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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/301,517	04/06/2021	Yojiro MATSUEDA	8317-0050	1637

466 7590 05/06/2025

NIXON & VANDERHYE, PC
901 NORTH GLEBE ROAD
11TH FLOOR
ARLINGTON, VA 22203

EXAMINER
CASAREZ, BENJAMIN X.

ART UNIT	PAPER NUMBER
2619	

NOTIFICATION DATE	DELIVERY MODE
05/06/2025	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

pair_nixon@firsttofile.com
ptomail@nixonvan.com

PTOL-90A (Rev. 04/07)

LG DISPLAY 1002

APPLICATION NO.	ISSUE DATE	PATENT NO.
17/301,517	06-May-2025	12293691

NIXON & VANDERHYE, PC
901 NORTH GLEBE ROAD
ARLINGTON, VA 22203

EGRANT NOTIFICATION

Your electronic patent grant (eGrant) is now available, which can be accessed via Patent Center at https://patentcenter.uspto.gov

The electronic patent grant is the official patent grant under 35 U.S.C. 153. For more information, please visit https://www.uspto.gov/electronicgrants

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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/301,517	05/06/2025	12293691	8317-0050	1637

466 7590 04/16/2025

NIXON & VANDERHYE, PC
901 NORTH GLEBE ROAD
11TH FLOOR
ARLINGTON, VA 22203

ISSUE NOTIFICATION

The projected patent number and issue date are specified above. The patent will issue electronically. The electronically issued patent is the official patent grant pursuant to 35 U.S.C. § 153. The patent may be accessed on or after the issue date through Patent Center at https://patentcenter.uspto.gov/. The patent will be available in both the public and the private sides of Patent Center. Further assistance in electronically accessing the patent, or about Patent Center, is available by calling the Patent Electronic Business Center at 1-888-217-9197.

The USPTO is implementing electronic patent issuance with a transition period, during which period the USPTO will mail a ceremonial paper copy of the electronic patent grant to the correspondence address of record. Additional copies of the patent (i.e., certified and presentation copies) may be ordered for a fee from the USPTO's Certified Copy Center at https://certifiedcopycenter.uspto.gov/index.html. The Certified Copy Center may be reached at (800)972-6382.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Center (https://patentcenter.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Patents Stakeholder Experience (OPSE), Stakeholder Support Division (SSD) at (571)-272-4200.

INVENTOR(s) (Please see PATENT CENTER site https://patentcenter.uspto.gov for additional inventors):

Yojiro MATSUEDA, Kanagawa, JAPAN;
Kenichi TAKATORI, Kanagawa, JAPAN;

APPLICANT(s) (Please see PATENT CENTER site https://patentcenter.uspto.gov for additional applicants):

NLT Technologies, Ltd., Kanagawa, JAPAN;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

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PATENT AND TRADEMARK OFFICE

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www.uspto.gov

ELECTRONIC PAYMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/301,517	**04/07/2025 12:12:51 PM Z ET**	**8317-0050**

Title of Invention

DISPLAY DEVICE AND COMPUTER READABLE MEDIA

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	1637	FILED BY	Emebet Girma
PATENT CENTER #	69892401	AUTHORIZED BY	Andrew Patch
CUSTOMER #	466	FILING DATE	04/06/2021
CORRESPONDENCE ADDRESS	-	FIRST NAMED INVENTOR	Yojiro MATSUEDA

Payment Information

PAYMENT METHOD	PAYMENT TRANSACTION ID	PAYMENT AUTHORIZED BY
CARD / 5024	**E202547C15586809**	**Emebet Girma**

FEE CODE	DESCRIPTION	ITEM PRICE($)	QUANTITY	ITEM TOTAL($)
1501	UTILITY ISSUE FEE	1200.00	1	1200.00
			TOTAL AMOUNT:	**$1,200.00**

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/301,517	**04/07/2025 12:12:51 PM Z ET**	**8317-0050**

Title of Invention

DISPLAY DEVICE AND COMPUTER READABLE MEDIA

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CONFIRMATION #	1637	FILED BY	Emebet Girma
PATENT CENTER #	69892401	FILING DATE	04/06/2021
CUSTOMER #	466	FIRST NAMED INVENTOR	Yojiro MATSUEDA
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Andrew Patch

Documents

TOTAL DOCUMENTS: 1

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
20250407_8317-0050_8317-0050_IF-.pdf	1	Issue Fee Payment (PTO-85B)	182 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
20250407_8317-0050_8317-0050_IF-.pdf	2DF4F04E1B7671148902597ABF9B868A483A0BE4E837FA7E58CAC074AAA71E6F7561EEA9E68E6C4C8CDBF153DA799AA5EAC007AE1DAC1988D2BB73429517A070

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New International Application Filed with the USPTO as a Receiving Office

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PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via the USPTO patent electronic filing system.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications. **Because electronic patent issuance may occur shortly after issue fee payment, any desired continuing application should preferably be filed prior to payment of this issue fee in order not to jeopardize copendency.**

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

466 7590 01/07/2025
NIXON & VANDERHYE, PC
901 NORTH GLEBE ROAD
11TH FLOOR
ARLINGTON, VA 22203

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via the USPTO patent electronic filing system or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/301,517	04/06/2021	Yojiro MATSUEDA	8317-0050	1637

TITLE OF INVENTION: DISPLAY DEVICE AND COMPUTER READABLE MEDIA

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1200	$0.00	$0.00	$1200	04/07/2025

EXAMINER	ART UNIT	CLASS-SUBCLASS
CASAREZ, BENJAMIN X.	2619	345-694000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❑ Change of correspondence address (or Change of Correspondence Address form PTO/AIA/122 or PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/AIA/47 or PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 NIXON & VANDERHYE
2
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: TIANMA MICROELECTRONICS CO., LTD.
(B) RESIDENCE: (CITY and STATE OR COUNTRY): Shenzhen, CHINA

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ☒ Corporation or other private group entity ❑ Government

4a. Fees submitted: ☒ Issue Fee ❑ Publication Fee (if required)

4b. Method of Payment: *(Please first reapply any previously paid fee shown above)*

☒ Electronic Payment via the USPTO patent electronic filing system ❑ Enclosed check ❑ Non-electronic payment by credit card (Attach form PTO-2038)

☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. 14-1140

5. **Change in Entity Status** (from status indicated above)

❑ Applicant certifying micro entity status. See 37 CFR 1.29

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

❑ Applicant asserting small entity status. See 37 CFR 1.27

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

❑ Applicant changing to regular undiscounted fee status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /Andrew J. Patch/ Date April 7, 2025

Typed or printed name Andrew J. Patch Registration No. 32,925

UNITED STATES PATENT AND TRADEMARK OFFICE

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United States Patent and Trademark Office
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NOTICE OF ALLOWANCE AND FEE(S) DUE

466 7590 01/07/2025

NIXON & VANDERHYE, PC
901 NORTH GLEBE ROAD
11TH FLOOR
ARLINGTON, VA 22203

EXAMINER	
CASAREZ, BENJAMIN X.	
ART UNIT	PAPER NUMBER
2619	

DATE MAILED: 01/07/2025

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/301,517	04/06/2021	Yojiro MATSUEDA	8317-0050	1637

TITLE OF INVENTION: DISPLAY DEVICE AND COMPUTER READABLE MEDIA

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1200	$0.00	$0.00	$1200	04/07/2025

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 40% the amount of undiscounted fees, and micro entity fees are 20% the amount of undiscounted fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via the USPTO patent electronic filing system.

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Commissioner for Patents
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(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/301,517	04/06/2021	Yojiro MATSUEDA	8317-0050	1637

TITLE OF INVENTION: DISPLAY DEVICE AND COMPUTER READABLE MEDIA

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1200	$0.00	$0.00	$1200	04/07/2025

EXAMINER	ART UNIT	CLASS-SUBCLASS
CASAREZ, BENJAMIN X.	2619	345-694000

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❑ Change of correspondence address (or Change of Correspondence Address form PTO/AIA/122 or PTO/SB/122) attached.

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2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____
2 _____
3 _____

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PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. Fees submitted: ❑Issue Fee ❑Publication Fee (if required)

4b. Method of Payment: *(Please first reapply any previously paid fee shown above)*

❑ Electronic Payment via the USPTO patent electronic filing system ❑ Enclosed check ❑ Non-electronic payment by credit card (Attach form PTO-2038)

❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. **Change in Entity Status** (from status indicated above)

❑ Applicant certifying micro entity status. See 37 CFR 1.29
NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

❑ Applicant asserting small entity status. See 37 CFR 1.27
NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

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NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
CASAREZ, BENJAMIN X.	
ART UNIT	**PAPER NUMBER**
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DATE MAILED: 01/07/2025

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. The United States Patent and Trademark Office (USPTO) collects the information in this record under authority of 35 U.S.C. 2. The USPTO's system of records is used to manage all applicant and owner information including name, citizenship, residence, post office address, and other information with respect to inventors and their legal representatives pertaining to the applicant's/ owner's activities in connection with the invention for which a patent is sought or has been granted. The applicable Privacy Act System of Records Notice for the information collected in this form is COMMERCE/PAT-TM-7 Patent Application Files, available in the Federal Register at 78 FR 19243 (March 29, 2013).
https://www.govinfo.gov/content/pkg/FR-2013-03-29/pdf/2013-07341.pdf

Routine uses of the information in this record may include disclosure to:

1) law enforcement, in the event that the system of records indicates a violation or potential violation of law;
2) a federal, state, local, or international agency, in response to its request;
3) a contractor of the USPTO having need for the information in order to perform a contract;
4) the Department of Justice for determination of whether the Freedom of Information Act (FOIA) requires disclosure of the record;
5) a Member of Congress submitting a request involving an individual to whom the record pertains, when the individual has requested the Member's assistance with respect to the subject matter of the record;
6) a court, magistrate, or administrative tribunal, in the course of presenting evidence, including disclosures to opposing counsel in the course of settlement negotiations;
7) the Administrator, General Services Administration (GSA), or their designee, during an inspection of records conducted by GSA under authority of 44 U.S.C. 2904 and 2906, in accordance with the GSA regulations and any other relevant (i.e., GSA or Commerce) directive, where such disclosure shall not be used to make determinations about individuals;
8) another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c));
9) the Office of Personnel Management (OPM) for personnel research purposes; and
10) the Office of Management and Budget (OMB) for legislative coordination and clearance.

If you do not furnish the information requested on this form, the USPTO may not be able to process and/or examine your submission, which may result in termination of proceedings, abandonment of the application, and/or expiration of the patent.

Notice of Allowability	Application No. 17/301,517	Applicant(s) MATSUEDA et al.	
	Examiner Benjamin X Casarez	Art Unit 2619	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☑ This communication is responsive to claim amendments filed 10/22/2024.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☑ The allowed claim(s) is/are 1-8 . As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see **http://www.uspto.gov/patents/init_events/pph/index.jsp** or send an inquiry to **PPHfeedback@uspto.gov.**

4. ☑ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☑ All b) ☐ Some* c) ☐ None of the:

   1. ☐ Certified copies of the priority documents have been received.
   2. ☑ Certified copies of the priority documents have been received in Application No. 15/255,377 .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____ .

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____.
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.
5. ☐ Examiner's Amendment/Comment
6. ☑ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/BENJAMIN X CASAREZ/
Primary Examiner, Art Unit 2619

DETAILED ACTION

Status

This Office Action is responsive to claim amendments filed for No. 17/301,517 on July 22, 2022. Please note: Claims 1 and 3 have been amended. d.

Notice of Pre-AIA or AIA Status

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Reasons for Allowance

2. Claims 1-8 are allowed.

3. The following is an examiner's statement of reasons for allowance:

None of the cited prior art, either alone or in combination, explicitly teaches or renders obvious all of the limitations of the independent claim.

4. The closest prior art to claim 1 is Kim et al. (US 20160225834 A1), hereinafter Kim, in view of Sung et al. (US 20090121983 A1), and in further view of Cok et al. (US 20040217694 A1), hereinafter Cok..

Regarding **Claim 1**, please refer to the rejection of claim 1 over Kim in view of Cok in the Non-Final Office Action dated 05/22/2024.

Regarding the amended limitations of **Claim 1**, Kim teaches:

wherein

in the first pixel and the second pixel adjacent to each other in the column direction, the subpixel of the second color and the subpixel of the third color are arrayed alternately in the column direction (**See annotated FIG. 2 below: in the first pixel and the second pixel adjacent to each other in the column direction, the subpixel of the second color (G) and the subpixel of the third color (R) are arrayed alternately in the column direction**),

a column where the subpixel of the first color in the first pixel and the subpixel of the first color in the second pixel are arrayed in parallel with a column where the subpixel of the second color and the subpixel of the third color are alternately arrayed, the columns being arrayed alternately in the row direction **(See annotated FIG. 2 below: a column where the subpixel of the first color (B) in the first pixel and the subpixel of the first color (B) in the second pixel are arrayed in parallel with a column where the subpixel of the second color (G) and the subpixel of the third color (R) are alternately arrayed, the columns being arrayed alternately in the row direction)**,

the subpixel of the first color in one of the first pixels has a biased arrangement and is positioned toward a side of the subpixel of the second color in an array direction of the subpixel of the second color and the subpixel of the third color that are arrayed alternately **(See annotated FIG. 2 below: the subpixel of the first color (B) in one of the first pixels (e.g., the top middle first pixel) has a biased arrangement and is positioned toward a side of the subpixel of the second color (G) in an array direction of the subpixel of the second color (G) and the subpixel of the third color (R) that are arrayed alternately)**,

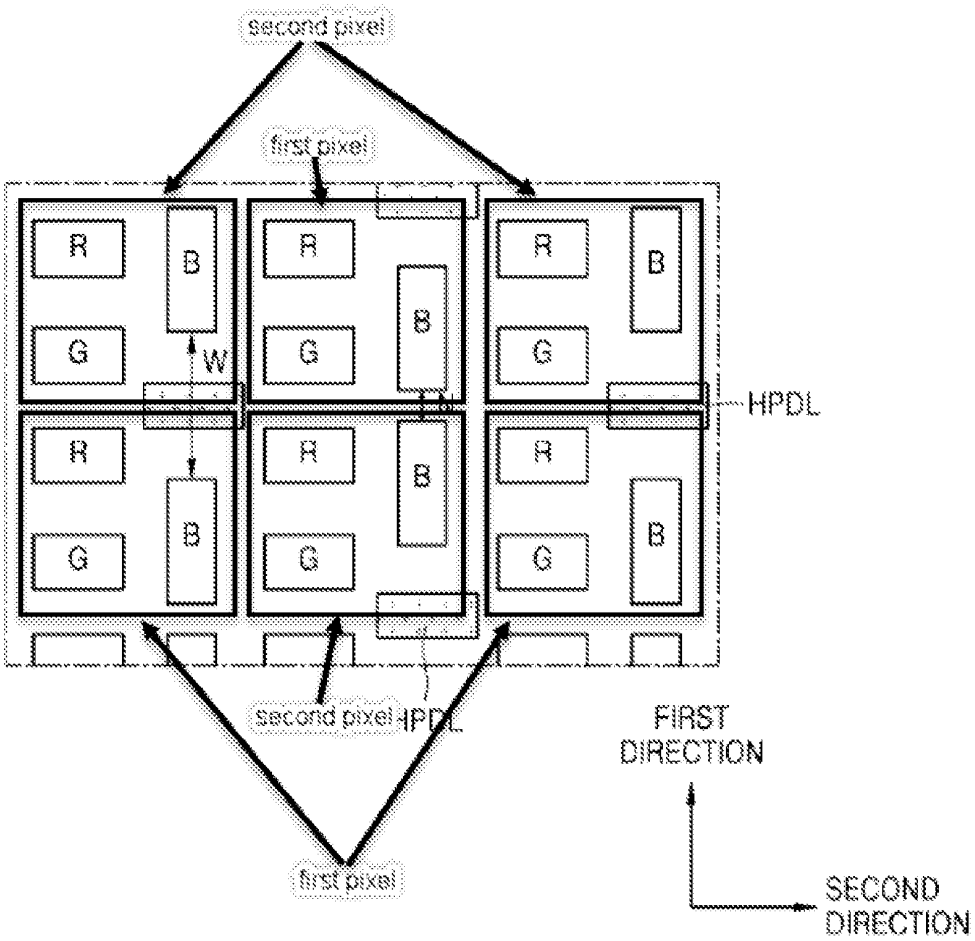
the subpixel of the first color in one of the second pixels has a biased arrangement and is positioned toward a side of the subpixel of the third color in the array direction of the subpixel of the second color and the subpixel of the third color that are arrayed alternately **(See annotated FIG. 2 below: the subpixel of the first color (B) in one of the second pixels (e.g., the top left second pixel) has a biased arrangement and is positioned toward a side of the subpixel of the third color (R) in the array direction of the subpixel of the second color (G) and the subpixel of the third color (R) that are arrayed alternately)**,

the subpixel of the first color in one of the first pixels has a rectangle or rounded rectangle shape whose long axis is parallel with the direction in which the subpixel of the second color and the subpixel of the third color are arrayed alternately **(See annotated FIG. 2 below: the subpixel of the first color (B) in one of the first pixels has a rectangle or rounded rectangle shape whose long axis is parallel with the direction in which the subpixel of the second color (G) and the subpixel of the third color (R) are arrayed alternately)**,

the subpixel of the first color in one of the second pixels has the rectangle or rounded rectangle shape whose long axis is parallel with the direction in which the subpixel of the second color and the subpixel of the third color are arrayed alternately **(See annotated FIG. 2 below: the subpixel of the first color (B) in one of the second**

pixels has a rectangle or rounded rectangle shape whose long axis is parallel with the direction in which the subpixel of the second color (G) and the subpixel of the third color (R) are arrayed alternately).

FIG. 2



Kim does not explicitly teach:

the at least one connection part of the subpixel of the first color in one of the first pixels is one connection part and is biased from a middle of a long axis of the subpixel of the first color toward an end of the long axis when viewed from the row direction,

the at least one connection part of the subpixel of the first color in one of the second pixels is one connection part and is biased from a middle of a long axis of the subpixel of the first color toward an of the axis when viewed from the row direction,

a biased position where the connection part of the subpixel of the first color in the first pixel is disposed with respect to the middle of the long axis of the subpixel of the first color in the first pixel when viewed from the row direction is relatively different from a biased position where the connection part of the subpixel of the first color in the second pixel is disposed with respect to the middle of the long axis of the subpixel of the first color in the second pixel when viewed from the row direction,

a position where the connection part is disposed with respect to the subpixel of the second color, a position where the connection part is disposed with respect to the subpixel of the third color and a position where the connection part is disposed with respect to the subpixel of the first color in the first pixel are relatively same as a position where the connection part with respect to the subpixel of the second color, a position where the connection part is disposed with respect to the subpixel of the third color and a position where the connection part is disposed with respect to the subpixel of the first color in the second pixel, and

in a pixel array including the first pixel and the second pixel arrayed in the column direction, the connection part of the subpixel of the first color is disposed between a column where the subpixel of the second color and the subpixel of the third color are alternately arrayed and a column where the subpixel of the first color arranged in parallel with the column where the subpixel of the second color and the subpixel of the third color are alternately arrayed.

However, in the same field of endeavor, a color OLED displays **(Cok, Abstract)**, Cok teaches:

in the arrangement of the subpixels **(See paragraph [0041])** of the first color, the second color and the third color of first pixels **(See FIG. 17: 12, 14, 16 and 18 correspond to a first pixel, and the blue light emitting element 16 corresponds to a subpixel of a first color in one of first pixels, the green light emitting element 14 corresponds to a second color, and the red light emitting element 12 corresponds to a third color)**, at least one connection part **(FIG. 12: 145a)** connected to the subpixel of the first color in one of the first pixels is disposed at a biased position in an array direction of the subpixel of the second color and the subpixel of the third color with respect to a rectangle or rounded rectangle shape of the subpixel of the first color in one of the first pixels **(See FIGS. 12 and 17: 145a is disposed at a biased position in an array direction of a subpixel of a second color (G**

corresponding to 14) and a subpixel of a third color (R corresponding to 12) with respect to a rectangle or rounded rectangle shape of the subpixel of the first color (B corresponding to 16) in one of the first pixels) and in an OLED layer of the first color **(See FIG. 13: the via connecting 181a to 141a (corresponding to the at least one connection part) overlaps with the OLED layer 310)**,

at least one connection part **(FIG. 12: 145a) (See paragraph [0041])** of a subpixel of a first color in one of first pixels is one connection part and is biased from a middle of a long axis of the subpixel of the first color toward an end of the long axis when viewed from a row direction **(See FIG. 17: 145a of the blue subpixel in one of first pixels is one connection part and is biased from a middle of a long axis of the subpixel of the first color toward an end of the long axis when viewed from a row direction)**,

the at least one connection part of the subpixel of the first color in one of the second pixels is one connection part and is biased from a middle of a long axis of the subpixel of the first color toward an end of the long axis when viewed from the row direction **(See FIG. 17: 145a of the blue subpixel in one of second pixels is one connection part and is biased from a middle of a long axis of the subpixel of the first color toward an end of the long axis when viewed from a row direction)**,

a position where the connection part is disposed with respect to the subpixel of a second color, a position where the connection part is disposed with respect to the subpixel of the third color and a position where the connection part is disposed with respect to the subpixel of the first color in the first pixel are relatively same as a position where the connection part with respect to the subpixel of the second color, a position where the connection part is disposed with respect to the subpixel of a third color and a position where the connection part is disposed with respect to the subpixel of the first color in the second pixel **(See FIG. 17: a position where 145a is disposed with respect to the subpixel of a second color (G), a position where 145a is disposed with respect to the subpixel of the third color (R) and a position where the connection part is disposed with respect to the subpixel of the first color (B) in the first pixel are relatively same as a position where the connection part with respect to the subpixel of the second color (G), a position where the connection part is disposed with respect to the subpixel of a third color (R) and a position where the connection part is disposed with respect to the subpixel of the first color (B) in the second pixel)**, and

Kim contained **a device which differed from the claimed device by the substitution of** the at least one connection part connected to the subpixel of the first color in each of the first and second pixels, but without the

specific positional arrangement that is claimed. Cok **teaches the substituted element of** at least one connection part disposed in the claimed manner. **Their functions were known in the art** to connect OLEDs to driving circuitry for each subpixel. The at least one connection part taught by Kim could have been substituted with the at least one connection part taught by Cok and the **results would have been predictable** and resulted in placing the at least one connection part connected to each of the first subpixels so that they are aligned in the row direction, as shown in FIG. 14 of Cok. Furthermore, by adding the connection part to the first subpixels, in a pixel array including the first pixel and the second pixel arrayed in the column direction, the connection part of the subpixel of the first color is disposed between a column where the subpixel of the second color and the subpixel of the third color are alternately arrayed and a column where the subpixel of the first color arranged in parallel with the column where the subpixel of the second color and the subpixel of the third color are alternately arrayed **(the connection part would be added to the array shown in FIG. 2 of Kim, and therefore the connection part of the blue subpixel would be between the columns where the red and green subpixels are alternately arrayed)**.

Therefore, the claimed subject matter would have been obvious to a person having ordinary skill in the art before the effective filing date of the claimed invention.

Kim in view of Cok does not explicitly teach:

a biased position where the connection part of the subpixel of the first color in the first pixel is disposed with respect to the middle of the long axis of the subpixel of the first color in the first pixel when viewed from the row direction is relatively different from a biased position where the connection part of the subpixel of the first color in a second pixel is disposed with respect to the middle of the long axis of the subpixel of the first color in the second pixel when viewed from the row direction.

Specifically, as shown in FIG. 17 of Cok, the connection part 145a for the blue subpixel is placed at relatively the same position with respect to the middle of the long axis of the subpixel. Therefore, Kim in view of Cok does not explicitly teach or render obvious this limitation in combination with all of the other limitations of the claim. Furthermore, none of the other cited prior art would render this limitation obvious. Therefore, none of the cited prior art, either alone or in combination, explicitly teaches or renders obvious all of the limitations of the independent claim.

Applicant's FIG. 1 illustrates the claimed display device **(FIG. 1: 10)** comprising:

a display unit **(FIG. 1: 30)** where a plurality of first pixels **(351)** each including subpixels of three colors **(31, 32, 33)** and a plurality of second pixels **(351)** each including subpixels of three colors **(31, 32, 33)** arranged differently from the subpixels in one of the first pixels are alternately arrayed in a row direction and a column direction **(See FIG. 4) (See paragraph [0044])**, the subpixels of the three colors including a subpixel of a first color, a subpixel of a second color and a subpixel of a third color **(See paragraph [0039])**;

a thin film transistor (TFT) circuit disposed below each of the subpixels to control the subpixels **(See FIG. 6 and paragraph [0053])**; and

at least one connection part that connects the TFT circuit and one of the subpixels **(See FIGS. 6 and 7: 42) (See paragraph [0055])**;

wherein

in the first pixel and the second pixel adjacent to each other in the column direction, the subpixel of the second color and the subpixel of the third color are arrayed alternately in the column direction **(See FIG. 4) (See paragraph [0045])**,

a column where the subpixel of the first color in the first pixel and the subpixel of the first color in the second pixel are arrayed in parallel with a column where the subpixel of the second color and the subpixel of the third color are alternately arrayed, the columns being arrayed alternately in the row direction **(See FIG. 4: 31 arrayed in parallel and 32 and 33 are alternately arrayed)**,

the subpixel of the first color in one of the first pixels has a biased arrangement and is positioned toward a side of the subpixel of the second color in an array direction of the subpixel of the second color and the subpixel of the third color that are arrayed alternately **(See FIG. 4: 31 in one of the first pixels 351 has a biased arrangement and is positioned toward a side of 32 in an array direction of 32 and 33 that are arrayed alternately)**,

the subpixel of the first color in one of the second pixels has a biased arrangement and is positioned toward a side of the subpixel of the third color in the array direction of the subpixel of the second color and the subpixel of the third color that are arrayed alternately **(See FIG. 4: 31 in one of the second pixels 352 has a biased arrangement and is positioned toward a side 33 in an array direction 32 and 33 that are arrayed alternately)**,

the subpixel of the first color in one of the first pixels has a rectangle or rounded rectangle shape whose long axis is parallel with the direction in which the subpixel of the second color and the subpixel of the third color are arrayed alternately **(See FIG. 4: 31 in one of the first pixels 351 has a rectangle or rounded rectangle shape**

whose long axis is parallel with the direction in which 32 and 33 are arrayed alternately) (See paragraph [0041]),

the subpixel of the first color in one of the second pixels has the rectangle or rounded rectangle shape whose long axis is parallel with the direction in which the subpixel of the second color and the subpixel of the third color are arrayed alternately **(See FIG. 4: 31 in one of the second pixels 352 has a rectangle or rounded rectangle shape whose long axis is parallel with the direction in which 32 and 33 are arrayed alternately) (See paragraph [0041])**,

the at least one connection part of the subpixel of the first color in one of the first pixels is one connection part and is biased from a middle of a long axis of the subpixel of the first color toward an end of the long axis when viewed from the row direction **(See FIG. 7: 42 of 31 in one of the first pixels 351 is one connection part 42 and is biased from a middle of a long axis 31 toward an end of the long axis when viewed from the row direction)**,

the at least one connection part of the subpixel of the first color in one of the second pixels is one connection part and is biased from a middle of a long axis of the subpixel of the first color toward an of the axis when viewed from the row direction **(See FIG. 7: 42 of 31 in one of the second pixels 352 is one connection part 42 and is biased from a middle of a long axis 31 toward an end of the long axis when viewed from the row direction)**,

a biased position where the connection part of the subpixel of the first color in the first pixel is disposed with respect to the middle of the long axis of the subpixel of the first color in the first pixel when viewed from the row direction is relatively different from a biased position where the connection part of the subpixel of the first color in the second pixel is disposed with respect to the middle of the long axis of the subpixel of the first color in the second pixel when viewed from the row direction **(See FIG. 7: a biased position where the connection part 42 of 31 in the first pixel 351 is disposed with respect to the middle of the long axis of the subpixel of 31 in the first pixel 351 when viewed from the row direction is relatively different from a biased position where the connection part 42 of 31 in the second pixel 352 is disposed with respect to the middle of the long axis of 31 in the second pixel 352 when viewed from the row direction)**,

a position where the connection part is disposed with respect to the subpixel of the second color, a position where the connection part is disposed with respect to the subpixel of the third color and a position where the connection part is disposed with respect to the subpixel of the first color in the first pixel are relatively same as a

position where the connection part with respect to the subpixel of the second color, a position where the connection part is disposed with respect to the subpixel of the third color and a position where the connection part is disposed with respect to the subpixel of the first color in the second pixel **(See FIG. 7: a position where the connection part 42 is disposed with respect to 32, a position where the connection part is disposed with respect to 33 and a position where the connection part is disposed with respect to 31 in the first pixel 351 are relatively same as a position where the connection part with respect to 32, a position where the connection part 42 is disposed with respect to 33 and a position where the connection part is disposed with respect to 31 in the second pixel 352)**, and

in a pixel array including the first pixel and the second pixel arrayed in the column direction, the connection part of the subpixel of the first color is disposed between a column where the subpixel of the second color and the subpixel of the third color are alternately arrayed and a column where the subpixel of the first color arranged in parallel with the column where the subpixel of the second color and the subpixel of the third color are alternately arrayed **(See FIG. 7: in a pixel array including the first pixel 351 and the second pixel 352 arrayed in the column direction, the connection part of 31 is disposed between a column where 32 and the subpixel of the third color are alternately arrayed and a column where 31 arranged in parallel with the column where 32 and 33 are alternately arrayed)**.

Claims 2-8 depend on claim 1, and are therefore allowed for the reasons discussed above with regard to claim 1.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

5. Applicant's arguments filed 10/22/2024 have been fully considered and are persuasive.

Applicant argues (Remarks, pages 8-9) that the combination of Kim and Cok do not teach all of the amended limitations of the independent claim. For the reasons discussed in the above "Reasons for Allowance" section, the Examiner agrees.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Benjamin X Casarez whose telephone number is (571)270-5332. The examiner can normally be reached Monday-Friday: 7:30 am - 5:00 pm.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Claire Pappas can be reached on 571-270-1051. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: https://patentcenter.uspto.gov. Visit https://www.uspto.gov/patents/apply/patent-center for more information about Patent Center and https://www.uspto.gov/patents/docx for information about filing in DOCX format. For additional questions, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BENJAMIN X CASAREZ/
Primary Examiner, Art Unit 2619

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/301,517	MATSUEDA et al.
	Examiner	**Art Unit**
	Benjamin X Casarez	2619

CPC						
Symbol					**Type**	**Version**
G09G	/	3	/	2003	F	2013-01-01
G09G	/	3	/	3233	I	2013-01-01
G09G	/	3	/	3266	I	2013-01-01
G09G	/	2300	/	0452	A	2013-01-01
G09G	/	2310	/	0283	A	2013-01-01
G09G	/	2300	/	0861	A	2013-01-01
G09G	/	2300	/	0842	A	2013-01-01
G09G	/	2310	/	0262	A	2013-01-01

CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
	/		/					

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	8	
/BENJAMIN X CASAREZ/ Primary Examiner, Art Unit 2619	13 December 2024	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	7

U.S. Patent and Trademark Office — Part of Paper No.: 20241212

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/301,517	MATSUEDA et al.
	Examiner	**Art Unit**
	Benjamin X Casarez	2619

INTERNATIONAL CLASSIFICATION					
CLAIMED					
G09G3/20	/	3	/	20	

NON-CLAIMED				
	/		/	

US ORIGINAL CLASSIFICATION	
CLASS	**SUBCLASS**

CROSS REFERENCES(S)						
CLASS	**SUBCLASS (ONE SUBCLASS PER BLOCK)**					

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	8	
/BENJAMIN X CASAREZ/ Primary Examiner, Art Unit 2619	13 December 2024	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	7

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/301,517	MATSUEDA et al.
	Examiner	**Art Unit**
	Benjamin X Casarez	2619

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIMS

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1														
2	2														
4	3														
5	4														
6	5														
7	6														
8	7														
3	8														

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	8	
/BENJAMIN X CASAREZ/ Primary Examiner, Art Unit 2619	13 December 2024	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	7

U.S. Patent and Trademark Office

Part of Paper No.: 20241212

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/301,517	MATSUEDA et al.
	Examiner	Art Unit
	Benjamin X Casarez	2619

CPC - Searched*		
Symbol	**Date**	**Examiner**
G09G2300/0452 (with text search)	12/13/2024	BC
G09G2300/0842 (with text search)	12/13/2024	BC
G09G2300/0861 (with text search)	12/13/2024	BC
G09G2310/0262 (with text search)	12/13/2024	BC
G09G2310/0283 (with text search)	12/13/2024	BC
G09G3/2003 (with text search)	12/13/2024	BC
G09G3/3233 (with text search)	12/13/2024	BC
G09G3/3266 (with text search)	12/13/2024	BC
G09G3/3208 (with text search)	12/13/2024	BC

CPC Combination Sets - Searched*		
Symbol	**Date**	**Examiner**

US Classification - Searched*			
Class	**Subclass**	**Date**	**Examiner**

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

/BENJAMIN X CASAREZ/ Examiner, Art Unit 2692	

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/301,517	MATSUEDA et al.
	Examiner	Art Unit
	Benjamin X Casarez	2619

Search Notes		
Search Notes	**Date**	**Examiner**
EAST search started	10/21/2021	BC
EAST inventor and assignee name search (with text search)	10/21/2021	BC
Updated PE2E search started	03/22/2022	BC
Updated PE2E inventor and assignee name search (with text search)	03/22/2022	BC
Updated PE2E search started	07/29/2022	BC
Updated PE2E inventor and assignee name search (with text search)	07/29/2022	BC
Updated PE2E search started	03/03/2023	BC
Updated PE2E inventor and assignee name search (with text search)	03/06/2023	BC
Updated PE2E search started	06/28/2023	BC
Updated PE2E inventor and assignee name search (with text search)	06/30/2023	BC
Updated PE2E search started	01/23/2024	BC
Updated PE2E inventor and assignee name search (with text search)	01/26/2024	BC
Updated PE2E search started	05/18/2024	BC
Updated PE2E inventor and assignee name search (with text search)	05/18/2024	BC
Updated PE2E search started	12/13/2024	BC
Updated PE2E inventor and assignee name search (with text search)	12/13/2024	BC
NPL search (see attached search history)	12/13/2024	BC

Interference Search			
US Class/CPC Symbol	**US Subclass/CPC Group**	**Date**	**Examiner**
	keyword search of the claim language (see attached search history)	12/13/2024	BC

/BENJAMIN X CASAREZ/ Examiner, Art Unit 2692	

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L1	5	("20090121983"|"20100270912"|"20110260951"|"20110260952"|"20110291550").PN.	(US-PGPUB; USPAT)	OR	ON	ON	2021/10/21 04:57 PM
L2	18	("20060103615"|"20060158466"|"20090051627"|"20090322215"|"20120092238"|"20130286262"|"20150035729"|"20150061978"|"20150235617"|"20160019825"|"20160027404"|"20160104413"|"20160126287"|"20160155416"|"20160379540"|"20170092174"|"20170132969"|"9767741").PN.	(US-PGPUB; USPAT)	OR	ON	ON	2021/10/21 05:01 PM
L3	1943	(nlt).IN,AANM,AS.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:10 PM
L4	885	((MATSUEDA near2 YOJIRO) (TAKATORI near2 KENICHI)).IN.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:10 PM
L5	2691	L3 L4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:10 PM
L6	50	L5 and ((subpixel (sub near2 pixel)) with (color colour)) and ((thin near2 film) TFT) and bias$4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:11 PM
L7	7	"56011000".FMID.	(US-PGPUB; USPAT; FPRS; JPO)	OR	ON	ON	2021/10/21 05:14 PM
L8	72	("20010030508" | "20020015110" | "20020186214" | "20030071943" | "20040113875" | "20040201558" | "20050140907" | "20050168423" | "20060077139" | "20080074041" | "20090121983" | "20090302331" | "20090322215" | "20100270912" | "20110050604" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2021/10/21 05:17 PM

		"20110291550" | "20120056531" | "20140197396" | "20140240279" | "20140246654" | "20140333852" | "20140354617" | "20150236077" | "20160148981" | "20170061849" | "20170352312" | "20180143721" | "20180315801" | "4450439" | "5563621" | "6714206" | "6771028" | "8179365" | "9013098" | "9733527").PN. OR ("10312295" | "10452182" | "10671200" | "11107399" | "2015/0379924" | "2016/0104413" | "2016/0148981" | "2018/0143721" | "2018/0254306" | "2020/0004370" | "2020/0035156" | "9508285").URPN.					
L9	7	"56011000".FMID.	(US-PGPUB; USPAT; FPRS; JPO)	OR	ON	ON	2021/10/21 05:22 PM
L10	12	"51357858".FMID.	(US-PGPUB; USPAT; FPRS; JPO)	OR	ON	ON	2021/10/21 05:37 PM
L11	2	("20210225247").PN.	(US-PGPUB; USPAT; USOCR; DERWENT)	OR	ON	ON	2021/10/21 05:42 PM
L12	19328	(G09G2300/0452).CPC.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:42 PM
L13	88828	(G09G2300/0842 OR G09G2300/0861 OR G09G2310/0262 OR G09G2310/0283 OR G09G3/2003 OR G09G3/3233 OR G09G3/3266).CPC.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:42 PM
L14	9475	L12 and L13	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:42 PM
L15	31	L14 and ((thin near2 film) TFT) and ((color colour) with (row column) with alternat$4 with arrangement)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:43 PM

L16	38	L14 and (shar$4 with (color$3 colour$3 subpixel (sub near pixel)) with (adjacent$3 neighbour$4 neighbor$4 near$2 surround$3)) same (divid$4 division separat$4)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:52 PM
L17	403	L12 and (alternating$2 with (column row))	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:56 PM
L18	241	L17 and ((thin near2 film) TFT)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:56 PM
L19	13	("20070002084" | "20090121983" | "20120169682" | "20130057521" | "20130113363").PN. OR ("2015/0129856" | "9013098").URPN.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2021/10/21 06:04 PM
L20	349	L12 and ((thin near2 film) TFT) with anode	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 06:12 PM
L21	36	L20 and (shar$4 with (color$3 colour$3 subpixel (sub near pixel)) with (adjacent$3 neighbour$4 neighbor$4 near$2 surround$3))	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 06:12 PM
L22	6	"54931178".FMID.	(US-PGPUB; USPAT; FPRS; JPO)	OR	ON	ON	2021/10/21 06:51 PM
L23	7	"56011000".FMID.	(US-PGPUB; USPAT; FPRS; JPO)	OR	ON	ON	2021/10/21 06:51 PM
L24	4	("20120056531" | "20130222217" | "9013098").PN. OR ("9245932").URPN.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2021/10/21 06:53 PM
L25	3	((US-20150129856-A1 OR US-20120056531-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK,	OR	ON	ON	2022/03/22 09:54 AM

			TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L26	43	("9013098" | "20120056531" | "20130222217").pn. OR ("9245932" | "2015/0129856" | "2012/0056531").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 10:25 AM
L27	6	(14/526077 | 14/537522 | 13/227271).APP.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 10:25 AM
L28	69	("9013098" | "20120056531" | "20130222217" | "20070002084" | "20090121983" | "20120169682" | "20130057521" | "20130113363" | "20050225232" | "20070064020" | "20090121983" | "20090195144" | "20090322215" | "20110180825").pn. OR ("2015/0144908" | "9245932" | "2015/0129856" | "9013098" | "2012/0056531" | "8593057").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 10:25 AM
L29	69	L26 L28	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 10:26 AM
L30	4	("8552635" | "20120056531" | "20160148981").pn. OR ("10497757").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 11:17 AM
L31	13	"56011000".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK,	OR	ON	ON	2022/03/22 11:18 AM

			TH, TN, TR, TW, UA, VN); FPRS; JPO)				
L32	7	("20060017375" | "20080116463" | "20080252200" | "20090200936" | "20100309172" | "20120025182" | "20120056531").pn. OR ("9893127").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 11:28 AM
L33	6	("20060077139" | "20160148981" | "20170352312").pn. OR ("2020/0035156" | "11107399").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 12:48 PM
L34	10	("8552635" | "20120056531" | "20160148981").pn. OR ("10497757" | "2018/0315801").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 12:50 PM
L35	6	"62147578".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2022/03/22 12:54 PM
L36	12	("20080074041" | "20110050604" | "20140240279" | "20140333852" | "20140354617" | "20080074041" | "20110050604" | "20140240279" | "20140333852" | "20140354617" | "20170061849" | "20180143721").pn. OR ("2018/0143721" | "2020/0004370" | "10452182" | "10671200").urpn. AND	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 12:54 PM

		(PGPB | USPT | USOC).dbnm.					
L37	11	"56554736".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2022/03/22 01:02 PM
L38	30118	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/03/22 01:16 PM
L39	143601	(G09G2300/0842 OR G09G2300/0861 OR G09G2310/0262 OR G09G2310/0283 OR G09G3/2003 OR G09G3/3233 OR G09G3/3266).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/03/22 01:17 PM
L40	14825	L38 AND L39	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV,	OR	ON	ON	2022/03/22 01:17 PM

			MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L41	1727	L40 AND (blue WITH (pixel subpixel) WITH (divid$4 split$4 combin$4 shar$4))	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/03/22 01:17 PM
L42	237	L41 AND (TFT WITH (connect$4 coupl$4))	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/03/22 01:18 PM
L43	56	L5 and ((subpixel (sub near2 pixel)) with (color colour)) and ((thin near2 film) TFT) and bias$4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/03/22 01:24 PM
L44	2	((US-20150129856-A1 OR US-20160225833-A1).did. AND PGPB.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK,	OR	ON	ON	2022/03/22 04:23 PM

			TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L45	5	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2 OR US-9893127-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/03/22 05:09 PM
L46	2	((US-20150129856-A1 OR US-20160225833-A1).did. AND PGPB.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/18 10:09 AM
L47	31381	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/18 10:51 AM
L48	7	L41 AND (TFT WITH (connect$4 coupl$4) WITH (subpixel (sub near2 pixel)) WITH (via	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU,	OR	ON	ON	2022/07/18 10:52 AM

		hole))	CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L49	187	L47 AND (TFT WITH (connect$4 coupl$4) WITH (subpixel (sub near2 pixel)) WITH (via hole))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/18 11:00 AM
L50	78014	(G09G3/3233).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/18 11:18 AM
L51	4685	L47 AND L50	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN,	OR	ON	ON	2022/07/18 11:18 AM

			WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L52	117	L51 AND (TFT WITH (connect$4 coupl$4) WITH (via hole))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/18 11:19 AM
L53	50	((US-20150379924-A1 OR US-20090051627-A1 OR US-20060158466-A1 OR US-20060103615-A1 OR US-20210225247-A1 OR US-20170061849-A1 OR US-20200035156-A1 OR US-20180143721-A1 OR US-20160148981-A1 OR US-20110260952-A1 OR US-20180315801-A1 OR US-20150129856-A1 OR US-20170116900-A1 OR US-20200043990-A1 OR US-20140197396-A1 OR US-20120056531-A1 OR US-20120092238-A1 OR US-20110291550-A1 OR US-20100270912-A1 OR US-20090121983-A1 OR US-20110260951-A1 OR US-20170132969-A1 OR US-20170092174-A1 OR US-20160379540-A1 OR US-20160155416-A1 OR US-20160126287-A1 OR US-20160104413-A1 OR US-20160027404-A1 OR US-20160019825-	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/18 11:41 AM

		A1 OR US-20150235617-A1 OR US-20150061978-A1 OR US-20150035729-A1 OR US-20130286262-A1 OR US-20090322215-A1 OR US-20160225833-A1 OR US-20130002992-A1 OR US-20150364075-A1 OR US-20150129853-A1 OR US-20140292622-A1 OR US-20070029941-A1).did. AND PGPB.dbnm.) OR ((US-9767741-B2 OR US-11107399-B2 OR US-9245932-B2 OR US-10692938-B2 OR US-10546906-B2 OR US-10497757-B2 OR US-8552635-B2 OR US-10312295-B2 OR US-10103205-B2).did. AND USPT.dbnm.) OR ((CN-101960504-A).did. AND FTDB.dbnm.)					
L54	14	L53 AND (TFT WITH (connect$4 coupl$4) WITH (via hole))	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/18 11:41 AM
L55	5	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK,	OR	ON	ON	2022/07/20 12:35 PM

			TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L56	2	(14/855199).APP.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/07/29 09:09 AM
L57	12	("20060017375" | "20080116463" | "20080252200" | "20090200936" | "20100309172" | "20120025182" | "20120056531").pn. OR ("2016/0225833" | "9893127").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/07/29 09:10 AM
L58	12	"56554731".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2022/07/29 09:13 AM
L59	31450	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:15 AM
L60	151353	(G09G2300/0842 OR G09G2300/0861 OR G09G2310/0262 OR G09G2310/0283 OR G09G3/2003 OR G09G3/3233 OR G09G3/3266).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO,	OR	ON	ON	2022/07/29 09:15 AM

			MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L61	15705	L38 AND L39	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:15 AM
L62	1778	L40 AND (blue WITH (pixel subpixel) WITH (divid$4 split$4 combin$4 shar$4))	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:15 AM
L63	245	L41 AND (TFT WITH (connect$4 coupl$4))	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:15 AM
L64	1934	(nlt).IN,AANM,AS.	(US-PGPUB; USPAT;	OR	ON	ON	2022/07/29

			USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)				09:15 AM
L65	916	((MATSUEDA near2 YOJIRO) (TAKATORI near2 KENICHI)).IN.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:16 AM
L66	2717	L3 L4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:16 AM
L67	61	L5 and ((subpixel (sub near2 pixel)) with (color colour)) and ((thin near2 film) TFT) and bias$4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:16 AM
L68	54	L67 AND (TFT WITH (connect$4 coupl$4))	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:16 AM
L69	6	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 02:37 PM
L70	6	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 04:01 PM
L71	14	("20150129856"|"20140292622"|"20120056531"|"9245932"|"20160225833").PN.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU,	OR	ON	ON	2022/07/29 04:01 PM

			CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L72	1	L70 NOT L71	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 04:01 PM
L73	6	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/04 11:45 AM
L74	2	((US-20160225834-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA,	OR	ON	ON	2023/03/03 11:05 AM

			VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L75	4	(14/969251 | 14/526077).APP.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 11:18 AM
L76	29	("20020149720" | "20070200488" | "20090058271" | "20090121983" | "20100033084" | "20130021566" | "20140111757" | "20140197396" | "20140252321" | "20140319479" | "20160225833" | "9013098" | "20120056531" | "20130222217").pn. OR ("2016/0225834" | "10263054" | "2015/0144908" | "9245932").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 11:18 AM
L77	10	"49002264".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/03 11:35 AM
L78	25	("6940222" | "8330352" | "20020070909" | "20030052597" | "20050139834" | "20070001954" | "20070002084" | "20080111459" | "20090322215" | "20110248985" | "20110279014" | "20120056531" | "20120097933").pn. OR ("2013/0222217" | "2016/0155780" | "9972663").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 11:36 AM

L79	2	"40623242".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/03 11:43 AM
L80	33979	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 11:44 AM
L81	166416	(G09G2300/0842 OR G09G2300/0861 OR G09G2310/0262 OR G09G2310/0283 OR G09G3/2003 OR G09G3/3233 OR G09G3/3266).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 11:44 AM
L82	17422	L38 AND L39	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO,	OR	ON	ON	2023/03/03 11:45 AM

			RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L83	5441	L82 AND (((transistor TFT) WITH (connect$4 coupl$4 contact$4 hole via)))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 11:45 AM
L84	173	L82 AND (((transistor TFT) WITH (connect$4 coupl$4 contact$4 hole via)) WITH overlap$4 WITH (OLED emission emitting))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 11:45 AM
L85	9	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 11:46 AM
L86	53	((US-20150379924-A1 OR US-20090051627-A1 OR US-	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY,	OR	ON	ON	2023/03/03 12:41 PM

		20060158466-A1 OR US-20060103615-A1 OR US-20210225247-A1 OR US-20170061849-A1 OR US-20200035156-A1 OR US-20180143721-A1 OR US-20160148981-A1 OR US-20110260952-A1 OR US-20180315801-A1 OR US-20150129856-A1 OR US-20170116900-A1 OR US-20200043990-A1 OR US-20140197396-A1 OR US-20120056531-A1 OR US-20120092238-A1 OR US-20110291550-A1 OR US-20100270912-A1 OR US-20090121983-A1 OR US-20110260951-A1 OR US-20170132969-A1 OR US-20170092174-A1 OR US-20160379540-A1 OR US-20160155416-A1 OR US-20160104413-A1 OR US-20160027404-A1 OR US-20160019825-A1 OR US-20150235617-A1 OR US-20150061978-A1 OR US-20150035729-A1 OR US-20130286262-A1 OR US-20090322215-A1 OR US-20160126287-A1 OR US-20160225833-A1 OR US-20130002992-A1 OR US-20150364075-A1 OR US-20150129853-A1 OR US-20140292622-A1 OR US-20070029941-A1 OR US-20160225834-A1 OR US-20130222217-A1).did. AND PGPB.dbnm.) OR ((US-9767741-B2 OR US-11107399-B2 OR US-9245932-B2 OR US-10692938-B2 OR	CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				

		US-10546906-B2 OR US-10497757-B2 OR US-8552635-B2 OR US-10312295-B2 OR US-10103205-B2 OR US-10615237-B2).did. AND USPT.dbnm.) OR ((CN-101960504-A).did. AND FTDB.dbnm.)					
L87	15	"56011000".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/03 12:45 PM
L88	14	"51620270".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/03 02:25 PM
L89	94	("7365488" | "8253323" | "8552635" | "20040036421" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "7365488" | "8253323" | "8552635" | "9478586" | "20040036421" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "7365488" | "8253323" | "8319906" | "8338832" | "8552635" | "9478586" | "20040036421" | "20050057460" | "20050242712" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 02:25 PM

		"20070015429" | "20090289963" | "20110291550" | "20120056531" | "7365488" | "8232123" | "8253323" | "8319906" | "8338832" | "8552635" | "9231000" | "9478586" | "20040036421" | "20040183083" | "20050057460" | "20050242712" | "20070015429" | "20090128018" | "20090289963" | "20110102402" | "20110291550" | "20120056531" | "20140132584" | "7365488" | "8232123" | "8253323" | "8319906" | "8338832" | "8552635" | "8587194" | "9231000" | "9478586" | "10084029" | "10546906" | "10923545" | "20040036421" | "20040183083" | "20050057460" | "20050242712" | "20070015429" | "20090128018" | "20090289963" | "20110102402" | "20110291550" | "20120056531" | "20140132584").pn. OR ("2014/0292622" | "2017/0012094" | "2019/0027546" | "2020/0144349" | "2021/0134908" | "9478586" | "10084029" | "10546906" | "10923545" | "11574969").urpn. AND (PGPB | USPT | USOC).dbnm.				
L90	347	L82 AND ((transistor TFT) WITH overlap$4 WITH (OLED emission emitting))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL,	OR	ON	ON	2023/03/03 02:52 PM

			NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L91	174	L90 NOT L84	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 02:52 PM
L92	2	"20210225247"	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 03:16 PM
L93	33979	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 03:16 PM
L94	202	L93 AND (((transistor TFT) WITH (connect$4 coupl$4 contact$4 hole via)) WITH overlap$4 WITH (OLED emission emitting))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT;	OR	ON	ON	2023/03/03 03:17 PM

			IBM_TDB)				
L95	29	L94 NOT L84	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 03:17 PM
L96	9	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 03:28 PM
L97	430	L93 AND ((transistor TFT) WITH overlap$4 WITH (OLED emission emitting))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 03:28 PM
L98	83	L97 NOT L90	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS,	OR	ON	ON	2023/03/03 03:29 PM

			IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L99	17	(14/969251 | 14/855199 | 14/526077 | 14/537522 | 13/963987 | 14/156188 | 13/467737 | 13/227271 | 12/250225).APP.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 03:33 PM
L100	350	("20020149720" | "20070200488" | "20090058271" | "20090121983" | "20100033084" | "20130021566" | "20140111757" | "20140197396" | "20140252321" | "20140319479" | "20160225833" | "20060017375" | "20080116463" | "20080252200" | "20090200936" | "20100309172" | "20120025182" | "20120056531" | "9013098" | "20120056531" | "20130222217" | "20070002084" | "20090121983" | "20120169682" | "20130057521" | "20130113363" | "7365488" | "8253323" | "8552635" | "20040036421" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "6294398" | "6992326" | "7132788" | "7443093" | "8110825" | "8115216" | "8124172" | "8309376" | "8330352" | "20040144975" | "20050112341" | "20080024402" | "20080111474" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 03:33 PM

		"20090195144" | "20090243483" | "20110183268" | "20110229994" | "20110248247" | "20110309389" | "20120049178" | "20120091482" | "20120228602" | "20120319089" | "20120326136" | "20120326600" | "20130109117" | "20140070175" | "20140078126" | "20050225232" | "20070064020" | "20090121983" | "20090195144" | "20090322215" | "20110180825" | "5341153" | "6008868" | "6366025" | "6429601" | "6747618" | "6801000" | "6838819" | "6867549" | "6870323" | "6903754" | "6919681" | "6940222" | "7205713" | "7239363" | "7492337" | "7508126" | "7728802" | "7791565" | "7821553" | "7825584" | "8013817" | "8247966" | "20020014837" | "20020015110" | "20030052597" | "20040036421" | "20040108818" | "20040125278" | "20040217694" | "20050001542" | "20050087740" | "20050127819" | "20050151462" | "20070001584" | "20070046185" | "20080111459" | "20080158107" | "20080224968" | "20080231554").pn. OR ("2016/0225834" | "10263054" | "2016/0225833" | "9893127" | "2015/0144908" | "9245932" | "2015/0129856" | "9013098" | "2014/0292622" |				

		"9478586" | "2014/0197396" | "9444050" | "2013/0222217" | "2012/0056531" | "8593057" | "2009/0121983" | "8330352").urpn. AND (PGPB | USPT | USOC).dbnm.					
L101	23	L100 AND ((transistor TFT) WITH overlap$4 WITH (OLED emission emitting))	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 03:34 PM
L102	9	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 04:33 PM
L105	54	((US-20150379924-A1 OR US-20090051627-A1 OR US-20060158466-A1 OR US-20060103615-A1 OR US-20210225247-A1 OR US-20170061849-A1 OR US-20200035156-A1 OR US-20180143721-A1 OR US-20160148981-A1 OR US-20110260952-A1 OR US-20180315801-A1 OR US-20150129856-A1 OR US-20170116900-A1 OR US-20200043990-A1 OR US-20140197396-A1 OR US-20120056531-A1 OR US-20120092238-A1 OR US-20110291550-A1 OR US-20100270912-A1 OR US-20090121983-A1 OR US-	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 04:34 PM

		20110260951-A1 OR US-20170132969-A1 OR US-20170092174-A1 OR US-20160379540-A1 OR US-20160155416-A1 OR US-20160104413-A1 OR US-20160027404-A1 OR US-20160019825-A1 OR US-20150235617-A1 OR US-20150061978-A1 OR US-20150035729-A1 OR US-20130286262-A1 OR US-20090322215-A1 OR US-20160126287-A1 OR US-20160225833-A1 OR US-20130002992-A1 OR US-20150364075-A1 OR US-20150129853-A1 OR US-20140292622-A1 OR US-20070029941-A1 OR US-20160225834-A1 OR US-20130222217-A1 OR US-20190074342-A1).did. AND PGPB.dbnm.) OR ((US-9767741-B2 OR US-11107399-B2 OR US-9245932-B2 OR US-10692938-B2 OR US-10546906-B2 OR US-10497757-B2 OR US-8552635-B2 OR US-10312295-B2 OR US-10103205-B2 OR US-10615237-B2).did. AND USPT.dbnm.) OR ((CN-101960504-A).did. AND FTDB.dbnm.)				
L106	10	"49002264".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK,	OR	ON	ON	2023/03/03 05:05 PM

			TH, TN, TR, TW, UA, VN); FPRS; JPO)				
L107	25	("6940222" | "8330352" | "20020070909" | "20030052597" | "20050139834" | "20070001954" | "20070002084" | "20080111459" | "20090322215" | "20110248985" | "20110279014" | "20120056531" | "20120097933").pn. OR ("2013/0222217" | "2016/0155780" | "9972663").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 05:05 PM
L108	15	"26604413".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/03 05:19 PM
L109	175	("5604613" | "6104446" | "6300612" | "6335778" | "6498592" | "6608620").pn. OR ("2002/0070909" | "6768482").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 05:19 PM
L110	2	((US-20160225834-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT;	OR	ON	ON	2023/03/06 09:02 PM

			IBM_TDB)				
L112	3	("20140197396" "8330352" "20090121983").pn.	(US-PGPUB; USPAT)	OR	ON	ON	2023/03/06 09:10 PM
L113	10	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1 OR US-20020070909-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 09:46 PM
L114	3	((US-20160225834-A1 OR US-20090121983-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 09:50 PM
L115	15	"26604413".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/06 09:55 PM
L116	175	("5604613" | "6104446" | "6300612" | "6335778" | "6498592" | "6608620").pn. OR ("2002/0070909" | "6768482").urpn. AND	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/06 09:56 PM

		(PGPB | USPT | USOC).dbnm.					
L117	4	("9013098" | "20120056531" | "20130222217").pn. OR ("9245932").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/06 10:14 PM
L118	19	(14/969251 | 14/855199 | 14/526077 | 14/537522 | 13/963987 | 14/156188 | 13/467737 | 13/227271 | 12/250225 | 09/990414).APP.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/06 10:16 PM
L119	495	("20020149720" | "20070200488" | "20090058271" | "20090121983" | "20100033084" | "20130021566" | "20140111757" | "20140197396" | "20140252321" | "20140319479" | "20160225833" | "20060017375" | "20080116463" | "20080252200" | "20090200936" | "20100309172" | "20120025182" | "20120056531" | "9013098" | "20120056531" | "20130222217" | "20070002084" | "20090121983" | "20120169682" | "20130057521" | "20130113363" | "7365488" | "8253323" | "8552635" | "20040036421" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "6294398" | "6992326" | "7132788" | "7443093" | "8110825" | "8115216" | "8124172" | "8309376" | "8330352" | "20040144975" | "20050112341" | "20080024402" | "20080111474" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/06 10:16 PM

		"20090195144" | "20090243483" | "20110183268" | "20110229994" | "20110248247" | "20110309389" | "20120049178" | "20120091482" | "20120228602" | "20120319089" | "20120326136" | "20120326600" | "20130109117" | "20140070175" | "20140078126" | "20050225232" | "20070064020" | "20090121983" | "20090195144" | "20090322215" | "20110180825" | "5341153" | "6008868" | "6366025" | "6429601" | "6747618" | "6801000" | "6838819" | "6867549" | "6870323" | "6903754" | "6919681" | "6940222" | "7205713" | "7239363" | "7492337" | "7508126" | "7728802" | "7791565" | "7821553" | "7825584" | "8013817" | "8247966" | "20020014837" | "20020015110" | "20030052597" | "20040036421" | "20040108818" | "20040125278" | "20040217694" | "20050001542" | "20050087740" | "20050127819" | "20050151462" | "20070001584" | "20070046185" | "20080111459" | "20080158107" | "20080224968" | "20080231554" | "5604613" | "6104446" | "6300612" | "6335778" | "6498592" | "6608620").pn. OR ("2016/0225834" | "10263054" | "2016/0225833" | "9893127" | "2015/0144908"				

		"9245932" | "2015/0129856" | "9013098" | "2014/0292622" | "9478586" | "2014/0197396" | "9444050" | "2013/0222217" | "2012/0056531" | "8593057" | "2009/0121983" | "8330352" | "2002/0070909" | "6768482").urpn. AND (PGPB | USPT | USOC).dbnm.					
L120	33	L119 AND ((transistor TFT) WITH overlap$4 WITH (OLED emission emitting))	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/06 10:16 PM
L121	56	((US-20150379924-A1 OR US-20090051627-A1 OR US-20060158466-A1 OR US-20060103615-A1 OR US-20210225247-A1 OR US-20170061849-A1 OR US-20200035156-A1 OR US-20180143721-A1 OR US-20160148981-A1 OR US-20110260952-A1 OR US-20180315801-A1 OR US-20150129856-A1 OR US-20170116900-A1 OR US-20200043990-A1 OR US-20140197396-A1 OR US-20120056531-A1 OR US-20160126287-A1 OR US-20090322215-A1 OR US-20110291550-A1 OR US-20100270912-A1 OR US-20090121983-A1 OR US-20110260951-A1 OR US-20170132969-A1 OR US-20170092174-A1 OR US-20160379540-A1 OR US-20160155416-A1 OR US-20160104413-A1 OR US-20160027404-A1	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 10:22 PM

		OR US-20160019825-A1 OR US-20150235617-A1 OR US-20150061978-A1 OR US-20150035729-A1 OR US-20130286262-A1 OR US-20120092238-A1 OR US-20160225833-A1 OR US-20130002992-A1 OR US-20150364075-A1 OR US-20150129853-A1 OR US-20140292622-A1 OR US-20070029941-A1 OR US-20160225834-A1 OR US-20130222217-A1 OR US-20190074342-A1 OR US-20020070909-A1).did. AND PGPB.dbnm.) OR ((US-9767741-B2 OR US-11107399-B2 OR US-9245932-B2 OR US-10692938-B2 OR US-10546906-B2 OR US-10497757-B2 OR US-8552635-B2 OR US-10312295-B2 OR US-10103205-B2 OR US-10615237-B2 OR US-11552107-B2).did. AND USPT.dbnm.) OR ((CN-101960504-A).did. AND FTDB.dbnm.)					
L122	15	"56011000".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/06 10:28 PM
L123	14	"51357853".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB,	OR	ON	ON	2023/03/06 10:29 PM

			HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)				
L124	14	("9013098" | "20120056531" | "20130222217").pn. OR ("2015/0144908" | "9245932").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/06 10:29 PM
L125	14	"51620270".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/06 10:35 PM
L126	94	("7365488" | "8253323" | "8552635" | "20040036421" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "7365488" | "8253323" | "8552635" | "9478586" | "20040036421" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "7365488" | "8253323" | "8319906" | "8338832" | "8552635" | "9478586" | "20040036421" | "20050057460" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "20120056531" | "7365488" | "8232123" | "8253323" | "8319906" | "8338832" | "8552635" | "9231000" | "9478586" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/06 10:35 PM

		"20040036421" | "20040183083" | "20050057460" | "20050242712" | "20070015429" | "20090128018" | "20090289963" | "20110102402" | "20110291550" | "20120056531" | "20140132584" | "7365488" | "8232123" | "8253323" | "8319906" | "8338832" | "8552635" | "8587194" | "9231000" | "9478586" | "10084029" | "10546906" | "10923545" | "20040036421" | "20040183083" | "20050057460" | "20050242712" | "20070015429" | "20090128018" | "20090289963" | "20110102402" | "20110291550" | "20120056531" | "20140132584").pn. OR ("2014/0292622" | "2017/0012094" | "2019/0027546" | "2020/0144349" | "2021/0134908" | "9478586" | "10084029" | "10546906" | "10923545" | "11574969").urpn. AND (PGPB | USPT | USOC).dbnm.					
L127	20	"45595555".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/06 10:50 PM
L128	55	("20050225232" | "20070064020" | "20090121983" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/06 10:50 PM

		"20090195144" | "20090322215" | "20110180825" | "8593057" | "20020014837" | "20050225232" | "20070064020" | "20090121983" | "20090195144" | "20090289963" | "20090322215" | "20100156279" | "20110180825" | "20120049726").pn. OR ("2012/0056531" | "2014/0042418" | "8593057" | "8786182").urpn. AND (PGPB | USPT | USOC).dbnm.					
L129	10	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1 OR US-20020070909-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 10:56 PM
L130	10	"49002264".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/06 10:58 PM
L131	10	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS,	OR	ON	ON	2023/03/06 11:23 PM

		20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1 OR US-20020070909-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L132	16	("20150129856"|"20140292622"|"20120056531"|"9245932"|"20160225834"|"20160225833").PN.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 11:23 PM
L133	4	L131 NOT L132	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 11:23 PM
L134	5	((US-20160225834-A1 OR US-20090121983-A1 OR US-20130222217-A1 OR US-20120056531-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 11:24 PM

L135	1934	(nlt).IN,AANM,AS.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 11:30 PM
L136	940	((MATSUEDA near2 YOJIRO) (TAKATORI near2 KENICHI)).IN.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 11:30 PM
L137	2741	L3 L4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 11:30 PM
L138	63	L5 and ((subpixel (sub near2 pixel)) with (color colour)) and ((thin near2 film) TFT) and bias$4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 11:30 PM
L139	55	L67 AND (TFT WITH (connect$4 coupl$4))	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 11:30 PM
L140	5	((US-20160225834-A1 OR US-20090121983-A1 OR US-20130222217-A1 OR US-20120056531-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/28 09:30 AM
L141	9	(14/969251 | 14/526077 | 13/467737 | 13/227271 | 12/250225).APP.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/06/28 09:38 AM
L142	231	("20020149720" | "20070200488" | "20090058271" | "20090121983" | "20100033084" | "20130021566" | "20140111757" | "20140197396" | "20140252321" | "20140319479" | "20160225833" | "9013098" | "20120056531" | "20130222217" | "20050225232" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/06/28 09:38 AM

		"20070064020" | "20090121983" | "20090195144" | "20090322215" | "20110180825" | "5341153" | "6008868" | "6366025" | "6429601" | "6747618" | "6801000" | "6838819" | "6867549" | "6870323" | "6903754" | "6919681" | "6940222" | "7205713" | "7239363" | "7492337" | "7508126" | "7728802" | "7791565" | "7821553" | "7825584" | "8013817" | "8247966" | "20020014837" | "20020015110" | "20030052597" | "20040036421" | "20040108818" | "20040125278" | "20040217694" | "20050001542" | "20050087740" | "20050127819" | "20050151462" | "20070001584" | "20070046185" | "20080111459" | "20080158107" | "20080224968" | "20080231554").pn. OR ("2016/0225834" | "10263054" | "2015/0144908" | "9245932" | "2013/0222217" | "2012/0056531" | "8593057" | "2009/0121983" | "8330352").urpn. AND (PGPB | USPT | USOC).dbnm.				
L143	34647	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA,	OR	ON	ON	2023/06/28 03:42 PM

			VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L144	45015	(G09G3/3208).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/28 03:42 PM
L145	89873	(G09G3/3233).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/28 03:43 PM
L146	829	L143 AND L144 AND L145	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/28 03:43 PM
L147	1	"20140284570"	(US-PGPUB)	OR	ON	ON	2023/06/28 04:58 PM
L148	34657	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY,	OR	ON	ON	2023/06/29 09:02 AM

			CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L149	45021	(G09G3/3208).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/29 09:02 AM
L151	4772	L148 AND L149	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/29 09:02 AM
L152	1	L151 AND ((subpixel (sub near2 pixel)) WITH (color colour)) WITH ((thin near2 film) TFT) WITH (via hole contact)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/29 09:03 AM
L153	54	L151 AND ((subpixel (sub near2 pixel)) WITH (color colour)) WITH (via hole contact)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/29 09:04 AM
L154	9	L151 AND ((subpixel (sub near2 pixel)) WITH	(US-PGPUB; USPAT; USOCR; FPRS; EPO;	OR	ON	ON	2023/06/29 10:03 AM

		((thin near2 film) TFT) WITH (via hole contact))	JPO; DERWENT; IBM_TDB)				
L155	150	L151 AND ((subpixel (sub near2 pixel)) WITH (via hole contact))	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/29 10:04 AM
L157	461	L151 AND ((subpixel (sub near2 pixel)) WITH (via hole contact))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/29 10:05 AM
L158	294	L157 NOT L153	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/29 10:05 AM
L159	23	"51568466".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/06/29 10:26 AM
L160	21	("2014/0284570" | "8952374").urpn. AND (PGPB | USPT |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/06/29 10:26 AM

		USOC).dbnm.					
L161	5	((US-20160225834-A1 OR US-20090121983-A1 OR US-20130222217-A1 OR US-20120056531-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/30 01:32 PM
L162	11	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1 OR US-20020070909-A1 OR US-20060170712-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/30 01:44 PM
L163	11	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1 OR US-20020070909-A1 OR US-20060170712-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/30 02:31 PM
L164	28	("20140292622"|"20160225833"|"20160225834"|"20020070909"|"20090121983"|"20130222217"|"20140197396"|"924	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA,	OR	ON	ON	2023/06/30 02:31 PM

		5932"|"20120056531"|"20150129856").PN.	EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L165	1	L163 NOT L164	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/30 02:31 PM
L166	1934	(nlt).IN,AANM,AS.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/30 02:35 PM
L167	943	((MATSUEDA near2 YOJIRO) (TAKATORI near2 KENICHI)).IN.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/30 02:35 PM
L168	2744	L3 L4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/30 02:35 PM
L169	65	L5 and ((subpixel (sub near2 pixel)) with (color colour)) and ((thin near2 film) TFT) and bias$4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/30 02:35 PM
L170	57	L67 AND (TFT WITH (connect$4 coupl$4))	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/30 02:35 PM
L171	6	((US-20160225834-A1 OR US-20090121983-A1 OR US-20130222217-A1 OR US-20120056531-A1 OR US-20060170712-A1).did. AND PGPB.dbnm.) OR ((US-	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV,	OR	ON	ON	2024/01/23 09:05 AM

		9245932-B2).did. AND USPT.dbnm.)	MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L172	1	(11/048385).APP.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/01/23 09:12 AM
L173	45	("2006/0170712").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/01/23 09:13 AM
L174	32	("4356429" | "6281634" | "6366025" | "6771028" | "7102293" | "7202841" | "20020101394" | "20030067458" | "20040080479" | "20040113875" | "20040164668" | "20040173819" | "20040195963" | "20040201558" | "20040217694" | "20040222999" | "20050068281" | "20060028495" | "20060170712").pn. OR ("7382384").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/01/23 10:07 AM
L175	62	((US-20150379924-A1 OR US-20090051627-A1 OR US-20060158466-A1 OR US-20060103615-A1 OR US-20210225247-A1 OR US-20170061849-A1 OR US-20200035156-A1 OR US-20180143721-A1 OR US-20160148981-A1 OR US-20110260952-A1 OR US-20180315801-A1 OR US-20150129856-A1 OR US-20170116900-A1 OR US-20200043990-A1 OR US-20140197396-A1 OR US-20120056531-A1 OR US-20160155416-A1 OR US-20090322215-A1 OR	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/23 10:22 AM

		US-20110291550-A1 OR US-20100270912-A1 OR US-20090121983-A1 OR US-20110260951-A1 OR US-20170132969-A1 OR US-20170092174-A1 OR US-20160379540-A1 OR US-20160126287-A1 OR US-20160104413-A1 OR US-20160027404-A1 OR US-20160019825-A1 OR US-20150235617-A1 OR US-20150061978-A1 OR US-20150035729-A1 OR US-20130286262-A1 OR US-20120092238-A1 OR US-20160225833-A1 OR US-20130002992-A1 OR US-20150364075-A1 OR US-20150129853-A1 OR US-20140292622-A1 OR US-20070029941-A1 OR US-20160225834-A1 OR US-20130222217-A1 OR US-20190074342-A1 OR US-20020070909-A1 OR US-20040183083-A1 OR US-20140284570-A1 OR US-20060170712-A1 OR US-20040217694-A1).did. AND PGPB.dbnm.) OR ((US-9767741-B2 OR US-11107399-B2 OR US-9245932-B2 OR US-10692938-B2 OR US-10546906-B2 OR US-10497757-B2 OR US-8552635-B2 OR US-10312295-B2 OR US-10103205-B2 OR US-10615237-B2 OR US-11552107-B2 OR US-10439006-B2 OR US-7382384-B2).did. AND USPT.dbnm.) OR ((CN-101960504-A).did. AND FTDB.dbnm.)					

L176	7	("9214500" | "20050001542" | "20120092238" | "20130002118" | "20140198479" | "20150379916").pn. OR ("9767741").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/01/23 10:32 AM
L177	15	"56011000".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2024/01/23 10:37 AM
L178	7	"55655854".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2024/01/23 10:38 AM
L179	10	"54931178".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2024/01/23 10:39 AM
L180	16	"51620270".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA,	OR	ON	ON	2024/01/23 10:47 AM

			EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)				
L181	97	("7365488" | "8253323" | "8552635" | "20040036421" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "7365488" | "8253323" | "8552635" | "9478586" | "20040036421" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "7365488" | "8253323" | "8319906" | "8338832" | "8552635" | "9478586" | "20040036421" | "20050057460" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "20120056531" | "7365488" | "8232123" | "8253323" | "8319906" | "8338832" | "8552635" | "9231000" | "9478586" | "20040036421" | "20040183083" | "20050057460" | "20050242712" | "20070015429" | "20090128018" | "20090289963" | "20110102402" | "20110291550" | "20120056531" | "20140132584" | "7365488" | "8232123" | "8253323" | "8319906" | "8338832" | "8552635" | "8587194" | "9231000" | "9478586" | "10084029" | "10546906" | "10923545" | "20040036421" | "20040183083" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/01/23 10:47 AM

		"20050057460" | "20050242712" | "20070015429" | "20090128018" | "20090289963" | "20110102402" | "20110291550" | "20120056531" | "20140132584" | "7365488" | "7990050" | "8232123" | "8253323" | "8319906" | "8338832" | "8552635" | "8587194" | "9231000" | "9478586" | "10084029" | "10546906" | "10923545" | "20040036421" | "20040183083" | "20050057460" | "20050242712" | "20070015429" | "20090128018" | "20090289963" | "20110102402" | "20110291550" | "20120056531" | "20140132584").pn. OR ("2014/0292622" | "2017/0012094" | "2019/0027546" | "2020/0144349" | "2021/0134908" | "2023/0165066" | "9478586" | "10084029" | "10546906" | "10923545" | "11574969" | "11818921").urpn. AND (PGPB | USPT | USOC).dbnm.					
L182	11	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1 OR US-20020070909-A1 OR US-20060170712-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/23 11:25 AM

		USPT.dbnm.)					
L183	20	(14/969251 | 14/855199 | 14/526077 | 14/537522 | 13/963987 | 14/156188 | 13/467737 | 13/227271 | 12/250225 | 11/048385 | 09/990414).APP.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/01/23 11:25 AM
L184	554	("20020149720" | "20070200488" | "20090058271" | "20090121983" | "20100033084" | "20130021566" | "20140111757" | "20140197396" | "20140252321" | "20140319479" | "20160225833" | "20060017375" | "20080116463" | "20080252200" | "20090200936" | "20100309172" | "20120025182" | "20120056531" | "9013098" | "20120056531" | "20130222217" | "20070002084" | "20090121983" | "20120169682" | "20130057521" | "20130113363" | "7365488" | "8253323" | "8552635" | "20040036421" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "6294398" | "6992326" | "7132788" | "7443093" | "8110825" | "8115216" | "8124172" | "8309376" | "8330352" | "20040144975" | "20050112341" | "20080024402" | "20080111474" | "20090195144" | "20090243483" | "20110183268" | "20110229994" | "20110248247" | "20110309389" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/01/23 11:26 AM

		"20120049178" | "20120091482" | "20120228602" | "20120319089" | "20120326136" | "20120326600" | "20130109117" | "20140070175" | "20140078126" | "20050225232" | "20070064020" | "20090121983" | "20090195144" | "20090322215" | "20110180825" | "5341153" | "6008868" | "6366025" | "6429601" | "6747618" | "6801000" | "6838819" | "6867549" | "6870323" | "6903754" | "6919681" | "6940222" | "7205713" | "7239363" | "7492337" | "7508126" | "7728802" | "7791565" | "7821553" | "7825584" | "8013817" | "8247966" | "20020014837" | "20020015110" | "20030052597" | "20040036421" | "20040108818" | "20040125278" | "20040217694" | "20050001542" | "20050087740" | "20050127819" | "20050151462" | "20070001584" | "20070046185" | "20080111459" | "20080158107" | "20080224968" | "20080231554" | "5604613" | "6104446" | "6300612" | "6335778" | "6498592" | "6608620").pn. OR ("2016/0225834" | "10263054" | "2016/0225833" | "9893127" | "2015/0144908" | "9245932" | "2015/0129856" | "9013098" | "2014/0292622" | "9478586" | "2014/0197396" |				

		"9444050" | "2013/0222217" | "2012/0056531" | "8593057" | "2009/0121983" | "8330352" | "2006/0170712" | "2002/0070909" | "6768482").urpn. AND (PGPB | USPT | USOC).dbnm.					
L185	19	L184 AND ((red blue green color$4 colour$4) WITH (pixel subpixel) WITH align$4 WITH row)	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/01/23 11:26 AM
L186	35957	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/23 11:36 AM
L187	47345	(G09G3/3208).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/23 11:36 AM
L188	4973	L148 AND L149	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV,	OR	ON	ON	2024/01/23 11:36 AM

			MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L189	52	L188 AND ((red blue green color$4 colour$4) WITH (pixel subpixel) WITH align$4 WITH row)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/23 11:36 AM
L190	206	L188 AND ((red blue green color$4 colour$4) WITH (pixel subpixel) WITH align$4)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/23 11:48 AM
L191	154	L190 NOT L189	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/23 11:48 AM

L192	1	"20210225247"	(US-PGPUB)	OR	ON	ON	2024/01/23 02:28 PM
L193	593	L186 AND ((red blue green color$4 colour$4) WITH (pixel subpixel) WITH align$4 WITH row)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/23 02:29 PM
L194	541	L193 NOT L189	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/23 02:29 PM
L195	62	((US-20150379924-A1 OR US-20090051627-A1 OR US-20060158466-A1 OR US-20060103615-A1 OR US-20210225247-A1 OR US-20170061849-A1 OR US-20200035156-A1 OR US-20180143721-A1 OR US-20160148981-A1 OR US-20110260952-A1 OR US-20180315801-A1 OR US-20150129856-A1 OR US-20170116900-A1 OR US-20200043990-A1 OR US-20140197396-A1 OR US-20120056531-A1 OR US-20160379540-A1 OR US-	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/23 05:17 PM

		20090322215-A1 OR US-20110291550-A1 OR US-20100270912-A1 OR US-20090121983-A1 OR US-20110260951-A1 OR US-20170132969-A1 OR US-20170092174-A1 OR US-20160155416-A1 OR US-20160126287-A1 OR US-20160104413-A1 OR US-20160027404-A1 OR US-20160019825-A1 OR US-20150235617-A1 OR US-20150061978-A1 OR US-20150035729-A1 OR US-20130286262-A1 OR US-20120092238-A1 OR US-20160225833-A1 OR US-20130002992-A1 OR US-20150364075-A1 OR US-20150129853-A1 OR US-20140292622-A1 OR US-20070029941-A1 OR US-20160225834-A1 OR US-20130222217-A1 OR US-20190074342-A1 OR US-20020070909-A1 OR US-20040183083-A1 OR US-20140284570-A1 OR US-20060170712-A1 OR US-20040217694-A1).did. AND PGPB.dbnm.) OR ((US-9767741-B2 OR US-11107399-B2 OR US-9245932-B2 OR US-10692938-B2 OR US-10546906-B2 OR US-10497757-B2 OR US-8552635-B2 OR US-10312295-B2 OR US-10103205-B2 OR US-10615237-B2 OR US-11552107-B2 OR US-10439006-B2 OR US-7382384-B2).did. AND USPT.dbnm.) OR ((CN-101960504-A).did. AND FTDB.dbnm.)					

