



US 20130101176A1

(19) **United States**

(12) **Patent Application Publication**  
**PARK et al.**

(10) **Pub. No.: US 2013/0101176 A1**

(43) **Pub. Date: Apr. 25, 2013**

(54) **3D IMAGE ACQUISITION APPARATUS AND METHOD OF CALCULATING DEPTH INFORMATION IN THE 3D IMAGE ACQUISITION APPARATUS**

**Publication Classification**

(51) **Int. Cl.**  
*G06K 9/00* (2006.01)  
*H04N 13/02* (2006.01)  
(52) **U.S. Cl.**  
USPC ..... **382/106; 348/49; 348/E13.074**

(75) Inventors: **Yong-hwa PARK**, Yongin-si (KR);  
**Jang-woo YOU**, Yongin-si (KR);  
**Hee-sun YOON**, Seoul (KR)

(57) **ABSTRACT**

A 3-dimensional (3D) image acquisition apparatus and a method of calculating depth information in the 3D image acquisition apparatus, the 3D image acquisition apparatus including: an optical modulator for modulating light reflected from a subject by sequentially projected N (N is 3 or a larger natural number) light beams; an image sensor for generating N sub-images by capturing the light modulated by the optical modulator; and a signal processor for calculating depth information regarding a distance to the subject by using the N sub-images.

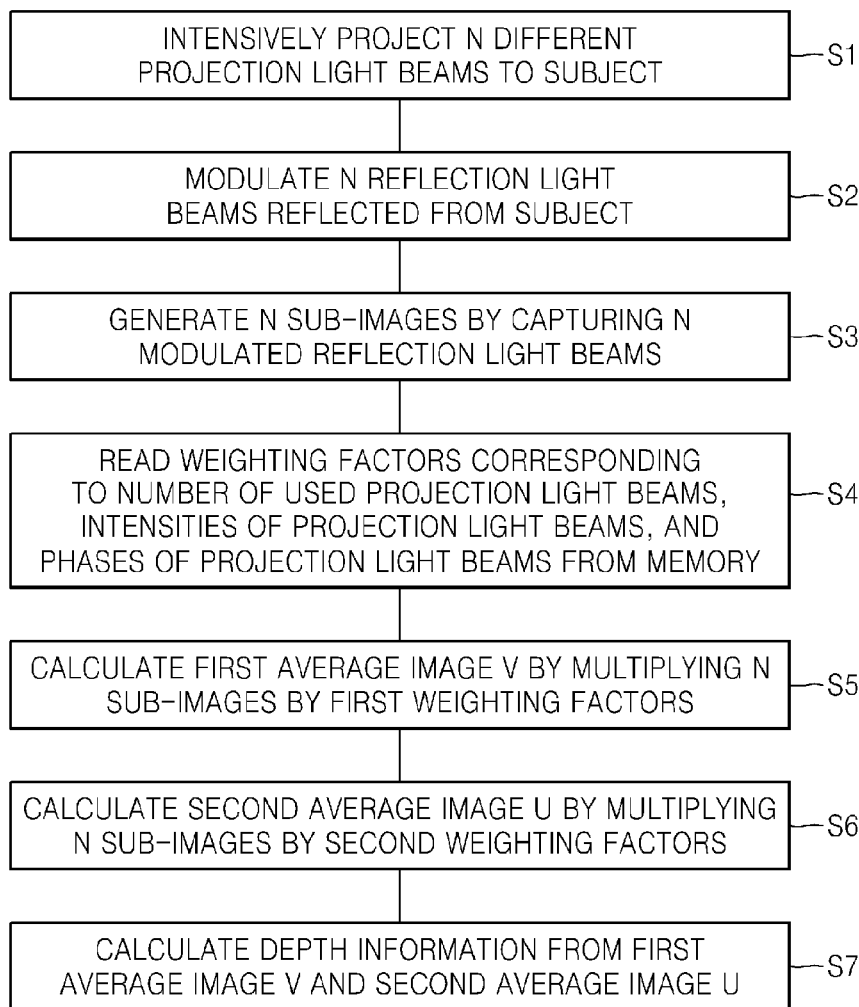
(73) Assignee: **SAMSUNG ELECTRONIC CO.,LTD.**,  
Suwon-si (KR)

