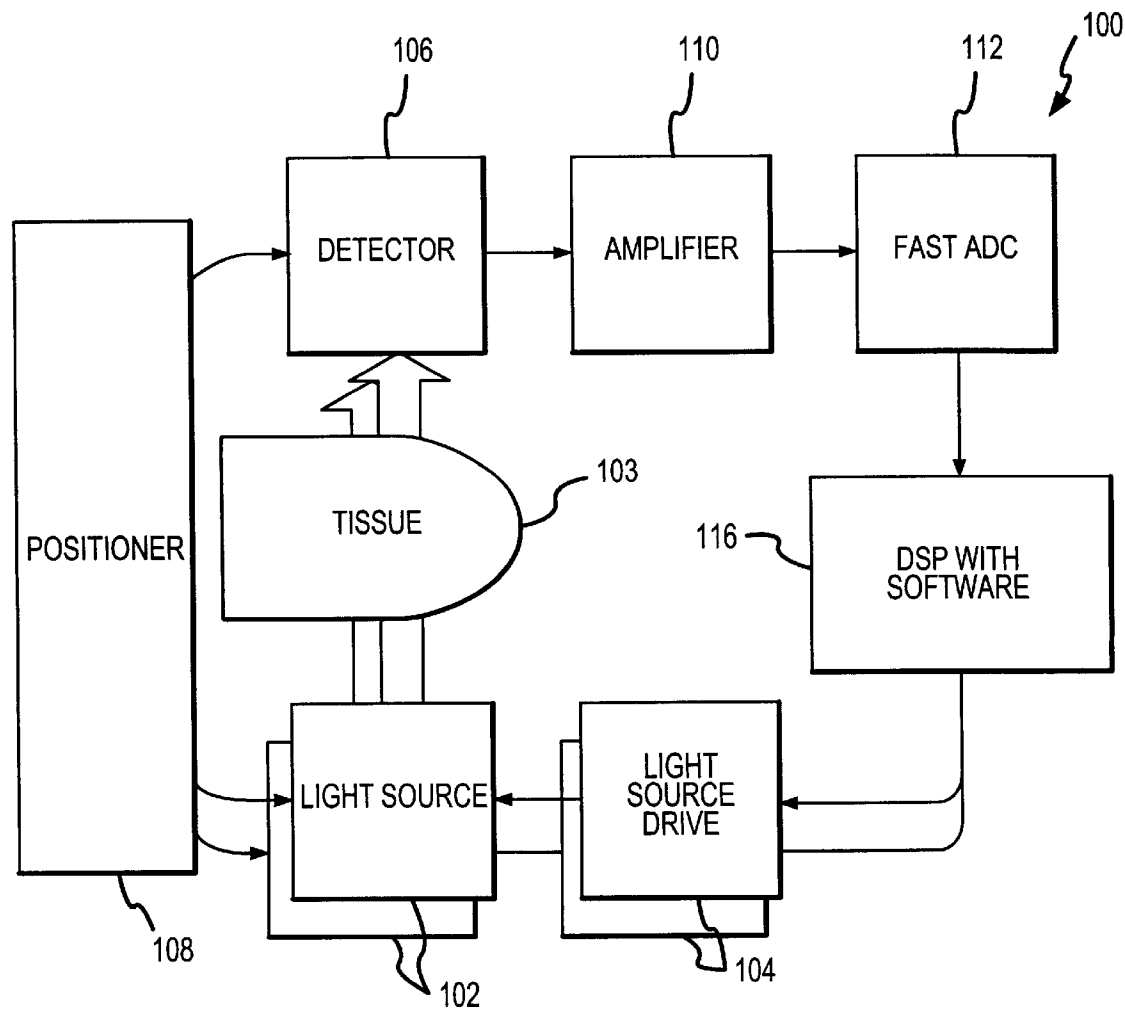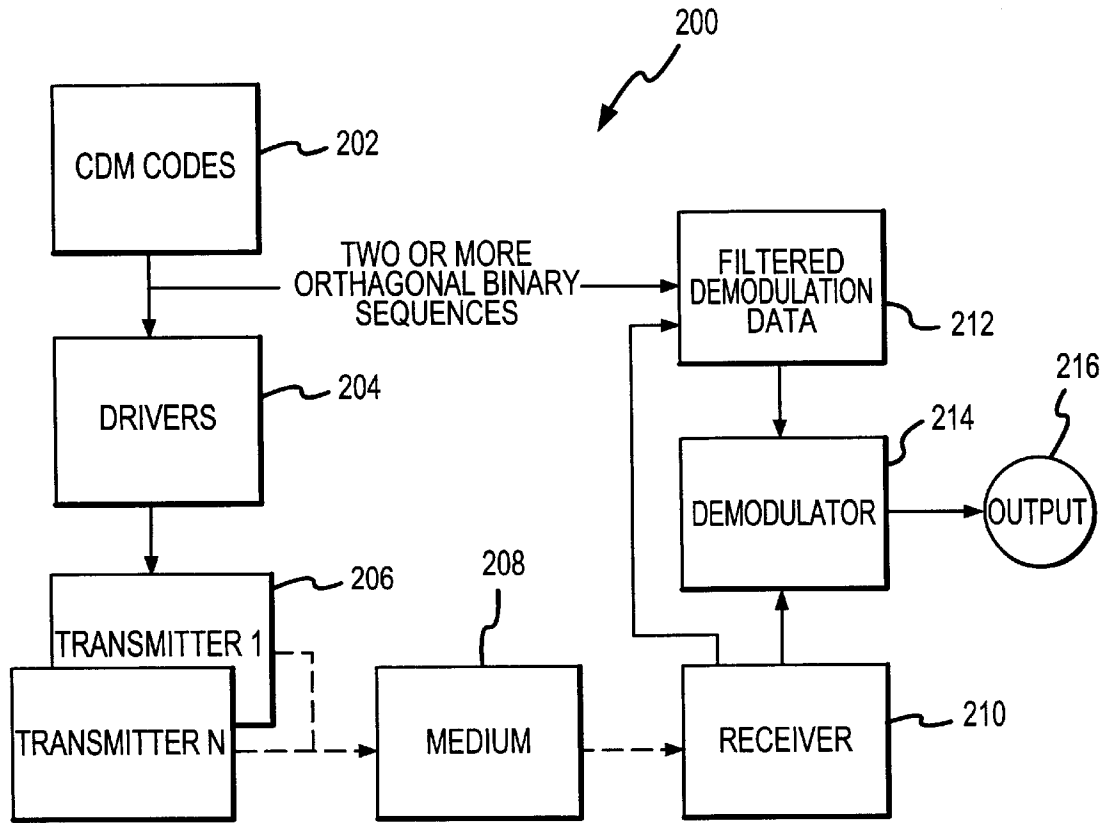