

(43) International Publication Date
29 September 2011 (29.09.2011)(10) International Publication Number
WO 2011/119466 A3(51) International Patent Classification:
H04N 5/335 (2011.01)(21) International Application Number:
PCT/US2011/029148(22) International Filing Date:
21 March 2011 (21.03.2011)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/316,266 22 March 2010 (22.03.2010) US(71) Applicant (for all designated States except US): **HO-LOGIC INC.** [US/US]; 35 Crosby Drive, Bedford, MA 01730 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **SUDHIRBHAI SHAH, Dhruvish** [IN/US]; 188 Haut Brion Avenue, Newark, Delaware (US). **POLISCHUK, Brad** [CA/US]; 1623 North Rodney St., Wilmington, Delaware (US). **PALECKI, Eugene** [US/US]; 4 Wilkinson Drive, Landenberg, Pennsylvania (US). **CELONA, Anthony** [US/US]; 1115 Thunder Hill Road, Lincoln University, Pennsylvania (US). **MYERS, Douglas** [US/US]; 483 W. Street Road, 483 W. Street Road, Kennett Square, Pennsylvania (US). **WALKER, Glenn** [US/US]; 248 Milford Drive, Middletown, Delaware (US).(74) Agent: **ANDERSON, Holmes**; Anderson Gorecki & Manaras LLP, 33 Nagog Park, Acton, MA 01720-3421 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

[Continued on next page]

(54) Title: DECORRELATED CHANNEL SAMPLING FOR DIGITAL IMAGING

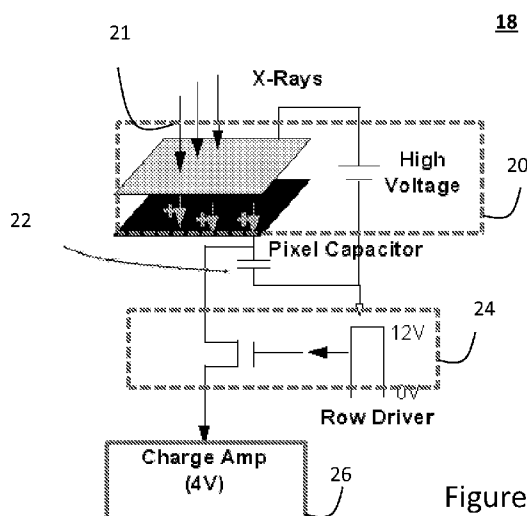


Figure 2

(57) Abstract: An imaging device generates a portion of an image from a plurality of channels within a first row by sampling each channel during a sampling time, wherein circuitry offsets sampling times of at least first and second channels within the first row, thereby reducing noise correlation between the channels. Pixel sampling times may be defined by start times of the channels within a row, end times or both. Offsetting may be accomplished using a predetermined set of sampling time values or by randomizing sampling time values. Offsetting pixel sampling times of channels within a row relative to each other decorrelates channel sampling because different phases of the noise signal are sampled on each channel, effectively blurring or dithering the channel noise within each row. Random sampling within the channel, such as by varying a channel sampling time between rows, further dithers the noise within each channel.



(88) Date of publication of the international search report:

17 November 2011

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2011/029148

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - H04N 5/335 (2011.01)

USPC - 348/308

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC(8) - H04N 5/335, 5/30, 5/341, 5/357 (2011.01)

USPC - 348/308, 294, 302, E5.091

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

MicroPatent, Google Scholar

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2009/0040351 A1 (CHO) 12 February 2009 (12.02.2009) entire document	1-6, 19-24
Y		7-18, 25-36
Y	US 6,977,685 B1 (ACOSTA-SERAFINI et al) 20 December 2005 (20.12.2005) entire document	7-18, 25-36
Y	US 4,677,490 A (LEVINE) 30 June 1987 (30.06.1987) entire document	14-17, 32-35
A	US 2008/0079830 A1 (LEPAGE) 03 April 2008 (03.04.2008) entire document	1-36
A	US 20090166515 A1 (BOEMLER) 02 July 2009 (02.07.2009) entire document	1-36
A	US 2009/0242738 A1 (YAN) 01 October 2009 (01.10.2009) entire document	1-36
A	US 2004/0165093 A1 (DOSLUOGLU et al) 26 August 2004 (26.08.2004) entire document	1-36

☐ Further documents are listed in the continuation of Box C.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier application or patent but published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

23 August 2010

Date of mailing of the international search report

13 SEP 2011

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US, Commissioner for Patents
P.O. Box 1450, Alexandria, Virginia 22313-1450

Facsimile No. 571-273-3201

Authorized officer:

Blaine R. Copenheaver

PCT Helpdesk: 571-272-4300
PCT OSP: 571-272-7774