L196	35957	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/24 09:30 AM
L197	680	L196 AND ((red blue green color$4 colour$4) WITH align$4 WITH row)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/24 09:30 AM
L198	87	L197 NOT L193	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/24 09:30 AM
L199	33	"59012713".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO,	OR	ON	ON	2024/01/24 09:48 AM

			MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)				
L200	54	("5341151" | "6914649" | "7399991" | "7663149" | "8044905" | "8350940" | "8552635" | "8687161" | "8981638" | "9147368" | "9525017" | "20050018110" | "20070002084" | "20090140253" | "20140104151" | "20140117339" | "20150002955" | "20150144945" | "20160216580" | "5341151" | "6768482" | "6914649" | "7399991" | "7464364" | "7663149" | "7898623" | "8044905" | "8154678" | "8223093" | "8255842" | "8339530" | "8350940" | "8451302" | "8552635" | "8587742" | "8687161" | "8902141" | "8981638" | "9070320" | "9147368" | "9337242" | "9525017" | "9536906" | "10573667" | "20050018110" | "20050087740" | "20060208981" | "20070002084" | "20090040243" | "20090140253" | "20140104151" | "20140117339" | "20140332764" | "20150002955" | "20150144945" | "20160079333" | "20160216580" | "20160233234").pn. OR ("2017/0170200" | "2020/0185420" | "2023/0079181" | "10573667" | "11552107").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/01/24 09:51 AM
L202	660	L196 AND ((blue) WITH (pixel subpixel) WITH (rectang rectangular$2))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU,	OR	ON	ON	2024/01/24 10:33 AM

			CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L203	664	L196 AND ((blue) WITH (pixel subpixel) WITH align$4)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/24 12:41 PM
L204	531	L203 NOT L202	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/24 12:42 PM
L205	12	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1 OR US-20020070909-A1 OR US-20060170712-A1	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN,	OR	ON	ON	2024/01/24 01:50 PM

		OR US-20170170200-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L206	22	(15/366255 | 14/969251 | 14/855199 | 14/526077 | 14/537522 | 13/963987 | 14/156188 | 13/467737 | 13/227271 | 12/250225 | 11/048385 | 09/990414).APP.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/01/24 01:50 PM
L207	578	("5341151" | "6914649" | "7399991" | "7663149" | "8044905" | "8350940" | "8552635" | "8687161" | "8981638" | "9147368" | "9525017" | "20050018110" | "20070002084" | "20090140253" | "20140104151" | "20140117339" | "20150002955" | "20150144945" | "20160216580" | "20020149720" | "20070200488" | "20090058271" | "20090121983" | "20100033084" | "20130021566" | "20140111757" | "20140197396" | "20140252321" | "20140319479" | "20160225833" | "20060017375" | "20080116463" | "20080252200" | "20090200936" | "20100309172" | "20120025182" | "20120056531" | "9013098" | "20120056531" | "20130222217" | "20070002084" | "20090121983" | "20120169682" | "20130057521" | "20130113363" | "7365488" | "8253323" | "8552635" | "20040036421" | "20050242712" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/01/24 01:51 PM

		"20070015429" | "20090289963" | "20110291550" | "6294398" | "6992326" | "7132788" | "7443093" | "8110825" | "8115216" | "8124172" | "8309376" | "8330352" | "20040144975" | "20050112341" | "20080024402" | "20080111474" | "20090195144" | "20090243483" | "20110183268" | "20110229994" | "20110248247" | "20110309389" | "20120049178" | "20120091482" | "20120228602" | "20120319089" | "20120326136" | "20120326600" | "20130109117" | "20140070175" | "20140078126" | "20050225232" | "20070064020" | "20090121983" | "20090195144" | "20090322215" | "20110180825" | "5341153" | "6008868" | "6366025" | "6429601" | "6747618" | "6801000" | "6838819" | "6867549" | "6870323" | "6903754" | "6919681" | "6940222" | "7205713" | "7239363" | "7492337" | "7508126" | "7728802" | "7791565" | "7821553" | "7825584" | "8013817" | "8247966" | "20020014837" | "20020015110" | "20030052597" | "20040036421" | "20040108818" | "20040125278" | "20040217694" | "20050001542" | "20050087740" | "20050127819" | "20050151462" | "20070001584" | "20070046185" | "20080111459" |				

		"20080158107" | "20080224968" | "20080231554" | "5604613" | "6104446" | "6300612" | "6335778" | "6498592" | "6608620").pn. OR ("2017/0170200" | "10573667" | "2016/0225834" | "10263054" | "2016/0225833" | "9893127" | "2015/0144908" | "9245932" | "2015/0129856" | "9013098" | "2014/0292622" | "9478586" | "2014/0197396" | "9444050" | "2013/0222217" | "2012/0056531" | "8593057" | "2009/0121983" | "8330352" | "2006/0170712" | "2002/0070909" | "6768482").urpn. AND (PGPB | USPT | USOC).dbnm.					
L208	13	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1 OR US-20020070909-A1 OR US-20060170712-A1 OR US-20170170200-A1 OR US-20040217694-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/26 09:46 AM
L209	13	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS,	OR	ON	ON	2024/01/26 10:36 AM

		20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1 OR US-20020070909-A1 OR US-20060170712-A1 OR US-20170170200-A1 OR US-20040217694-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L210	30	("20140292622"|"20160225833"|"20160225834"|"20140197396"|"20120056531"|"20150129856"|"9245932"|"20060170712"|"20020070909"|"20090121983"|"20130222217").PN.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/26 10:37 AM
L211	2	L209 NOT L210	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/26 10:37 AM
L212	1933	(nlt).IN,AANM,AS.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/26 10:42 AM
L213	950	((MATSUEDA near2 YOJIRO) (TAKATORI near2 KENICHI)).IN.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/26 10:42 AM
L214	2750	L3 L4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/26 10:42 AM

L215	70	L5 and ((subpixel (sub near2 pixel)) with (color colour)) and ((thin near2 film) TFT) and bias$4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/26 10:42 AM
L216	62	L67 AND (TFT WITH (connect$4 coupl$4))	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/26 10:42 AM
L217	7	((US-20160225834-A1 OR US-20090121983-A1 OR US-20130222217-A1 OR US-20120056531-A1 OR US-20060170712-A1 OR US-20040217694-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/05/18 11:04 AM
L218	20	"32990400".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2024/05/18 11:45 AM
L219	1933	(nlt).IN,AANM,AS.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/05/18 12:07 PM
L220	950	((MATSUEDA near2 YOJIRO) (TAKATORI near2 KENICHI)).IN.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/05/18 12:07 PM
L221	2750	L3 L4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/05/18 12:07 PM
L222	70	L5 and ((subpixel (sub near2 pixel)) with (color colour)) and ((thin near2 film) TFT) and bias$4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/05/18 12:07 PM
L223	62	L67 AND (TFT WITH	(US-PGPUB; USPAT;	OR	ON	ON	2024/05/18

		(connect$4 coupl$4))	USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)				12:07 PM
L224	36900	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/05/18 12:08 PM
L225	48879	(G09G3/3208).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/05/18 12:08 PM
L226	5094	L148 AND L149	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/05/18 12:08 PM
L227	55	L188 AND ((red blue green color$4 colour$4) WITH (pixel subpixel) WITH align$4 WITH row)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA,	OR	ON	ON	2024/05/18 12:08 PM

			EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L228	212	L188 AND ((red blue green color$4 colour$4) WITH (pixel subpixel) WITH align$4)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/05/18 12:08 PM
L229	157	L190 NOT L189	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/05/18 12:08 PM
L230	7	((US-20160225834-A1 OR US-20090121983-A1 OR US-20130222217-A1 OR US-20120056531-A1 OR US-20060170712-A1 OR US-20040217694-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO;	OR	ON	ON	2024/12/13 12:56 PM

			JPO; DERWENT; IBM_TDB)				
L231	39209	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/12/13 02:29 PM
L232	54003	(G09G3/3208).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/12/13 02:29 PM
L233	5523	L148 AND L149	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/12/13 02:29 PM
L234	66	L188 AND ((red blue green color$4 colour$4) WITH (pixel subpixel) WITH align$4 WITH row)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB,	OR	ON	ON	2024/12/13 02:29 PM

			HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L235	238	L188 AND ((red blue green color$4 colour$4) WITH (pixel subpixel) WITH align$4)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/12/13 02:29 PM
L236	172	L190 NOT L189	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/12/13 02:29 PM
L237	1934	(nlt).IN,AANM,AS.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/12/13 02:30 PM
L238	954	((MATSUEDA near2 YOJIRO) (TAKATORI near2 KENICHI)).IN.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/12/13 02:30 PM
L239	2755	L3 L4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/12/13 02:30 PM
L240	73	L5 and ((subpixel (sub near2 pixel)) with (color	(US-PGPUB; USPAT; USOCR; FPRS; EPO;	OR	ON	ON	2024/12/13 02:30 PM

		colour)) and ((thin near2 film) TFT) and bias$4	JPO; DERWENT; IBM_TDB)				
L241	64	L67 AND (TFT WITH (connect$4 coupl$4))	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/12/13 02:30 PM
L242	1	"20210225247"	(US-PGPUB)	OR	ON	ON	2024/12/13 02:30 PM
L243	39209	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/12/13 02:31 PM
L244	197072	(G09G2300/0842 OR G09G2300/0861 OR G09G2310/0262 OR G09G2310/0283 OR G09G3/2003 OR G09G3/3233 OR G09G3/3266).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/12/13 02:31 PM
L245	20791	L38 AND L39	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/12/13 02:31 PM

L246	7528	L82 AND (((transistor TFT) WITH (connect$4 coupl$4 contact$4 hole via)))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/12/13 02:31 PM
L247	311	L82 AND (((transistor TFT) WITH (connect$4 coupl$4 contact$4 hole via)) WITH overlap$4 WITH (OLED emission emitting))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/12/13 02:31 PM

PE2E SEARCH - Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
N1	0	((transistor TFT) AND (connect$4 coupl$4 contact$4 hole via) AND (subpixel (sub near2 pixel)) AND color AND alternat$4 AND column AND row AND ((long middle) near2 axis)).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2024/12/13 02:33 PM
N3	0	((transistor TFT) AND (connect$4 coupl$4 contact$4 hole via) AND (subpixel (sub near2 pixel)) AND color AND alternat$4 AND column AND row AND ((long middle) AND axis)).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2024/12/13 02:33 PM

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Search Strategy

Databases: ABI/INFORM® Professional Advanced, Abstracts in New Technology & Engineering, AdisInsight: Drugs, AdisInsight: Trials, Adis Pharmacoeconomics & Outcomes News, AGRICOLA, AGRIS, Allied & Complementary Medicine™, Analytical Abstracts, APA PsycInfo®, Aqualine, Aquatic Science & Fisheries Abstracts (ASFA), Australian Education Index, BIOSIS® Toxicology, BIOSIS Previews®, British Library Inside Conferences, British Nursing Index, Business & Industry, CAB ABSTRACTS, Chemical Business Newsbase, Chemical Engineering & Biotechnology Abstracts, Chemical Safety Newsbase, Civil Engineering Abstracts, Current Contents® Search, Derwent Drug File, Derwent Drug Registry, DH-DATA: Health Administration, Medical Toxicology & Environmental Health, DIOGENES® FDA Regulatory Updates, Drug Information Fulltext, Earthquake Engineering Abstracts, EconLit, Ei Compendex®, Embase®, Embase® French Local Literature, EMCare®, ERIC, ESPICOM Pharmaceutical & Medical Device News, FDAnews, FLUIDEX (Fluid Engineering Abstracts), Foodline®: MARKET, Foodline®: PRODUCT, Foodline®: SCIENCE, FSTA®, Gale Group Computer Database™, Gale Group Health Periodicals Database, Gale Group New Product Announcements / Plus®, Gale Group Newsletter Database™, Gale Group PharmaBiomed Business Journals, Gale Group PROMT®, Gale Group Trade & Industry Database™, GEOBASE, GeoRef, Global Health, HSELINE: Health and Safety, ICONDA - International Construction Database, Inspec®, International Pharmaceutical Abstracts, Jane's Defense & Aerospace News, King's Fund, KOSMET: Cosmetic Science, Lancet Titles, Mechanical & Transportation Engineering Abstracts, MEDLINE®, Meteorological & Geoastrophysical Abstracts, New England Journal of Medicine, NTIS: National Technical Information Service, Oceanic Abstracts, PAIS International, Paperbase, PAPERCHEM, ProQuest Advanced Tech & Aerospace Professional, ProQuest Biological & Health Science Professional, ProQuest Dissertations and Theses Professional, ProQuest Environmental Science Professional, ProQuest Materials Research Professional, ProQuest Newsstand Professional, ProQuest Technology Research Professional, Prous Science Daily Essentials, Prous Science Drug Data Report, Prous Science Drugs Of The Future™, Publicly Available Content, Registry of Toxic Effects of Chemical Substances (RTECS®), SciSearch®: a Cited Reference Science Database, Social SciSearch®, ToxFile®, Transport Research International Documentation, TULSA™ (Petroleum Abstracts), UBM Computer Full Text, Weldasearch®, Zoological Record

Set#	Searched for	Results
S1	(((subpixel OR (sub N/2 pixel)) N/8 ((thin N/2 film) OR TFT) N/8 (via OR hole OR contact)))	41°
S2	(((subpixel OR (sub N/2 pixel)) N/8 ((thin N/2 film) OR TFT) N/8 (via OR hole OR contact))) AND (pixel N/8 blue N/8 (bias* OR stagger* OR zigzag* OR zig* OR zag*))	0°

° Duplicates are removed from the search and from the result count.

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Bibliographic Data

Application No: 17/301,517

Foreign Priority claimed: (•) Yes ( ) No

35 USC 119 (a-d) conditions met: [☑] Yes [ ] No [ ] Met After Allowance

Verified and Acknowledged: /BENJAMIN X CASAREZ/ (Examiner's Signature) BC (Initials)

Title: DISPLAY DEVICE AND COMPUTER READABLE MEDIA

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
04/06/2021	345	2619	8317-0050
RULE			

APPLICANTS

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INVENTORS

Yojiro MATSUEDA, Kanagawa, JAPAN

Kenichi TAKATORI, Kanagawa, JAPAN

CONTINUING DATA

This application is a CON of 15255377 09/02/2016ABN

FOREIGN APPLICATIONS

JAPAN JP2015-173215 09/02/2015

JAPAN JP2016-104437 05/25/2016

IF REQUIRED, FOREIGN LICENSE GRANTED**

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ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/301,517	**10/22/2024 04:05:13 PM Z ET**	**8317-0050**

Title of Invention

DISPLAY DEVICE AND COMPUTER READABLE MEDIA

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	1637	FILED BY	Linda Sayyad
PATENT CENTER #	67674036	FILING DATE	04/06/2021
CUSTOMER #	466	FIRST NAMED INVENTOR	Yojiro MATSUEDA
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	ERIC JENSEN

Documents

TOTAL DOCUMENTS: 3

DOCUMENT		PAGES	DESCRIPTION	SIZE (KB)
8317-0050 AMD.pdf		10	-	78 KB
8317-0050 AMD-A....pdf	(1-1)	1	Amendment/Request for Reconsideration-After Non-Final Rejection	40 KB
8317-0050 AMD-CLM.pdf	(2-7)	6	Claims	63 KB
8317-0050 AMD-REM.pdf	(8-10)	3	Applicant Arguments/Remarks Made in an Amendment	48 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
8317-0050 AMD.pdf	84FB6DF3961AE681CD65AF319F5B1465A680146949664755E5

	F504183D1E4341F2EF31B30D7193242686F3695F45154166BC 9CE97E36A9F36B99D28EAEF218AE
8317-0050 AMD-A....pdf	1DB12CB2D4EF4F95A5F025AF4F459D1DE8BD8DF35E4E6A71 6ACFDC64DBB40EC8DDB41FD82386AD0EBBBB1CDD490B5C CDF5DB66AC4B3C7735CD00698ED47CD7E5
8317-0050 AMD-CLM.pdf	A7BE2BC9C851B4AA85DA85DFE9DCC31560B33F39C61932E7 4D5D41B7EB4E6DDCEF25011367E9EE03392AFFCBA60D7388 E2A0918625E0F4C296EB6C7B492B1C79
8317-0050 AMD-REM.pdf	EE9EBFC101258A0DE3680175986661B1CEA53C8E0D4434656 05FAF2A14574C1A1FE679243DD1C25BBB817657390F329B5B 986EF8735EF624669ED2804DA6002E

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ELECTRONIC PAYMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/301,517	**10/22/2024 04:05:13 PM Z ET**	**8317-0050**

Title of Invention

DISPLAY DEVICE AND COMPUTER READABLE MEDIA

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	1637	FILED BY	Linda Sayyad
PATENT CENTER #	67674036	AUTHORIZED BY	ERIC JENSEN
CUSTOMER #	466	FILING DATE	04/06/2021
CORRESPONDENCE ADDRESS	-	FIRST NAMED INVENTOR	Yojiro MATSUEDA

Payment Information

PAYMENT METHOD	PAYMENT TRANSACTION ID	PAYMENT AUTHORIZED BY
CARD / 5024	**E20240LG06098005**	**Linda Sayyad**

FEE CODE	DESCRIPTION	ITEM PRICE($)	QUANTITY	ITEM TOTAL($)
1252	EXTENSION FOR RESPONSE WITHIN SECOND MONTH	640.00	1	640.00
			TOTAL AMOUNT:	**$640.00**

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New International Application Filed with the USPTO as a Receiving Office

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor	Atty. Docket No.: 8317-0050
MATSUEDA, Yojiro	Confirmation No.: 1637
Appln. No.: 17/301,517	Group Art Unit: 2619
Filed: April 6, 2021	Examiner: CASAREZ, BENJAMIN X.

For: DISPLAY DEVICE AND COMPUTER READABLE MEDIA

* * * * * * * * * * * *

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

October 22, 2024

Honorable Commissioner:

AMENDMENT AFTER NON-FINAL OFFICE ACTION

In response to the non-final Office action mailed May 22, 2024, for which the period for response has been extended two months, please amend the application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks begin on page 8 of this paper.

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (currently amended) A display device comprising:

a display unit where a plurality of first pixels each including subpixels of three colors and a plurality of second pixels each including subpixels of three colors arranged differently from the subpixels in one of the first pixels are alternately arrayed in a row direction and a column direction, the subpixels of the three colors including a subpixel of a first color, a subpixel of a second color and a subpixel of a third color;

a thin film transistor (TFT) circuit disposed below each of the subpixels to control the subpixels; and

at least one connection part that connects the TFT circuit and one of the subpixels; ~~and~~

~~an organic light emitting diode (OLED) layer of the first color,~~

wherein

in the first pixel and the second pixel adjacent to each other in the column direction, the subpixel of the second color and the subpixel of the third color are arrayed alternately in the column direction,

a column where the subpixel of the ~~third~~first color in ~~one~~the first pixel and the subpixel of the first ~~pixels~~color in the second pixel are arrayed in parallel with a column where the subpixel of the second color and the subpixel of the third color are alternately arrayed, the columns being arrayed alternately in the row direction, ~~in one of the second pixels,~~

~~a first arrangement in the column direction of the subpixel of the second color and the subpixel of the third color in one of the first pixels and a second arrangement of the subpixel of the second color and the subpixel of the third color in one of the second pixels are identical,~~

~~the subpixels of the first color in one of the first pixels and in one of the second pixels that are adjacent to each other in the row direction are aligned in the row direction with respect to the subpixel of the second color and the subpixel of the third color,~~

the subpixel of the first color in one of the first pixels has a biased arrangement and is positioned toward a side of the subpixel of the second color in an array direction of the subpixel of the second color and the subpixel of the third color that are arrayed alternately,

the subpixel of the first color in one of the second pixels has a biased arrangement and is positioned toward a side of the subpixel of the third color in the array direction of the subpixel of the second color and the subpixel of the third color that are arrayed alternately,

the subpixel of the first color in one of the first pixels has a rectangle or rounded rectangle shape whose long axis is ~~aligned along~~parallel with the direction in which the subpixel of the second color and the subpixel of the third color ~~in the same one of the first pixels are disposed~~are arrayed alternately,

~~in the arrangement of the subpixels of the first color, the second color and the third color of the first pixels, the at least one connection part connected to the subpixel of the first color in one of the first pixels is disposed at a biased position in the array~~

~~direction of the subpixel of the second color and the subpixel of the third color with respect to the rectangle or rounded rectangle shape of the subpixel of the first color in one of the first pixels and in the OLED layer of the first color,~~

the subpixel of the first color in one of the second pixels has the rectangle or rounded rectangle shape whose long axis is ~~aligned along~~parallel with the direction in which the subpixel of the second color and the subpixel of the third color ~~in the same one of the second pixels are disposed~~are arrayed alternately,

~~in the arrangement of the subpixels of the first color, the second color and the third color of the second pixels,~~ the at least one connection part ~~connected to the~~ of the subpixel of the first color in one of the first pixels is one connection part and is biased from a middle of a long axis of the subpixel of the first color toward an end of the long axis when viewed from the row direction,

the at least one connection part of the subpixel of the first color in one of the second pixels is ~~disposed at a biased position in the array direction of the subpixel of the second color and the subpixel of the third color with respect to the rectangle or rounded rectangle shape~~one connection part and is biased from a middle of a long axis of the subpixel of the first color ~~in one~~toward an end of the ~~second pixels and in~~long axis when viewed from the ~~OLED layer of the first color~~row direction,

a biased position ~~of~~where the ~~at least one~~ connection part ~~connected to~~of the subpixel of the first color in ~~one of~~ the first ~~pixels relative~~pixel is disposed with respect to the ~~rectangle or rounded rectangle shape~~middle of the long axis of the subpixel of the first color in the ~~same one of the~~ first ~~pixels, and~~pixel when viewed from the row direction

is relatively different from a biased position ~~of~~where the ~~at least one~~ connection part ~~connected to~~of the subpixel of the first color in ~~one of~~ the second ~~pixels relative~~pixel is disposed with respect to the ~~rectangle or rounded rectangle shape~~middle of the long axis of the subpixel of the first color in the ~~same one of the~~ second ~~pixels are different~~pixel when viewed from the row direction,

a position where the ~~at least one~~ connection part is disposed ~~at an identical position in each of the first pixels and the second pixels independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels, in the plurality of first pixels and second pixels arranged alternately along the row direction, each connection part connected~~with respect to the subpixel of the ~~first~~second color ~~in one of~~, a position where the ~~first pixels~~connection part is ~~positioned in a manner identical to each~~ disposed with respect to the subpixel of the third color and a position where the connection part ~~connected~~is disposed with respect to the subpixel of the first color in ~~one of the second pixels~~the first pixel are relatively same as a position where the connection part with respect to the subpixel of the second color, a position where the connection part is disposed with respect to the subpixel of the third color and a position where the connection part is disposed with respect to the subpixel of the first color in the second pixel, and

~~the subpixels in each of the first pixels are arranged identically, and the subpixels in each of the second pixels are arranged identically.~~

in a pixel array including the first pixel and the second pixel arrayed in the column direction, the connection part of the subpixel of the first color is disposed between a column where the subpixel of the second color and the subpixel of the third color are

alternately arrayed and a column where the subpixel of the first color arranged in parallel with the column where the subpixel of the second color and the subpixel of the third color are alternately arrayed.

2. (original) The display device according to claim 1, wherein

the subpixel includes an anode electrode, and

the at least one connection part is a portion that connects an output of the TFT circuit and the anode electrode.

3. (currently amended) The display device according to claim 1, wherein

[[The]] the TFT circuit includes an identical circuit arrangement pattern for the subpixels of the first to third colors.

4. (previously presented) The display device according to claim 1, wherein

in one of the first pixels and one of the second pixels that are adjacent to each other in the row direction, a distance between a first connection part of the at least one connection part for the subpixel of the first color in the one of the first pixels and a second connection part of the at least one connection part for the subpixel of the first color in the one of the second pixels are consistent in the display unit independent of the biased arrangements of the subpixels.

5. (original) The display device according to claim 1, wherein

a first square not crossing the subpixels encloses a region including the subpixels of three colors included in one of the first pixels and excluding other subpixels,

a second square not crossing the subpixels encloses a region including the subpixels of three colors included in one of the second pixels and excluding other subpixels, and

the first square and the second square are arranged without overlapping each other.

6. (previously presented) The display device according to claim 1, wherein

the OLED layer is disposed above the at least one connection part, and

a position where the at least one connection part is disposed overlaps with the OLED layer in a plan view.

7. (previously presented) The display device according to claim 1, wherein

the TFT circuit and one of the subpixels are connected by only one of the at least one connection part.

8. (previously presented) The display device according to claim 2, wherein

a position where the at least one connection part is disposed overlaps with the anode electrode in a plan view.

REMARKS

This application has been amended so as to place it in condition for allowance at the time of the next Office action.

103 Rejection over Kim, Sung, and Cok

Claims 1-8 are rejected under 35 U.S.C. 103 as being unpatentable over Kim et al. (US 20160225834 A1), hereinafter Kim, in view of Sung et al. (US 20090121983 A1), and in further view of Cok et al. (US 20040217694 A1). Reconsideration and withdrawal of such rejection are respectfully requested for the following reasons.

Of the rejected claims, only claim 1 is independent. Applicant has amended claim 1 and, by extension, implicitly amended each claim depending therefrom. Applicant nevertheless retains the right to pursue one or more claims having a scope that is equivalent to or greater than that of previously pending claim 1 in a continuing application.

The present amendments to the claims are fully supported by the application materials as originally filed. Specifically, the features recited in lines 13-20 (of the attached markup) are described at least in paragraphs [0071] - [0078] and Fig.4. The features recited in lines 52-70 are described at least in paragraphs [0072] - [0078] and Fig.4, paragraphs [0086] - [0094] and Fig.6, and paragraphs [0097] - [0099] and Fig.7. The features recited in lines 71-83 are described at least in paragraphs [0097] - [0099] and Fig.7. The features in the last paragraph are described at least in paragraph [0099] and Figs.6 and 7.

Among other features, the invention of amended claim 1 includes 'at least one connection part that connects the TFT circuit and one of the subpixels… .' Recited characteristics of such connection part are neither taught nor suggested by any known prior art, including the references currently applied.

The sub-pixel array disclosed in Cok is an R,G,B stripe array, which differs significantly from the sub-pixel array now recited. The following features are now part of the claimed display device:

> "a column where the subpixel of the first color in the first pixel and the subpixel of the first color in the second pixel are arrayed in parallel with a column where the subpixel of the second color and the subpixel of the

third color are alternately arrayed, the columns being arrayed alternately in the row direction,"

"a biased position where the connection part of the subpixel of the first color in the first pixel is disposed with respect to the middle of the long axis of the subpixel of the first color in the first pixel when viewed from the row direction is relatively different from a biased position where the connection part of the subpixel of the first color in the second pixel is disposed with respect to the middle of the long axis of the subpixel of the first color in the second pixel when viewed from the row direction,"

"a position where the connection part is disposed with respect to the subpixel of the second color, a position where the connection part is disposed with respect to the subpixel of the third color and a position where the connection part is disposed with respect to the subpixel of the first color in the first pixel are relatively same as a position where the connection part with respect to the subpixel of the second color, a position where the connection part is disposed with respect to the subpixel of the third color and a position where the connection part is disposed with respect to the subpixel of the first color in the second pixel," and

"in a pixel array including the first pixel and the second pixel arrayed in the column direction, the connection part of the subpixel of the first color is disposed between a column where the subpixel of the second color and the subpixel of the third color are alternately arrayed and a column where the subpixel of the first color arranged in parallel with the column where the subpixel of the second color and the subpixel of the third color are alternately arrayed."

This set of features is neither disclosed nor suggested by Cok. Similarly, the collection of Cok, Kim, and Sung, considered either individually or collectively, fails to anticipate or render obvious the device recited in the amended claims. Applicant therefore suggests that the present rejection cannot reasonably be maintained, and reconsideration and withdrawal of such rejection are therefore respectfully requested.

Conclusion

In light of the amendments provided above and the arguments offered in support thereof, applicant believes that the present application is in condition for allowance and an

early indication of the same is respectfully requested. If the examiner has any questions or requires further clarification of any of the above points, the examiner is invited to contact the undersigned attorney so that this application may continue to be expeditiously advanced.

The Commissioner is hereby authorized in this, concurrent, and future submissions, to charge any additional fee(s) or underpayment of fee(s) under 37 C.F.R. § 1.16 or 37 C.F.R. § 1.17 or 37 C.F.R. § 41.20 or credit any overpayment of fee(s) to Deposit Account No. 14-1140.

Respectfully submitted,
NIXON & VANDERHYE P.C.

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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 17/301,517	Filing Date 04/06/2021	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $100 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $480 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	10/22/2024	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 8	Minus	** 20	= 0		x $100 =	0
	Independent (37 CFR 1.16(h))	* 1	Minus	*** 3	= 0		x $480 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	0

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	SLIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/JULIET MCMILLAN/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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TO: ptomail@nixonvan.com,pair_nixon@firsttofile.com
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CC: patentcenter_eofficeaction@uspto.gov
SUBJECT: USPTO: Patent Electronic System - e-Postcard Notification for Customer Number 466

Wed May 29 10:07:12 EDT 2024

Dear Patent Center Customer:

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An email notification regarding the correspondence was sent to the following email address(es) associated with customer number 466:

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This is a courtesy reminder that new correspondence is available for the application. If you have not done so already, please review the correspondence listed below. The official date of notification of the outgoing correspondence will be indicated on the form PTOL-90 accompanying the correspondence.

Application	Document	Mailroom Date	Attorney Docket No.
17301517	CTNF	05/22/2024	8317-0050

To view your correspondence online, please sign in to Patent Center and then select Workbench/View correspondence. Or to update your email addresses, select Manage/Manage customer numbers.

If you have any questions, please contact the Patent Electronic Business Center (EBC) at ebc@uspto.gov or 866-217-9197 Monday – Friday, 6 a.m. to midnight ET.

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Sincerely,

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/301,517	04/06/2021	Yojiro MATSUEDA	8317-0050	1637

466 7590 05/22/2024

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EXAMINER
CASAREZ, BENJAMIN X.

ART UNIT	PAPER NUMBER
2619	

NOTIFICATION DATE	DELIVERY MODE
05/22/2024	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

pair_nixon@firsttofile.com
ptomail@nixonvan.com

Office Action Summary	Application No. 17/301,517	Applicant(s) MATSUEDA et al.	
	Examiner Benjamin X Casarez	Art Unit 2619	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 30 April 2024.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL.** 2b) ☑ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 1-8 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1-8 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 30, 2024 has been entered.

Status

This Office Action is responsive to claim amendments filed for No. 17/301,517 on April 30, 2024. Please note: Claim 1 has been amended. Claims 1-8 are pending and have been examined.

Notice of Pre-AIA or AIA Status

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Claim Rejections - 35 USC § 103

2. In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

3. The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-8 are rejected under 35 U.S.C. 103 as being unpatentable over Kim et al. (US 20160225834 A1), hereinafter Kim, in view of Sung et al. (US 20090121983 A1), and in further view of Cok et al. (US 20040217694 A1), hereinafter Cok.

Regarding **Claim 1**, Kim teaches:

A display device **(See paragraphs [0039] and [0067]: FIGS. 1 and 2 are views of an organic light-emitting display apparatus)** comprising:

a display unit **(See FIG. 2)** where a plurality of first pixels each including subpixels of three colors **(See annotated FIG. 2 below: the labeled pixels correspond to first pixels each including subpixels of three colors (R, G, B))** and a plurality of second pixels each including subpixels of three colors arranged differently from the subpixels in one of the first pixels **(See annotated FIG. 2 below: the labeled pixels correspond to second pixels each including subpixels of three colors (R, G, B) arranged differently from the subpixels in one of the first pixels)** are alternately arrayed in a row direction and a column direction **(See annotated FIG. 2 below: the first pixels and the second pixels are alternately arrayed in a row direction (second direction) and a column direction (first direction))**, the subpixels of the three colors including a subpixel of a first color, a subpixel of a second color and a subpixel of a third color **(See paragraph [0059]; See annotated FIG. 2 below: the subpixels of the three colors including a subpixel of a first color (B), a subpixel of a second color (G) and a subpixel of a third color (R))**;

a thin film transistor (TFT) circuit disposed below each of the subpixels **(See FIG. 1: TFT disposed below each of the subpixels, which is composed of an OLED, as discussed in paragraph [0053])** to control the subpixels **(See paragraph [0007]; Although control with the TFT shown in FIG. 1 is not explicitly discussed, it is necessarily true that the TFT element must exert some control over the subpixels in order to cause the subpixels to emit light, as disclosed. Therefore, this is an inherent feature)**;

at least one connection part that connects the TFT circuit and one of the subpixels **(See paragraph [0054], lines 1-4; See FIG. 1: the portion of 141 disposed in the via hole VIA corresponds to at least one connection part that connects the TFT circuit and one of the subpixels)**, and

an organic light emitting diode (OLED) layer of the first color **(See FIG. 1: 143; See paragraph [0056])**,

wherein the subpixel of the second color and the subpixel of the third color in one of the first pixels are arrayed in parallel with the subpixel of the second color and the subpixel of the third color in one of the second pixels **(See annotated FIG. 2 below: the subpixel of the second color (G) and the subpixel of the third color (R)**

in one of the first pixels (e.g., the top middle first pixel) are arrayed in parallel with the subpixel of the second color (G) and the subpixel of the third color (R) in one of the second pixels (e.g., the top left second pixel)),

a first arrangement in the column direction of the subpixel of the second color and the subpixel of the third color in one of the first pixels and a second arrangement of the subpixel of the second color and the subpixel of the third color in one of the second pixels are identical **(See annotated FIG. 2 below: a first arrangement in the column direction of the subpixel of the second color (G) and the subpixel of the third color (R) in one of the first pixels (e.g., the top middle first pixel) and a second arrangement of the subpixel of the second color (G) and the subpixel of the third color (R) in one of the second pixels (e.g., the bottom middle second pixel) are identical)**,

the subpixels of the first color in one of the first pixels and in one of the second pixels that are adjacent to each other in the row direction are aligned in the row direction with respect to the subpixel of the second color and the subpixel of the third color **(See annotated FIG. 2 below: the subpixels of the first color (B) in one of the first pixels (e.g., the top middle first pixel) and in one of the second pixels (e.g., the top left second pixel) that are adjacent to each other in the row direction are aligned in the row direction with respect to the subpixel of the second color (G) and the subpixel of the third color (R). Specifically, the top edge of B in the first pixel is aligned with R and a center of B is aligned with G in the row direction, and the bottom edge of B in the second pixel is aligned with G and a center of B is aligned with R in the row direction)**,

the subpixel of the first color in one of the first pixels has a biased arrangement and is positioned toward a side of the subpixel of the second color in an array direction of the subpixel of the second color and the subpixel of the third color **(See annotated FIG. 2 below: the subpixel of the first color (B) in one of the first pixels (e.g., the top middle first pixel) has a biased arrangement and is positioned toward a side of the subpixel of the second color (G) in an array direction of the subpixel of the second color (G) and the subpixel of the third color (R))**,

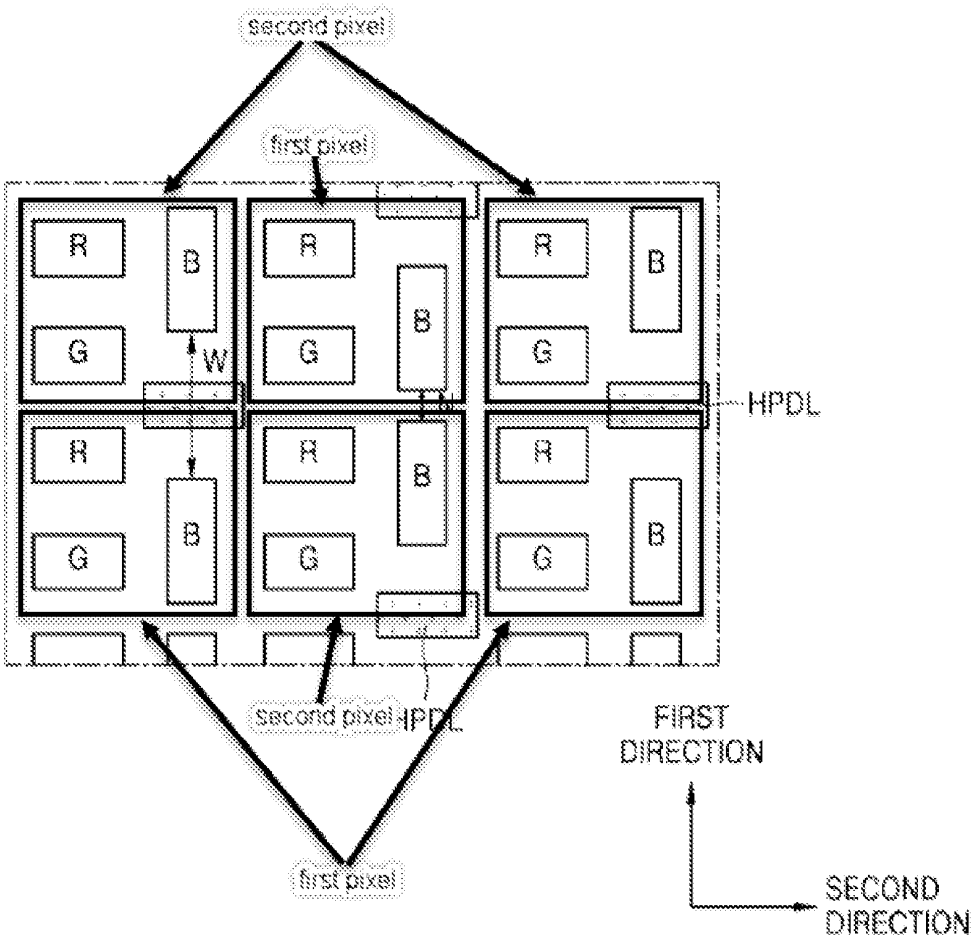
the subpixel of the first color in one of the second pixels has a biased arrangement and is positioned toward a side of the subpixel of the third color in the array direction of the subpixel of the second color and the subpixel of the third color **(See annotated FIG. 2 below: the subpixel of the first color (B) in one of the second pixels (e.g., the top left second pixel) has a biased arrangement and is positioned toward a side of the subpixel of the third color (R) in the array direction of the subpixel of the second color (G) and the subpixel of the third color (R))**,

the subpixel of the first color in one of the first pixels has a rectangle or rounded rectangle shape whose long axis is aligned along the direction in which the subpixel of the second color and the subpixel of the third color in the same one of the first pixels are disposed **(See annotated FIG. 2 below: the subpixel of the first color (B) in one of the first pixels has a rectangle or rounded rectangle shape whose long axis is aligned along the direction in which the subpixel of the second color (G) and the subpixel of the third color (R) in the same one of the first pixels are disposed)**,

the subpixel of the first color in one of the second pixels has the rectangle or rounded rectangle shape whose long axis is aligned along the direction in which the subpixel of the second color and the subpixel of the third color in the same one of the second pixels are disposed **(See annotated FIG. 2 below: the subpixel of the first color (B) in one of the second pixels has a rectangle or rounded rectangle shape whose long axis is aligned along the direction in which the subpixel of the second color (G) and the subpixel of the third color (R) in the same one of the second pixels are disposed)**, and

the subpixels in each of the first pixels are arranged identically, and the subpixels in each of the second pixels are arranged identically **(See annotated FIG. 2 below: the subpixels in each of the first pixels are arranged identically, and the subpixels in each of the second pixels are arranged identically)**.

FIG. 2



Kim does not explicitly teach:

in the arrangement of the subpixels of the first color, the second color and the third color of the first pixels, the at least one connection part connected to the subpixel of the first color in one of the first pixels is disposed at a biased position in the array direction of the subpixel of the second color and the subpixel of the third color with respect to the rectangle or rounded rectangle shape of the subpixel of the first color in one of the first pixels and in the OLED layer of the first color,

in the arrangement of the subpixels of the first color, the second color and the third color of the second pixels, the at least one connection part connected to the subpixel of the first color in one of the second pixels is

disposed at a biased position in the array direction of the subpixel of the second color and the subpixel of the third color with respect to the rectangle or rounded rectangle shape of the subpixel of the first color in one of the second pixels and in the OLED layer of the first color.

a position of the at least one connection part connected to the subpixel of the first color in one of the first pixels relative to the rectangle or rounded rectangle shape of the subpixel of the first color in the same one of the first pixels, and a position of the at least one connection part connected to the subpixel of the first color in one of the second pixels relative to the rectangle or rounded rectangle shape of the subpixel of the first color in the same one of the second pixels are different,

the at least one connection part is disposed at an identical position in each of the first pixels and the second pixels independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels,

in the plurality of first pixels and second pixels arranged alternately along the row direction, each connection part connected to the subpixel of the first color in one of the first pixels is positioned in a manner identical to each connection part connected to the subpixel of the first color in one of the second pixels.

However, in the same field of endeavor, a color OLED displays **(Cok, Abstract)**, Cok teaches:

in the arrangement of the subpixels **(See paragraph [0041])** of the first color, the second color and the third color of first pixels **(See FIG. 17: 12, 14, 16 and 18 correspond to a first pixel, and the blue light emitting element 16 corresponds to a subpixel of a first color in one of first pixels, the green light emitting element 14 corresponds to a second color, and the red light emitting element 12 corresponds to a third color)**, at least one connection part **(FIG. 12: 145a)** connected to the subpixel of the first color in one of the first pixels is disposed at a biased position in an array direction of the subpixel of the second color and the subpixel of the third color with respect to a rectangle or rounded rectangle shape of the subpixel of the first color in one of the first pixels **(See FIGS. 12 and 17: 145a is disposed at a biased position in an array direction of a subpixel of a second color (G corresponding to 14) and a subpixel of a third color (R corresponding to 12) with respect to a rectangle or rounded rectangle shape of the subpixel of the first color (B corresponding to 16) in one of the first pixels)** and in an OLED layer of the first color **(See FIG. 13: the via connecting 181a to 141a (corresponding to the at least one connection part) overlaps with the OLED layer 310)**,

in the arrangement of the subpixels **(See paragraph [0041])** of the first color, the second color and the third color of second pixels **(See FIG. 17: 12b, 14b, 16b and 18b correspond to a second pixel, and the blue light emitting element 16b corresponds to a subpixel of a first color in one of second pixels, the green light emitting element 14b corresponds to a second color, and the red light emitting element 12b corresponds to a third color)**, at least one connection part **(FIG. 12: 145a)** connected to the subpixel of the first color in one of the second pixels is disposed at a biased position in an array direction of the subpixel of the second color and the subpixel of the third color with respect to a rectangle or rounded rectangle shape of the subpixel of the first color in one of the second pixels **(See FIGS. 12 and 17: 145a is disposed at a biased position in an array direction of a subpixel of a second color (G corresponding to 14b) and a subpixel of a third color (R corresponding to 12b) with respect to a rectangle or rounded rectangle shape of the subpixel of the first color (B corresponding to 16b) in one of the second pixels)** and in an OLED layer of the first color **(See FIG. 13: the via connecting 181a to 141a (corresponding to the at least one connection part) overlaps with the OLED layer 310)**.

a position of the at least one connection part connected to the subpixel of the first color in one of the first pixels relative to the rectangle or rounded rectangle shape of the subpixel of the first color in the same one of the first pixels, and a position of the at least one connection part connected to the subpixel of the first color in one of the second pixels relative to the rectangle or rounded rectangle shape of the subpixel of the second color in the same one of the first pixels are different **(See FIGS. 12 and 17: a position of the at least one connection part 145a connected to the subpixel of the first color (B corresponding to 16) in one of the first pixels relative to the rectangle or rounded rectangle shape of the subpixel of the first color (B corresponding to 16) in the same one of the first pixels, and a position of the at least one connection part 102 connected to the subpixel of the first color (B) in one of the second pixels relative to the rectangle or rounded rectangle shape of the subpixel of the second color (B corresponding to 16b) in the same one of the first pixels are different)**,

the at least one connection part is disposed at an identical position in each of the first pixels and the second pixels independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels **(See FIGS. 12 and 17: the at least one connection part 145a is disposed at an identical position in each of the first pixels and the second pixels independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels, because 145a, connecting B to the transistor are in the same vertical position)**,

in the plurality of first pixels and second pixels arranged alternately along the row direction, each connection part connected to the subpixel of the first color in one of the first pixels is positioned in a manner identical to each connection part connected to the subpixel of the first color in one of the second pixels **(See FIGS. 12 and 17: in the plurality of first pixels and second pixels arranged alternately along the row direction, each connection part 145a connected to the subpixel of the first color (B corresponding to 16) in one of the first pixels is positioned in a manner identical (i.e., aligned in the vertical direction) to each connection part connected to the subpixel of the first color (B corresponding to 16b) in one of the second pixels)**.

Kim in view of Sung contained **a device which differed from the claimed device by the substitution of** the at least one connection part connected to the subpixel of the first color in each of the first and second pixels, but without the specific positional arrangement that is claimed. Cok **teaches the substituted element of** at least one connection part disposed in the claimed manner. **Their functions were known in the art** to connect OLEDs to driving circuitry for each subpixel. The at least one connection part taught by Kim in view of Sung could have been substituted with the at least one connection part taught by Cok and the **results would have been predictable** and resulted in placing the at least one connection part connected to each of the first subpixels so that they are aligned in the row direction, as shown in FIG. 14 of Cok.

Therefore, the claimed subject matter would have been obvious to a person having ordinary skill in the art before the effective filing date of the claimed invention.

