

CORRECTED VERSION

(19) World Intellectual Property Organization International Bureau

(43) International Publication Date 14 July 2016 (14.07.2016)



(10) International Publication Number WO 2016/112355 A8

- (51) International Patent Classification: G01J 5/08 (2006.01) G01J 5/20 (2006.01) G01J 5/02 (2006.01)
(21) International Application Number: PCT/US2016/012753
(22) International Filing Date: 8 January 2016 (08.01.2016)
(25) Filing Language: English
(26) Publication Language: English
(30) Priority Data: 62/101,713 9 January 2015 (09.01.2015) US; 62/101,894 9 January 2015 (09.01.2015) US; 62/101,565 9 January 2015 (09.01.2015) US; 62/102,523 12 January 2015 (12.01.2015) US; 62/213,019 1 September 2015 (01.09.2015) US

Loop, MS 74-3PA, Cupertino, CA 95014 (US). SONTAG III, Harold, L.; c/o Apple Inc., 1 Infinite Loop, MS 74-3PA, Cupertino, CA 95014 (US). SKIDMORE, George, Dee; 2205 Silver Holly Ln, Richardson, TX 75082 (US).

(74) Agents: NGUYEN, Jean et al.; Morrison & Foerster LLP, 707 Wilshire Boulevard, Los Angeles, CA 90017 (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, BN, 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, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, 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.

(71) Applicant: APPLE INC. [US/US]; 1 Infinite Loop, Cupertino, CA 95014 (US).

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, 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, KM, ML, MR, NE, SN, TD, TG).

(72) Inventors: KANGAS, Miikka, M.; c/o Apple Inc., 1 Infinite Loop, MS 74-3PA, Cupertino, CA 95014 (US). BISHOP, Michael, J.; c/o Apple Inc., 1 Infinite Loop, MS 74-3PA, Cupertino, CA 95014 (US). CHEN, Robert; c/o Apple Inc., 1 Infinite Loop, MS 74-1PA, Cupertino, CA 95014 (US). SIMON, David, I.; c/o Apple Inc., 1 Infinite

[Continued on next page]

(54) Title: POLARIZATION SELECTIVE, FREQUENCY SELECTIVE, AND WIDE DYNAMIC RANGE DETECTORS, IMAGING ARRAYS, READOUT INTEGRATED CIRCUITS, AND SENSOR SYSTEMS

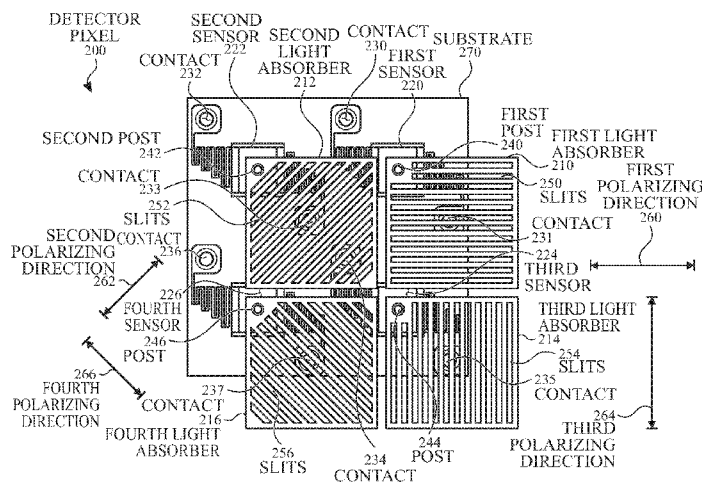


FIG. 2A

(57) Abstract: This relates to sensor systems, detectors, imagers, and readout integrated circuits (ROICs) configured to selectively detect one or more frequencies or polarizations of light, capable of operating with a wide dynamic range, or any combination thereof. In some examples, the detector can include one or more light absorbers; the patterns and/or properties of a light absorber can be configured based on the desired measurement wavelength range and/or polarization direction. In some examples, the detector can comprise a plurality of at least partially overlapping light absorbers for enhanced dynamic range detection. In some examples, the detector can be capable of electrostatic tuning for one or more flux levels by varying the response time or sensitivity to account for various flux levels. In some examples, the ROIC can be capable of dynamically adjusting at least one of the frame rate integrating capacitance, and power of the illumination source.

WO 2016/112355 A8



Published:

— *with international search report (Art. 21(3))*

(48) Date of publication of this corrected version:

17 August 2017

(88) Date of publication of the international search report:
22 September 2016

(15) Information about Correction:
see Notice of 17 August 2017