(21) Appl. No.: **13/594,094**

(22) Filed: **Aug. 24, 2012**

(30) **Foreign Application Priority Data**

Oct. 25, 2011 (KR) ..... 10-2011-0109431



Align Ex. 1016

FIG. 1

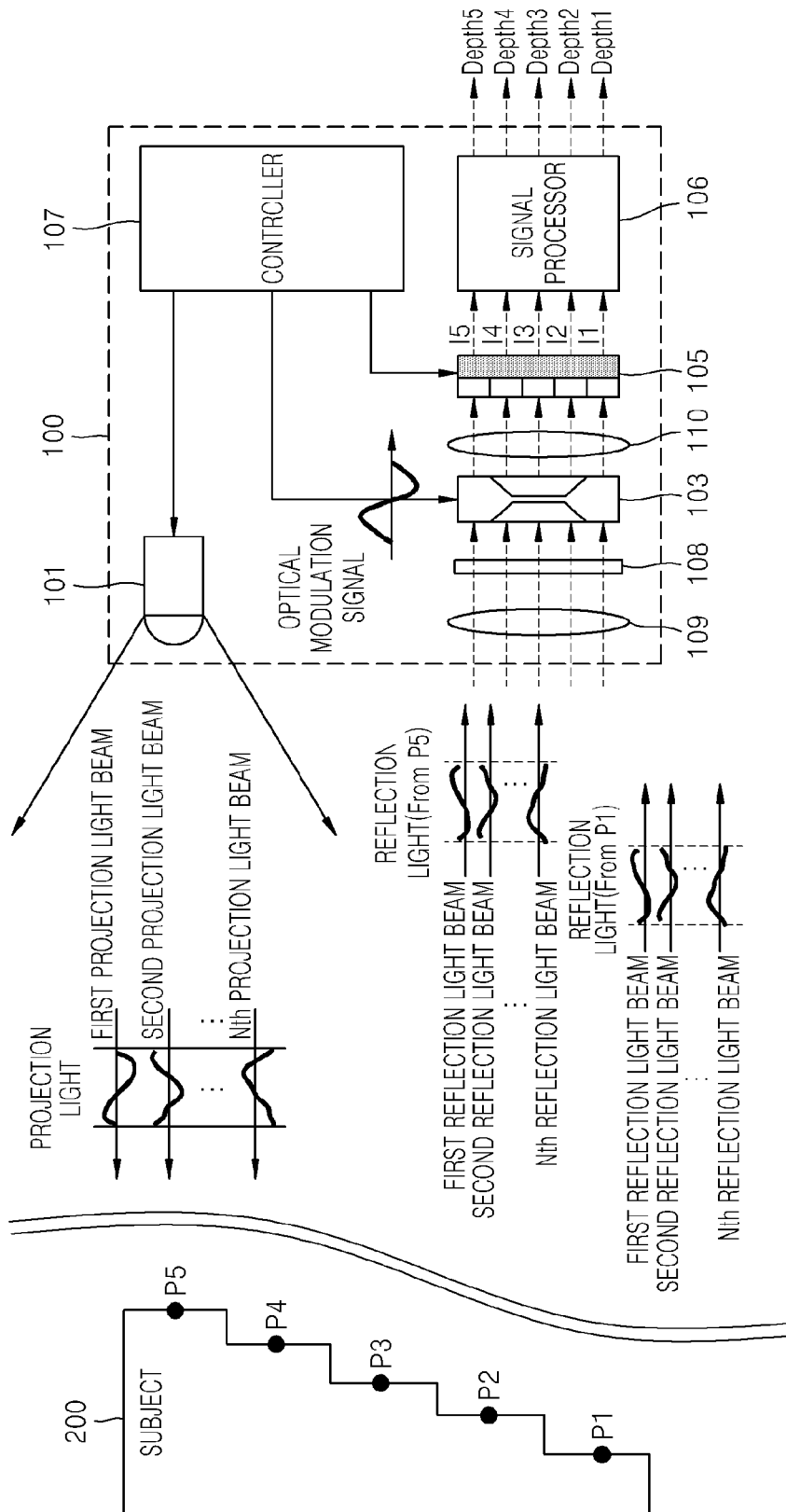