Regarding **Claim 2**, Kim in view of Cok teaches all of the elements of the claimed invention, as stated above. Furthermore, Kim in view of Cok teaches:

The display device according to claim 1, wherein

the subpixel includes an anode electrode **(See Kim, paragraph [0057] and FIG. 1: 141) (See Cok, paragraph [0040] and FIG. 13: 181a)**, and

the at least one connection part is a portion that connects an output of the TFT circuit **(Cok, FIG. 14: 120 and 140)** and the anode electrode **(See Cok, paragraph [0041])**.

Regarding **Claim 3**, Kim in view of Cok teaches all of the elements of the claimed invention, as stated above. Furthermore, Kim teaches:

The display device according to claim 1, wherein

the TFT circuit includes an identical circuit arrangement pattern for the subpixels of the first to third colors **(See paragraph [0040] and FIG. 1: the TFT has an identical circuit arrangement pattern (an identical pattern of S, G, A and D) for the subpixels of the first to third colors)**.

Regarding **Claim 4**, Kim in view of Cok teaches all of the elements of the claimed invention, as stated above. Furthermore, Kim in view of Cok teaches:

The display device according to claim 1, wherein

in one of the first pixels and one of the second pixels that are adjacent to each other in the row direction, a distance between a first connection part **(102)** of the at least one connection part for the subpixel of the first color **(B)** in the one of the first pixels **(56)** and a second connection part **(102)** of the at least one connection part for the subpixel of the first color **(B)** in the one of the second pixels **(66)** are consistent in the display unit independent of the biased arrangements of the subpixels **(See Cok, FIGS. 12 and 17: in one of the first pixels and one of the second pixels that are adjacent to each other in the row direction, a distance between a first connection part (145a) of the at least one connection part for the subpixel of the first color (B corresponding to 16) in the one of the first pixels and a second connection part (145a) of the at least one connection part for the subpixel of the first color (B corresponding to 16b) in the one of the second pixels are consistent in the display unit independent of the biased arrangements of the subpixels; Furthermore, as applied to the first and second pixels of Kim, the relationship between the connection parts taught by Cok would hold true)**.

In addition, the same motivation is used as the rejection for claim 1.

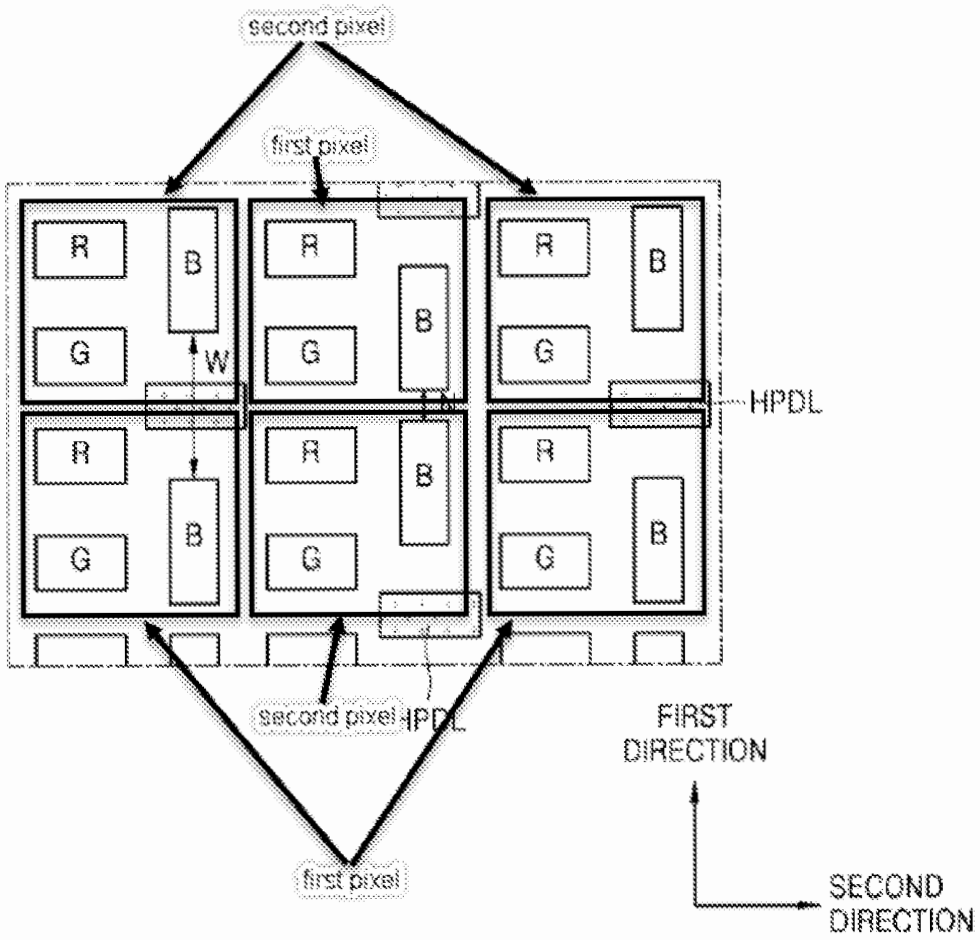
Regarding **Claim 5**, Kim in view of Cok teaches all of the elements of the claimed invention, as stated above. Furthermore, Kim teaches:

The display device according to claim 1, wherein a first square not crossing the subpixels encloses a region including the subpixels of three colors included in one of the first pixels and excluding other subpixels **(See annotated FIG. 2 below: a first square not crossing the subpixels encloses a region including the subpixels of three colors R,G, B included in one of the first pixels (e.g., the top middle first pixel) and excluding other subpixels)**,

a second square not crossing the subpixels encloses a region including the subpixels of three colors included in one of the second pixels and excluding other subpixels (**See annotated FIG. 2 below: a second square not crossing the subpixels encloses a region including the subpixels of three colors R, G, B included in one of the second pixels (e.g., the top left second pixel) and excluding other subpixels**), and

the first square and the second square are arranged without overlapping each other (**See annotated FIG. 2 below: the first square and the second square are arranged without overlapping each other**).

FIG. 2



Regarding **Claim 6**, Kim in view of Cok teaches all of the elements of the claimed invention, as stated above. Furthermore, Kim in view of Cok teaches:

The display device according to claim 1, wherein the OLED layer is disposed above the at least one connection part **(See Kim, FIG. 1: the OLED layer 143 is disposed above the portion of 141 disposed in the via hole VIA; See Cok, FIG. 13: the OLED layer 310 is disposed above the at least one connection part connecting 181a to 141a)**, and

a position where the at least one connection part is disposed overlaps with the OLED layer in a plan view **(See Cok, FIGS. 12 and 13: a position where the at least one connection part 145a is disposed overlaps with the OLED layer 310 in a plan view)**.

In addition, the same motivation is used as the rejection for claim 1.

Regarding **Claim 7**, Kim in view of Cok teaches all of the elements of the claimed invention, as stated above. Furthermore, Kim in view of Cok teaches:

The display device according to claim 1, wherein the TFT circuit and one of the subpixels are connected by only one of the at least one connection part **(See Cok, paragraph [0041] and FIGS. 12 and 13: the TFT circuit (shown in FIG. 14: 120 and 140) and one of the subpixels (B) are connected by only one of the at least one connection part 145a)**.

In addition, the same motivation is used as the rejection for claim 1.

Regarding **Claim 8**, Kim in view of teaches all of the elements of the claimed invention, as stated above. Furthermore, Kim in view of teaches:

The display device according to claim 2, wherein a position where the at least one connection part is disposed overlaps with the anode electrode in a plan view **(See Cok, FIGS. 12 and 13: a position where the at least one connection part 145a is disposed overlaps with the anode electrode 181a in a plan view)**.

In addition, the same motivation is used as the rejection for claim 1.

Response to Arguments

5. Applicant's arguments filed 04/30/2024 have been fully considered but they are not persuasive.

Applicant discusses (Remarks, page 8) the following limitation that has been amended from a previous recitation: "the subpixels of the first color in one of the first pixels and in one of the second pixels that are adjacent

to each other in the row direction are aligned in the row direction with respect to the subpixel of the second color and the subpixel of the third color". While Applicant does not make a specific assertion that the primary reference Kim does not teach the limitation as amended, the Examiner will address the interpretation of the claim limitation to assert that Kim does still teach this limitation. Specifically, in interpreting the claim limitation, the Examiner is relying on Applicant's FIG. 4. As shown in this figure, the subpixels of the first color 31 in one of the first pixels 351 and in one of the second pixels 352 that are adjacent to each other in the row direction are generally aligned in the row direction with respect to the subpixel of the second color 32 and the subpixel of the third color 33, but do not include any boundaries that are perfectly aligned in the row direction (i.e., a line drawn in the row direction will intersect subpixels 31, 32 and 33 in both 351 and 352). For this reason, the Examiner is taking the broadest reasonable interpretation of the claim limitation as requiring any portion of the respective subpixels as being aligned in the row direction, rather than requiring a perfect alignment of the boundaries of these subpixels (See MPEP 2111). Based on this interpretation, the Examiner submits that Kim teaches this particular feature.

Applicant discusses Cok with regard to FIG. 17 and concludes (Remarks, pages 9-12): "Given the assertion in the specification of Cok that Figs. 16 and 17 are illustrations of the same structure, one interpretation is that the positions of "R" and "B" of Fig.17 are erroneously reversed. If that is the case, a modified version of Fig. 17 that brings it into agreement with the text of Cok". The Examiner agrees that, in light of the disclosure of Cok, FIG. 17 appears to contain an error, and that one of ordinary skill in the art would understand this in view of the disclosure. The Examiner also agrees with Applicant that, based on this conclusion, Cok teaches the discussed feature F) (See Remarks, pages 12-13).

Applicant argues (Remarks, page 13): "Therefore, by the above-mentioned amendment, the Applicant has clarified the arrangement of "subpixel of the first color in one of the first pixels" and "subpixel of the first color in one of the second pixels", as well as clarifying "the subpixels of the first color in one of the first pixels and in one of the second pixels that are adjacent to each other in the row direction are aligned in the row direction with respect to the subpixel of the second color and the subpixel of the third color…." The above feature will be identified as G) hereinafter. The amendment clarifies that the subpixel arrangement of the present structure as recited in the amended claims is substantially different from that of Cok, and that the structures of B), C), and G) are not disclosed". As discussed above, the Examiner submits that Kim teaches the limitation directed to the alignment of subpixels. Furthermore, the Examiner submits, in view of the correct interpretation of Cok, FIG. 17 presented by the Applicant

above, that Cok teaches the features B) and C). Specifically, considering the connection part 145a within the arrangement of the subpixels of the first color 16, the second color 14 and the third color 12 of the first pixels (12, 14, 16 and 18), the Examiner maintains that Cok teaches that the connection part 145a is still reasonably interpreted as being disposed at a biased position in an array direction of the subpixel of the second color and the subpixel of the third color with respect to a rectangle or rounded rectangle shape of the subpixel of the first color in one of the first pixels (**See FIGS. 12 and 17: 145a is disposed at a biased position in an array direction of a subpixel of a second color (G corresponding to 14) and a subpixel of a third color (R corresponding to 12) with respect to a rectangle or rounded rectangle shape of the subpixel of the first color (B corresponding to 16) in one of the first pixels**). The same reasoning applies with respect to the second pixel and feature C). In other words, within the arrangement of subpixels, the connection part 145a for the blue subpixel 16 is biased towards the green 14 and red 12 subpixels with respect to the blue subpixel 16 in the case of the first pixels and biased away from the green 14b and red 12b subpixels with respect to the blue subpixel 16b in the case of the second pixels.

Applicant argues (Remarks, page 13): "Therefore, even if Kim and Sung are combined with Cok, there is no reason that one of skill in the art would be motivated to combine the teachings of such to arrive at the structure of amended claim 1". The Examiner notes that Sung is no longer relied upon in the above rejections, and therefore arguments with regard to Sung are rendered moot. Furthermore, the Examiner respectfully disagrees that one of skill in the art would be motivated to combine the teachings of such to arrive at the structure of amended claim 1. Specifically, the Examiner submits that one of ordinary skill in the art would be motivated to modify Kim according to Cok because doing so would have been simple substitution of one known element for another to obtain predictable results (See MPEP 2143 – I. B.).

Applicant argues (Remarks, page 13): "There exists yet another interpretation of the prior art that the examiner may consider, namely that the subpixel of the first color corresponds to the "light emitting elements" of the reference numbers 18 and 18b". The Examiner appreciates Applicant's thorough discussion of an alternative interpretation of Cok, however, since the Examiner does not adopt this interpretation, these arguments are respectfully considered moot.

Applicant argues (Remarks, page 15): "Applicant has gone to considerable effort to construe the Cok reference not only as it literally appears, but also to consider multiple interpretations of the same. However, regardless of the possible interpretation of Cok, and the Kim and Sung references with which it has been combined,

Applicant believes that no reasonable interpretation of this or any other combination of known prior art can reasonably be construed to render obvious the invention recited in amended claim 1, and by extension in the remaining claims that depend therefrom". The Examiner sincerely appreciates the Applicant's thorough discussion of Cok, and in particular, the correct identification of an error in FIG. 16 of Cok. However, in view of the above discussion of Kim and Cok, the Examiner respectfully submits that all of the limitations of claim 1 are taught by the combination of these references.

For the above reasons, Applicant's arguments are not convincing to overcome the current rejections.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Benjamin X Casarez whose telephone number is (571)270-5332. The examiner can normally be reached Monday-Friday: 7:30 am - 5:00 pm.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Claire Pappas can be reached on 571-270-1051. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: https://patentcenter.uspto.gov. Visit https://www.uspto.gov/patents/apply/patent-center for more information about Patent Center and https://www.uspto.gov/patents/docx for information about filing in DOCX format. For additional questions, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BENJAMIN X CASAREZ/
Primary Examiner, Art Unit 2619

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/301,517	MATSUEDA et al.
	Examiner	Art Unit
	Benjamin X Casarez	2619

CPC - Searched*		
Symbol	Date	Examiner
G09G2300/0452 (with text search)	05/18/2024	BC
G09G2300/0842 (with text search)	03/03/2023	BC
G09G2300/0861 (with text search)	03/03/2023	BC
G09G2310/0262 (with text search)	03/03/2023	BC
G09G2310/0283 (with text search)	03/03/2023	BC
G09G3/2003 (with text search)	03/03/2023	BC
G09G3/3233 (with text search)	06/28/2023	BC
G09G3/3266 (with text search)	03/03/2023	BC
G09G3/3208 (with text search)	05/18/2024	BC

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

/BENJAMIN X CASAREZ/ Examiner, Art Unit 2692	

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/301,517	MATSUEDA et al.
	Examiner	**Art Unit**
	Benjamin X Casarez	2619

Search Notes		
Search Notes	**Date**	**Examiner**
EAST search started	10/21/2021	BC
EAST inventor and assignee name search (with text search)	10/21/2021	BC
Updated PE2E search started	03/22/2022	BC
Updated PE2E inventor and assignee name search (with text search)	03/22/2022	BC
Updated PE2E search started	07/29/2022	BC
Updated PE2E inventor and assignee name search (with text search)	07/29/2022	BC
Updated PE2E search started	03/03/2023	BC
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Updated PE2E search started	06/28/2023	BC
Updated PE2E inventor and assignee name search (with text search)	06/30/2023	BC
Updated PE2E search started	01/23/2024	BC
Updated PE2E inventor and assignee name search (with text search)	01/26/2024	BC
Updated PE2E search started	05/18/2024	BC
Updated PE2E inventor and assignee name search (with text search)	05/18/2024	BC

Interference Search			
US Class/CPC Symbol	**US Subclass/CPC Group**	**Date**	**Examiner**

/BENJAMIN X CASAREZ/ Examiner, Art Unit 2692	

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/301,517	MATSUEDA et al.
	Examiner	Art Unit
	Benjamin X Casarez	2619

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	10/21/2021	03/22/2022	07/29/2022	03/06/2023	01/26/2024	05/18/2024			
	1	✓	✓	✓	✓	✓	✓			
	2	✓	✓	✓	✓	✓	✓			
	3	✓	✓	✓	✓	✓	✓			
	4	✓	✓	✓	✓	✓	✓			
	5	✓	✓	✓	✓	✓	✓			
	6				✓	✓	✓			
	7				✓	✓	✓			
	8				✓	✓	✓			

PE2E SEARCH - Search History (Prior Art)

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L2	18	("20060103615"|"20060158466"|"20090051627"|"20090322215"|"20120092238"|"20130286262"|"20150035729"|"20150061978"|"20150235617"|"20160019825"|"20160027404"|"20160104413"|"20160126287"|"20160155416"|"20160379540"|"20170092174"|"20170132969"|"9767741").PN.	(US-PGPUB; USPAT)	OR	ON	ON	2021/10/21 05:01 PM
L3	1943	(nlt).IN,AANM,AS.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:10 PM
L4	885	((MATSUEDA near2 YOJIRO) (TAKATORI near2 KENICHI)).IN.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:10 PM
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L14	9475	L12 and L13	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:42 PM
L15	31	L14 and ((thin near2 film) TFT) and ((color colour) with (row column) with alternat$4 with arrangement)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:43 PM

L16	38	L14 and (shar$4 with (color$3 colour$3 subpixel (sub near pixel)) with (adjacent$3 neighbour$4 neighbor$4 near$2 surround$3)) same (divid$4 division separat$4)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:52 PM
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			TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
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L27	6	(14/526077 | 14/537522 | 13/227271).APP.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 10:25 AM
L28	69	("9013098" | "20120056531" | "20130222217" | "20070002084" | "20090121983" | "20120169682" | "20130057521" | "20130113363" | "20050225232" | "20070064020" | "20090121983" | "20090195144" | "20090322215" | "20110180825").pn. OR ("2015/0144908" | "9245932" | "2015/0129856" | "9013098" | "2012/0056531" | "8593057").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 10:25 AM
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		(PGPB | USPT | USOC).dbnm.					
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L38	30118	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/03/22 01:16 PM
L39	143601	(G09G2300/0842 OR G09G2300/0861 OR G09G2310/0262 OR G09G2310/0283 OR G09G3/2003 OR G09G3/3233 OR G09G3/3266).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/03/22 01:17 PM
L40	14825	L38 AND L39	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV,	OR	ON	ON	2022/03/22 01:17 PM

			MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L41	1727	L40 AND (blue WITH (pixel subpixel) WITH (divid$4 split$4 combin$4 shar$4))	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/03/22 01:17 PM
L42	237	L41 AND (TFT WITH (connect$4 coupl$4))	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/03/22 01:18 PM
L43	56	L5 and ((subpixel (sub near2 pixel)) with (color colour)) and ((thin near2 film) TFT) and bias$4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/03/22 01:24 PM
L44	2	((US-20150129856-A1 OR US-20160225833-A1).did. AND PGPB.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK,	OR	ON	ON	2022/03/22 04:23 PM

			TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L45	5	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2 OR US-9893127-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/03/22 05:09 PM
L46	2	((US-20150129856-A1 OR US-20160225833-A1).did. AND PGPB.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/18 10:09 AM
L47	31381	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/18 10:51 AM
L48	7	L41 AND (TFT WITH (connect$4 coupl$4) WITH (subpixel (sub near2 pixel)) WITH (via	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU,	OR	ON	ON	2022/07/18 10:52 AM

		hole))	CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L49	187	L47 AND (TFT WITH (connect$4 coupl$4) WITH (subpixel (sub near2 pixel)) WITH (via hole))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/18 11:00 AM
L50	78014	(G09G3/3233).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/18 11:18 AM
L51	4685	L47 AND L50	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN,	OR	ON	ON	2022/07/18 11:18 AM

			WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L52	117	L51 AND (TFT WITH (connect$4 coupl$4) WITH (via hole))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/18 11:19 AM
L53	50	((US-20150379924-A1 OR US-20090051627-A1 OR US-20060158466-A1 OR US-20060103615-A1 OR US-20210225247-A1 OR US-20170061849-A1 OR US-20200035156-A1 OR US-20180143721-A1 OR US-20160148981-A1 OR US-20110260952-A1 OR US-20180315801-A1 OR US-20150129856-A1 OR US-20170116900-A1 OR US-20200043990-A1 OR US-20140197396-A1 OR US-20120056531-A1 OR US-20120092238-A1 OR US-20110291550-A1 OR US-20100270912-A1 OR US-20090121983-A1 OR US-20110260951-A1 OR US-20170132969-A1 OR US-20170092174-A1 OR US-20160379540-A1 OR US-20160155416-A1 OR US-20160126287-A1 OR US-20160104413-A1 OR US-20160027404-A1 OR US-20160019825-	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/18 11:41 AM

		A1 OR US-20150235617-A1 OR US-20150061978-A1 OR US-20150035729-A1 OR US-20130286262-A1 OR US-20090322215-A1 OR US-20160225833-A1 OR US-20130002992-A1 OR US-20150364075-A1 OR US-20150129853-A1 OR US-20140292622-A1 OR US-20070029941-A1).did. AND PGPB.dbnm.) OR ((US-9767741-B2 OR US-11107399-B2 OR US-9245932-B2 OR US-10692938-B2 OR US-10546906-B2 OR US-10497757-B2 OR US-8552635-B2 OR US-10312295-B2 OR US-10103205-B2).did. AND USPT.dbnm.) OR ((CN-101960504-A).did. AND FTDB.dbnm.)					
L54	14	L53 AND (TFT WITH (connect$4 coupl$4) WITH (via hole))	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/18 11:41 AM
L55	5	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK,	OR	ON	ON	2022/07/20 12:35 PM

			TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L56	2	(14/855199).APP.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/07/29 09:09 AM
L57	12	("20060017375" | "20080116463" | "20080252200" | "20090200936" | "20100309172" | "20120025182" | "20120056531").pn. OR ("2016/0225833" | "9893127").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/07/29 09:10 AM
L58	12	"56554731".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2022/07/29 09:13 AM
L59	31450	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:15 AM
L60	151353	(G09G2300/0842 OR G09G2300/0861 OR G09G2310/0262 OR G09G2310/0283 OR G09G3/2003 OR G09G3/3233 OR G09G3/3266).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO,	OR	ON	ON	2022/07/29 09:15 AM

			MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L61	15705	L38 AND L39	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:15 AM
L62	1778	L40 AND (blue WITH (pixel subpixel) WITH (divid$4 split$4 combin$4 shar$4))	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:15 AM
L63	245	L41 AND (TFT WITH (connect$4 coupl$4))	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:15 AM
L64	1934	(nlt).IN,AANM,AS.	(US-PGPUB; USPAT;	OR	ON	ON	2022/07/29

			USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)				09:15 AM
L65	916	((MATSUEDA near2 YOJIRO) (TAKATORI near2 KENICHI)).IN.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:16 AM
L66	2717	L3 L4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:16 AM
L67	61	L5 and ((subpixel (sub near2 pixel)) with (color colour)) and ((thin near2 film) TFT) and bias$4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:16 AM
L68	54	L67 AND (TFT WITH (connect$4 coupl$4))	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:16 AM
L69	6	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 02:37 PM
L70	6	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 04:01 PM
L71	14	("20150129856"|"20140292622"|"20120056531"|"9245932"|"20160225833").PN.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU,	OR	ON	ON	2022/07/29 04:01 PM

			CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L72	1	L70 NOT L71	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 04:01 PM
L73	6	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/04 11:45 AM
L74	2	((US-20160225834-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA,	OR	ON	ON	2023/03/03 11:05 AM

			VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L75	4	(14/969251 | 14/526077).APP.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 11:18 AM
L76	29	("20020149720" | "20070200488" | "20090058271" | "20090121983" | "20100033084" | "20130021566" | "20140111757" | "20140197396" | "20140252321" | "20140319479" | "20160225833" | "9013098" | "20120056531" | "20130222217").pn. OR ("2016/0225834" | "10263054" | "2015/0144908" | "9245932").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 11:18 AM
L77	10	"49002264".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/03 11:35 AM
L78	25	("6940222" | "8330352" | "20020070909" | "20030052597" | "20050139834" | "20070001954" | "20070002084" | "20080111459" | "20090322215" | "20110248985" | "20110279014" | "20120056531" | "20120097933").pn. OR ("2013/0222217" | "2016/0155780" | "9972663").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 11:36 AM

L79	2	"40623242".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/03 11:43 AM
L80	33979	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 11:44 AM
L81	166416	(G09G2300/0842 OR G09G2300/0861 OR G09G2310/0262 OR G09G2310/0283 OR G09G3/2003 OR G09G3/3233 OR G09G3/3266).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 11:44 AM
L82	17422	L38 AND L39	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO,	OR	ON	ON	2023/03/03 11:45 AM

			RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L83	5441	L82 AND (((transistor TFT) WITH (connect$4 coupl$4 contact$4 hole via)))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 11:45 AM
L84	173	L82 AND (((transistor TFT) WITH (connect$4 coupl$4 contact$4 hole via)) WITH overlap$4 WITH (OLED emission emitting))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 11:45 AM
L85	9	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 11:46 AM
L86	53	((US-20150379924-A1 OR US-20090051627-A1 OR US-	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY,	OR	ON	ON	2023/03/03 12:41 PM

		20060158466-A1 OR US-20060103615-A1 OR US-20210225247-A1 OR US-20170061849-A1 OR US-20200035156-A1 OR US-20180143721-A1 OR US-20160148981-A1 OR US-20110260952-A1 OR US-20180315801-A1 OR US-20150129856-A1 OR US-20170116900-A1 OR US-20200043990-A1 OR US-20140197396-A1 OR US-20120056531-A1 OR US-20120092238-A1 OR US-20110291550-A1 OR US-20100270912-A1 OR US-20090121983-A1 OR US-20110260951-A1 OR US-20170132969-A1 OR US-20170092174-A1 OR US-20160379540-A1 OR US-20160155416-A1 OR US-20160104413-A1 OR US-20160027404-A1 OR US-20160019825-A1 OR US-20150235617-A1 OR US-20150061978-A1 OR US-20150035729-A1 OR US-20130286262-A1 OR US-20090322215-A1 OR US-20160126287-A1 OR US-20160225833-A1 OR US-20130002992-A1 OR US-20150364075-A1 OR US-20150129853-A1 OR US-20140292622-A1 OR US-20070029941-A1 OR US-20160225834-A1 OR US-20130222217-A1).did. AND PGPB.dbnm.) OR ((US-9767741-B2 OR US-11107399-B2 OR US-9245932-B2 OR US-10692938-B2 OR	CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				

		US-10546906-B2 OR US-10497757-B2 OR US-8552635-B2 OR US-10312295-B2 OR US-10103205-B2 OR US-10615237-B2).did. AND USPT.dbnm.) OR ((CN-101960504-A).did. AND FTDB.dbnm.)					
L87	15	"56011000".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/03 12:45 PM
L88	14	"51620270".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/03 02:25 PM
L89	94	("7365488" | "8253323" | "8552635" | "20040036421" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "7365488" | "8253323" | "8552635" | "9478586" | "20040036421" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "7365488" | "8253323" | "8319906" | "8338832" | "8552635" | "9478586" | "20040036421" | "20050057460" | "20050242712" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 02:25 PM

		"20070015429" | "20090289963" | "20110291550" | "20120056531" | "7365488" | "8232123" | "8253323" | "8319906" | "8338832" | "8552635" | "9231000" | "9478586" | "20040036421" | "20040183083" | "20050057460" | "20050242712" | "20070015429" | "20090128018" | "20090289963" | "20110102402" | "20110291550" | "20120056531" | "20140132584" | "7365488" | "8232123" | "8253323" | "8319906" | "8338832" | "8552635" | "8587194" | "9231000" | "9478586" | "10084029" | "10546906" | "10923545" | "20040036421" | "20040183083" | "20050057460" | "20050242712" | "20070015429" | "20090128018" | "20090289963" | "20110102402" | "20110291550" | "20120056531" | "20140132584").pn. OR ("2014/0292622" | "2017/0012094" | "2019/0027546" | "2020/0144349" | "2021/0134908" | "9478586" | "10084029" | "10546906" | "10923545" | "11574969").urpn. AND (PGPB | USPT | USOC).dbnm.				
L90	347	L82 AND ((transistor TFT) WITH overlap$4 WITH (OLED emission emitting))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL,	OR	ON	ON	2023/03/03 02:52 PM

			NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L91	174	L90 NOT L84	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 02:52 PM
L92	2	"20210225247"	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 03:16 PM
L93	33979	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 03:16 PM
L94	202	L93 AND (((transistor TFT) WITH (connect$4 coupl$4 contact$4 hole via)) WITH overlap$4 WITH (OLED emission emitting))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT;	OR	ON	ON	2023/03/03 03:17 PM

			IBM_TDB)				
L95	29	L94 NOT L84	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 03:17 PM
L96	9	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 03:28 PM
L97	430	L93 AND ((transistor TFT) WITH overlap$4 WITH (OLED emission emitting))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 03:28 PM
L98	83	L97 NOT L90	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS,	OR	ON	ON	2023/03/03 03:29 PM

			IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L99	17	(14/969251 | 14/855199 | 14/526077 | 14/537522 | 13/963987 | 14/156188 | 13/467737 | 13/227271 | 12/250225).APP.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 03:33 PM
L100	350	("20020149720" | "20070200488" | "20090058271" | "20090121983" | "20100033084" | "20130021566" | "20140111757" | "20140197396" | "20140252321" | "20140319479" | "20160225833" | "20060017375" | "20080116463" | "20080252200" | "20090200936" | "20100309172" | "20120025182" | "20120056531" | "9013098" | "20120056531" | "20130222217" | "20070002084" | "20090121983" | "20120169682" | "20130057521" | "20130113363" | "7365488" | "8253323" | "8552635" | "20040036421" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "6294398" | "6992326" | "7132788" | "7443093" | "8110825" | "8115216" | "8124172" | "8309376" | "8330352" | "20040144975" | "20050112341" | "20080024402" | "20080111474" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 03:33 PM

		"20090195144" | "20090243483" | "20110183268" | "20110229994" | "20110248247" | "20110309389" | "20120049178" | "20120091482" | "20120228602" | "20120319089" | "20120326136" | "20120326600" | "20130109117" | "20140070175" | "20140078126" | "20050225232" | "20070064020" | "20090121983" | "20090195144" | "20090322215" | "20110180825" | "5341153" | "6008868" | "6366025" | "6429601" | "6747618" | "6801000" | "6838819" | "6867549" | "6870323" | "6903754" | "6919681" | "6940222" | "7205713" | "7239363" | "7492337" | "7508126" | "7728802" | "7791565" | "7821553" | "7825584" | "8013817" | "8247966" | "20020014837" | "20020015110" | "20030052597" | "20040036421" | "20040108818" | "20040125278" | "20040217694" | "20050001542" | "20050087740" | "20050127819" | "20050151462" | "20070001584" | "20070046185" | "20080111459" | "20080158107" | "20080224968" | "20080231554").pn. OR ("2016/0225834" | "10263054" | "2016/0225833" | "9893127" | "2015/0144908" | "9245932" | "2015/0129856" | "9013098" | "2014/0292622" |				

		"9478586" | "2014/0197396" | "9444050" | "2013/0222217" | "2012/0056531" | "8593057" | "2009/0121983" | "8330352").urpn. AND (PGPB | USPT | USOC).dbnm.					
L101	23	L100 AND ((transistor TFT) WITH overlap$4 WITH (OLED emission emitting))	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 03:34 PM
L102	9	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 04:33 PM
L105	54	((US-20150379924-A1 OR US-20090051627-A1 OR US-20060158466-A1 OR US-20060103615-A1 OR US-20210225247-A1 OR US-20170061849-A1 OR US-20200035156-A1 OR US-20180143721-A1 OR US-20160148981-A1 OR US-20110260952-A1 OR US-20180315801-A1 OR US-20150129856-A1 OR US-20170116900-A1 OR US-20200043990-A1 OR US-20140197396-A1 OR US-20120056531-A1 OR US-20120092238-A1 OR US-20110291550-A1 OR US-20100270912-A1 OR US-20090121983-A1 OR US-	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 04:34 PM

		20110260951-A1 OR US-20170132969-A1 OR US-20170092174-A1 OR US-20160379540-A1 OR US-20160155416-A1 OR US-20160104413-A1 OR US-20160027404-A1 OR US-20160019825-A1 OR US-20150235617-A1 OR US-20150061978-A1 OR US-20150035729-A1 OR US-20130286262-A1 OR US-20090322215-A1 OR US-20160126287-A1 OR US-20160225833-A1 OR US-20130002992-A1 OR US-20150364075-A1 OR US-20150129853-A1 OR US-20140292622-A1 OR US-20070029941-A1 OR US-20160225834-A1 OR US-20130222217-A1 OR US-20190074342-A1).did. AND PGPB.dbnm.) OR ((US-9767741-B2 OR US-11107399-B2 OR US-9245932-B2 OR US-10692938-B2 OR US-10546906-B2 OR US-10497757-B2 OR US-8552635-B2 OR US-10312295-B2 OR US-10103205-B2 OR US-10615237-B2).did. AND USPT.dbnm.) OR ((CN-101960504-A).did. AND FTDB.dbnm.)				
L106	10	"49002264".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK,	OR	ON	ON	2023/03/03 05:05 PM

			TH, TN, TR, TW, UA, VN); FPRS; JPO)				
L107	25	("6940222" | "8330352" | "20020070909" | "20030052597" | "20050139834" | "20070001954" | "20070002084" | "20080111459" | "20090322215" | "20110248985" | "20110279014" | "20120056531" | "20120097933").pn. OR ("2013/0222217" | "2016/0155780" | "9972663").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 05:05 PM
L108	15	"26604413".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/03 05:19 PM
L109	175	("5604613" | "6104446" | "6300612" | "6335778" | "6498592" | "6608620").pn. OR ("2002/0070909" | "6768482").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 05:19 PM
L110	2	((US-20160225834-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT;	OR	ON	ON	2023/03/06 09:02 PM

			IBM_TDB)				
L112	3	("20140197396" "8330352" "20090121983").pn.	(US-PGPUB; USPAT)	OR	ON	ON	2023/03/06 09:10 PM
L113	10	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1 OR US-20020070909-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 09:46 PM
L114	3	((US-20160225834-A1 OR US-20090121983-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 09:50 PM
L115	15	"26604413".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/06 09:55 PM
L116	175	("5604613" | "6104446" | "6300612" | "6335778" | "6498592" | "6608620").pn. OR ("2002/0070909" | "6768482").urpn. AND	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/06 09:56 PM

		(PGPB | USPT | USOC).dbnm.					
L117	4	("9013098" | "20120056531" | "20130222217").pn. OR ("9245932").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/06 10:14 PM
L118	19	(14/969251 | 14/855199 | 14/526077 | 14/537522 | 13/963987 | 14/156188 | 13/467737 | 13/227271 | 12/250225 | 09/990414).APP.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/06 10:16 PM
L119	495	("20020149720" | "20070200488" | "20090058271" | "20090121983" | "20100033084" | "20130021566" | "20140111757" | "20140197396" | "20140252321" | "20140319479" | "20160225833" | "20060017375" | "20080116463" | "20080252200" | "20090200936" | "20100309172" | "20120025182" | "20120056531" | "9013098" | "20120056531" | "20130222217" | "20070002084" | "20090121983" | "20120169682" | "20130057521" | "20130113363" | "7365488" | "8253323" | "8552635" | "20040036421" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "6294398" | "6992326" | "7132788" | "7443093" | "8110825" | "8115216" | "8124172" | "8309376" | "8330352" | "20040144975" | "20050112341" | "20080024402" | "20080111474" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/06 10:16 PM

		"20090195144" | "20090243483" | "20110183268" | "20110229994" | "20110248247" | "20110309389" | "20120049178" | "20120091482" | "20120228602" | "20120319089" | "20120326136" | "20120326600" | "20130109117" | "20140070175" | "20140078126" | "20050225232" | "20070064020" | "20090121983" | "20090195144" | "20090322215" | "20110180825" | "5341153" | "6008868" | "6366025" | "6429601" | "6747618" | "6801000" | "6838819" | "6867549" | "6870323" | "6903754" | "6919681" | "6940222" | "7205713" | "7239363" | "7492337" | "7508126" | "7728802" | "7791565" | "7821553" | "7825584" | "8013817" | "8247966" | "20020014837" | "20020015110" | "20030052597" | "20040036421" | "20040108818" | "20040125278" | "20040217694" | "20050001542" | "20050087740" | "20050127819" | "20050151462" | "20070001584" | "20070046185" | "20080111459" | "20080158107" | "20080224968" | "20080231554" | "5604613" | "6104446" | "6300612" | "6335778" | "6498592" | "6608620").pn. OR ("2016/0225834" | "10263054" | "2016/0225833" | "9893127" | "2015/0144908"				

		"9245932" | "2015/0129856" | "9013098" | "2014/0292622" | "9478586" | "2014/0197396" | "9444050" | "2013/0222217" | "2012/0056531" | "8593057" | "2009/0121983" | "8330352" | "2002/0070909" | "6768482").urpn. AND (PGPB | USPT | USOC).dbnm.					
L120	33	L119 AND ((transistor TFT) WITH overlap$4 WITH (OLED emission emitting))	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/06 10:16 PM
L121	56	((US-20150379924-A1 OR US-20090051627-A1 OR US-20060158466-A1 OR US-20060103615-A1 OR US-20210225247-A1 OR US-20170061849-A1 OR US-20200035156-A1 OR US-20180143721-A1 OR US-20160148981-A1 OR US-20110260952-A1 OR US-20180315801-A1 OR US-20150129856-A1 OR US-20170116900-A1 OR US-20200043990-A1 OR US-20140197396-A1 OR US-20120056531-A1 OR US-20160126287-A1 OR US-20090322215-A1 OR US-20110291550-A1 OR US-20100270912-A1 OR US-20090121983-A1 OR US-20110260951-A1 OR US-20170132969-A1 OR US-20170092174-A1 OR US-20160379540-A1 OR US-20160155416-A1 OR US-20160104413-A1 OR US-20160027404-A1	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 10:22 PM

		OR US-20160019825-A1 OR US-20150235617-A1 OR US-20150061978-A1 OR US-20150035729-A1 OR US-20130286262-A1 OR US-20120092238-A1 OR US-20160225833-A1 OR US-20130002992-A1 OR US-20150364075-A1 OR US-20150129853-A1 OR US-20140292622-A1 OR US-20070029941-A1 OR US-20160225834-A1 OR US-20130222217-A1 OR US-20190074342-A1 OR US-20020070909-A1).did. AND PGPB.dbnm.) OR ((US-9767741-B2 OR US-11107399-B2 OR US-9245932-B2 OR US-10692938-B2 OR US-10546906-B2 OR US-10497757-B2 OR US-8552635-B2 OR US-10312295-B2 OR US-10103205-B2 OR US-10615237-B2 OR US-11552107-B2).did. AND USPT.dbnm.) OR ((CN-101960504-A).did. AND FTDB.dbnm.)					
L122	15	"56011000".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/06 10:28 PM
L123	14	"51357853".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB,	OR	ON	ON	2023/03/06 10:29 PM

			HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)				
L124	14	("9013098" | "20120056531" | "20130222217").pn. OR ("2015/0144908" | "9245932").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/06 10:29 PM
L125	14	"51620270".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/06 10:35 PM
L126	94	("7365488" | "8253323" | "8552635" | "20040036421" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "7365488" | "8253323" | "8552635" | "9478586" | "20040036421" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "7365488" | "8253323" | "8319906" | "8338832" | "8552635" | "9478586" | "20040036421" | "20050057460" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "20120056531" | "7365488" | "8232123" | "8253323" | "8319906" | "8338832" | "8552635" | "9231000" | "9478586" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/06 10:35 PM

		"20040036421" | "20040183083" | "20050057460" | "20050242712" | "20070015429" | "20090128018" | "20090289963" | "20110102402" | "20110291550" | "20120056531" | "20140132584" | "7365488" | "8232123" | "8253323" | "8319906" | "8338832" | "8552635" | "8587194" | "9231000" | "9478586" | "10084029" | "10546906" | "10923545" | "20040036421" | "20040183083" | "20050057460" | "20050242712" | "20070015429" | "20090128018" | "20090289963" | "20110102402" | "20110291550" | "20120056531" | "20140132584").pn. OR ("2014/0292622" | "2017/0012094" | "2019/0027546" | "2020/0144349" | "2021/0134908" | "9478586" | "10084029" | "10546906" | "10923545" | "11574969").urpn. AND (PGPB | USPT | USOC).dbnm.					
L127	20	"45595555".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/06 10:50 PM
L128	55	("20050225232" | "20070064020" | "20090121983" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/06 10:50 PM

		"20090195144" | "20090322215" | "20110180825" | "8593057" | "20020014837" | "20050225232" | "20070064020" | "20090121983" | "20090195144" | "20090289963" | "20090322215" | "20100156279" | "20110180825" | "20120049726").pn. OR ("2012/0056531" | "2014/0042418" | "8593057" | "8786182").urpn. AND (PGPB | USPT | USOC).dbnm.					
L129	10	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1 OR US-20020070909-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 10:56 PM
L130	10	"49002264".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/06 10:58 PM
L131	10	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS,	OR	ON	ON	2023/03/06 11:23 PM

		20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1 OR US-20020070909-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L132	16	("20150129856"|"20140292622"|"20120056531"|"9245932"|"20160225834"|"20160225833").PN.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 11:23 PM
L133	4	L131 NOT L132	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 11:23 PM
L134	5	((US-20160225834-A1 OR US-20090121983-A1 OR US-20130222217-A1 OR US-20120056531-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 11:24 PM