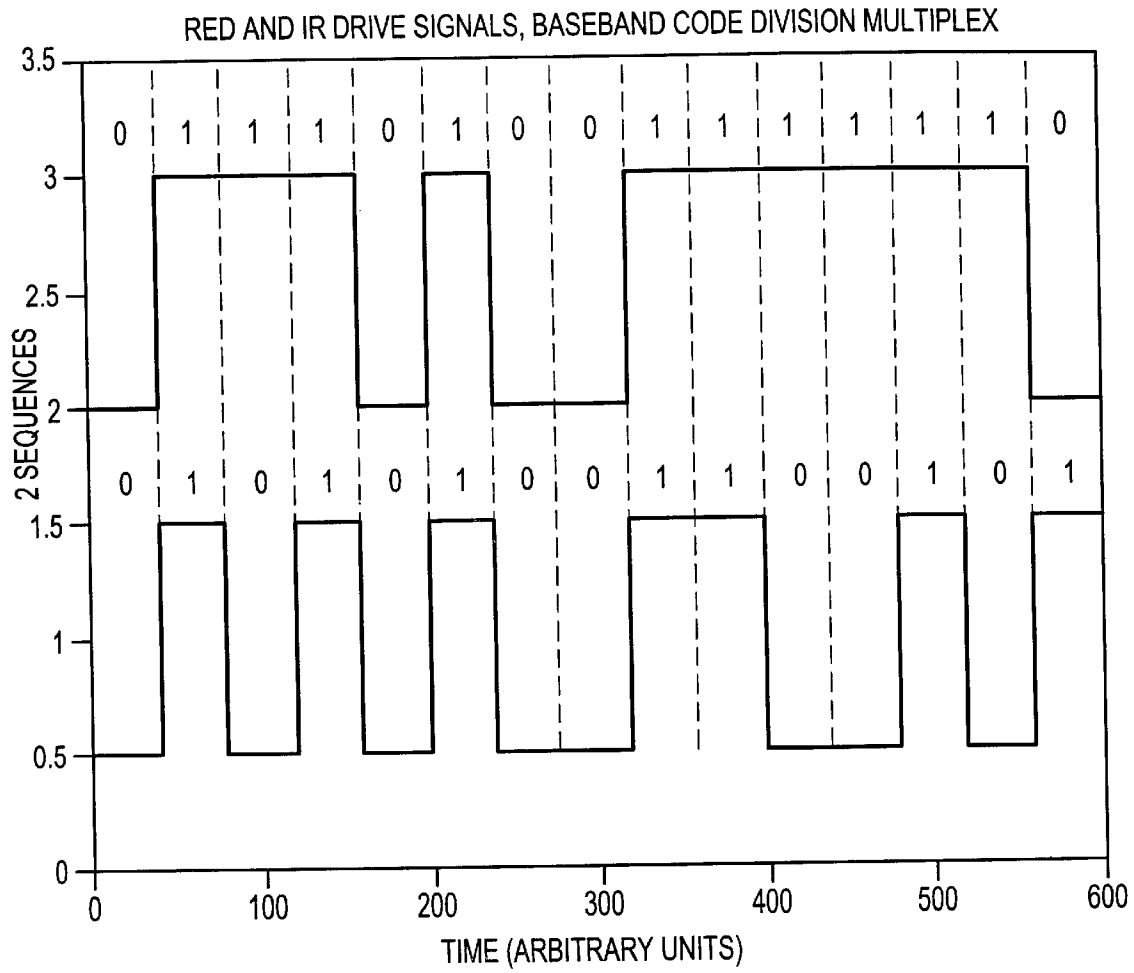
24 Claims, 5 Drawing Sheets