FIG. 2

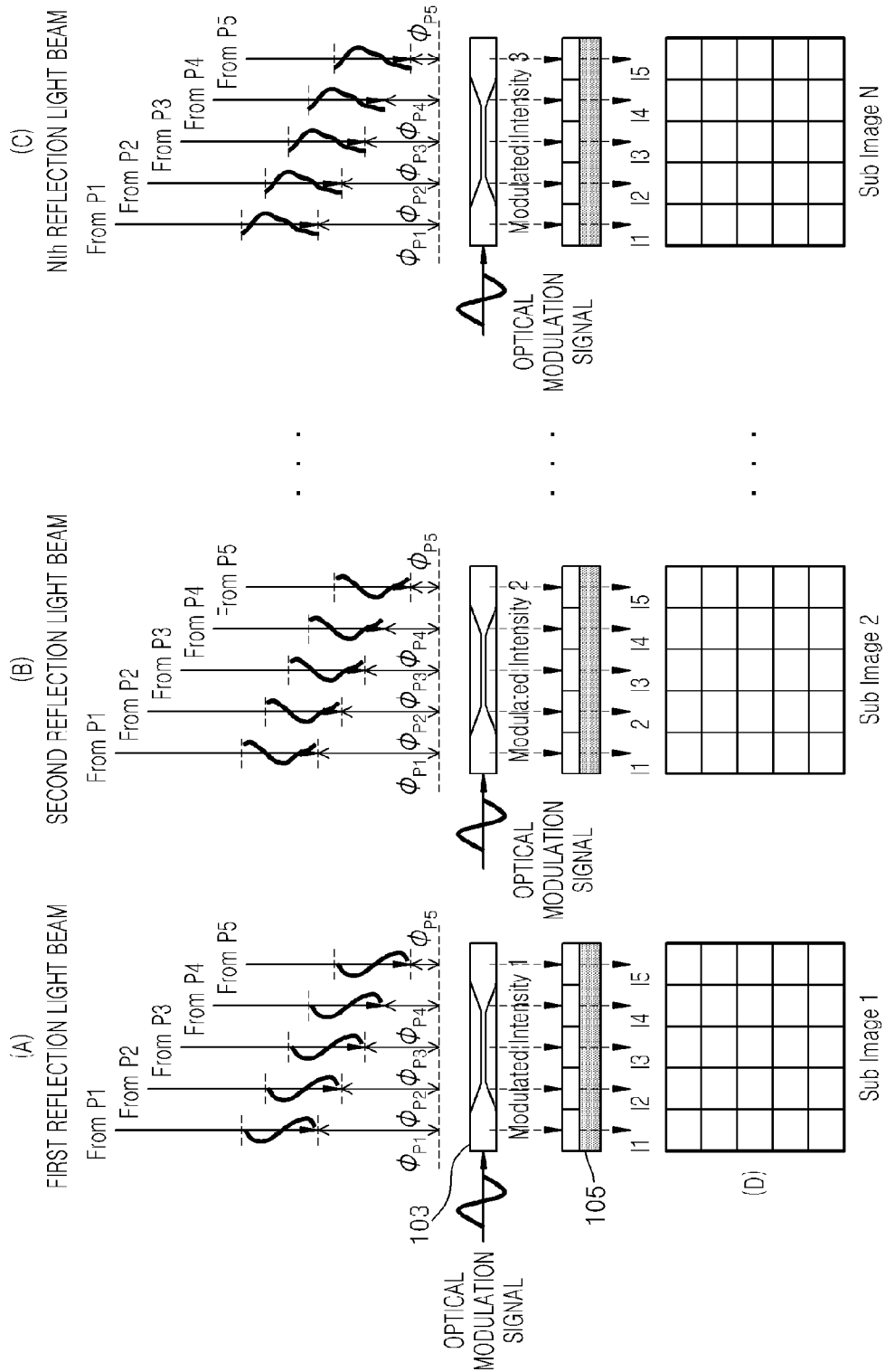


FIG. 3

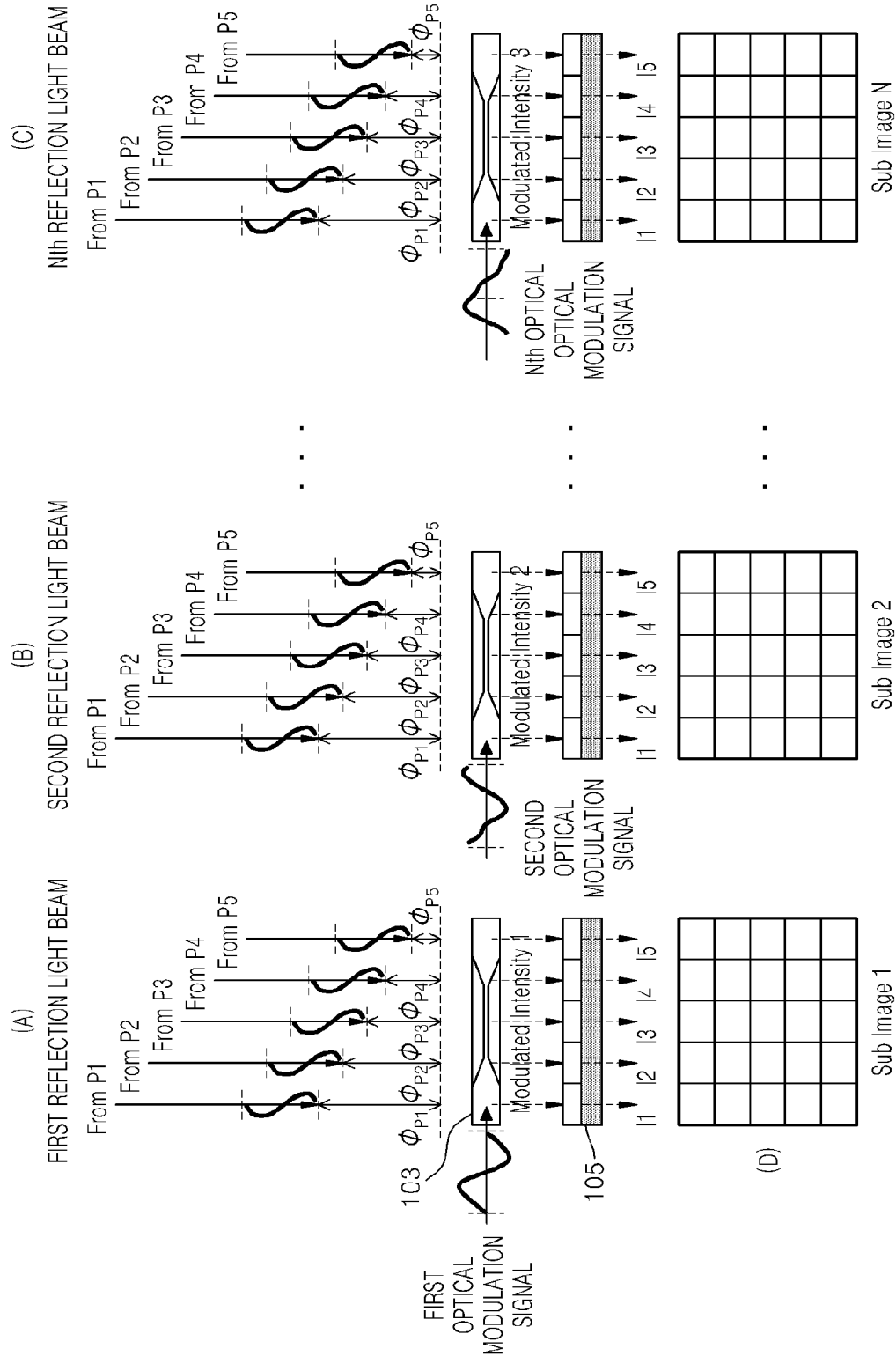