L135	1934	(nlt).IN,AANM,AS.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 11:30 PM
L136	940	((MATSUEDA near2 YOJIRO) (TAKATORI near2 KENICHI)).IN.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 11:30 PM
L137	2741	L3 L4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 11:30 PM
L138	63	L5 and ((subpixel (sub near2 pixel)) with (color colour)) and ((thin near2 film) TFT) and bias$4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 11:30 PM
L139	55	L67 AND (TFT WITH (connect$4 coupl$4))	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 11:30 PM
L140	5	((US-20160225834-A1 OR US-20090121983-A1 OR US-20130222217-A1 OR US-20120056531-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/28 09:30 AM
L141	9	(14/969251 | 14/526077 | 13/467737 | 13/227271 | 12/250225).APP.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/06/28 09:38 AM
L142	231	("20020149720" | "20070200488" | "20090058271" | "20090121983" | "20100033084" | "20130021566" | "20140111757" | "20140197396" | "20140252321" | "20140319479" | "20160225833" | "9013098" | "20120056531" | "20130222217" | "20050225232" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/06/28 09:38 AM

		"20070064020" | "20090121983" | "20090195144" | "20090322215" | "20110180825" | "5341153" | "6008868" | "6366025" | "6429601" | "6747618" | "6801000" | "6838819" | "6867549" | "6870323" | "6903754" | "6919681" | "6940222" | "7205713" | "7239363" | "7492337" | "7508126" | "7728802" | "7791565" | "7821553" | "7825584" | "8013817" | "8247966" | "20020014837" | "20020015110" | "20030052597" | "20040036421" | "20040108818" | "20040125278" | "20040217694" | "20050001542" | "20050087740" | "20050127819" | "20050151462" | "20070001584" | "20070046185" | "20080111459" | "20080158107" | "20080224968" | "20080231554").pn. OR ("2016/0225834" | "10263054" | "2015/0144908" | "9245932" | "2013/0222217" | "2012/0056531" | "8593057" | "2009/0121983" | "8330352").urpn. AND (PGPB | USPT | USOC).dbnm.				
L143	34647	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA,	OR	ON	ON	2023/06/28 03:42 PM

			VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L144	45015	(G09G3/3208).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/28 03:42 PM
L145	89873	(G09G3/3233).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/28 03:43 PM
L146	829	L143 AND L144 AND L145	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/28 03:43 PM
L147	1	"20140284570"	(US-PGPUB)	OR	ON	ON	2023/06/28 04:58 PM
L148	34657	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY,	OR	ON	ON	2023/06/29 09:02 AM

			CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L149	45021	(G09G3/3208).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/29 09:02 AM
L151	4772	L148 AND L149	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/29 09:02 AM
L152	1	L151 AND ((subpixel (sub near2 pixel)) WITH (color colour)) WITH ((thin near2 film) TFT) WITH (via hole contact)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/29 09:03 AM
L153	54	L151 AND ((subpixel (sub near2 pixel)) WITH (color colour)) WITH (via hole contact)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/29 09:04 AM
L154	9	L151 AND ((subpixel (sub near2 pixel)) WITH	(US-PGPUB; USPAT; USOCR; FPRS; EPO;	OR	ON	ON	2023/06/29 10:03 AM

		((thin near2 film) TFT) WITH (via hole contact))	JPO; DERWENT; IBM_TDB)				
L155	150	L151 AND ((subpixel (sub near2 pixel)) WITH (via hole contact))	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/29 10:04 AM
L157	461	L151 AND ((subpixel (sub near2 pixel)) WITH (via hole contact))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/29 10:05 AM
L158	294	L157 NOT L153	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/29 10:05 AM
L159	23	"51568466".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/06/29 10:26 AM
L160	21	("2014/0284570" | "8952374").urpn. AND (PGPB | USPT |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/06/29 10:26 AM

		USOC).dbnm.					
L161	5	((US-20160225834-A1 OR US-20090121983-A1 OR US-20130222217-A1 OR US-20120056531-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/30 01:32 PM
L162	11	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1 OR US-20020070909-A1 OR US-20060170712-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/30 01:44 PM
L163	11	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1 OR US-20020070909-A1 OR US-20060170712-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/30 02:31 PM
L164	28	("20140292622"|"20160225833"|"20160225834"|"20020070909"|"20090121983"|"20130222217"|"20140197396"|"924	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA,	OR	ON	ON	2023/06/30 02:31 PM

		5932"|"20120056531"|"20150129856").PN.	EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L165	1	L163 NOT L164	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/30 02:31 PM
L166	1934	(nlt).IN,AANM,AS.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/30 02:35 PM
L167	943	((MATSUEDA near2 YOJIRO) (TAKATORI near2 KENICHI)).IN.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/30 02:35 PM
L168	2744	L3 L4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/30 02:35 PM
L169	65	L5 and ((subpixel (sub near2 pixel)) with (color colour)) and ((thin near2 film) TFT) and bias$4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/30 02:35 PM
L170	57	L67 AND (TFT WITH (connect$4 coupl$4))	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/30 02:35 PM
L171	6	((US-20160225834-A1 OR US-20090121983-A1 OR US-20130222217-A1 OR US-20120056531-A1 OR US-20060170712-A1).did. AND PGPB.dbnm.) OR ((US-	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV,	OR	ON	ON	2024/01/23 09:05 AM

		9245932-B2).did. AND USPT.dbnm.)	MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L172	1	(11/048385).APP.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/01/23 09:12 AM
L173	45	("2006/0170712").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/01/23 09:13 AM
L174	32	("4356429" | "6281634" | "6366025" | "6771028" | "7102293" | "7202841" | "20020101394" | "20030067458" | "20040080479" | "20040113875" | "20040164668" | "20040173819" | "20040195963" | "20040201558" | "20040217694" | "20040222999" | "20050068281" | "20060028495" | "20060170712").pn. OR ("7382384").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/01/23 10:07 AM
L175	62	((US-20150379924-A1 OR US-20090051627-A1 OR US-20060158466-A1 OR US-20060103615-A1 OR US-20210225247-A1 OR US-20170061849-A1 OR US-20200035156-A1 OR US-20180143721-A1 OR US-20160148981-A1 OR US-20110260952-A1 OR US-20180315801-A1 OR US-20150129856-A1 OR US-20170116900-A1 OR US-20200043990-A1 OR US-20140197396-A1 OR US-20120056531-A1 OR US-20160155416-A1 OR US-20090322215-A1 OR	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/23 10:22 AM

		US-20110291550-A1 OR US-20100270912-A1 OR US-20090121983-A1 OR US-20110260951-A1 OR US-20170132969-A1 OR US-20170092174-A1 OR US-20160379540-A1 OR US-20160126287-A1 OR US-20160104413-A1 OR US-20160027404-A1 OR US-20160019825-A1 OR US-20150235617-A1 OR US-20150061978-A1 OR US-20150035729-A1 OR US-20130286262-A1 OR US-20120092238-A1 OR US-20160225833-A1 OR US-20130002992-A1 OR US-20150364075-A1 OR US-20150129853-A1 OR US-20140292622-A1 OR US-20070029941-A1 OR US-20160225834-A1 OR US-20130222217-A1 OR US-20190074342-A1 OR US-20020070909-A1 OR US-20040183083-A1 OR US-20140284570-A1 OR US-20060170712-A1 OR US-20040217694-A1).did. AND PGPB.dbnm.) OR ((US-9767741-B2 OR US-11107399-B2 OR US-9245932-B2 OR US-10692938-B2 OR US-10546906-B2 OR US-10497757-B2 OR US-8552635-B2 OR US-10312295-B2 OR US-10103205-B2 OR US-10615237-B2 OR US-11552107-B2 OR US-10439006-B2 OR US-7382384-B2).did. AND USPT.dbnm.) OR ((CN-101960504-A).did. AND FTDB.dbnm.)					

L176	7	("9214500" | "20050001542" | "20120092238" | "20130002118" | "20140198479" | "20150379916").pn. OR ("9767741").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/01/23 10:32 AM
L177	15	"56011000".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2024/01/23 10:37 AM
L178	7	"55655854".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2024/01/23 10:38 AM
L179	10	"54931178".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2024/01/23 10:39 AM
L180	16	"51620270".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA,	OR	ON	ON	2024/01/23 10:47 AM

			EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)				
L181	97	("7365488" | "8253323" | "8552635" | "20040036421" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "7365488" | "8253323" | "8552635" | "9478586" | "20040036421" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "7365488" | "8253323" | "8319906" | "8338832" | "8552635" | "9478586" | "20040036421" | "20050057460" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "20120056531" | "7365488" | "8232123" | "8253323" | "8319906" | "8338832" | "8552635" | "9231000" | "9478586" | "20040036421" | "20040183083" | "20050057460" | "20050242712" | "20070015429" | "20090128018" | "20090289963" | "20110102402" | "20110291550" | "20120056531" | "20140132584" | "7365488" | "8232123" | "8253323" | "8319906" | "8338832" | "8552635" | "8587194" | "9231000" | "9478586" | "10084029" | "10546906" | "10923545" | "20040036421" | "20040183083" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/01/23 10:47 AM

		"20050057460" | "20050242712" | "20070015429" | "20090128018" | "20090289963" | "20110102402" | "20110291550" | "20120056531" | "20140132584" | "7365488" | "7990050" | "8232123" | "8253323" | "8319906" | "8338832" | "8552635" | "8587194" | "9231000" | "9478586" | "10084029" | "10546906" | "10923545" | "20040036421" | "20040183083" | "20050057460" | "20050242712" | "20070015429" | "20090128018" | "20090289963" | "20110102402" | "20110291550" | "20120056531" | "20140132584").pn. OR ("2014/0292622" | "2017/0012094" | "2019/0027546" | "2020/0144349" | "2021/0134908" | "2023/0165066" | "9478586" | "10084029" | "10546906" | "10923545" | "11574969" | "11818921").urpn. AND (PGPB | USPT | USOC).dbnm.					
L182	11	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1 OR US-20020070909-A1 OR US-20060170712-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/23 11:25 AM

		USPT.dbnm.)					
L183	20	(14/969251 | 14/855199 | 14/526077 | 14/537522 | 13/963987 | 14/156188 | 13/467737 | 13/227271 | 12/250225 | 11/048385 | 09/990414).APP.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/01/23 11:25 AM
L184	554	("20020149720" | "20070200488" | "20090058271" | "20090121983" | "20100033084" | "20130021566" | "20140111757" | "20140197396" | "20140252321" | "20140319479" | "20160225833" | "20060017375" | "20080116463" | "20080252200" | "20090200936" | "20100309172" | "20120025182" | "20120056531" | "9013098" | "20120056531" | "20130222217" | "20070002084" | "20090121983" | "20120169682" | "20130057521" | "20130113363" | "7365488" | "8253323" | "8552635" | "20040036421" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "6294398" | "6992326" | "7132788" | "7443093" | "8110825" | "8115216" | "8124172" | "8309376" | "8330352" | "20040144975" | "20050112341" | "20080024402" | "20080111474" | "20090195144" | "20090243483" | "20110183268" | "20110229994" | "20110248247" | "20110309389" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/01/23 11:26 AM

		"20120049178" | "20120091482" | "20120228602" | "20120319089" | "20120326136" | "20120326600" | "20130109117" | "20140070175" | "20140078126" | "20050225232" | "20070064020" | "20090121983" | "20090195144" | "20090322215" | "20110180825" | "5341153" | "6008868" | "6366025" | "6429601" | "6747618" | "6801000" | "6838819" | "6867549" | "6870323" | "6903754" | "6919681" | "6940222" | "7205713" | "7239363" | "7492337" | "7508126" | "7728802" | "7791565" | "7821553" | "7825584" | "8013817" | "8247966" | "20020014837" | "20020015110" | "20030052597" | "20040036421" | "20040108818" | "20040125278" | "20040217694" | "20050001542" | "20050087740" | "20050127819" | "20050151462" | "20070001584" | "20070046185" | "20080111459" | "20080158107" | "20080224968" | "20080231554" | "5604613" | "6104446" | "6300612" | "6335778" | "6498592" | "6608620").pn. OR ("2016/0225834" | "10263054" | "2016/0225833" | "9893127" | "2015/0144908" | "9245932" | "2015/0129856" | "9013098" | "2014/0292622" | "9478586" | "2014/0197396" |				

		"9444050" | "2013/0222217" | "2012/0056531" | "8593057" | "2009/0121983" | "8330352" | "2006/0170712" | "2002/0070909" | "6768482").urpn. AND (PGPB | USPT | USOC).dbnm.					
L185	19	L184 AND ((red blue green color$4 colour$4) WITH (pixel subpixel) WITH align$4 WITH row)	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/01/23 11:26 AM
L186	35957	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/23 11:36 AM
L187	47345	(G09G3/3208).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/23 11:36 AM
L188	4973	L148 AND L149	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV,	OR	ON	ON	2024/01/23 11:36 AM

			MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L189	52	L188 AND ((red blue green color$4 colour$4) WITH (pixel subpixel) WITH align$4 WITH row)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/23 11:36 AM
L190	206	L188 AND ((red blue green color$4 colour$4) WITH (pixel subpixel) WITH align$4)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/23 11:48 AM
L191	154	L190 NOT L189	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/23 11:48 AM

L192	1	"20210225247"	(US-PGPUB)	OR	ON	ON	2024/01/23 02:28 PM
L193	593	L186 AND ((red blue green color$4 colour$4) WITH (pixel subpixel) WITH align$4 WITH row)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/23 02:29 PM
L194	541	L193 NOT L189	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/23 02:29 PM
L195	62	((US-20150379924-A1 OR US-20090051627-A1 OR US-20060158466-A1 OR US-20060103615-A1 OR US-20210225247-A1 OR US-20170061849-A1 OR US-20200035156-A1 OR US-20180143721-A1 OR US-20160148981-A1 OR US-20110260952-A1 OR US-20180315801-A1 OR US-20150129856-A1 OR US-20170116900-A1 OR US-20200043990-A1 OR US-20140197396-A1 OR US-20120056531-A1 OR US-20160379540-A1 OR US-	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/23 05:17 PM

		20090322215-A1 OR US-20110291550-A1 OR US-20100270912-A1 OR US-20090121983-A1 OR US-20110260951-A1 OR US-20170132969-A1 OR US-20170092174-A1 OR US-20160155416-A1 OR US-20160126287-A1 OR US-20160104413-A1 OR US-20160027404-A1 OR US-20160019825-A1 OR US-20150235617-A1 OR US-20150061978-A1 OR US-20150035729-A1 OR US-20130286262-A1 OR US-20120092238-A1 OR US-20160225833-A1 OR US-20130002992-A1 OR US-20150364075-A1 OR US-20150129853-A1 OR US-20140292622-A1 OR US-20070029941-A1 OR US-20160225834-A1 OR US-20130222217-A1 OR US-20190074342-A1 OR US-20020070909-A1 OR US-20040183083-A1 OR US-20140284570-A1 OR US-20060170712-A1 OR US-20040217694-A1).did. AND PGPB.dbnm.) OR ((US-9767741-B2 OR US-11107399-B2 OR US-9245932-B2 OR US-10692938-B2 OR US-10546906-B2 OR US-10497757-B2 OR US-8552635-B2 OR US-10312295-B2 OR US-10103205-B2 OR US-10615237-B2 OR US-11552107-B2 OR US-10439006-B2 OR US-7382384-B2).did. AND USPT.dbnm.) OR ((CN-101960504-A).did. AND FTDB.dbnm.)					

L196	35957	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/24 09:30 AM
L197	680	L196 AND ((red blue green color$4 colour$4) WITH align$4 WITH row)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/24 09:30 AM
L198	87	L197 NOT L193	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/24 09:30 AM
L199	33	"59012713".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO,	OR	ON	ON	2024/01/24 09:48 AM

			MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)				
L200	54	("5341151" | "6914649" | "7399991" | "7663149" | "8044905" | "8350940" | "8552635" | "8687161" | "8981638" | "9147368" | "9525017" | "20050018110" | "20070002084" | "20090140253" | "20140104151" | "20140117339" | "20150002955" | "20150144945" | "20160216580" | "5341151" | "6768482" | "6914649" | "7399991" | "7464364" | "7663149" | "7898623" | "8044905" | "8154678" | "8223093" | "8255842" | "8339530" | "8350940" | "8451302" | "8552635" | "8587742" | "8687161" | "8902141" | "8981638" | "9070320" | "9147368" | "9337242" | "9525017" | "9536906" | "10573667" | "20050018110" | "20050087740" | "20060208981" | "20070002084" | "20090040243" | "20090140253" | "20140104151" | "20140117339" | "20140332764" | "20150002955" | "20150144945" | "20160079333" | "20160216580" | "20160233234").pn. OR ("2017/0170200" | "2020/0185420" | "2023/0079181" | "10573667" | "11552107").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/01/24 09:51 AM
L202	660	L196 AND ((blue) WITH (pixel subpixel) WITH (rectang rectangular$2))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU,	OR	ON	ON	2024/01/24 10:33 AM

			CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L203	664	L196 AND ((blue) WITH (pixel subpixel) WITH align$4)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/24 12:41 PM
L204	531	L203 NOT L202	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/24 12:42 PM
L205	12	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1 OR US-20020070909-A1 OR US-20060170712-A1	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN,	OR	ON	ON	2024/01/24 01:50 PM

		OR US-20170170200-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L206	22	(15/366255 | 14/969251 | 14/855199 | 14/526077 | 14/537522 | 13/963987 | 14/156188 | 13/467737 | 13/227271 | 12/250225 | 11/048385 | 09/990414).APP.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/01/24 01:50 PM
L207	578	("5341151" | "6914649" | "7399991" | "7663149" | "8044905" | "8350940" | "8552635" | "8687161" | "8981638" | "9147368" | "9525017" | "20050018110" | "20070002084" | "20090140253" | "20140104151" | "20140117339" | "20150002955" | "20150144945" | "20160216580" | "20020149720" | "20070200488" | "20090058271" | "20090121983" | "20100033084" | "20130021566" | "20140111757" | "20140197396" | "20140252321" | "20140319479" | "20160225833" | "20060017375" | "20080116463" | "20080252200" | "20090200936" | "20100309172" | "20120025182" | "20120056531" | "9013098" | "20120056531" | "20130222217" | "20070002084" | "20090121983" | "20120169682" | "20130057521" | "20130113363" | "7365488" | "8253323" | "8552635" | "20040036421" | "20050242712" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/01/24 01:51 PM

		"20070015429" | "20090289963" | "20110291550" | "6294398" | "6992326" | "7132788" | "7443093" | "8110825" | "8115216" | "8124172" | "8309376" | "8330352" | "20040144975" | "20050112341" | "20080024402" | "20080111474" | "20090195144" | "20090243483" | "20110183268" | "20110229994" | "20110248247" | "20110309389" | "20120049178" | "20120091482" | "20120228602" | "20120319089" | "20120326136" | "20120326600" | "20130109117" | "20140070175" | "20140078126" | "20050225232" | "20070064020" | "20090121983" | "20090195144" | "20090322215" | "20110180825" | "5341153" | "6008868" | "6366025" | "6429601" | "6747618" | "6801000" | "6838819" | "6867549" | "6870323" | "6903754" | "6919681" | "6940222" | "7205713" | "7239363" | "7492337" | "7508126" | "7728802" | "7791565" | "7821553" | "7825584" | "8013817" | "8247966" | "20020014837" | "20020015110" | "20030052597" | "20040036421" | "20040108818" | "20040125278" | "20040217694" | "20050001542" | "20050087740" | "20050127819" | "20050151462" | "20070001584" | "20070046185" | "20080111459" |				

		"20080158107" | "20080224968" | "20080231554" | "5604613" | "6104446" | "6300612" | "6335778" | "6498592" | "6608620").pn. OR ("2017/0170200" | "10573667" | "2016/0225834" | "10263054" | "2016/0225833" | "9893127" | "2015/0144908" | "9245932" | "2015/0129856" | "9013098" | "2014/0292622" | "9478586" | "2014/0197396" | "9444050" | "2013/0222217" | "2012/0056531" | "8593057" | "2009/0121983" | "8330352" | "2006/0170712" | "2002/0070909" | "6768482").urpn. AND (PGPB | USPT | USOC).dbnm.					
L208	13	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1 OR US-20020070909-A1 OR US-20060170712-A1 OR US-20170170200-A1 OR US-20040217694-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/26 09:46 AM
L209	13	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS,	OR	ON	ON	2024/01/26 10:36 AM

		20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1 OR US-20020070909-A1 OR US-20060170712-A1 OR US-20170170200-A1 OR US-20040217694-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L210	30	("20140292622"|"20160225833"|"20160225834"|"20140197396"|"20120056531"|"20150129856"|"9245932"|"20060170712"|"20020070909"|"20090121983"|"20130222217").PN.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/26 10:37 AM
L211	2	L209 NOT L210	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/26 10:37 AM
L212	1933	(nlt).IN,AANM,AS.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/26 10:42 AM
L213	950	((MATSUEDA near2 YOJIRO) (TAKATORI near2 KENICHI)).IN.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/26 10:42 AM
L214	2750	L3 L4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/26 10:42 AM

L215	70	L5 and ((subpixel (sub near2 pixel)) with (color colour)) and ((thin near2 film) TFT) and bias$4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/26 10:42 AM
L216	62	L67 AND (TFT WITH (connect$4 coupl$4))	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/26 10:42 AM
L217	7	((US-20160225834-A1 OR US-20090121983-A1 OR US-20130222217-A1 OR US-20120056531-A1 OR US-20060170712-A1 OR US-20040217694-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/05/18 11:04 AM
L218	20	"32990400".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2024/05/18 11:45 AM
L219	1933	(nlt).IN,AANM,AS.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/05/18 12:07 PM
L220	950	((MATSUEDA near2 YOJIRO) (TAKATORI near2 KENICHI)).IN.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/05/18 12:07 PM
L221	2750	L3 L4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/05/18 12:07 PM
L222	70	L5 and ((subpixel (sub near2 pixel)) with (color colour)) and ((thin near2 film) TFT) and bias$4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/05/18 12:07 PM
L223	62	L67 AND (TFT WITH	(US-PGPUB; USPAT;	OR	ON	ON	2024/05/18

		(connect$4 coupl$4))	USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)				12:07 PM
L224	36900	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/05/18 12:08 PM
L225	48879	(G09G3/3208).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/05/18 12:08 PM
L226	5094	L148 AND L149	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/05/18 12:08 PM
L227	55	L188 AND ((red blue green color$4 colour$4) WITH (pixel subpixel) WITH align$4 WITH row)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA,	OR	ON	ON	2024/05/18 12:08 PM

			EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L228	212	L188 AND ((red blue green color$4 colour$4) WITH (pixel subpixel) WITH align$4)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/05/18 12:08 PM
L229	157	L190 NOT L189	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/05/18 12:08 PM

PE2E SEARCH - Search History (Interference)

There are no Interference searches to show.

UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
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ELECTRONIC PAYMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/301,517	04/30/2024 10:40:00 PM Z ET	8317-0050

Title of Invention

DISPLAY DEVICE AND COMPUTER READABLE MEDIA

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	1637	FILED BY	ERIC JENSEN
PATENT CENTER #	65328457	AUTHORIZED BY	-
CUSTOMER #	466	FILING DATE	04/06/2021
CORRESPONDENCE ADDRESS	-	FIRST NAMED INVENTOR	Yojiro MATSUEDA

Payment Information

PAYMENT METHOD	PAYMENT TRANSACTION ID	PAYMENT AUTHORIZED BY
CARD / 5024	E20244TM43415106	ERIC JENSEN

FEE CODE	DESCRIPTION	ITEM PRICE($)	QUANTITY	ITEM TOTAL($)
1620	REQUEST FOR CONTINUED EXAMINATION (RCE)- 2ND AND SUBSEQUENT REQUEST (SEE 37 CFR 1.114)	2000.00	1	2000.00
			TOTAL AMOUNT:	$2,000.00

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

MAIL STOP AMD
PATENT
8317-0050

IN THE U. S. PATENT AND TRADEMARK OFFICE

In re application of

Yojiro MATSUEDA et al. Conf. 1637

Application No. 17/301,517 Group 2692

Filed: April 6, 2021 Examiner CASAREZ, BENJAMIN

Title: DISPLAY DEVICE AND COMPUTER READABLE MEDIA

AMENDMENT

Assistant Commissioner for Patents April 30, 2024
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the final Office Action mailed January 31, 2024, please amend the above-identified application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks follow the Amendments to the Claims.

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (currently amended) A display device comprising:

a display unit where a plurality of first pixels each including subpixels of three colors and a plurality of second pixels each including subpixels of three colors arranged differently from the subpixels in one of the first pixels are alternately arrayed in a row direction and a column direction, the subpixels of the three colors including a subpixel of a first color, a subpixel of a second color and a subpixel of a third color;

a thin film transistor (TFT) circuit disposed below each of the subpixels to control the subpixels;

at least one connection part that connects the TFT circuit and one of the subpixels; and

an organic light emitting diode (OLED) layer of the first color,

wherein the subpixel of the second color and the subpixel of the third color in one of the first pixels are arrayed in parallel with the subpixel of the second color and the subpixel of the third color in one of the second pixels,

a first arrangement in the column direction of the subpixel of the second color and the subpixel of the third color in one of the first pixels and a second arrangement of the subpixel of the second color and the subpixel of the third color in one of the second pixels are identical,

the subpixels of the ~~second~~first color in one of the first pixels and in one of the second pixels that are adjacent to each other in the row direction are aligned in the row direction with respect to the subpixel of the second color and the subpixel of the third color,

the subpixel of the first color in one of the first pixels has a biased arrangement and is positioned toward a side of the subpixel of the second color in an array direction of the subpixel of the second color and the subpixel of the third color,

the subpixel of the first color in one of the second pixels has a biased arrangement and is positioned toward a side of the subpixel of the third color in the array direction of the subpixel of the second color and the subpixel of the third color,

~~the OLED layer of the first color is formed over the subpixel of the first color in one of the first pixels and the subpixel of the first color in one of the second pixels that is adjacent to one of the first pixels in a direction in which the subpixel of the first color in one of the first pixels is biased,~~

the subpixel of the first color in one of the first pixels has a rectangle or rounded rectangle shape whose long

axis is aligned along the direction in which the subpixel of the second color and the subpixel of the third color in the same one of the first pixels are disposed,

in the arrangement of the subpixels of the first color, the second color and the third color of the first pixels, the at least one connection part connected to the subpixel of the first color in one of the first pixels is disposed at a biased position in the array direction of the subpixel of the second color and the subpixel of the third color with respect to the rectangle or rounded rectangle shape of the subpixel of the first color in one of the first pixels and in the OLED layer of the first color,

the subpixel of the first color in one of the second pixels has the rectangle or rounded rectangle shape whose long axis is aligned along the direction in which the subpixel of the second color and the subpixel of the third color in the same one of the second pixels are disposed,

in the arrangement of the subpixels of the first color, the second color and the third color of the second pixels, the at least one connection part connected to the subpixel of the first color in one of the second pixels is disposed at a biased position in the array direction of the subpixel of the second color and the subpixel of the third color with respect to the rectangle or rounded rectangle shape of the subpixel of

the first color in one of the second pixels and in the OLED layer of the first color,

a position of the at least one connection part connected to the subpixel of the first color in one of the first pixels relative to the rectangle or rounded rectangle shape of the subpixel of the first color in the same one of the first pixels, and a position of the at least one connection part connected to the subpixel of the first color in one of the second pixels relative to the rectangle or rounded rectangle shape of the subpixel of the first color in the same one of the second pixels are different,

the at least one connection part is disposed at an identical position in each of the first pixels and the second pixels independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels,

in the plurality of first pixels and second pixels arranged alternately along the row direction, each connection part connected to the subpixel of the first color in one of the first pixels is positioned in a manner identical to each connection part connected to the subpixel of the first color in one of the second pixels, and

the subpixels in each of the first pixels are arranged identically, and the subpixels in each of the second pixels are arranged identically.

2. (original) The display device according to claim 1, wherein

the subpixel includes an anode electrode, and

the at least one connection part is a portion that connects an output of the TFT circuit and the anode electrode.

3. (original) The display device according to claim 1, wherein

The TFT circuit includes an identical circuit arrangement pattern for the subpixels of the first to third colors.

4. (previously presented) The display device according to claim 1, wherein

in one of the first pixels and one of the second pixels that are adjacent to each other in the row direction, a distance between a first connection part of the at least one connection part for the subpixel of the first color in the one of the first pixels and a second connection part of the at least one connection part for the subpixel of the first color in the one of the second pixels are consistent in the display unit independent of the biased arrangements of the subpixels.

5. (original) The display device according to claim 1, wherein

a first square not crossing the subpixels encloses a region including the subpixels of three colors included in one of the first pixels and excluding other subpixels,

a second square not crossing the subpixels encloses a region including the subpixels of three colors included in one of the second pixels and excluding other subpixels, and

the first square and the second square are arranged without overlapping each other.

6. (previously presented) The display device according to claim 1, wherein

the OLED layer is disposed above the at least one connection part, and

a position where the at least one connection part is disposed overlaps with the OLED layer in a plan view.

7. (previously presented) The display device according to claim 1, wherein

the TFT circuit and one of the subpixels are connected by only one of the at least one connection part.

8. (previously presented) The display device according to claim 2, wherein

a position where the at least one connection part is disposed overlaps with the anode electrode in a plan view.

REMARKS

Claims 1-8 were rejected.

Claim 1 is amended. Support for the amendments to independent claim 1 comes at least from Figs. 4 and 7 and the corresponding portions of the originally-filed specification (including paragraphs [0078] and [0097] through [0099] of the published application).

Claims 1-8 are currently pending in this application. No new matter is added.

I. Rejection under 35 U.S.C. § 103

In the Office Action, at page 3, claims 1-8 were rejected under 35 U.S.C. § 103 as being unpatentable over US 2016/0225834 to Kim ("Kim"), US 2009/0121983 to Sung ("Sung"), and US 20040217694 to Cok ("Cok"). This rejection is respectfully traversed.

In applying the prior art, the examiner helpfully provides an annotated version of FIG. 2 of Kim, which facilitates applicant's understanding of how the recitations of claim 1 are being read on Kim. The original and annotated versions of FIG. 2 appear below.

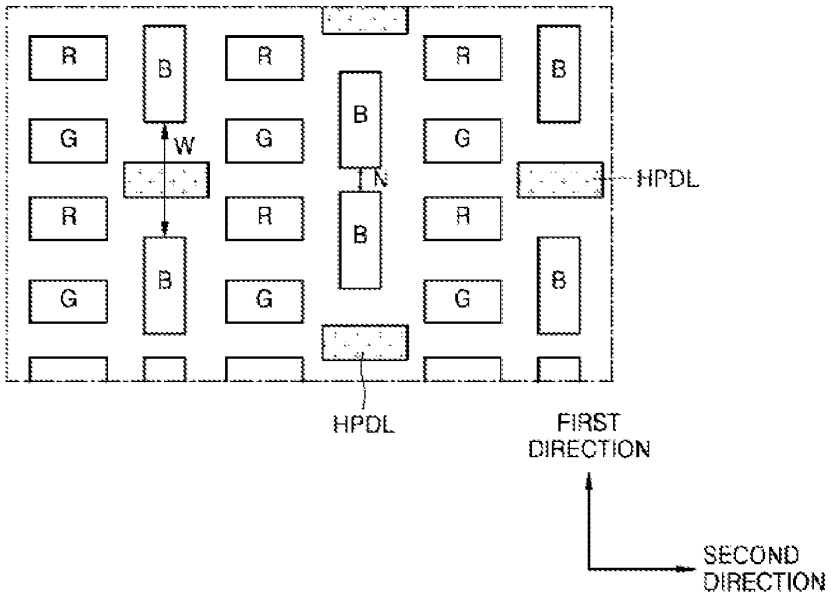
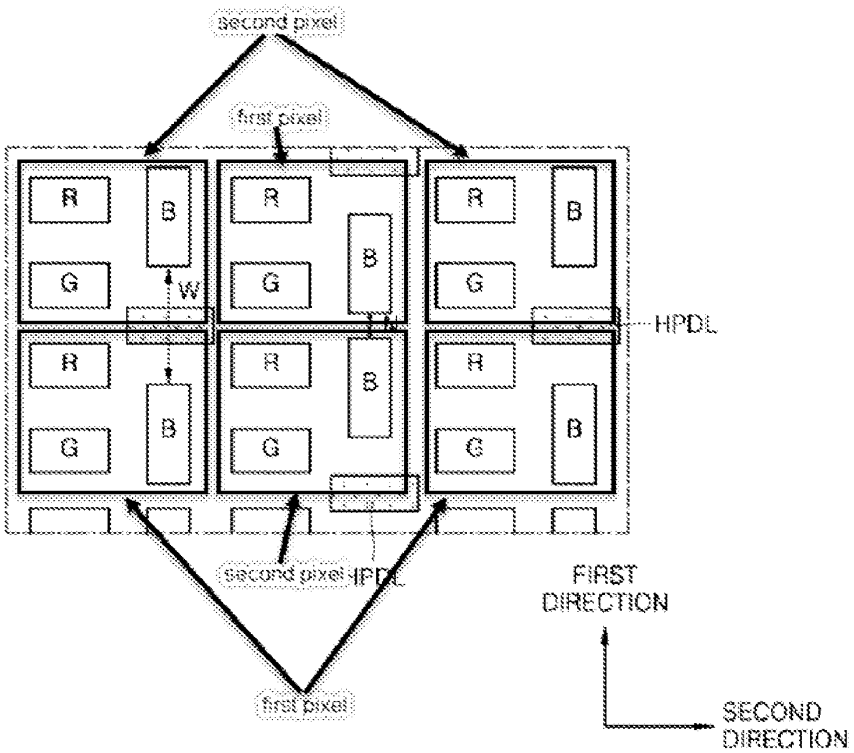

R
G
B
W
N
HPDL
FIRST DIRECTION
SECOND DIRECTION

FIG. 2


second pixel
first pixel
R
G
B
W
N
HPDL
FIRST DIRECTION
SECOND DIRECTION

The annotations add the rectangle separating the first and second pixels from one another.

The HPDL is a pixel-defining spacer formed on top of a planarization layer PL, described by Kim as follows:

> [0061] The pixel-defining spacer HPDL in one embodiment indicates a component which performs both the role of a pixel-defining layer for defining a pixel area and a non-pixel area, and the role of a spacer for maintaining a gap between the substrate 110 and a sealing substrate (not shown).
>
> [0062] Therefore, the organic light-emitting display apparatus according to embodiments herein includes the pixel defining spacer HPDL capable of performing both roles, and thus time and costs are saved in terms of a process.

Kim's FIG. 1 indicates a longitudinal section view wherein one connection part is connected under one subpixel. However, Kim does not indicate where the connection part is placed in the plan view.

The Examiner admits that the features of Claim 1 that are not disclosed in Kim include:

A) the OLED layer of the first color is formed over the subpixel of the first color in one of the first pixels and the subpixel of the first color in one of the second pixels that is adjacent to one of the first pixels in a direction in which the subpixel of the first color in one of the first pixels is biased,

B) the at least one connection part connected to the subpixel of the first color in one of the first pixels is

disposed at a biased position in the array direction of the subpixel of the second color and the subpixel of the third color with respect to the rectangle or rounded rectangle shape of the subpixel of the first color in one of the first pixels and in the OLED layer of the first color,

C) the at least one connection part connected to the subpixel of the first color in one of the second pixels is disposed at a biased position in the array direction of the subpixel of the second color and the subpixel of the third color with respect to the rectangle or rounded rectangle shape of the subpixel of the first color in one of the second pixels and in the OLED layer of the first color

D) a position of the at least one connection part connected to the subpixel of the first color in one of the first pixels relative to the rectangle or rounded rectangle shape of the subpixel of the first color in the same one of the first pixels, and a position of the at least one connection part connected to the subpixel of the first color in one of the second pixels relative to the rectangle or rounded rectangle shape of the subpixel of the first color in the same one of the second pixels are different,

E) the at least one connection part is disposed at an identical position in each of the first pixels and the second pixels independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels, and

F) in the plurality of first pixels and second pixels arranged alternately along the row direction, each connection part connected to the subpixel of the first color in one of the first pixels is positioned in a manner identical to each connection part connected to the subpixel of the first color in one of the second pixels.

Among these, the recitations of F) were added in the amendment of September 24, 2023, and it is for such features that the examiner has applied Sung. To support the rejection, Office action asserts that the combination of Kim and Sung teaches the features of A) thus:

> An OLED layer (FIG. 1: 370B) of a first color is formed over a subpixel of a first color in a first pixel and a subpixel of the first color a second pixels (See paragraph [0084] and FIG. 11: 370B is formed over pixel electrodes 191B1 and 191B2 of a subpixel of a first color in a first pixel and a subpixel of the first color a second pixels) that is adjacent to one of the first pixels in a direction in which the subpixel of the first color in one of the first pixels is biased (See FIG. 10: a first pixel includes B1 and a second pixel includes B2, where the first and second pixels are adjacent in a direction in which the subpixel of the first color in one of the first pixels is biased).

Nevertheless, features B) through F) remain neither taught nor suggested by the Kim/Sung combination. Accordingly, the rejection adds Cok to provide the missing disclosure, summarized in the Office action as:

> at least one connection part (FIG. 12: 145a) connected to a subpixel (See paragraph [0041]) of a first color in one of first pixels (See FIG. 17: 12, 14, 16 and 18 correspond to a first pixel, and the blue light emitting element 16 corresponds to a subpixel of a first color in one of first pixels) is disposed at a biased position in an array direction of a subpixel of a second color and a subpixel of a third color with respect to a rectangle or rounded rectangle shape of the subpixel of the first color in one of the first pixels (See FIGS. 12 and 17: 145a is disposed at a biased position in an array direction of a subpixel of a second color (G corresponding to 14) and a subpixel of a third color (R corresponding to 12) with respect to a rectangle or rounded rectangle shape of the subpixel of the first color (B corresponding to 16) in one of the first pixels) and in an OLED layer of the first color (See FIG. 13: the via connecting 181a to 141a (corresponding to the at least one connection part) overlaps with the OLED layer 310),
>
> at least one connection part (FIG. 12: 145a) connected to a subpixel (See paragraph [0041]) of a first color in one of second pixels (See FIG. 17: 12b, 14b, 16b and 18b correspond to a second pixel, and the blue light emitting element 16b corresponds to a subpixel of a first color in one of second pixels) is disposed at a biased position in an array direction of a subpixel of a second color and a subpixel of a third color with respect to a rectangle or rounded rectangle shape of the subpixel of the first color in one of the second pixels (See FIGS. 12 and 17: 145a is disposed at a biased position in an array direction of a subpixel of a second color (G corresponding to 14b) and a subpixel of a third color (R corresponding to 12b) with respect to a rectangle or rounded rectangle shape of the subpixel of the first color (B corresponding to 16b) in one of the second pixels) and in an OLED layer of the first color (See FIG. 13: the via connecting 181a to

141a (corresponding to the at least one connection part) overlaps with the OLED layer 310).

a position of the at least one connection part connected to the subpixel of the first color in one of the first pixels relative to the rectangle or rounded rectangle shape of the subpixel of the first color in the same one of the first pixels, and a position of the at least one connection part connected to the subpixel of the first color in one of the second pixels relative to the rectangle or rounded rectangle shape of the subpixel of the second color in the same one of the first pixels are different (See FIGS. 12 and 17: a position of the at least one connection part 145a connected to the subpixel of the first color (B corresponding to 16) in one of the first pixels relative to the rectangle or rounded rectangle shape of the subpixel of the first color (B corresponding to 16) in the same one of the first pixels, and a position of the at least one connection part 102 connected to the subpixel of the first color (B) in one of the second pixels relative to the rectangle or rounded rectangle shape of the subpixel of the second color (B corresponding to 16b) in the same one of the first pixels are different),

the at least one connection part is disposed at an identical position in each of the first pixels and the second pixels independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels (See FIGS. 12 and 17: the at least one connection part 145a is disposed at an identical position in each of the first pixels and the second pixels independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels, because 145a, connecting B to the transistor are in the same vertical position),

in the plurality of first pixels and second pixels arranged alternately along the row direction, each connection part connected to the subpixel of the first color in one of the first pixels is positioned in a manner identical to each connection part connected to the subpixel of the first color in one of the second pixels (See FIGS. 12 and 17: in the plurality of first pixels and second pixels arranged alternately along the row direction, each connection

> part 145a connected to the subpixel of the first color (B corresponding to 16) in one of the first pixels is positioned in a manner identical (i.e., aligned in the vertical direction) to each connection part connected to the subpixel of the first color (B corresponding to 16b) in one of the second pixels).

Present Amendment

Feature A) above, added in the last amendment, is again removed. It is neither necessary to overcome the prior art nor to recite the invention as originally disclosed.

Feature B) is amended to begin with the modifying phrase "in the arrangement of the subpixels of the first color, the second color and the third color of the first pixels… ."

Feature C) correspondingly recites, with respect to the second pixels: "in the arrangement of the subpixels of the first color, the second color and the third color of the second pixels… ."

One of the features attributed to Kim in the Office action is "the subpixels of the second color in one of the first pixels and in one of the second pixels that are adjacent to each other in the row direction are aligned in the row direction… ." This feature is now amended to:

> the subpixels of the ~~second~~first color in one of the first pixels and in one of the second pixels that are adjacent to each other in the row direction are aligned in the row direction with respect to the subpixel of the second color and the subpixel of the third color,

Based on the analysis supporting the rejection, Applicant understands the application of Cok to be as illustrated in connection with Fig. 17 of that reference.