FIG.1

200

CDM CODES — 202

TWO OR MORE
ORTHAGONAL BINARY
SEQUENCES

FILTERED
DEMODULATION
DATA — 212

DRIVERS — 204

DEMODULATOR — 214

216

OUTPUT

TRANSMITTER 1 — 206

208

TRANSMITTER N
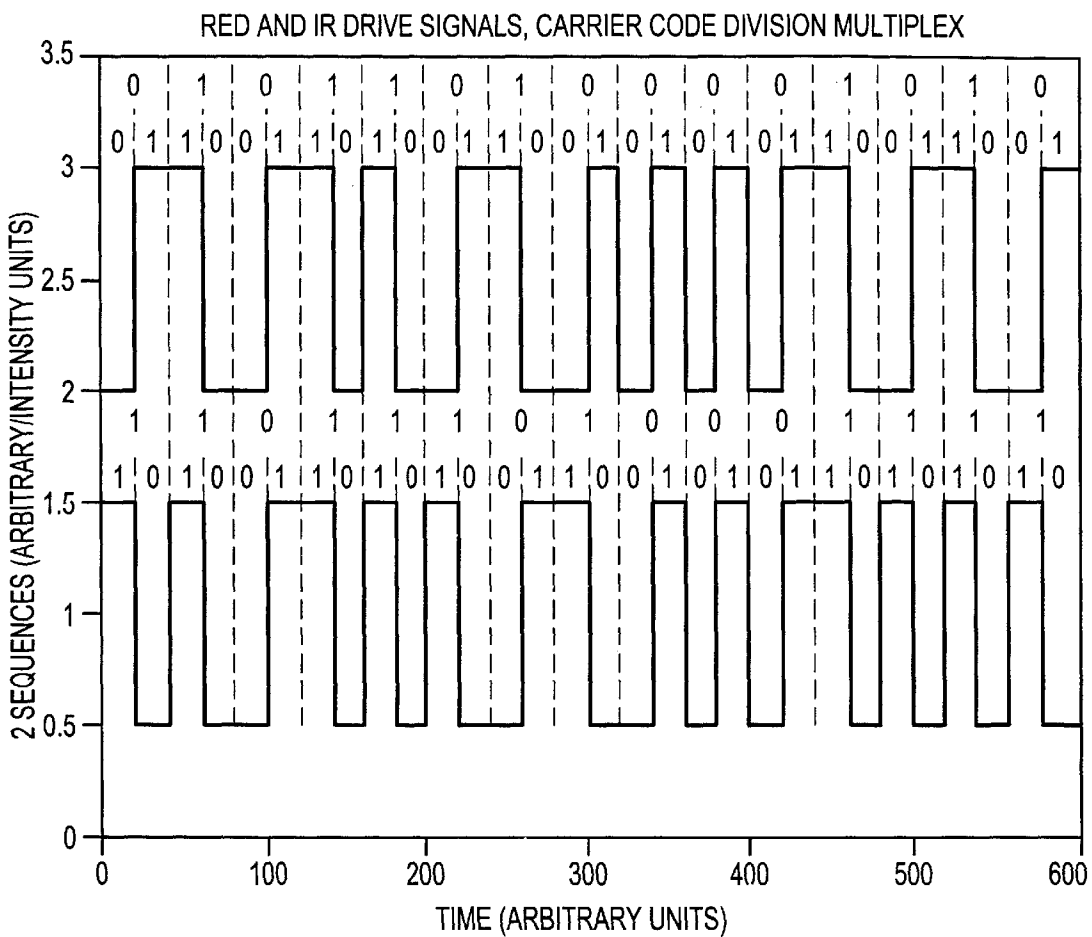
MEDIUM

RECEIVER — 210

FIG.2

FIG.3

FIG.4

DOCKET ALARM

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