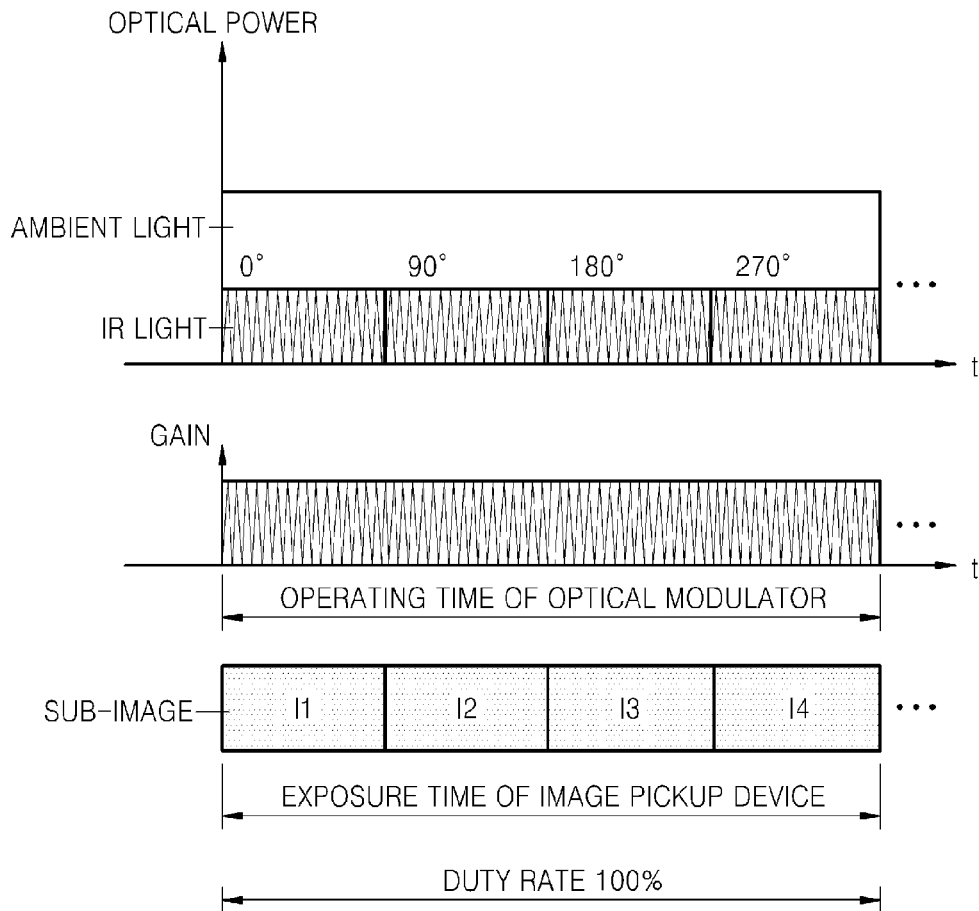


FIG. 4A



# 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.