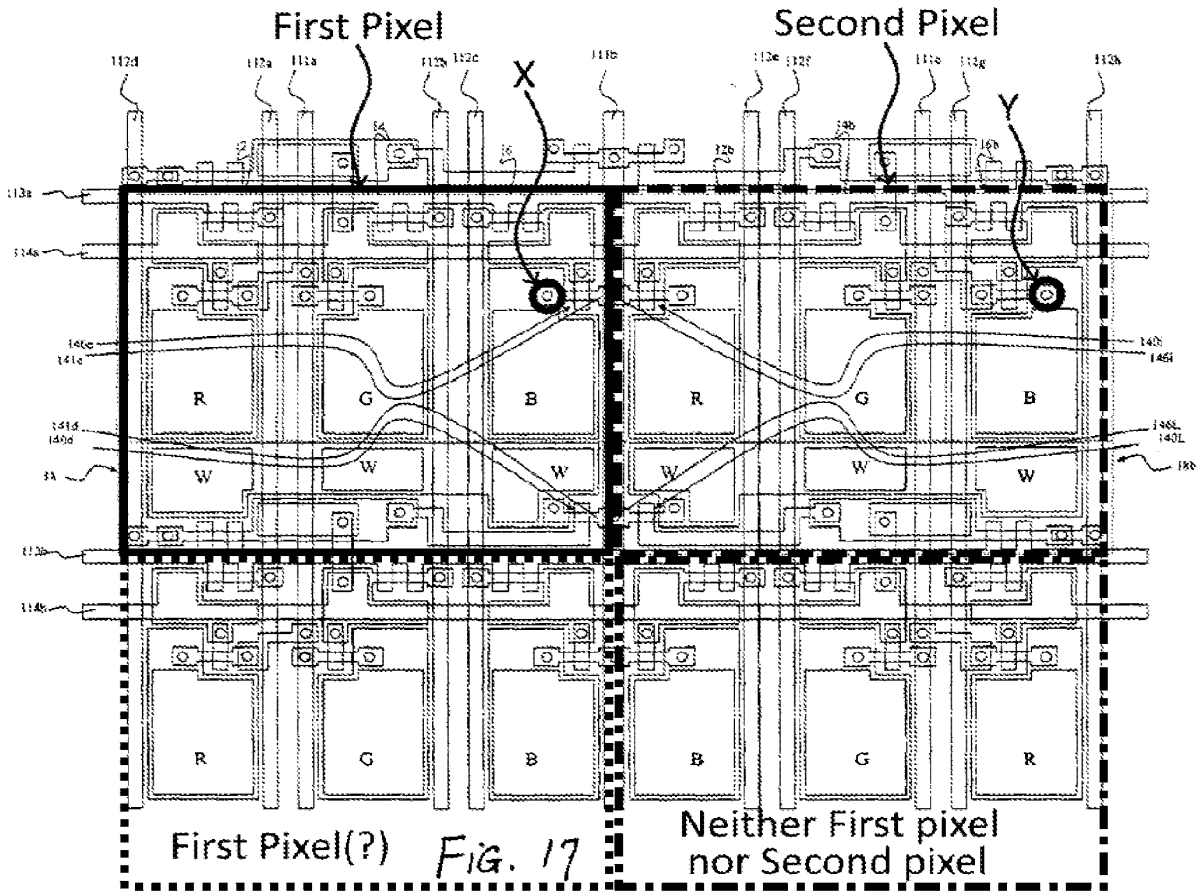


FIG. 17

The annotations identify the First and Second pixels with bounding boxes of different formats.

The feature enclosed in the circle identified as X reflects the recited "connection part connected to the subpixel of the first color in one of the first pixels". The feature

enclosed in the circle identified as Y reflects the recited "connection part connected to the subpixel of the first color in one of the second pixels". The features X and Y also satisfy the recitation "in the plurality of first pixels and second pixels arranged alternately along the row direction, each connection part connected to the subpixel of the first color in one of the first pixels is positioned in a manner identical to each connection part connected to the subpixel of the first color in one of the second pixels… ."

It is necessary further to consider the two other pixels included in Fig. 17. The pixel surrounded by the dotted line in the lower left is the same as the First pixel as far as illustrated. The positional arrangement of R, G, and B in the pixel surrounded by the dot/dash line in the lower right is obviously different from that of the First pixel and the Second pixel.

Therefore, Fig 17 of Cok itself, relied upon in the rejection, does not disclose the structures "first pixels and second pixels arranged alternately along the row direction" as claimed.

As stated above, even if Kim is combined with Sung, there is no suggestion of the structure of F) to one of ordinary skill in the art.

Alternatively, even if there is an error in Fig. 17 of Cok, the rejection still fails in light of the present amendments.

Paragraph [0058] of Cok states "FIG. 17 shows a layout pattern diagram for the active matrix circuit of FIG. 16 as described above." An annotated representation of Fig. 16 appears below.

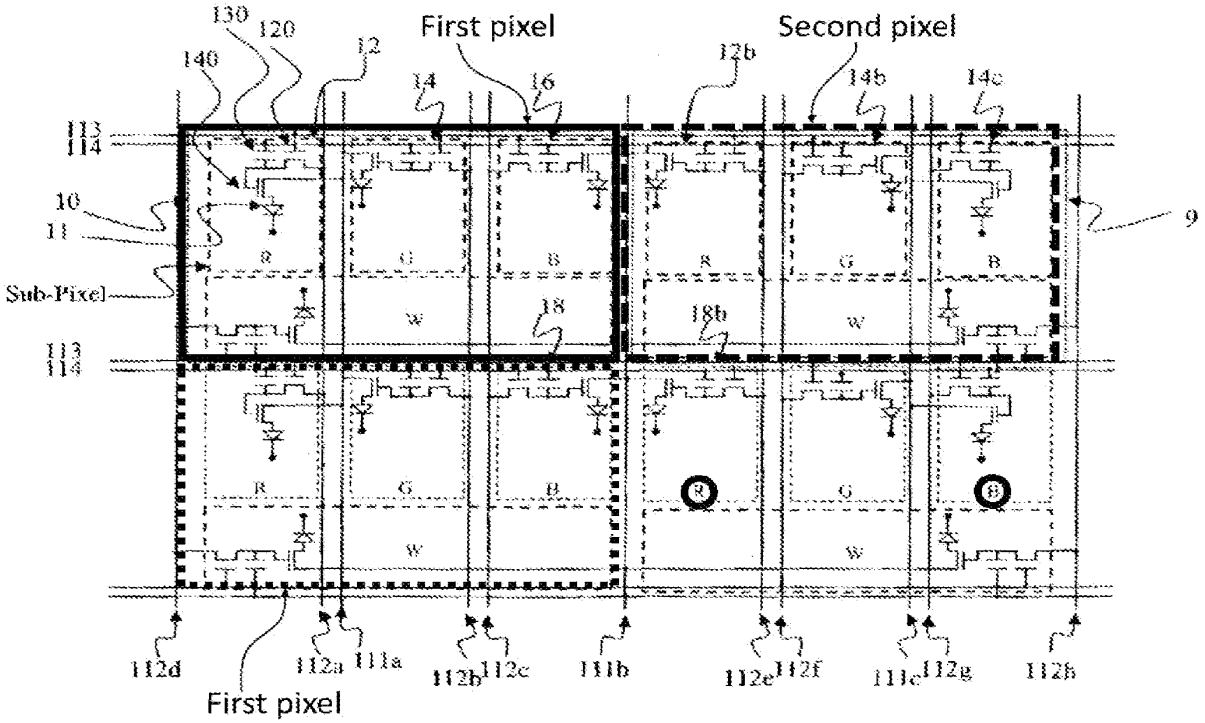


FIG. 16

Applicant notes that the notations "R" and "B" in the lower right Fig. 17 and enclosed within circular markings are reversed as compared with the corresponding notations in Fig. 16.

Given the assertion in the specification of Cok that Figs. 16 and 17 are illustrations of the same structure, one interpretation is that the positions of "R" and "B" of Fig.17 are erroneously reversed. If that is the case, a modified version of Fig. 17 that brings it into agreement with the text of Cok is thus:

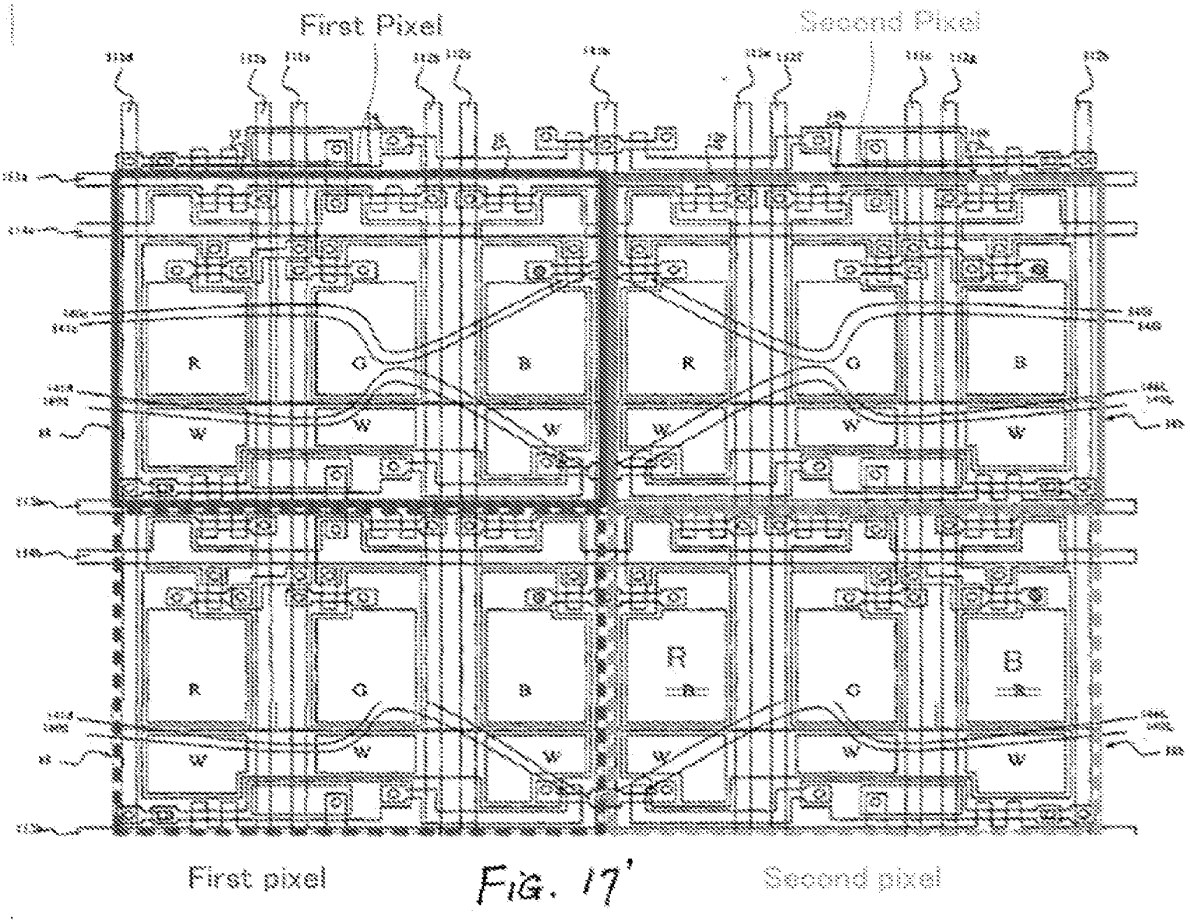


FIG. 17'

If we assume Cok's Figure 17 is modified as shown above, Cok discloses the features of F) underscored below.

> F) in the plurality of first pixels and second pixels arranged alternately along the row direction, each connection part connected to the subpixel of the first color in one of the first pixels is positioned in a manner identical to each connection part connected to

the subpixel of the first color in one of the second pixels.

Therefore, by the above-mentioned amendment, the Applicant has clarified the arrangement of "subpixel of the first color in one of the first pixels" and "subpixel of the first color in one of the second pixels", as well as clarifying "the subpixels of the first color in one of the first pixels and in one of the second pixels that are adjacent to each other in the row direction are aligned in the row direction with respect to the subpixel of the second color and the subpixel of the third color… ."

The above feature will be identified as G) hereinafter.

The amendment clarifies that the subpixel arrangement of the present structure as recited in the amended claims is substantially different from that of Cok, and that the structures of B), C), and G) are not disclosed.

Therefore, even if Kim and Sung are combined with Cok, there is no reason that one of skill in the art would be motivated to combine the teachings of such to arrive at the structure of amended claim 1.

There exists yet another interpretation of the prior art that the examiner may consider, namely that the subpixel of the first color corresponds to the "light emitting elements" of the reference numbers 18 and 18b.

However, paragraph [0058] of Cok states: "Similarly, the power transistor **140**d of light emitting element **18** and the power transistor **140**L of light emitting element **18**b are both connected to power line 111b." From this, we know that the connection part corresponding to the subpixel of the reference numbers 18 and 18b is the part appearing in the bold circles in the figure below.

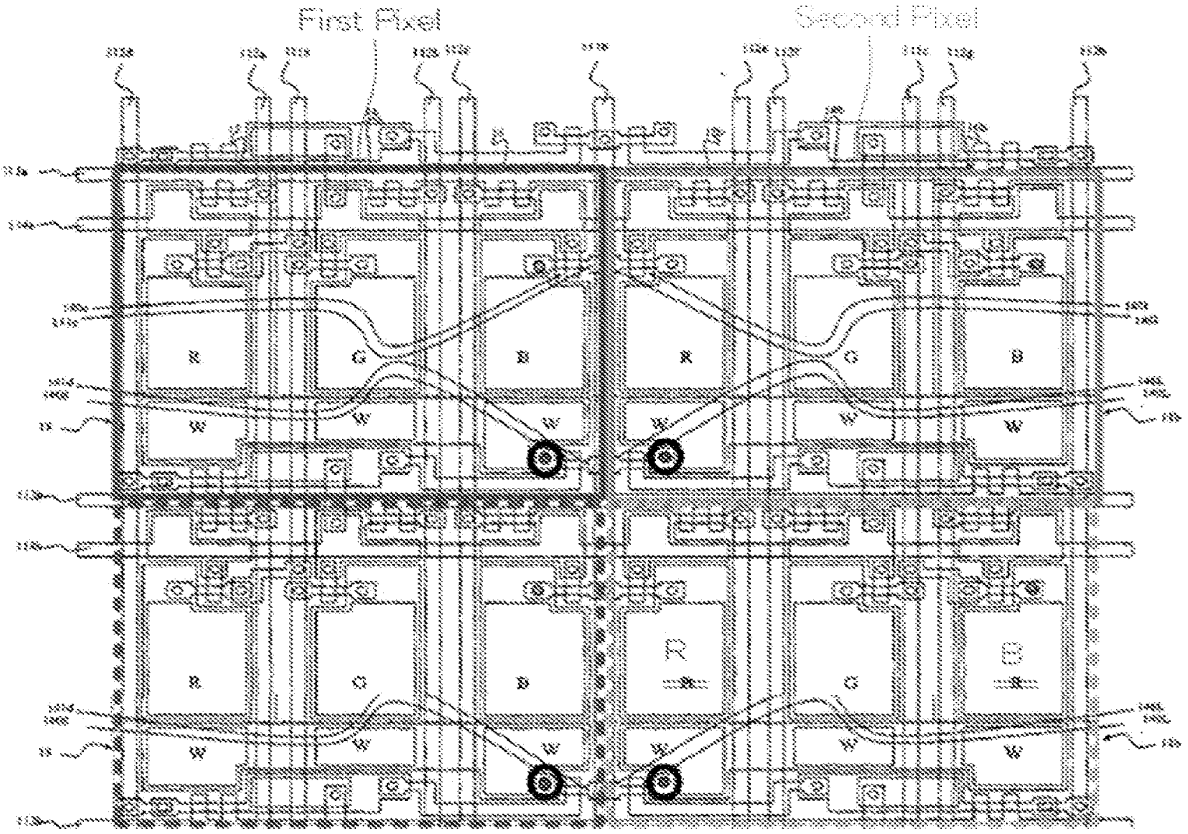


FIG. 17'

From this figure, even if the subpixel of the first color is recognized as corresponding to the reference numbers 18 and 18b, there is no reason that the following structures of

underscored part of below of F) can be easily achieved by a person having ordinary skill in the art based on Cok.

> F) in the plurality of first pixels and second pixels arranged alternately along the row direction, <u>each connection part connected to the subpixel of the first color in one of the first pixels is positioned in a manner identical to each connection part connected to the subpixel of the first color in one of the second pixels</u>.

Applicant has gone to considerable effort to construe the Cok reference not only as it literally appears, but also to consider multiple interpretations of the same. However, regardless of the possible interpretation of Cok, and the Kim and Sung references with which it has been combined, Applicant believes that no reasonable interpretation of this or any other combination of known prior art can reasonably be construed to render obvious the invention recited in amended claim 1, and by extension in the remaining claims that depend therefrom.

II. <u>Conclusion</u>

In view of the present amendment and the foregoing remarks, it is believed that the present application has been placed in condition for allowance. Reconsideration and allowance are respectfully requested.

The Commissioner is hereby authorized in this, concurrent, and future submissions to charge any additional fees(s) or underpayment of fee(s) under 37 C.F.R. §§ 1.16, 1.17,

and 41.20 or credit any overpayment of fee(s) to Deposit Account No. 14-1140.

Respectfully submitted,

NIXON & VANDERHYE

/Eric Jensen/

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EJ/

PTO/SB/30EFS (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
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REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	17/301,517	Filing Date	2021-04-06	Docket Number (if applicable)	8317-0050	Art Unit	2692
First Named Inventor	Yojiro MATSUEDA			Examiner Name	Benjamin Casarez		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

- ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____
- ☐ Other _____

☒ Enclosed

- ☒ Amendment/Reply
- ☐ Information Disclosure Statement (IDS)
- ☐ Affidavit(s)/ Declaration(s)
- ☐ Other _____

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____
(Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

☒ **The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.**
The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 141140

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature

☐ Applicant Signature

PTO/SB/30EFS (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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Signature of Registered U.S. Patent Practitioner			
Signature	/Eric Jensen/	Date (YYYY-MM-DD)	2024-04-30
Name	Eric Jensen	Registration Number	37855

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450.

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6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

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ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/301,517	**04/30/2024 10:40:00 PM Z ET**	**8317-0050**

Title of Invention

DISPLAY DEVICE AND COMPUTER READABLE MEDIA

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	1637	FILED BY	ERIC JENSEN
PATENT CENTER #	65326457	FILING DATE	04/06/2021
CUSTOMER #	466	FIRST NAMED INVENTOR	Yojiro MATSUEDA
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	-

Documents

TOTAL DOCUMENTS: 3

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
8317-0050 amdt with RCE-APP.TEXT.docx	23	Application body structured text document	1399 KB

Warning: Track changes containing insertions/deletions have been detected. These changes will be displayed in the document as underlines/strikethroughs. Dynamic dates have been converted to static dates. Bookmarks were found and have been removed. Track changes containing insertions/deletions have been detected. These changes will be displayed in the document as underlines/strikethroughs. The automatic document description has been replaced. Dynamic dates have been converted to static dates. Bookmarks were found and have been removed.

8317-0050 amdt with RCE.pdf	23	Auxiliary PDF of Application	3269 KB
8317-0050_RCE2.pdf	3	Request for Continued	1318 KB

Examination (RCE)

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
8317-0050 amdt with RCE-APP.TEXT.docx	3E27BFB91A1985C5F50DF12C70BA3442D9E2A58720CA081E5931F51ACA60E5D562ED6985D38860E68BE811331ACF8889B82EF443B7BBA445339E2F141EF2B1AB
8317-0050 amdt with RCE.pdf	76825C924CECDD02C20064C8FB3DEABF08B01D53E80DA8C8F4CE1107B1F566986F04F1E3164340A15CD3E07A8BA278D13AAC433CCEC59B550A09BCA10531DA99
8317-0050_RCE2.pdf	A3B76B37072B9AD94C01FC5851E2299BAFBD46C752A121CF8B7093F8F9FACF8715AA96F87BEC012ED7662D1D5B260515EFC9CD3720157987E41FC9E236F06C61

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

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If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

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PTO/SB/06 (09-11)
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 17/301,517	Filing Date 04/06/2021	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $100 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $480 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	04/30/2024	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 8	Minus	** 20	= 0		x $100 =	0
	Independent (37 CFR 1.16(h))	* 1	Minus	*** 3	= 0		x $480 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	0

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	SLIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/MONIQUE BENJAMIN/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

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Application	Document	Mailroom Date	Attorney Docket No.
17301517	CTFR	01/31/2024	8317-0050
17289928	892	01/31/2024	7535-0188
17781936	NOA	01/31/2024	7107-0331
17781936	EXIN	01/31/2024	7107-0331
18339440	CTRS	01/31/2024	7300-0011
17288483	892	01/31/2024	7107-0266
17288483	1449	01/31/2024	7107-0266
18062612	892	01/31/2024	7171-0091
16770349	NOA	01/31/2024	7183-0156
17289928	CTNF	01/31/2024	7535-0188
17295156	CTNF	01/31/2024	7107-0268
17295156	892	01/31/2024	7107-0268
17295156	1449	01/31/2024	7107-0268
17295156	1449	01/31/2024	7107-0268
17301517	892	01/31/2024	8317-0050

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/301,517	04/06/2021	Yojiro MATSUEDA	8317-0050	1637

466 7590 01/31/2024

NIXON & VANDERHYE, PC
901 NORTH GLEBE ROAD
11TH FLOOR
ARLINGTON, VA 22203

EXAMINER
CASAREZ, BENJAMIN X.

ART UNIT	PAPER NUMBER
2619	

NOTIFICATION DATE	DELIVERY MODE
01/31/2024	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

pair_nixon@firsttofile.com
ptomail@nixonvan.com

Office Action Summary	Application No. 17/301,517	Applicant(s) MATSUEDA et al.	
	Examiner Benjamin X Casarez	Art Unit 2619	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 24 September 2023.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☑ This action is **FINAL.** 2b) ☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 1-8 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1-8 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☑ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

DETAILED ACTION

Status

This Office Action is responsive to claim amendments filed for No. 17/301,517 on September 24, 2023.

Please note: Claim 1 has been amended. Claims 1-8 are pending and have been examined.

Notice of Pre-AIA or AIA Status

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Claim Objections

2. The claim objections are hereby withdrawn since the amended claims, submitted on September 24, 2023, overcome the objections.

Claim Rejections - 35 USC § 103

3. In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

4. The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-8 are rejected under 35 U.S.C. 103 as being unpatentable over Kim et al. (US 20160225834 A1), hereinafter Kim, in view of Sung et al. (US 20090121983 A1), and in further view of Cok et al. (US 20040217694 A1), hereinafter Cok.

Regarding **Claim 1**, Kim teaches:

A display device **(See paragraphs [0039] and [0067]: FIGS. 1 and 2 are views of an organic light-emitting display apparatus)** comprising:

a display unit **(See FIG. 2)** where a plurality of first pixels each including subpixels of three colors **(See annotated FIG. 2 below: the labeled pixels correspond to first pixels each including subpixels of three colors (R, G, B))** and a plurality of second pixels each including subpixels of three colors arranged differently from the subpixels in one of the first pixels **(See annotated FIG. 2 below: the labeled pixels correspond to second pixels each including subpixels of three colors (R, G, B) arranged differently from the subpixels in one of the first pixels)** are alternately arrayed in a row direction and a column direction **(See annotated FIG. 2 below: the first pixels and the second pixels are alternately arrayed in a row direction (second direction) and a column direction (first direction))**, the subpixels of the three colors including a subpixel of a first color, a subpixel of a second color and a subpixel of a third color **(See paragraph [0059]; See annotated FIG. 2 below: the subpixels of the three colors including a subpixel of a first color (B), a subpixel of a second color (G) and a subpixel of a third color (R))**;

a thin film transistor (TFT) circuit disposed below each of the subpixels **(See FIG. 1: TFT disposed below each of the subpixels, which is composed of an OLED, as discussed in paragraph [0053])** to control the subpixels **(See paragraph [0007]; Although control with the TFT shown in FIG. 1 is not explicitly discussed, it is necessarily true that the TFT element must exert some control over the subpixels in order to cause the subpixels to emit light, as disclosed. Therefore, this is an inherent feature)**;

at least one connection part that connects the TFT circuit and one of the subpixels **(See paragraph [0054], lines 1-4; See FIG. 1: the portion of 141 disposed in the via hole VIA corresponds to at least one connection part that connects the TFT circuit and one of the subpixels)**, and

an organic light emitting diode (OLED) layer of the first color **(See FIG. 1: 143; See paragraph [0056])**,

wherein the subpixel of the second color and the subpixel of the third color in one of the first pixels are arrayed in parallel with the subpixel of the second color and the subpixel of the third color in one of the second pixels **(See annotated FIG. 2 below: the subpixel of the second color (G) and the subpixel of the third color (R) in one of the first pixels (e.g., the top middle first pixel) are arrayed in parallel with the subpixel of the second color (G) and the subpixel of the third color (R) in one of the second pixels (e.g., the top left second pixel))**,

a first arrangement in the column direction of the subpixel of the second color and the subpixel of the third color in one of the first pixels and a second arrangement of the subpixel of the second color and the subpixel of the third color in one of the second pixels are identical **(See annotated FIG. 2 below: a first arrangement in the column direction of the subpixel of the second color (G) and the subpixel of the third color (R) in one of the first pixels (e.g., the top middle first pixel) and a second arrangement of the subpixel of the second color (G) and the subpixel of the third color (R) in one of the second pixels (e.g., the bottom middle second pixel) are identical)**,

the subpixels of the second color in one of the first pixels and in one of the second pixels that are adjacent to each other in the row direction are aligned in the row direction **(See annotated FIG. 2 below: the subpixels of the second color (G) in one of the first pixels (e.g., the top middle first pixel) and in one of the second pixels (e.g., the top left second pixel) that are adjacent to each other in the row direction are aligned in the row direction)**,

the subpixel of the first color in one of the first pixels has a biased arrangement and is positioned toward a side of the subpixel of the second color in an array direction of the subpixel of the second color and the subpixel of the third color **(See annotated FIG. 2 below: the subpixel of the first color (B) in one of the first pixels (e.g., the top middle first pixel) has a biased arrangement and is positioned toward a side of the subpixel of the second color (G) in an array direction of the subpixel of the second color (G) and the subpixel of the third color (R))**,

the subpixel of the first color in one of the second pixels has a biased arrangement and is positioned toward a side of the subpixel of the third color in the array direction of the subpixel of the second color and the subpixel of the third color **(See annotated FIG. 2 below: the subpixel of the first color (B) in one of the second pixels (e.g., the top left second pixel) has a biased arrangement and is positioned toward a side of the subpixel of the third color (R) in the array direction of the subpixel of the second color (G) and the subpixel of the third color (R))**,

the OLED layer of the first color is formed over the subpixel of the first color in one of the first pixels **(See paragraph [0053])**,

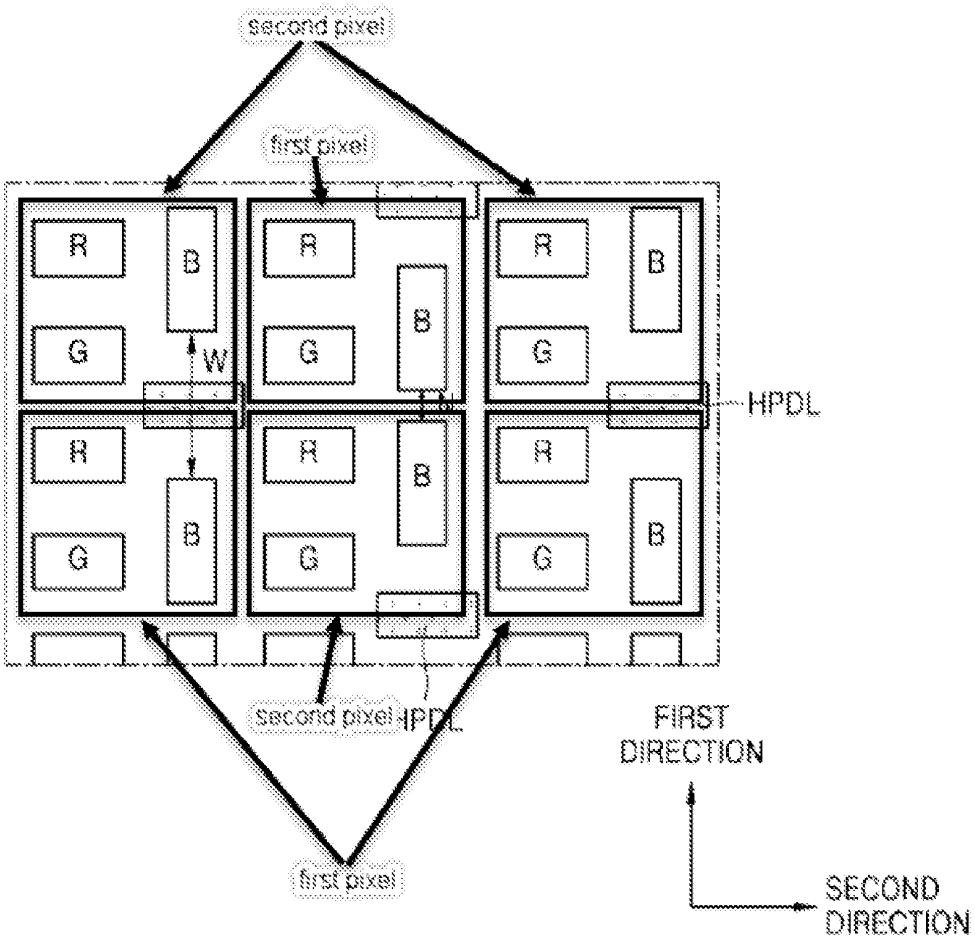
the subpixel of the first color in one of the first pixels has a rectangle or rounded rectangle shape whose long axis is aligned along the direction in which the subpixel of the second color and the subpixel of the third color in the same one of the first pixels are disposed **(See annotated FIG. 2 below: the subpixel of the first color (B) in one of the first pixels has a rectangle or rounded rectangle shape whose long axis is aligned along the**

direction in which the subpixel of the second color (G) and the subpixel of the third color (R) in the same one of the first pixels are disposed),

the subpixel of the first color in one of the second pixels has the rectangle or rounded rectangle shape whose long axis is aligned along the direction in which the subpixel of the second color and the subpixel of the third color in the same one of the second pixels are disposed **(See annotated FIG. 2 below: the subpixel of the first color (B) in one of the second pixels has a rectangle or rounded rectangle shape whose long axis is aligned along the direction in which the subpixel of the second color (G) and the subpixel of the third color (R) in the same one of the second pixels are disposed)**, and

the subpixels in each of the first pixels are arranged identically, and the subpixels in each of the second pixels are arranged identically **(See annotated FIG. 2 below: the subpixels in each of the first pixels are arranged identically, and the subpixels in each of the second pixels are arranged identically)**.

FIG. 2



Kim does not explicitly teach:

the OLED layer of the first color is formed over the subpixel of the first color in one of the first pixels and the subpixel of the first color in one of the second pixels that is adjacent to one of the first pixels in a direction in which the subpixel of the first color in one of the first pixels is biased,

the at least one connection part connected to the subpixel of the first color in one of the first pixels is disposed at a biased position in the array direction of the subpixel of the second color and the subpixel of the third color with respect to the rectangle or rounded rectangle shape of the subpixel of the first color in one of the first pixels and in the OLED layer of the first color,

the at least one connection part connected to the subpixel of the first color in one of the second pixels is disposed at a biased position in the array direction of the subpixel of the second color and the subpixel of the third color with respect to the rectangle or rounded rectangle shape of the subpixel of the first color in one of the second pixels and in the OLED layer of the first color.

a position of the at least one connection part connected to the subpixel of the first color in one of the first pixels relative to the rectangle or rounded rectangle shape of the subpixel of the first color in the same one of the first pixels, and a position of the at least one connection part connected to the subpixel of the first color in one of the second pixels relative to the rectangle or rounded rectangle shape of the subpixel of the first color in the same one of the second pixels are different,

the at least one connection part is disposed at an identical position in each of the first pixels and the second pixels independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels,

in the plurality of first pixels and second pixels arranged alternately along the row direction, each connection part connected to the subpixel of the first color in one of the first pixels is positioned in a manner identical to each connection part connected to the subpixel of the first color in one of the second pixels.

However, in the same field of endeavor, displays **(Sung, Abstract)**, Sung teaches:

An OLED layer **(FIG. 1: 370B)** of a first color is formed over a subpixel of a first color in a first pixel and a subpixel of the first color a second pixels **(See paragraph [0084] and FIG. 11: 370B is formed over pixel electrodes 191B1 and 191B2 of a subpixel of a first color in a first pixel and a subpixel of the first color a second pixels)** that is adjacent to one of the first pixels in a direction in which the subpixel of the first color in one of the first pixels is biased **(See FIG. 10: a first pixel includes B1 and a second pixel includes B2, where the first and second pixels are adjacent in a direction in which the subpixel of the first color in one of the first pixels is biased)**

Therefore, it would have been obvious to one of ordinary skill in the art, before the effective filing date of the claimed invention, to modify the display device **(as taught by Kim)** so the OLED layer of the first color is formed over the subpixel of the first color in one of the first pixels and the subpixel of the first color in one of the second pixels that is adjacent to one of the first pixels in a direction in which the subpixel of the first color in one of

the first pixels is biased **(as taught by Sung)**. Doing so would prevent reduction of the emission area and the aperture ratio by the interval between the emission layers **(See Sung, paragraph [0097])**.

Kim in view of Sung does not explicitly teach:

the at least one connection part connected to the subpixel of the first color in one of the first pixels is disposed at a biased position in the array direction of the subpixel of the second color and the subpixel of the third color with respect to the rectangle or rounded rectangle shape of the subpixel of the first color in one of the first pixels and in the OLED layer of the first color,

the at least one connection part connected to the subpixel of the first color in one of the second pixels is disposed at a biased position in the array direction of the subpixel of the second color and the subpixel of the third color with respect to the rectangle or rounded rectangle shape of the subpixel of the first color in one of the second pixels and in the OLED layer of the first color.

a position of the at least one connection part connected to the subpixel of the first color in one of the first pixels relative to the rectangle or rounded rectangle shape of the subpixel of the first color in the same one of the first pixels, and a position of the at least one connection part connected to the subpixel of the first color in one of the second pixels relative to the rectangle or rounded rectangle shape of the subpixel of the first color in the same one of the second pixels are different,

the at least one connection part is disposed at an identical position in each of the first pixels and the second pixels independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels,

in the plurality of first pixels and second pixels arranged alternately along the row direction, each connection part connected to the subpixel of the first color in one of the first pixels is positioned in a manner identical to each connection part connected to the subpixel of the first color in one of the second pixels.

However, in the same field of endeavor, a color OLED displays **(Cok, Abstract)**, Cok teaches:

at least one connection part **(FIG. 12: 145a)** connected to a subpixel **(See paragraph [0041])** of a first color in one of first pixels **(See FIG. 17: 12, 14, 16 and 18 correspond to a first pixel, and the blue light emitting element 16 corresponds to a subpixel of a first color in one of first pixels)** is disposed at a biased position in an array direction of a subpixel of a second color and a subpixel of a third color with respect to a rectangle or rounded rectangle shape of the subpixel of the first color in one of the first pixels **(See FIGS. 12 and 17: 145a is disposed at**

a biased position in an array direction of a subpixel of a second color (G corresponding to 14) and a subpixel of a third color (R corresponding to 12) with respect to a rectangle or rounded rectangle shape of the subpixel of the first color (B corresponding to 16) in one of the first pixels) and in an OLED layer of the first color **(See FIG. 13: the via connecting 181a to 141a (corresponding to the at least one connection part) overlaps with the OLED layer 310)**,

at least one connection part **(FIG. 12: 145a)** connected to a subpixel **(See paragraph [0041])** of a first color in one of second pixels **(See FIG. 17: 12b, 14b, 16b and 18b correspond to a second pixel, and the blue light emitting element 16b corresponds to a subpixel of a first color in one of second pixels)** is disposed at a biased position in an array direction of a subpixel of a second color and a subpixel of a third color with respect to a rectangle or rounded rectangle shape of the subpixel of the first color in one of the second pixels **(See FIGS. 12 and 17: 145a is disposed at a biased position in an array direction of a subpixel of a second color (G corresponding to 14b) and a subpixel of a third color (R corresponding to 12b) with respect to a rectangle or rounded rectangle shape of the subpixel of the first color (B corresponding to 16b) in one of the second pixels)** and in an OLED layer of the first color **(See FIG. 13: the via connecting 181a to 141a (corresponding to the at least one connection part) overlaps with the OLED layer 310)**.

a position of the at least one connection part connected to the subpixel of the first color in one of the first pixels relative to the rectangle or rounded rectangle shape of the subpixel of the first color in the same one of the first pixels, and a position of the at least one connection part connected to the subpixel of the first color in one of the second pixels relative to the rectangle or rounded rectangle shape of the subpixel of the second color in the same one of the first pixels are different **(See FIGS. 12 and 17: a position of the at least one connection part 145a connected to the subpixel of the first color (B corresponding to 16) in one of the first pixels relative to the rectangle or rounded rectangle shape of the subpixel of the first color (B corresponding to 16) in the same one of the first pixels, and a position of the at least one connection part 102 connected to the subpixel of the first color (B) in one of the second pixels relative to the rectangle or rounded rectangle shape of the subpixel of the second color (B corresponding to 16b) in the same one of the first pixels are different)**,

the at least one connection part is disposed at an identical position in each of the first pixels and the second pixels independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels **(See FIGS. 12 and 17: the at least one connection part 145a is disposed at an identical position in**

each of the first pixels and the second pixels independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels, because 145a, connecting B to the transistor are in the same vertical position),

in the plurality of first pixels and second pixels arranged alternately along the row direction, each connection part connected to the subpixel of the first color in one of the first pixels is positioned in a manner identical to each connection part connected to the subpixel of the first color in one of the second pixels **(See FIGS. 12 and 17: in the plurality of first pixels and second pixels arranged alternately along the row direction, each connection part 145a connected to the subpixel of the first color (B corresponding to 16) in one of the first pixels is positioned in a manner identical (i.e., aligned in the vertical direction) to each connection part connected to the subpixel of the first color (B corresponding to 16b) in one of the second pixels)**.

Kim in view of Sung contained **a device which differed from the claimed device by the substitution of** the at least one connection part connected to the subpixel of the first color in each of the first and second pixels, but without the specific positional arrangement that is claimed. Cok **teaches the substituted element of** at least one connection part disposed in the claimed manner. **Their functions were known in the art** to connect OLEDs to driving circuitry for each subpixel. The at least one connection part taught by Kim in view of Sung could have been substituted with the at least one connection part taught by Cok and the **results would have been predictable** and resulted in placing the at least one connection part connected to each of the first subpixels so that they are aligned in the row direction, as shown in FIG. 14 of Cok.

Therefore, the claimed subject matter would have been obvious to a person having ordinary skill in the art before the effective filing date of the claimed invention.

Regarding **Claim 2**, Kim in view of Sung, and in further view of Cok teaches all of the elements of the claimed invention, as stated above. Furthermore, Kim in view of Sung, and in further view of Cok teaches:

The display device according to claim 1, wherein

the subpixel includes an anode electrode **(See Kim, paragraph [0057] and FIG. 1: 141) (See Cok, paragraph [0040] and FIG. 13: 181a)**, and

the at least one connection part is a portion that connects an output of the TFT circuit **(Cok, FIG. 14: 120 and 140)** and the anode electrode **(See Cok, paragraph [0041])**.

Regarding **Claim 3**, Kim in view of Sung, and in further view of Cok teaches all of the elements of the claimed invention, as stated above. Furthermore, Kim teaches:

The display device according to claim 1, wherein

the TFT circuit includes an identical circuit arrangement pattern for the subpixels of the first to third colors **(See paragraph [0040] and FIG. 1: the TFT has an identical circuit arrangement pattern (an identical pattern of S, G, A and D) for the subpixels of the first to third colors)**.

Regarding **Claim 4**, Kim in view of Sung, and in further view of Cok teaches all of the elements of the claimed invention, as stated above. Furthermore, Kim in view of Sung, and in further view of Cok teaches:

The display device according to claim 1, wherein

in one of the first pixels and one of the second pixels that are adjacent to each other in the row direction, a distance between a first connection part **(102)** of the at least one connection part for the subpixel of the first color **(B)** in the one of the first pixels **(56)** and a second connection part **(102)** of the at least one connection part for the subpixel of the first color **(B)** in the one of the second pixels **(66)** are consistent in the display unit independent of the biased arrangements of the subpixels **(See Cok, FIGS. 12 and 17: in one of the first pixels and one of the second pixels that are adjacent to each other in the row direction, a distance between a first connection part (145a) of the at least one connection part for the subpixel of the first color (B corresponding to 16) in the one of the first pixels and a second connection part (145a) of the at least one connection part for the subpixel of the first color (B corresponding to 16b) in the one of the second pixels are consistent in the display unit independent of the biased arrangements of the subpixels; Furthermore, as applied to the first and second pixels of Kim, the relationship between the connection parts taught by Cok would hold true)**.

In addition, the same motivation is used as the rejection for claim 1.

Regarding **Claim 5**, Kim in view of Sung, and in further view of Cok teaches all of the elements of the claimed invention, as stated above. Furthermore, Kim teaches:

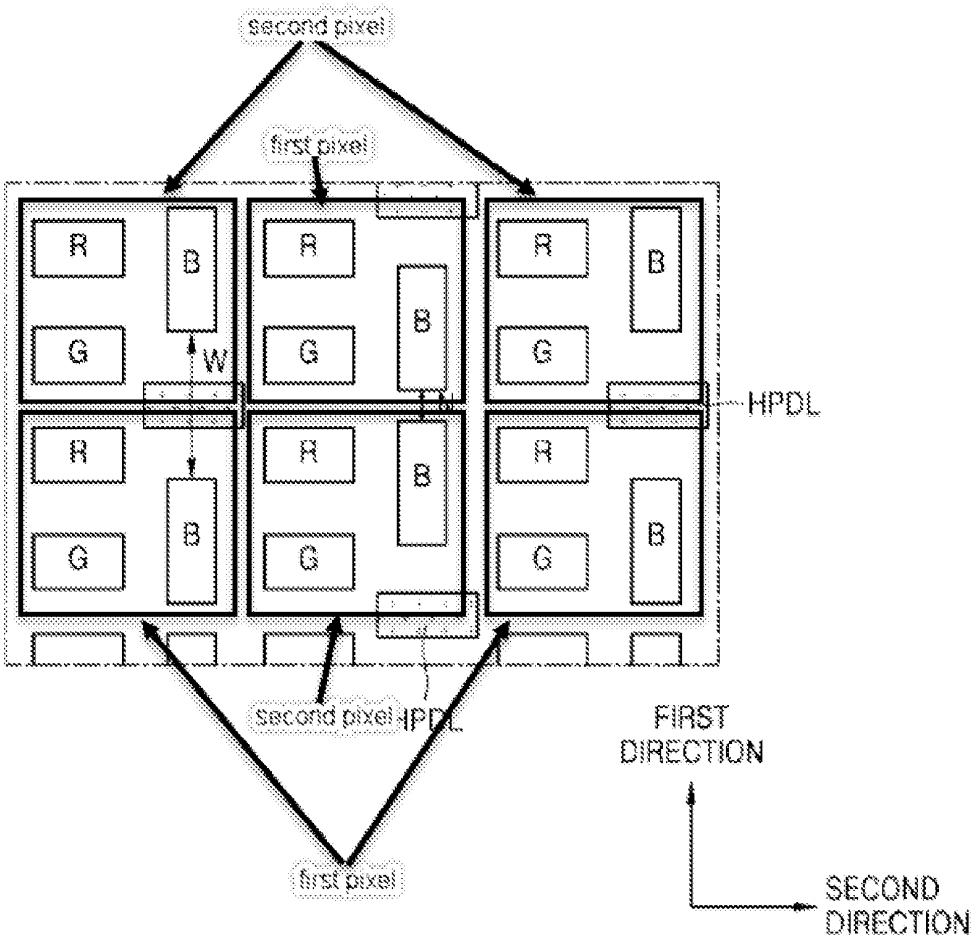
The display device according to claim 1, wherein a first square not crossing the subpixels encloses a region including the subpixels of three colors included in one of the first pixels and excluding other subpixels **(See**

annotated FIG. 2 below: a first square not crossing the subpixels encloses a region including the subpixels of three colors R,G, B included in one of the first pixels (e.g., the top middle first pixel) and excluding other subpixels),

a second square not crossing the subpixels encloses a region including the subpixels of three colors included in one of the second pixels and excluding other subpixels (**See annotated FIG. 2 below: a second square not crossing the subpixels encloses a region including the subpixels of three colors R, G, B included in one of the second pixels (e.g., the top left second pixel) and excluding other subpixels**), and

the first square and the second square are arranged without overlapping each other (**See annotated FIG. 2 below: the first square and the second square are arranged without overlapping each other**).

FIG. 2



Regarding **Claim 6**, Kim in view of Sung, and in further view of Cok teaches all of the elements of the claimed invention, as stated above. Furthermore, Kim in view of Sung, and in further view of Cok teaches:

The display device according to claim 1, wherein the OLED layer is disposed above the at least one connection part (**See Kim, FIG. 1: the OLED layer 143 is disposed above the portion of 141 disposed in the via hole VIA; See Cok, FIG. 13: the OLED layer 310 is disposed above the at least one connection part connecting 181a to 141a**), and

a position where the at least one connection part is disposed overlaps with the OLED layer in a plan view **(See Cok, FIGS. 12 and 13: a position where the at least one connection part 145a is disposed overlaps with the OLED layer 310 in a plan view)**.

In addition, the same motivation is used as the rejection for claim 1.

Regarding **Claim 7**, Kim in view of Sung, and in further view of Cok teaches all of the elements of the claimed invention, as stated above. Furthermore, Kim in view of Sung, and in further view of Cok teaches:

The display device according to claim 1, wherein the TFT circuit and one of the subpixels are connected by only one of the at least one connection part **(See Cok, paragraph [0041] and FIGS. 12 and 13: the TFT circuit (shown in FIG. 14: 120 and 140) and one of the subpixels (B) are connected by only one of the at least one connection part 145a)**.

In addition, the same motivation is used as the rejection for claim 1.

Regarding **Claim 8**, Kim in view of Sung, and in further view of Cok teaches all of the elements of the claimed invention, as stated above. Furthermore, Kim in view of Sung, and in further view of Cok teaches:

The display device according to claim 2, wherein a position where the at least one connection part is disposed overlaps with the anode electrode in a plan view **(See Cok, FIGS. 12 and 13: a position where the at least one connection part 145a is disposed overlaps with the anode electrode 181a in a plan view)**.

In addition, the same motivation is used as the rejection for claim 1.

Response to Arguments

6. Applicant's arguments filed 05/31/2023 have been fully considered but they are moot on the grounds of new rejections.

Applicant argues (Remarks, pages 9-12) that Miller does not teach the amended limitations of claim 1. These arguments are respectfully moot on the grounds of new rejections. Specifically, Miller is no longer relied upon in the above rejections, and Cok has been introduced to render the argued limitations obvious in combination with Kim and Sung.

For the above reasons, Applicant's arguments are not convincing to overcome the current rejections.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Benjamin X Casarez whose telephone number is (571)270-5332. The examiner can normally be reached Monday-Friday: 7:30 am - 5:00 pm.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Claire Pappas can be reached on 571-270-1051. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: https://patentcenter.uspto.gov. Visit https://www.uspto.gov/patents/apply/patent-center for more information about Patent Center and https://www.uspto.gov/patents/docx for information about filing in DOCX format. For additional questions, contact

the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO

Customer Service Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BENJAMIN X CASAREZ/
Primary Examiner, Art Unit 2619

Notice of References Cited	Application/Control No. 17/301,517	Applicant(s)/Patent Under Reexamination MATSUEDA et al.	
	Examiner Benjamin X Casarez	Art Unit 2619	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date YYYY-MM-DD	Name	CPC Classification	US Classification
*	A	US-20040217694-A1	2004-11-04	Cok, Ronald S.	G09G3/3216	313/504
	B					
	C					
	D					
	E					
	F					
	G					
	H					
	I					
	J					
	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date YYYY-MM-DD	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in YYYY-MM-DD format are publication dates. Classifications may be US or foreign.

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/301,517	MATSUEDA et al.
	Examiner	Art Unit
	Benjamin X Casarez	2619

CPC - Searched*		
Symbol	**Date**	**Examiner**
G09G2300/0452 (with text search)	01/24/2024	BC
G09G2300/0842 (with text search)	03/03/2023	BC
G09G2300/0861 (with text search)	03/03/2023	BC
G09G2310/0262 (with text search)	03/03/2023	BC
G09G2310/0283 (with text search)	03/03/2023	BC
G09G3/2003 (with text search)	03/03/2023	BC
G09G3/3233 (with text search)	06/28/2023	BC
G09G3/3266 (with text search)	03/03/2023	BC
G09G3/3208 (with text search)	01/23/2024	BC

CPC Combination Sets - Searched*		
Symbol	**Date**	**Examiner**

US Classification - Searched*			
Class	**Subclass**	**Date**	**Examiner**

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

/BENJAMIN X CASAREZ/ Examiner, Art Unit 2692	

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/301,517	MATSUEDA et al.
	Examiner	Art Unit
	Benjamin X Casarez	2619

Search Notes		
Search Notes	**Date**	**Examiner**
EAST search started	10/21/2021	BC
EAST inventor and assignee name search (with text search)	10/21/2021	BC
Updated PE2E search started	03/22/2022	BC
Updated PE2E inventor and assignee name search (with text search)	03/22/2022	BC
Updated PE2E search started	07/29/2022	BC
Updated PE2E inventor and assignee name search (with text search)	07/29/2022	BC
Updated PE2E search started	03/03/2023	BC
Updated PE2E inventor and assignee name search (with text search)	03/06/2023	BC
Updated PE2E search started	06/28/2023	BC
Updated PE2E inventor and assignee name search (with text search)	06/30/2023	BC
Updated PE2E search started	01/23/2024	BC
Updated PE2E inventor and assignee name search (with text search)	01/26/2024	BC

Interference Search			
US Class/CPC Symbol	**US Subclass/CPC Group**	**Date**	**Examiner**

/BENJAMIN X CASAREZ/
Examiner, Art Unit 2692

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/301,517	MATSUEDA et al.
	Examiner	Art Unit
	Benjamin X Casarez	2619

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	10/21/2021	03/22/2022	07/29/2022	03/06/2023	01/26/2024				
	1	✓	✓	✓	✓	✓				
	2	✓	✓	✓	✓	✓				
	3	✓	✓	✓	✓	✓				
	4	✓	✓	✓	✓	✓				
	5	✓	✓	✓	✓	✓				
	6				✓	✓				
	7				✓	✓				
	8				✓	✓				

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L1	5	("20090121983"|"20100270912"|"20110260951"|"20110260952"|"20110291550").PN.	(US-PGPUB; USPAT)	OR	ON	ON	2021/10/21 04:57 PM
L2	18	("20060103615"|"20060158466"|"20090051627"|"20090322215"|"20120092238"|"20130286262"|"20150035729"|"20150061978"|"20150235617"|"20160019825"|"20160027404"|"20160104413"|"20160126287"|"20160155416"|"20160379540"|"20170092174"|"20170132969"|"9767741").PN.	(US-PGPUB; USPAT)	OR	ON	ON	2021/10/21 05:01 PM
L3	1943	(nlt).IN,AANM,AS.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:10 PM
L4	885	((MATSUEDA near2 YOJIRO) (TAKATORI near2 KENICHI)).IN.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:10 PM
L5	2691	L3 L4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:10 PM
L6	50	L5 and ((subpixel (sub near2 pixel)) with (color colour)) and ((thin near2 film) TFT) and bias$4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:11 PM
L7	7	"56011000".FMID.	(US-PGPUB; USPAT; FPRS; JPO)	OR	ON	ON	2021/10/21 05:14 PM
L8	72	("20010030508" | "20020015110" | "20020186214" | "20030071943" | "20040113875" | "20040201558" | "20050140907" | "20050168423" | "20060077139" | "20080074041" | "20090121983" | "20090302331" | "20090322215" | "20100270912" | "20110050604" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2021/10/21 05:17 PM

		"20110291550" | "20120056531" | "20140197396" | "20140240279" | "20140246654" | "20140333852" | "20140354617" | "20150236077" | "20160148981" | "20170061849" | "20170352312" | "20180143721" | "20180315801" | "4450439" | "5563621" | "6714206" | "6771028" | "8179365" | "9013098" | "9733527").PN. OR ("10312295" | "10452182" | "10671200" | "11107399" | "2015/0379924" | "2016/0104413" | "2016/0148981" | "2018/0143721" | "2018/0254306" | "2020/0004370" | "2020/0035156" | "9508285").URPN.					
L9	7	"56011000".FMID.	(US-PGPUB; USPAT; FPRS; JPO)	OR	ON	ON	2021/10/21 05:22 PM
L10	12	"51357858".FMID.	(US-PGPUB; USPAT; FPRS; JPO)	OR	ON	ON	2021/10/21 05:37 PM
L11	2	("20210225247").PN.	(US-PGPUB; USPAT; USOCR; DERWENT)	OR	ON	ON	2021/10/21 05:42 PM
L12	19328	(G09G2300/0452).CPC.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:42 PM
L13	88828	(G09G2300/0842 OR G09G2300/0861 OR G09G2310/0262 OR G09G2310/0283 OR G09G3/2003 OR G09G3/3233 OR G09G3/3266).CPC.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:42 PM
L14	9475	L12 and L13	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:42 PM
L15	31	L14 and ((thin near2 film) TFT) and ((color colour) with (row column) with alternat$4 with arrangement)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:43 PM

L16	38	L14 and (shar$4 with (color$3 colour$3 subpixel (sub near pixel)) with (adjacent$3 neighbour$4 neighbor$4 near$2 surround$3)) same (divid$4 division separat$4)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:52 PM
L17	403	L12 and (alternating$2 with (column row))	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:56 PM
L18	241	L17 and ((thin near2 film) TFT)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:56 PM
L19	13	("20070002084" | "20090121983" | "20120169682" | "20130057521" | "20130113363").PN. OR ("2015/0129856" | "9013098").URPN.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2021/10/21 06:04 PM
L20	349	L12 and ((thin near2 film) TFT) with anode	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 06:12 PM
L21	36	L20 and (shar$4 with (color$3 colour$3 subpixel (sub near pixel)) with (adjacent$3 neighbour$4 neighbor$4 near$2 surround$3))	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 06:12 PM
L22	6	"54931178".FMID.	(US-PGPUB; USPAT; FPRS; JPO)	OR	ON	ON	2021/10/21 06:51 PM
L23	7	"56011000".FMID.	(US-PGPUB; USPAT; FPRS; JPO)	OR	ON	ON	2021/10/21 06:51 PM
L24	4	("20120056531" | "20130222217" | "9013098").PN. OR ("9245932").URPN.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2021/10/21 06:53 PM
L25	3	((US-20150129856-A1 OR US-20120056531-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK,	OR	ON	ON	2022/03/22 09:54 AM

			TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L26	43	("9013098" | "20120056531" | "20130222217").pn. OR ("9245932" | "2015/0129856" | "2012/0056531").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 10:25 AM
L27	6	(14/526077 | 14/537522 | 13/227271).APP.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 10:25 AM
L28	69	("9013098" | "20120056531" | "20130222217" | "20070002084" | "20090121983" | "20120169682" | "20130057521" | "20130113363" | "20050225232" | "20070064020" | "20090121983" | "20090195144" | "20090322215" | "20110180825").pn. OR ("2015/0144908" | "9245932" | "2015/0129856" | "9013098" | "2012/0056531" | "8593057").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 10:25 AM
L29	69	L26 L28	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 10:26 AM
L30	4	("8552635" | "20120056531" | "20160148981").pn. OR ("10497757").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 11:17 AM
L31	13	"56011000".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK,	OR	ON	ON	2022/03/22 11:18 AM

			TH, TN, TR, TW, UA, VN); FPRS; JPO)				
L32	7	("20060017375" | "20080116463" | "20080252200" | "20090200936" | "20100309172" | "20120025182" | "20120056531").pn. OR ("9893127").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 11:28 AM
L33	6	("20060077139" | "20160148981" | "20170352312").pn. OR ("2020/0035156" | "11107399").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 12:48 PM
L34	10	("8552635" | "20120056531" | "20160148981").pn. OR ("10497757" | "2018/0315801").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 12:50 PM
L35	6	"62147578".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2022/03/22 12:54 PM
L36	12	("20080074041" | "20110050604" | "20140240279" | "20140333852" | "20140354617" | "20080074041" | "20110050604" | "20140240279" | "20140333852" | "20140354617" | "20170061849" | "20180143721").pn. OR ("2018/0143721" | "2020/0004370" | "10452182" | "10671200").urpn. AND	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 12:54 PM

		(PGPB | USPT | USOC).dbnm.					
L37	11	"56554736".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2022/03/22 01:02 PM
L38	30118	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/03/22 01:16 PM
L39	143601	(G09G2300/0842 OR G09G2300/0861 OR G09G2310/0262 OR G09G2310/0283 OR G09G3/2003 OR G09G3/3233 OR G09G3/3266).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/03/22 01:17 PM
L40	14825	L38 AND L39	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV,	OR	ON	ON	2022/03/22 01:17 PM

			MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L41	1727	L40 AND (blue WITH (pixel subpixel) WITH (divid$4 split$4 combin$4 shar$4))	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/03/22 01:17 PM
L42	237	L41 AND (TFT WITH (connect$4 coupl$4))	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/03/22 01:18 PM
L43	56	L5 and ((subpixel (sub near2 pixel)) with (color colour)) and ((thin near2 film) TFT) and bias$4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/03/22 01:24 PM
L44	2	((US-20150129856-A1 OR US-20160225833-A1).did. AND PGPB.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK,	OR	ON	ON	2022/03/22 04:23 PM

			TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L45	5	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2 OR US-9893127-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/03/22 05:09 PM
L46	2	((US-20150129856-A1 OR US-20160225833-A1).did. AND PGPB.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/18 10:09 AM
L47	31381	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/18 10:51 AM
L48	7	L41 AND (TFT WITH (connect$4 coupl$4) WITH (subpixel (sub near2 pixel)) WITH (via	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU,	OR	ON	ON	2022/07/18 10:52 AM

		hole))	CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L49	187	L47 AND (TFT WITH (connect$4 coupl$4) WITH (subpixel (sub near2 pixel)) WITH (via hole))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/18 11:00 AM
L50	78014	(G09G3/3233).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/18 11:18 AM
L51	4685	L47 AND L50	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN,	OR	ON	ON	2022/07/18 11:18 AM

			WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L52	117	L51 AND (TFT WITH (connect$4 coupl$4) WITH (via hole))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/18 11:19 AM
L53	50	((US-20150379924-A1 OR US-20090051627-A1 OR US-20060158466-A1 OR US-20060103615-A1 OR US-20210225247-A1 OR US-20170061849-A1 OR US-20200035156-A1 OR US-20180143721-A1 OR US-20160148981-A1 OR US-20110260952-A1 OR US-20180315801-A1 OR US-20150129856-A1 OR US-20170116900-A1 OR US-20200043990-A1 OR US-20140197396-A1 OR US-20120056531-A1 OR US-20120092238-A1 OR US-20110291550-A1 OR US-20100270912-A1 OR US-20090121983-A1 OR US-20110260951-A1 OR US-20170132969-A1 OR US-20170092174-A1 OR US-20160379540-A1 OR US-20160155416-A1 OR US-20160126287-A1 OR US-20160104413-A1 OR US-20160027404-A1 OR US-20160019825-	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/18 11:41 AM

		A1 OR US-20150235617-A1 OR US-20150061978-A1 OR US-20150035729-A1 OR US-20130286262-A1 OR US-20090322215-A1 OR US-20160225833-A1 OR US-20130002992-A1 OR US-20150364075-A1 OR US-20150129853-A1 OR US-20140292622-A1 OR US-20070029941-A1).did. AND PGPB.dbnm.) OR ((US-9767741-B2 OR US-11107399-B2 OR US-9245932-B2 OR US-10692938-B2 OR US-10546906-B2 OR US-10497757-B2 OR US-8552635-B2 OR US-10312295-B2 OR US-10103205-B2).did. AND USPT.dbnm.) OR ((CN-101960504-A).did. AND FTDB.dbnm.)					
L54	14	L53 AND (TFT WITH (connect$4 coupl$4) WITH (via hole))	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/18 11:41 AM
L55	5	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK,	OR	ON	ON	2022/07/20 12:35 PM

			TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L56	2	(14/855199).APP.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/07/29 09:09 AM
L57	12	("20060017375" | "20080116463" | "20080252200" | "20090200936" | "20100309172" | "20120025182" | "20120056531").pn. OR ("2016/0225833" | "9893127").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/07/29 09:10 AM
L58	12	"56554731".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2022/07/29 09:13 AM
L59	31450	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:15 AM
L60	151353	(G09G2300/0842 OR G09G2300/0861 OR G09G2310/0262 OR G09G2310/0283 OR G09G3/2003 OR G09G3/3233 OR G09G3/3266).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO,	OR	ON	ON	2022/07/29 09:15 AM

			MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L61	15705	L38 AND L39	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:15 AM
L62	1778	L40 AND (blue WITH (pixel subpixel) WITH (divid$4 split$4 combin$4 shar$4))	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:15 AM
L63	245	L41 AND (TFT WITH (connect$4 coupl$4))	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:15 AM
L64	1934	(nlt).IN,AANM,AS.	(US-PGPUB; USPAT;	OR	ON	ON	2022/07/29

			USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)				09:15 AM
L65	916	((MATSUEDA near2 YOJIRO) (TAKATORI near2 KENICHI)).IN.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:16 AM
L66	2717	L3 L4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:16 AM
L67	61	L5 and ((subpixel (sub near2 pixel)) with (color colour)) and ((thin near2 film) TFT) and bias$4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:16 AM
L68	54	L67 AND (TFT WITH (connect$4 coupl$4))	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:16 AM
L69	6	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 02:37 PM
L70	6	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 04:01 PM
L71	14	("20150129856"|"20140292622"|"20120056531"|"9245932"|"20160225833").PN.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU,	OR	ON	ON	2022/07/29 04:01 PM

			CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L72	1	L70 NOT L71	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 04:01 PM
L73	6	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/04 11:45 AM
L74	2	((US-20160225834-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA,	OR	ON	ON	2023/03/03 11:05 AM

			VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L75	4	(14/969251 | 14/526077).APP.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 11:18 AM
L76	29	("20020149720" | "20070200488" | "20090058271" | "20090121983" | "20100033084" | "20130021566" | "20140111757" | "20140197396" | "20140252321" | "20140319479" | "20160225833" | "9013098" | "20120056531" | "20130222217").pn. OR ("2016/0225834" | "10263054" | "2015/0144908" | "9245932").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 11:18 AM
L77	10	"49002264".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/03 11:35 AM
L78	25	("6940222" | "8330352" | "20020070909" | "20030052597" | "20050139834" | "20070001954" | "20070002084" | "20080111459" | "20090322215" | "20110248985" | "20110279014" | "20120056531" | "20120097933").pn. OR ("2013/0222217" | "2016/0155780" | "9972663").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 11:36 AM

L79	2	"40623242".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/03 11:43 AM
L80	33979	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 11:44 AM
L81	166416	(G09G2300/0842 OR G09G2300/0861 OR G09G2310/0262 OR G09G2310/0283 OR G09G3/2003 OR G09G3/3233 OR G09G3/3266).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 11:44 AM
L82	17422	L38 AND L39	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO,	OR	ON	ON	2023/03/03 11:45 AM

			RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L83	5441	L82 AND (((transistor TFT) WITH (connect$4 coupl$4 contact$4 hole via)))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 11:45 AM
L84	173	L82 AND (((transistor TFT) WITH (connect$4 coupl$4 contact$4 hole via)) WITH overlap$4 WITH (OLED emission emitting))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 11:45 AM
L85	9	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 11:46 AM
L86	53	((US-20150379924-A1 OR US-20090051627-A1 OR US-	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY,	OR	ON	ON	2023/03/03 12:41 PM

		20060158466-A1 OR US-20060103615-A1 OR US-20210225247-A1 OR US-20170061849-A1 OR US-20200035156-A1 OR US-20180143721-A1 OR US-20160148981-A1 OR US-20110260952-A1 OR US-20180315801-A1 OR US-20150129856-A1 OR US-20170116900-A1 OR US-20200043990-A1 OR US-20140197396-A1 OR US-20120056531-A1 OR US-20120092238-A1 OR US-20110291550-A1 OR US-20100270912-A1 OR US-20090121983-A1 OR US-20110260951-A1 OR US-20170132969-A1 OR US-20170092174-A1 OR US-20160379540-A1 OR US-20160155416-A1 OR US-20160104413-A1 OR US-20160027404-A1 OR US-20160019825-A1 OR US-20150235617-A1 OR US-20150061978-A1 OR US-20150035729-A1 OR US-20130286262-A1 OR US-20090322215-A1 OR US-20160126287-A1 OR US-20160225833-A1 OR US-20130002992-A1 OR US-20150364075-A1 OR US-20150129853-A1 OR US-20140292622-A1 OR US-20070029941-A1 OR US-20160225834-A1 OR US-20130222217-A1).did. AND PGPB.dbnm.) OR ((US-9767741-B2 OR US-11107399-B2 OR US-9245932-B2 OR US-10692938-B2 OR	CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				

		US-10546906-B2 OR US-10497757-B2 OR US-8552635-B2 OR US-10312295-B2 OR US-10103205-B2 OR US-10615237-B2).did. AND USPT.dbnm.) OR ((CN-101960504-A).did. AND FTDB.dbnm.)					
L87	15	"56011000".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/03 12:45 PM
L88	14	"51620270".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/03 02:25 PM
L89	94	("7365488" | "8253323" | "8552635" | "20040036421" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "7365488" | "8253323" | "8552635" | "9478586" | "20040036421" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "7365488" | "8253323" | "8319906" | "8338832" | "8552635" | "9478586" | "20040036421" | "20050057460" | "20050242712" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 02:25 PM

		"20070015429" | "20090289963" | "20110291550" | "20120056531" | "7365488" | "8232123" | "8253323" | "8319906" | "8338832" | "8552635" | "9231000" | "9478586" | "20040036421" | "20040183083" | "20050057460" | "20050242712" | "20070015429" | "20090128018" | "20090289963" | "20110102402" | "20110291550" | "20120056531" | "20140132584" | "7365488" | "8232123" | "8253323" | "8319906" | "8338832" | "8552635" | "8587194" | "9231000" | "9478586" | "10084029" | "10546906" | "10923545" | "20040036421" | "20040183083" | "20050057460" | "20050242712" | "20070015429" | "20090128018" | "20090289963" | "20110102402" | "20110291550" | "20120056531" | "20140132584").pn. OR ("2014/0292622" | "2017/0012094" | "2019/0027546" | "2020/0144349" | "2021/0134908" | "9478586" | "10084029" | "10546906" | "10923545" | "11574969").urpn. AND (PGPB | USPT | USOC).dbnm.				
L90	347	L82 AND ((transistor TFT) WITH overlap$4 WITH (OLED emission emitting))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL,	OR	ON	ON	2023/03/03 02:52 PM

			NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L91	174	L90 NOT L84	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 02:52 PM
L92	2	"20210225247"	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 03:16 PM
L93	33979	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 03:16 PM
L94	202	L93 AND (((transistor TFT) WITH (connect$4 coupl$4 contact$4 hole via)) WITH overlap$4 WITH (OLED emission emitting))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT;	OR	ON	ON	2023/03/03 03:17 PM

			IBM_TDB)				
L95	29	L94 NOT L84	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 03:17 PM
L96	9	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 03:28 PM
L97	430	L93 AND ((transistor TFT) WITH overlap$4 WITH (OLED emission emitting))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 03:28 PM
L98	83	L97 NOT L90	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS,	OR	ON	ON	2023/03/03 03:29 PM

			IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L99	17	(14/969251 | 14/855199 | 14/526077 | 14/537522 | 13/963987 | 14/156188 | 13/467737 | 13/227271 | 12/250225).APP.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 03:33 PM
L100	350	("20020149720" | "20070200488" | "20090058271" | "20090121983" | "20100033084" | "20130021566" | "20140111757" | "20140197396" | "20140252321" | "20140319479" | "20160225833" | "20060017375" | "20080116463" | "20080252200" | "20090200936" | "20100309172" | "20120025182" | "20120056531" | "9013098" | "20120056531" | "20130222217" | "20070002084" | "20090121983" | "20120169682" | "20130057521" | "20130113363" | "7365488" | "8253323" | "8552635" | "20040036421" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "6294398" | "6992326" | "7132788" | "7443093" | "8110825" | "8115216" | "8124172" | "8309376" | "8330352" | "20040144975" | "20050112341" | "20080024402" | "20080111474" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 03:33 PM

		"20090195144" | "20090243483" | "20110183268" | "20110229994" | "20110248247" | "20110309389" | "20120049178" | "20120091482" | "20120228602" | "20120319089" | "20120326136" | "20120326600" | "20130109117" | "20140070175" | "20140078126" | "20050225232" | "20070064020" | "20090121983" | "20090195144" | "20090322215" | "20110180825" | "5341153" | "6008868" | "6366025" | "6429601" | "6747618" | "6801000" | "6838819" | "6867549" | "6870323" | "6903754" | "6919681" | "6940222" | "7205713" | "7239363" | "7492337" | "7508126" | "7728802" | "7791565" | "7821553" | "7825584" | "8013817" | "8247966" | "20020014837" | "20020015110" | "20030052597" | "20040036421" | "20040108818" | "20040125278" | "20040217694" | "20050001542" | "20050087740" | "20050127819" | "20050151462" | "20070001584" | "20070046185" | "20080111459" | "20080158107" | "20080224968" | "20080231554").pn. OR ("2016/0225834" | "10263054" | "2016/0225833" | "9893127" | "2015/0144908" | "9245932" | "2015/0129856" | "9013098" | "2014/0292622" |				

		"9478586" | "2014/0197396" | "9444050" | "2013/0222217" | "2012/0056531" | "8593057" | "2009/0121983" | "8330352").urpn. AND (PGPB | USPT | USOC).dbnm.					
L101	23	L100 AND ((transistor TFT) WITH overlap$4 WITH (OLED emission emitting))	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 03:34 PM
L102	9	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 04:33 PM
L105	54	((US-20150379924-A1 OR US-20090051627-A1 OR US-20060158466-A1 OR US-20060103615-A1 OR US-20210225247-A1 OR US-20170061849-A1 OR US-20200035156-A1 OR US-20180143721-A1 OR US-20160148981-A1 OR US-20110260952-A1 OR US-20180315801-A1 OR US-20150129856-A1 OR US-20170116900-A1 OR US-20200043990-A1 OR US-20140197396-A1 OR US-20120056531-A1 OR US-20120092238-A1 OR US-20110291550-A1 OR US-20100270912-A1 OR US-20090121983-A1 OR US-	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 04:34 PM

		20110260951-A1 OR US-20170132969-A1 OR US-20170092174-A1 OR US-20160379540-A1 OR US-20160155416-A1 OR US-20160104413-A1 OR US-20160027404-A1 OR US-20160019825-A1 OR US-20150235617-A1 OR US-20150061978-A1 OR US-20150035729-A1 OR US-20130286262-A1 OR US-20090322215-A1 OR US-20160126287-A1 OR US-20160225833-A1 OR US-20130002992-A1 OR US-20150364075-A1 OR US-20150129853-A1 OR US-20140292622-A1 OR US-20070029941-A1 OR US-20160225834-A1 OR US-20130222217-A1 OR US-20190074342-A1).did. AND PGPB.dbnm.) OR ((US-9767741-B2 OR US-11107399-B2 OR US-9245932-B2 OR US-10692938-B2 OR US-10546906-B2 OR US-10497757-B2 OR US-8552635-B2 OR US-10312295-B2 OR US-10103205-B2 OR US-10615237-B2).did. AND USPT.dbnm.) OR ((CN-101960504-A).did. AND FTDB.dbnm.)				
L106	10	"49002264".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK,	OR	ON	ON	2023/03/03 05:05 PM

			TH, TN, TR, TW, UA, VN); FPRS; JPO)				
L107	25	("6940222" | "8330352" | "20020070909" | "20030052597" | "20050139834" | "20070001954" | "20070002084" | "20080111459" | "20090322215" | "20110248985" | "20110279014" | "20120056531" | "20120097933").pn. OR ("2013/0222217" | "2016/0155780" | "9972663").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 05:05 PM
L108	15	"26604413".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/03 05:19 PM
L109	175	("5604613" | "6104446" | "6300612" | "6335778" | "6498592" | "6608620").pn. OR ("2002/0070909" | "6768482").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 05:19 PM
L110	2	((US-20160225834-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT;	OR	ON	ON	2023/03/06 09:02 PM

			IBM_TDB)				
L112	3	("20140197396" "8330352" "20090121983").pn.	(US-PGPUB; USPAT)	OR	ON	ON	2023/03/06 09:10 PM
L113	10	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1 OR US-20020070909-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 09:46 PM
L114	3	((US-20160225834-A1 OR US-20090121983-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 09:50 PM
L115	15	"26604413".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/06 09:55 PM
L116	175	("5604613" | "6104446" | "6300612" | "6335778" | "6498592" | "6608620").pn. OR ("2002/0070909" | "6768482").urpn. AND	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/06 09:56 PM

		(PGPB | USPT | USOC).dbnm.					
L117	4	("9013098" | "20120056531" | "20130222217").pn. OR ("9245932").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/06 10:14 PM
L118	19	(14/969251 | 14/855199 | 14/526077 | 14/537522 | 13/963987 | 14/156188 | 13/467737 | 13/227271 | 12/250225 | 09/990414).APP.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/06 10:16 PM
L119	495	("20020149720" | "20070200488" | "20090058271" | "20090121983" | "20100033084" | "20130021566" | "20140111757" | "20140197396" | "20140252321" | "20140319479" | "20160225833" | "20060017375" | "20080116463" | "20080252200" | "20090200936" | "20100309172" | "20120025182" | "20120056531" | "9013098" | "20120056531" | "20130222217" | "20070002084" | "20090121983" | "20120169682" | "20130057521" | "20130113363" | "7365488" | "8253323" | "8552635" | "20040036421" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "6294398" | "6992326" | "7132788" | "7443093" | "8110825" | "8115216" | "8124172" | "8309376" | "8330352" | "20040144975" | "20050112341" | "20080024402" | "20080111474" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/06 10:16 PM

		"20090195144" | "20090243483" | "20110183268" | "20110229994" | "20110248247" | "20110309389" | "20120049178" | "20120091482" | "20120228602" | "20120319089" | "20120326136" | "20120326600" | "20130109117" | "20140070175" | "20140078126" | "20050225232" | "20070064020" | "20090121983" | "20090195144" | "20090322215" | "20110180825" | "5341153" | "6008868" | "6366025" | "6429601" | "6747618" | "6801000" | "6838819" | "6867549" | "6870323" | "6903754" | "6919681" | "6940222" | "7205713" | "7239363" | "7492337" | "7508126" | "7728802" | "7791565" | "7821553" | "7825584" | "8013817" | "8247966" | "20020014837" | "20020015110" | "20030052597" | "20040036421" | "20040108818" | "20040125278" | "20040217694" | "20050001542" | "20050087740" | "20050127819" | "20050151462" | "20070001584" | "20070046185" | "20080111459" | "20080158107" | "20080224968" | "20080231554" | "5604613" | "6104446" | "6300612" | "6335778" | "6498592" | "6608620").pn. OR ("2016/0225834" | "10263054" | "2016/0225833" | "9893127" | "2015/0144908"				

		"9245932" | "2015/0129856" | "9013098" | "2014/0292622" | "9478586" | "2014/0197396" | "9444050" | "2013/0222217" | "2012/0056531" | "8593057" | "2009/0121983" | "8330352" | "2002/0070909" | "6768482").urpn. AND (PGPB | USPT | USOC).dbnm.					
L120	33	L119 AND ((transistor TFT) WITH overlap$4 WITH (OLED emission emitting))	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/06 10:16 PM
L121	56	((US-20150379924-A1 OR US-20090051627-A1 OR US-20060158466-A1 OR US-20060103615-A1 OR US-20210225247-A1 OR US-20170061849-A1 OR US-20200035156-A1 OR US-20180143721-A1 OR US-20160148981-A1 OR US-20110260952-A1 OR US-20180315801-A1 OR US-20150129856-A1 OR US-20170116900-A1 OR US-20200043990-A1 OR US-20140197396-A1 OR US-20120056531-A1 OR US-20160126287-A1 OR US-20090322215-A1 OR US-20110291550-A1 OR US-20100270912-A1 OR US-20090121983-A1 OR US-20110260951-A1 OR US-20170132969-A1 OR US-20170092174-A1 OR US-20160379540-A1 OR US-20160155416-A1 OR US-20160104413-A1 OR US-20160027404-A1	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 10:22 PM

		OR US-20160019825-A1 OR US-20150235617-A1 OR US-20150061978-A1 OR US-20150035729-A1 OR US-20130286262-A1 OR US-20120092238-A1 OR US-20160225833-A1 OR US-20130002992-A1 OR US-20150364075-A1 OR US-20150129853-A1 OR US-20140292622-A1 OR US-20070029941-A1 OR US-20160225834-A1 OR US-20130222217-A1 OR US-20190074342-A1 OR US-20020070909-A1).did. AND PGPB.dbnm.) OR ((US-9767741-B2 OR US-11107399-B2 OR US-9245932-B2 OR US-10692938-B2 OR US-10546906-B2 OR US-10497757-B2 OR US-8552635-B2 OR US-10312295-B2 OR US-10103205-B2 OR US-10615237-B2 OR US-11552107-B2).did. AND USPT.dbnm.) OR ((CN-101960504-A).did. AND FTDB.dbnm.)					
L122	15	"56011000".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/06 10:28 PM
L123	14	"51357853".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB,	OR	ON	ON	2023/03/06 10:29 PM

			HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)				
L124	14	("9013098" | "20120056531" | "20130222217").pn. OR ("2015/0144908" | "9245932").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/06 10:29 PM
L125	14	"51620270".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/06 10:35 PM
L126	94	("7365488" | "8253323" | "8552635" | "20040036421" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "7365488" | "8253323" | "8552635" | "9478586" | "20040036421" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "7365488" | "8253323" | "8319906" | "8338832" | "8552635" | "9478586" | "20040036421" | "20050057460" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "20120056531" | "7365488" | "8232123" | "8253323" | "8319906" | "8338832" | "8552635" | "9231000" | "9478586" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/06 10:35 PM

		"20040036421" | "20040183083" | "20050057460" | "20050242712" | "20070015429" | "20090128018" | "20090289963" | "20110102402" | "20110291550" | "20120056531" | "20140132584" | "7365488" | "8232123" | "8253323" | "8319906" | "8338832" | "8552635" | "8587194" | "9231000" | "9478586" | "10084029" | "10546906" | "10923545" | "20040036421" | "20040183083" | "20050057460" | "20050242712" | "20070015429" | "20090128018" | "20090289963" | "20110102402" | "20110291550" | "20120056531" | "20140132584").pn. OR ("2014/0292622" | "2017/0012094" | "2019/0027546" | "2020/0144349" | "2021/0134908" | "9478586" | "10084029" | "10546906" | "10923545" | "11574969").urpn. AND (PGPB | USPT | USOC).dbnm.					
L127	20	"45595555".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/06 10:50 PM
L128	55	("20050225232" | "20070064020" | "20090121983" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/06 10:50 PM

		"20090195144" | "20090322215" | "20110180825" | "8593057" | "20020014837" | "20050225232" | "20070064020" | "20090121983" | "20090195144" | "20090289963" | "20090322215" | "20100156279" | "20110180825" | "20120049726").pn. OR ("2012/0056531" | "2014/0042418" | "8593057" | "8786182").urpn. AND (PGPB | USPT | USOC).dbnm.					
L129	10	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1 OR US-20020070909-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 10:56 PM
L130	10	"49002264".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/06 10:58 PM
L131	10	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS,	OR	ON	ON	2023/03/06 11:23 PM

		20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1 OR US-20020070909-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L132	16	("20150129856"|"20140292622"|"20120056531"|"9245932"|"20160225834"|"20160225833").PN.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 11:23 PM
L133	4	L131 NOT L132	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 11:23 PM
L134	5	((US-20160225834-A1 OR US-20090121983-A1 OR US-20130222217-A1 OR US-20120056531-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 11:24 PM

L135	1934	(nlt).IN,AANM,AS.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 11:30 PM
L136	940	((MATSUEDA near2 YOJIRO) (TAKATORI near2 KENICHI)).IN.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 11:30 PM
L137	2741	L3 L4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 11:30 PM
L138	63	L5 and ((subpixel (sub near2 pixel)) with (color colour)) and ((thin near2 film) TFT) and bias$4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 11:30 PM
L139	55	L67 AND (TFT WITH (connect$4 coupl$4))	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 11:30 PM
L140	5	((US-20160225834-A1 OR US-20090121983-A1 OR US-20130222217-A1 OR US-20120056531-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/28 09:30 AM
L141	9	(14/969251 | 14/526077 | 13/467737 | 13/227271 | 12/250225).APP.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/06/28 09:38 AM
L142	231	("20020149720" | "20070200488" | "20090058271" | "20090121983" | "20100033084" | "20130021566" | "20140111757" | "20140197396" | "20140252321" | "20140319479" | "20160225833" | "9013098" | "20120056531" | "20130222217" | "20050225232" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/06/28 09:38 AM

		"20070064020" | "20090121983" | "20090195144" | "20090322215" | "20110180825" | "5341153" | "6008868" | "6366025" | "6429601" | "6747618" | "6801000" | "6838819" | "6867549" | "6870323" | "6903754" | "6919681" | "6940222" | "7205713" | "7239363" | "7492337" | "7508126" | "7728802" | "7791565" | "7821553" | "7825584" | "8013817" | "8247966" | "20020014837" | "20020015110" | "20030052597" | "20040036421" | "20040108818" | "20040125278" | "20040217694" | "20050001542" | "20050087740" | "20050127819" | "20050151462" | "20070001584" | "20070046185" | "20080111459" | "20080158107" | "20080224968" | "20080231554").pn. OR ("2016/0225834" | "10263054" | "2015/0144908" | "9245932" | "2013/0222217" | "2012/0056531" | "8593057" | "2009/0121983" | "8330352").urpn. AND (PGPB | USPT | USOC).dbnm.				
L143	34647	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA,	OR	ON	ON	2023/06/28 03:42 PM

			VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L144	45015	(G09G3/3208).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/28 03:42 PM
L145	89873	(G09G3/3233).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/28 03:43 PM
L146	829	L143 AND L144 AND L145	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/28 03:43 PM
L147	1	"20140284570"	(US-PGPUB)	OR	ON	ON	2023/06/28 04:58 PM
L148	34657	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY,	OR	ON	ON	2023/06/29 09:02 AM

			CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L149	45021	(G09G3/3208).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/29 09:02 AM
L151	4772	L148 AND L149	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/29 09:02 AM
L152	1	L151 AND ((subpixel (sub near2 pixel)) WITH (color colour)) WITH ((thin near2 film) TFT) WITH (via hole contact)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/29 09:03 AM
L153	54	L151 AND ((subpixel (sub near2 pixel)) WITH (color colour)) WITH (via hole contact)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/29 09:04 AM
L154	9	L151 AND ((subpixel (sub near2 pixel)) WITH	(US-PGPUB; USPAT; USOCR; FPRS; EPO;	OR	ON	ON	2023/06/29 10:03 AM

		((thin near2 film) TFT) WITH (via hole contact))	JPO; DERWENT; IBM_TDB)				
L155	150	L151 AND ((subpixel (sub near2 pixel)) WITH (via hole contact))	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/29 10:04 AM
L157	461	L151 AND ((subpixel (sub near2 pixel)) WITH (via hole contact))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/29 10:05 AM
L158	294	L157 NOT L153	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/29 10:05 AM
L159	23	"51568466".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/06/29 10:26 AM
L160	21	("2014/0284570" | "8952374").urpn. AND (PGPB | USPT |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/06/29 10:26 AM

		USOC).dbnm.					
L161	5	((US-20160225834-A1 OR US-20090121983-A1 OR US-20130222217-A1 OR US-20120056531-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/30 01:32 PM
L162	11	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1 OR US-20020070909-A1 OR US-20060170712-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/30 01:44 PM
L163	11	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1 OR US-20020070909-A1 OR US-20060170712-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/30 02:31 PM
L164	28	("20140292622"|"20160225833"|"20160225834"|"20020070909"|"20090121983"|"20130222217"|"20140197396"|"924	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA,	OR	ON	ON	2023/06/30 02:31 PM

		5932"|"20120056531"|"20150129856").PN.	EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L165	1	L163 NOT L164	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/30 02:31 PM
L166	1934	(nlt).IN,AANM,AS.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/30 02:35 PM
L167	943	((MATSUEDA near2 YOJIRO) (TAKATORI near2 KENICHI)).IN.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/30 02:35 PM
L168	2744	L3 L4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/30 02:35 PM
L169	65	L5 and ((subpixel (sub near2 pixel)) with (color colour)) and ((thin near2 film) TFT) and bias$4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/30 02:35 PM
L170	57	L67 AND (TFT WITH (connect$4 coupl$4))	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/30 02:35 PM
L171	6	((US-20160225834-A1 OR US-20090121983-A1 OR US-20130222217-A1 OR US-20120056531-A1 OR US-20060170712-A1).did. AND PGPB.dbnm.) OR ((US-	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV,	OR	ON	ON	2024/01/23 09:05 AM

		9245932-B2).did. AND USPT.dbnm.)	MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L172	1	(11/048385).APP.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/01/23 09:12 AM
L173	45	("2006/0170712").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/01/23 09:13 AM
L174	32	("4356429" | "6281634" | "6366025" | "6771028" | "7102293" | "7202841" | "20020101394" | "20030067458" | "20040080479" | "20040113875" | "20040164668" | "20040173819" | "20040195963" | "20040201558" | "20040217694" | "20040222999" | "20050068281" | "20060028495" | "20060170712").pn. OR ("7382384").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/01/23 10:07 AM
L175	62	((US-20150379924-A1 OR US-20090051627-A1 OR US-20060158466-A1 OR US-20060103615-A1 OR US-20210225247-A1 OR US-20170061849-A1 OR US-20200035156-A1 OR US-20180143721-A1 OR US-20160148981-A1 OR US-20110260952-A1 OR US-20180315801-A1 OR US-20150129856-A1 OR US-20170116900-A1 OR US-20200043990-A1 OR US-20140197396-A1 OR US-20120056531-A1 OR US-20160155416-A1 OR US-20090322215-A1 OR	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/23 10:22 AM

		US-20110291550-A1 OR US-20100270912-A1 OR US-20090121983-A1 OR US-20110260951-A1 OR US-20170132969-A1 OR US-20170092174-A1 OR US-20160379540-A1 OR US-20160126287-A1 OR US-20160104413-A1 OR US-20160027404-A1 OR US-20160019825-A1 OR US-20150235617-A1 OR US-20150061978-A1 OR US-20150035729-A1 OR US-20130286262-A1 OR US-20120092238-A1 OR US-20160225833-A1 OR US-20130002992-A1 OR US-20150364075-A1 OR US-20150129853-A1 OR US-20140292622-A1 OR US-20070029941-A1 OR US-20160225834-A1 OR US-20130222217-A1 OR US-20190074342-A1 OR US-20020070909-A1 OR US-20040183083-A1 OR US-20140284570-A1 OR US-20060170712-A1 OR US-20040217694-A1).did. AND PGPB.dbnm.) OR ((US-9767741-B2 OR US-11107399-B2 OR US-9245932-B2 OR US-10692938-B2 OR US-10546906-B2 OR US-10497757-B2 OR US-8552635-B2 OR US-10312295-B2 OR US-10103205-B2 OR US-10615237-B2 OR US-11552107-B2 OR US-10439006-B2 OR US-7382384-B2).did. AND USPT.dbnm.) OR ((CN-101960504-A).did. AND FTDB.dbnm.)					

L176	7	("9214500" | "20050001542" | "20120092238" | "20130002118" | "20140198479" | "20150379916").pn. OR ("9767741").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/01/23 10:32 AM
L177	15	"56011000".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2024/01/23 10:37 AM
L178	7	"55655854".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2024/01/23 10:38 AM
L179	10	"54931178".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2024/01/23 10:39 AM
L180	16	"51620270".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA,	OR	ON	ON	2024/01/23 10:47 AM

			EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)				
L181	97	("7365488" | "8253323" | "8552635" | "20040036421" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "7365488" | "8253323" | "8552635" | "9478586" | "20040036421" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "7365488" | "8253323" | "8319906" | "8338832" | "8552635" | "9478586" | "20040036421" | "20050057460" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "20120056531" | "7365488" | "8232123" | "8253323" | "8319906" | "8338832" | "8552635" | "9231000" | "9478586" | "20040036421" | "20040183083" | "20050057460" | "20050242712" | "20070015429" | "20090128018" | "20090289963" | "20110102402" | "20110291550" | "20120056531" | "20140132584" | "7365488" | "8232123" | "8253323" | "8319906" | "8338832" | "8552635" | "8587194" | "9231000" | "9478586" | "10084029" | "10546906" | "10923545" | "20040036421" | "20040183083" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/01/23 10:47 AM

		"20050057460" | "20050242712" | "20070015429" | "20090128018" | "20090289963" | "20110102402" | "20110291550" | "20120056531" | "20140132584" | "7365488" | "7990050" | "8232123" | "8253323" | "8319906" | "8338832" | "8552635" | "8587194" | "9231000" | "9478586" | "10084029" | "10546906" | "10923545" | "20040036421" | "20040183083" | "20050057460" | "20050242712" | "20070015429" | "20090128018" | "20090289963" | "20110102402" | "20110291550" | "20120056531" | "20140132584").pn. OR ("2014/0292622" | "2017/0012094" | "2019/0027546" | "2020/0144349" | "2021/0134908" | "2023/0165066" | "9478586" | "10084029" | "10546906" | "10923545" | "11574969" | "11818921").urpn. AND (PGPB | USPT | USOC).dbnm.					
L182	11	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1 OR US-20020070909-A1 OR US-20060170712-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/23 11:25 AM

		USPT.dbnm.)					
L183	20	(14/969251 | 14/855199 | 14/526077 | 14/537522 | 13/963987 | 14/156188 | 13/467737 | 13/227271 | 12/250225 | 11/048385 | 09/990414).APP.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/01/23 11:25 AM
L184	554	("20020149720" | "20070200488" | "20090058271" | "20090121983" | "20100033084" | "20130021566" | "20140111757" | "20140197396" | "20140252321" | "20140319479" | "20160225833" | "20060017375" | "20080116463" | "20080252200" | "20090200936" | "20100309172" | "20120025182" | "20120056531" | "9013098" | "20120056531" | "20130222217" | "20070002084" | "20090121983" | "20120169682" | "20130057521" | "20130113363" | "7365488" | "8253323" | "8552635" | "20040036421" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "6294398" | "6992326" | "7132788" | "7443093" | "8110825" | "8115216" | "8124172" | "8309376" | "8330352" | "20040144975" | "20050112341" | "20080024402" | "20080111474" | "20090195144" | "20090243483" | "20110183268" | "20110229994" | "20110248247" | "20110309389" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/01/23 11:26 AM

		"20120049178" | "20120091482" | "20120228602" | "20120319089" | "20120326136" | "20120326600" | "20130109117" | "20140070175" | "20140078126" | "20050225232" | "20070064020" | "20090121983" | "20090195144" | "20090322215" | "20110180825" | "5341153"	"6008868" | "6366025"	"6429601" | "6747618"	"6801000" | "6838819"	"6867549" | "6870323"	"6903754" | "6919681"	"6940222" | "7205713"	"7239363" | "7492337"	"7508126" | "7728802"	"7791565" | "7821553"	"7825584" | "8013817"	"8247966" | "20020014837" | "20020015110" | "20030052597" | "20040036421" | "20040108818" | "20040125278" | "20040217694" | "20050001542" | "20050087740" | "20050127819" | "20050151462" | "20070001584" | "20070046185" | "20080111459" | "20080158107" | "20080224968" | "20080231554" | "5604613"	"6104446" | "6300612"	"6335778" | "6498592" | "6608620").pn. OR ("2016/0225834" | "10263054" | "2016/0225833" | "9893127" | "2015/0144908" | "9245932" | "2015/0129856" | "9013098" | "2014/0292622" | "9478586" | "2014/0197396"				

		"9444050" | "2013/0222217" | "2012/0056531" | "8593057" | "2009/0121983" | "8330352" | "2006/0170712" | "2002/0070909" | "6768482").urpn. AND (PGPB | USPT | USOC).dbnm.					
L185	19	L184 AND ((red blue green color$4 colour$4) WITH (pixel subpixel) WITH align$4 WITH row)	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/01/23 11:26 AM
L186	35957	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/23 11:36 AM
L187	47345	(G09G3/3208).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/23 11:36 AM
L188	4973	L148 AND L149	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV,	OR	ON	ON	2024/01/23 11:36 AM

			MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L189	52	L188 AND ((red blue green color$4 colour$4) WITH (pixel subpixel) WITH align$4 WITH row)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/23 11:36 AM
L190	206	L188 AND ((red blue green color$4 colour$4) WITH (pixel subpixel) WITH align$4)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/23 11:48 AM
L191	154	L190 NOT L189	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/23 11:48 AM

L192	1	"20210225247"	(US-PGPUB)	OR	ON	ON	2024/01/23 02:28 PM
L193	593	L186 AND ((red blue green color$4 colour$4) WITH (pixel subpixel) WITH align$4 WITH row)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/23 02:29 PM
L194	541	L193 NOT L189	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/23 02:29 PM
L195	62	((US-20150379924-A1 OR US-20090051627-A1 OR US-20060158466-A1 OR US-20060103615-A1 OR US-20210225247-A1 OR US-20170061849-A1 OR US-20200035156-A1 OR US-20180143721-A1 OR US-20160148981-A1 OR US-20110260952-A1 OR US-20180315801-A1 OR US-20150129856-A1 OR US-20170116900-A1 OR US-20200043990-A1 OR US-20140197396-A1 OR US-20120056531-A1 OR US-20160379540-A1 OR US-	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/23 05:17 PM

		20090322215-A1 OR US-20110291550-A1 OR US-20100270912-A1 OR US-20090121983-A1 OR US-20110260951-A1 OR US-20170132969-A1 OR US-20170092174-A1 OR US-20160155416-A1 OR US-20160126287-A1 OR US-20160104413-A1 OR US-20160027404-A1 OR US-20160019825-A1 OR US-20150235617-A1 OR US-20150061978-A1 OR US-20150035729-A1 OR US-20130286262-A1 OR US-20120092238-A1 OR US-20160225833-A1 OR US-20130002992-A1 OR US-20150364075-A1 OR US-20150129853-A1 OR US-20140292622-A1 OR US-20070029941-A1 OR US-20160225834-A1 OR US-20130222217-A1 OR US-20190074342-A1 OR US-20020070909-A1 OR US-20040183083-A1 OR US-20140284570-A1 OR US-20060170712-A1 OR US-20040217694-A1).did. AND PGPB.dbnm.) OR ((US-9767741-B2 OR US-11107399-B2 OR US-9245932-B2 OR US-10692938-B2 OR US-10546906-B2 OR US-10497757-B2 OR US-8552635-B2 OR US-10312295-B2 OR US-10103205-B2 OR US-10615237-B2 OR US-11552107-B2 OR US-10439006-B2 OR US-7382384-B2).did. AND USPT.dbnm.) OR ((CN-101960504-A).did. AND FTDB.dbnm.)					

L196	35957	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/24 09:30 AM
L197	680	L196 AND ((red blue green color$4 colour$4) WITH align$4 WITH row)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/24 09:30 AM
L198	87	L197 NOT L193	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/24 09:30 AM
L199	33	"59012713".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO,	OR	ON	ON	2024/01/24 09:48 AM

			MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)				
L200	54	("5341151" | "6914649" | "7399991" | "7663149" | "8044905" | "8350940" | "8552635" | "8687161" | "8981638" | "9147368" | "9525017" | "20050018110" | "20070002084" | "20090140253" | "20140104151" | "20140117339" | "20150002955" | "20150144945" | "20160216580" | "5341151" | "6768482" | "6914649" | "7399991" | "7464364" | "7663149" | "7898623" | "8044905" | "8154678" | "8223093" | "8255842" | "8339530" | "8350940" | "8451302" | "8552635" | "8587742" | "8687161" | "8902141" | "8981638" | "9070320" | "9147368" | "9337242" | "9525017" | "9536906" | "10573667" | "20050018110" | "20050087740" | "20060208981" | "20070002084" | "20090040243" | "20090140253" | "20140104151" | "20140117339" | "20140332764" | "20150002955" | "20150144945" | "20160079333" | "20160216580" | "20160233234").pn. OR ("2017/0170200" | "2020/0185420" | "2023/0079181" | "10573667" | "11552107").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/01/24 09:51 AM
L202	660	L196 AND ((blue) WITH (pixel subpixel) WITH (rectang rectangular$2))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU,	OR	ON	ON	2024/01/24 10:33 AM

			CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L203	664	L196 AND ((blue) WITH (pixel subpixel) WITH align$4)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/24 12:41 PM
L204	531	L203 NOT L202	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/24 12:42 PM
L205	12	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1 OR US-20020070909-A1 OR US-20060170712-A1	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN,	OR	ON	ON	2024/01/24 01:50 PM

		OR US-20170170200-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L206	22	(15/366255 | 14/969251 | 14/855199 | 14/526077 | 14/537522 | 13/963987 | 14/156188 | 13/467737 | 13/227271 | 12/250225 | 11/048385 | 09/990414).APP.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/01/24 01:50 PM
L207	578	("5341151" | "6914649" | "7399991" | "7663149" | "8044905" | "8350940" | "8552635" | "8687161" | "8981638" | "9147368" | "9525017" | "20050018110" | "20070002084" | "20090140253" | "20140104151" | "20140117339" | "20150002955" | "20150144945" | "20160216580" | "20020149720" | "20070200488" | "20090058271" | "20090121983" | "20100033084" | "20130021566" | "20140111757" | "20140197396" | "20140252321" | "20140319479" | "20160225833" | "20060017375" | "20080116463" | "20080252200" | "20090200936" | "20100309172" | "20120025182" | "20120056531" | "9013098" | "20120056531" | "20130222217" | "20070002084" | "20090121983" | "20120169682" | "20130057521" | "20130113363" | "7365488" | "8253323" | "8552635" | "20040036421" | "20050242712" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/01/24 01:51 PM

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		"20080158107" | "20080224968" | "20080231554" | "5604613" | "6104446" | "6300612" | "6335778" | "6498592" | "6608620").pn. OR ("2017/0170200" | "10573667" | "2016/0225834" | "10263054" | "2016/0225833" | "9893127" | "2015/0144908" | "9245932" | "2015/0129856" | "9013098" | "2014/0292622" | "9478586" | "2014/0197396" | "9444050" | "2013/0222217" | "2012/0056531" | "8593057" | "2009/0121983" | "8330352" | "2006/0170712" | "2002/0070909" | "6768482").urpn. AND (PGPB | USPT | USOC).dbnm.					
L208	13	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1 OR US-20020070909-A1 OR US-20060170712-A1 OR US-20170170200-A1 OR US-20040217694-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/26 09:46 AM
L209	13	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS,	OR	ON	ON	2024/01/26 10:36 AM

		20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1 OR US-20020070909-A1 OR US-20060170712-A1 OR US-20170170200-A1 OR US-20040217694-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L210	30	("20140292622"|"20160225833"|"20160225834"|"20140197396"|"20120056531"|"20150129856"|"9245932"|"20060170712"|"20020070909"|"20090121983"|"20130222217").PN.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/26 10:37 AM
L211	2	L209 NOT L210	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/26 10:37 AM
L212	1933	(nlt).IN,AANM,AS.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/26 10:42 AM
L213	950	((MATSUEDA near2 YOJIRO) (TAKATORI near2 KENICHI)).IN.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/26 10:42 AM
L214	2750	L3 L4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/26 10:42 AM

L215	70	L5 and ((subpixel (sub near2 pixel)) with (color colour)) and ((thin near2 film) TFT) and bias$4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/26 10:42 AM
L216	62	L67 AND (TFT WITH (connect$4 coupl$4))	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/01/26 10:42 AM

PE2E SEARCH - Search History (Interference)

There are no Interference searches to show.

MAIL STOP AMD
PATENT
8317-0050

IN THE U. S. PATENT AND TRADEMARK OFFICE

In re application of

Yojiro MATSUEDA et al. Conf. 1637

Application No. 17/301,517 Group 2692

Filed: April 6, 2021 Examiner CASAREZ, BENJAMIN

Title: DISPLAY DEVICE AND COMPUTER READABLE MEDIA

AMENDMENT

Assistant Commissioner for Patents September 24, 2023
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the non-final Office Action mailed July 6, 2023, please amend the above-identified application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks follow the Amendments to the Claims.

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (currently amended) A display device comprising:

a display unit where a plurality of first pixels each including subpixels of three colors and a plurality of second pixels each including subpixels of three colors arranged differently from the subpixels in one of the first pixels are alternately arrayed in a row direction and a column direction, the subpixels of the three colors including a subpixel of a first color, a subpixel of a second color and a subpixel of a third color;

a thin film transistor (TFT) circuit disposed below each of the subpixels to control the subpixels;

at least one connection part that connects the TFT circuit and one of the subpixels; and

an organic light emitting diode (OLED) layer of the first color,

wherein the subpixel of the second color and the subpixel of the third color in one of the first pixels are arrayed in parallel with the subpixel of the second color and the subpixel of the third color in one of the second pixels,

a first arrangement in the column direction of the subpixel of the second color and the subpixel of the third color in one of the first pixels and a second arrangement of the subpixel of the second color and the subpixel of the third color in one of the second pixels are identical,

the subpixels of the second color in one of the first pixels and in one of the second pixels that are adjacent to each other in the row direction are aligned in the row direction,

the subpixel of the first color in one of the first pixels has a biased arrangement and is positioned toward a side of the subpixel of the second color in an array direction of the subpixel of the second color and the subpixel of the third color,

the subpixel of the first color in one of the second pixels has a biased arrangement and is positioned toward a side of the subpixel of the third color in the array direction of the subpixel of the second color and the subpixel of the third color,

the OLED layer of the first color is formed over the subpixel of the first color in one of the first pixels and the subpixel of the first color in one of the second pixels that is adjacent to one of the first pixels in a direction in which the subpixel of the first color in one of the first pixels is biased,

the subpixel of the first color in one of the first pixels has a rectangle or rounded rectangle shape whose long axis is aligned along the direction in which the subpixel of the

second color and the subpixel of the third color in the same one of the first pixels are disposed,

the at least one connection part connected to the subpixel of the first color in one of the first pixels is disposed at a biased position in the array direction of the subpixel of the second color and the subpixel of the third color with respect to the rectangle or rounded rectangle shape of the subpixel of the first color in one of the first pixels and in the OLED layer of the first color,

the subpixel of the first color in one of the second pixels has the rectangle or rounded rectangle shape whose long axis is aligned along the direction in which the subpixel of the second color and the subpixel of the third color in the same one of the second pixels are disposed,

the at least one connection part connected to the subpixel of the first color in one of the second pixels is disposed at a biased position in the array direction of the subpixel of the second color and the subpixel of the third color with respect to the rectangle or rounded rectangle shape of the subpixel of the first color in one of the second pixels and in the OLED layer of the first color,

a position of the at least one connection part connected to the subpixel of the first color in one of the first pixels relative to the rectangle or rounded rectangle shape of the subpixel of the first color in the same one of the first

pixels, and a position of the at least one connection part connected to the subpixel of the first color in one of the second pixels relative to the rectangle or rounded rectangle shape of the subpixel of the ~~second~~ first color in the same one of the ~~first~~ second pixels are different,

the at least one connection part is disposed at an identical position in each of the first pixels and the second pixels independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels,

in the plurality of first pixels and second pixels arranged alternately along the row direction, each connection part connected to the subpixel of the first color in one of the first pixels is positioned in a manner identical to each connection part connected to the subpixel of the first color in one of the second pixels, and

the subpixels in each of the first pixels are arranged identically, and the subpixels in each of the second pixels are arranged identically.

2. (original) The display device according to claim 1, wherein

the subpixel includes an anode electrode, and

the at least one connection part is a portion that connects an output of the TFT circuit and the anode electrode.

3. (original) The display device according to claim 1, wherein

the TFT circuit includes an identical circuit arrangement pattern for the subpixels of the first to third colors.

4. (previously presented) The display device according to claim 1, wherein

in one of the first pixels and one of the second pixels that are adjacent to each other in the row direction, a distance between a first connection part of the at least one connection part for the subpixel of the first color in the one of the first pixels and a second connection part of the at least one connection part for the subpixel of the first color in the one of the second pixels are consistent in the display unit independent of the biased arrangements of the subpixels.

5. (original) The display device according to claim 1, wherein

a first square not crossing the subpixels encloses a region including the subpixels of three colors included in one of the first pixels and excluding other subpixels,

a second square not crossing the subpixels encloses a region including the subpixels of three colors included in one of the second pixels and excluding other subpixels, and

the first square and the second square are arranged without overlapping each other.

6. (previously presented) The display device according to claim 1, wherein

the OLED layer is disposed above the at least one connection part, and

a position where the at least one connection part is disposed overlaps with the OLED layer in a plan view.

7. (previously presented) The display device according to claim 1, wherein

the TFT circuit and one of the subpixels are connected by only one of the at least one connection part.

8. (previously presented) The display device according to claim 2, wherein

a position where the at least one connection part is disposed overlaps with the anode electrode in a plan view.

REMARKS

Claims 1-8 were rejected.

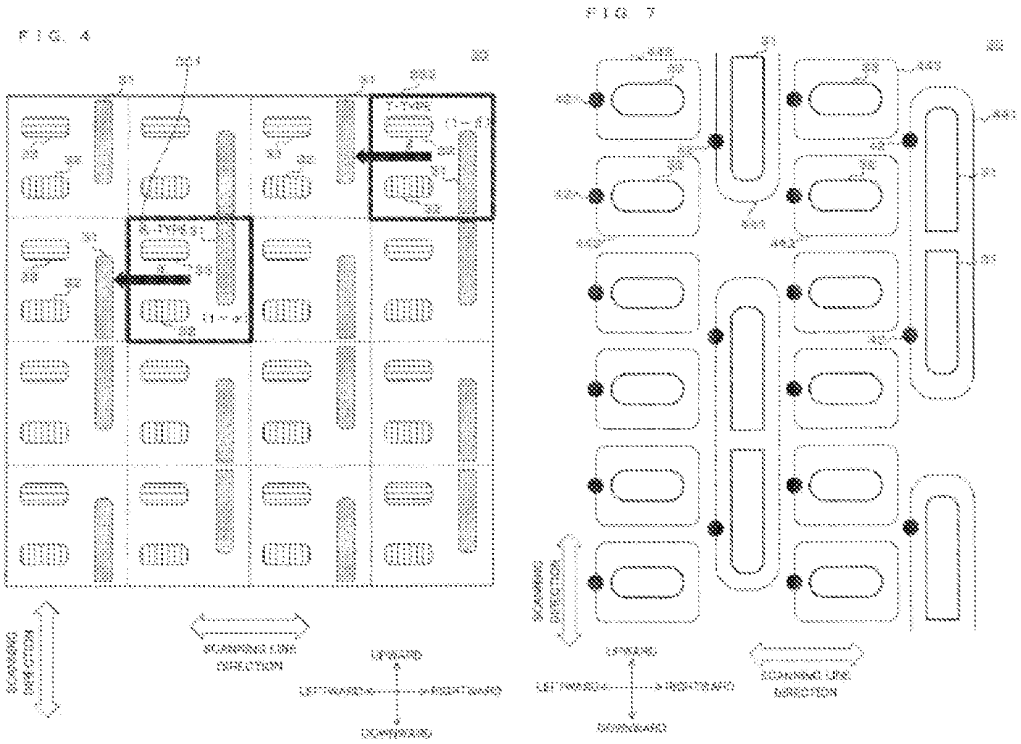
Claim 1 is amended. Support for the amendments to independent claim 1 comes at least from Figs. 4 and 7 and the corresponding portions of the originally-filed specification (including para. [0099] of the published application).

Claims 1-8 are currently pending in this application. No new matter is added.

I. Rejection under 35 U.S.C. § 103

In the Office Action, at page 3, claims 1-8 were rejected under 35 U.S.C. § 103 as being unpatentable over US 2016/0225834 to Kim ("Kim"), US 2009/0121983 to Sung ("Sung"), and US 2006/0170712 to Miller ("Miller"). This rejection is respectfully traversed.

According to the present invention, as illustrated in Figs. 4 and 7, reproduced below, in the plurality of first pixels 351 and plurality of second pixels 352 alternately arranged along the row direction (scanning line direction), the positions of TFT circuit output connection portion 42 connected to first subpixels 31 of first color of the first pixel 351 and the positions of TFT circuit output connection portion 42 connected to first subpixels 31 of first color of the second pixel 352 are the same.



In short, the combination of the teachings of Kim, Sung, and Miller does not disclose or suggest:

> in the plurality of first pixels and second pixels arranged alternately along the row direction, each connection part connected to the subpixel of the first color in one of the first pixels is positioned in a manner identical to each connection part connected to the subpixel of the first color in one of the second pixels,

as recited in amended independent claim 1.

In contrast to the present invention, Kim and Sung do not disclose or suggest that in the plurality of first pixels and second pixels arranged alternately along the row direction, each connection part connected to the subpixel of the first color in one of the first pixels is positioned in a manner

identical to each connection part connected to the subpixel of the first color in one of the second pixels.

Miller is directed to a color display device with enhanced pixel pattern, illustrated in Fig. 4, reproduced below.

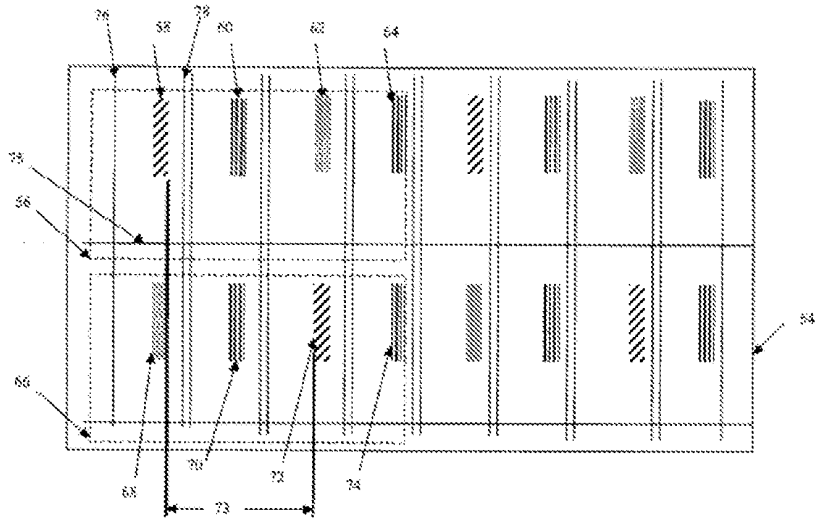


Fig. 4

As shown in FIG. 4, the display device 54 is composed of an array of pixels in a row, each pixel 56 in the row is composed of two lower luminance subpixels of different color, red 58 and blue 62 subpixels, and two higher luminance subpixels of one color, green subpixels 60 and 64, in a repeating fashion. A successive row is composed of an array of pixels 66, in which the location of the red 72 and blue 68 lower luminance subpixels are interchanged with respect to the first pixel 56 while the location of the two higher luminance green subpixels 70 and 74 are maintained within the pixel.

Paras. [0041]-[0044] and Fig. 7 (below) explain that a structure connect subpixel and electrode through a via (which corresponds with connection part).

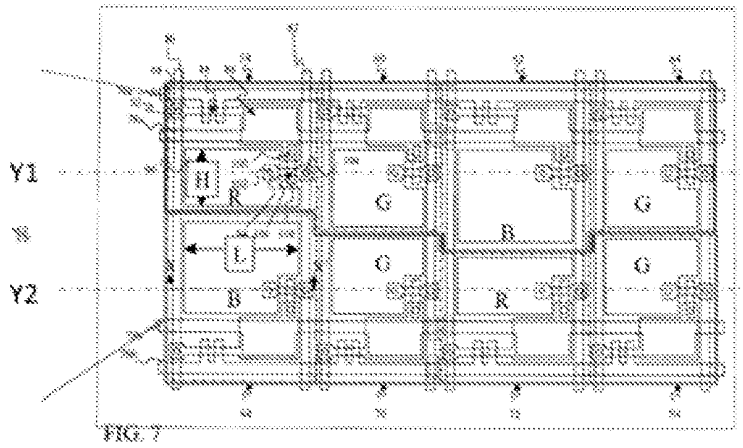


FIG. 7

In Miller, the four subpixels in one pixel (the parts circled above) are arranged in a horizontal row. The vias connected to respective subpixels are arranged in a row, as shown by the upper and lower dashed dotted lines (Y1, Y2).

In contrast to the present invention, Miller does not disclose or suggest that, in the plurality of first pixels and second pixels arranged alternately along the row direction, each connection part connected to the subpixel of the first color in one of the first pixels is positioned in a manner identical to each connection part connected to the subpixel of the first color in one of the second pixels. As shown in Fig. 4 (annotated, below), the pixel 56 (upper) and the pixel 66 (lower) are alternately aligned in the vertical direction, but not in the horizontal direction.

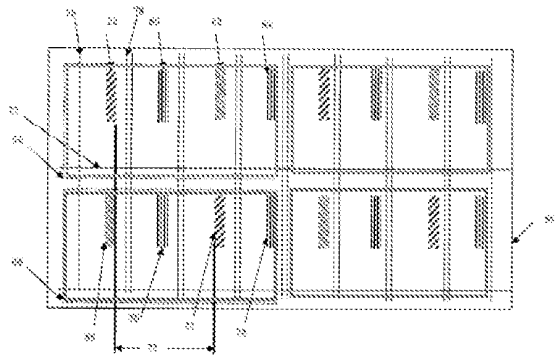


Fig. 4

Therefore, the combination of the teachings of Kim, Sung, and Miller does not disclose or suggest all the features of amended independent claim 1 and claim 1 is patentably distinguished over the reference relied upon. Claims 2-8 depend either directly or indirectly from amended independent claim 1 and are therefore patentably distinguished over the references relied upon for at least the reasons discussed above. Accordingly, withdrawal of the § 103 rejection is respectfully requested.

II. Conclusion

In view of the present amendment and the foregoing remarks, it is believed that the present application has been placed in condition for allowance. Reconsideration and allowance are respectfully requested.

The Commissioner is hereby authorized in this, concurrent, and future submissions to charge any additional fees(s) or underpayment of fee(s) under 37 C.F.R. §§ 1.16, 1.17, and 41.20 or credit any overpayment of fee(s) to Deposit Account No. 14-1140.

Respectfully submitted,

NIXON & VANDERHYE

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KPF/lrs

Electronic Acknowledgement Receipt

EFS ID:	48630812
Application Number:	17301517
International Application Number:	
Confirmation Number:	1637
Title of Invention:	DISPLAY DEVICE AND COMPUTER READABLE MEDIA
First Named Inventor/Applicant Name:	Yojiro MATSUEDA
Customer Number:	466
Filer:	Kari P. Footland/Linda Sayyad
Filer Authorized By:	Kari P. Footland
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Application Type:	Utility under 35 USC 111(a)

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Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		8317-0050_AMD.pdf	447467 70008ab087dbf5f2e35db28f67da422dcce62224	yes	13

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Request for Reconsideration-After Non-Final Rejection	1	1
	Claims	2	7
	Applicant Arguments/Remarks Made in an Amendment	8	13
Warnings:			
Information:			
	Total Files Size (in bytes):	447467	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.
National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.
New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 17/301,517	Filing Date 04/06/2021	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $100 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $480 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	09/24/2023	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 8	Minus	** 20	= 0		x $100 =	0
	Independent (37 CFR 1.16(h))	* 1	Minus	*** 3	= 0		x $480 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	0

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	SLIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/AMANDA CHRISTINE LEMUS/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/301,517	04/06/2021	Yojiro MATSUEDA	8317-0050	1637

466 7590 07/06/2023

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11TH FLOOR
ARLINGTON, VA 22203

EXAMINER	
CASAREZ, BENJAMIN X.	

ART UNIT	PAPER NUMBER
2692	

NOTIFICATION DATE	DELIVERY MODE
07/06/2023	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

pair_nixon@firsttofile.com
ptomail@nixonvan.com

Office Action Summary	Application No. 17/301,517	Applicant(s) MATSUEDA et al.	
	Examiner Benjamin X Casarez	Art Unit 2692	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 31 May 2023.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL.** 2b) ☑ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 1-8 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1-8 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☑ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 31, 2023 has been entered.

Status

This Office Action is responsive to claim amendments filed for No. 17/301,517 on May 31, 2023. Please note: Claim 1 has been amended, and claims 6-8 have been newly added. Claims 1-8 are pending and have been examined.

Notice of Pre-AIA or AIA Status

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Claim Objections

2. Claims 1-8 objected to because of the following informalities:

In lines 80-83 of Claim 1: "relative to the rectangle or rounded rectangle shape of the subpixel of the second color in the same one of the first pixels are different" should read "relative to the rectangle or rounded rectangle shape of the subpixel of the first color in the same one of the second pixels are different" because there is a lack of antecedent basis for "the rectangle or rounded rectangle shape of the subpixel of the second color" and because this limitation is directed to the position of the at least one connection part relative to one of the second pixels. For the purposes of furthering prosecution, the Examiner is interpreting the claim as reading in the claimed manner.

Claims 2-8 depend on claim 1, and are therefore objected to for including the above discussed informalities.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

4. The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-8 are rejected under 35 U.S.C. 103 as being unpatentable over Kim et al. (US 20160225834 A1), hereinafter Kim, in view of Sung et al. (US 20090121983 A1), and in further view of Miller et al. (US 20060170712 A1), hereinafter Miller.

Regarding **Claim 1**, Kim teaches:

A display device **(See paragraphs [0039] and [0067]: FIGS. 1 and 2 are views of an organic light-emitting display apparatus)** comprising:

a display unit **(See FIG. 2)** where a plurality of first pixels each including subpixels of three colors **(See annotated FIG. 2 below: the labeled pixels correspond to first pixels each including subpixels of three colors (R, G, B))** and a plurality of second pixels each including subpixels of three colors arranged differently from the subpixels in one of the first pixels **(See annotated FIG. 2 below: the labeled pixels correspond to second pixels each including subpixels of three colors (R, G, B) arranged differently from the subpixels in one of the first pixels)** are alternately arrayed in a row direction and a column direction **(See annotated FIG. 2 below: the first pixels and the second pixels are alternately arrayed in a row direction (second direction) and a column direction (first direction))**, the subpixels of the three colors including a subpixel of a first color, a subpixel of a second color and a subpixel of a third color **(See paragraph [0059]; See annotated FIG. 2 below: the subpixels of**

the three colors including a subpixel of a first color (B), a subpixel of a second color (G) and a subpixel of a third color (R));

a thin film transistor (TFT) circuit disposed below each of the subpixels **(See FIG. 1: TFT disposed below each of the subpixels, which is composed of an OLED, as discussed in paragraph [0053])** to control the subpixels **(See paragraph [0007]; Although control with the TFT shown in FIG. 1 is not explicitly discussed, it is necessarily true that the TFT element must exert some control over the subpixels in order to cause the subpixels to emit light, as disclosed. Therefore, this is an inherent feature)**;

at least one connection part that connects the TFT circuit and one of the subpixels **(See paragraph [0054], lines 1-4; See FIG. 1: the portion of 141 disposed in the via hole VIA corresponds to at least one connection part that connects the TFT circuit and one of the subpixels)**, and

an organic light emitting diode (OLED) layer of the first color **(See FIG. 1: 143; See paragraph [0056])**,

wherein the subpixel of the second color and the subpixel of the third color in one of the first pixels are arrayed in parallel with the subpixel of the second color and the subpixel of the third color in one of the second pixels **(See annotated FIG. 2 below: the subpixel of the second color (G) and the subpixel of the third color (R) in one of the first pixels (e.g., the top middle first pixel) are arrayed in parallel with the subpixel of the second color (G) and the subpixel of the third color (R) in one of the second pixels (e.g., the top left second pixel))**,

a first arrangement in the column direction of the subpixel of the second color and the subpixel of the third color in one of the first pixels and a second arrangement of the subpixel of the second color and the subpixel of the third color in one of the second pixels are identical **(See annotated FIG. 2 below: a first arrangement in the column direction of the subpixel of the second color (G) and the subpixel of the third color (R) in one of the first pixels (e.g., the top middle first pixel) and a second arrangement of the subpixel of the second color (G) and the subpixel of the third color (R) in one of the second pixels (e.g., the bottom middle second pixel) are identical)**,

the subpixels of the second color in one of the first pixels and in one of the second pixels that are adjacent to each other in the row direction are aligned in the row direction **(See annotated FIG. 2 below: the subpixels of the second color (G) in one of the first pixels (e.g., the top middle first pixel) and in one of the second pixels (e.g., the top left second pixel) that are adjacent to each other in the row direction are aligned in the row direction)**,

the subpixel of the first color in one of the first pixels has a biased arrangement and is positioned toward a side of the subpixel of the second color in an array direction of the subpixel of the second color and the subpixel of the third color **(See annotated FIG. 2 below: the subpixel of the first color (B) in one of the first pixels (e.g., the top middle first pixel) has a biased arrangement and is positioned toward a side of the subpixel of the second color (G) in an array direction of the subpixel of the second color (G) and the subpixel of the third color (R))**,

the subpixel of the first color in one of the second pixels has a biased arrangement and is positioned toward a side of the subpixel of the third color in the array direction of the subpixel of the second color and the subpixel of the third color **(See annotated FIG. 2 below: the subpixel of the first color (B) in one of the second pixels (e.g., the top left second pixel) has a biased arrangement and is positioned toward a side of the subpixel of the third color (R) in the array direction of the subpixel of the second color (G) and the subpixel of the third color (R))**,

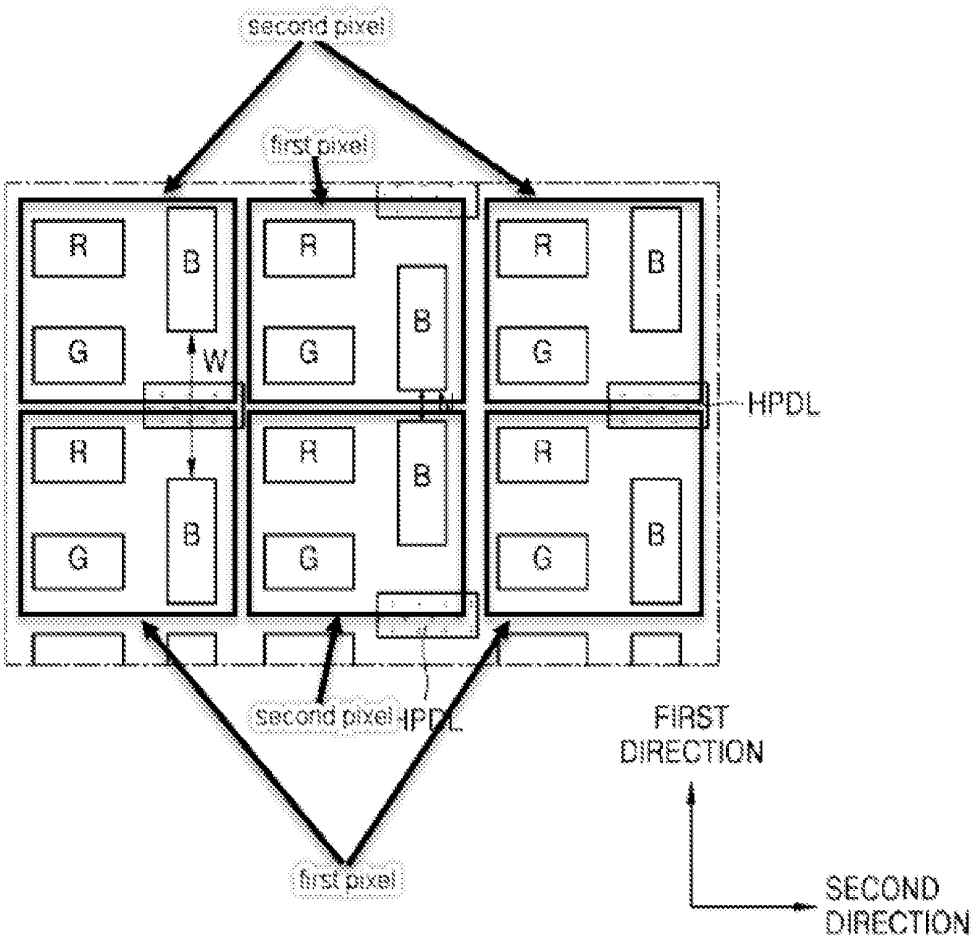
the OLED layer of the first color is formed over the subpixel of the first color in one of the first pixels **(See paragraph [0053])**,

the subpixel of the first color in one of the first pixels has a rectangle or rounded rectangle shape whose long axis is aligned along the direction in which the subpixel of the second color and the subpixel of the third color in the same one of the first pixels are disposed **(See annotated FIG. 2 below: the subpixel of the first color (B) in one of the first pixels has a rectangle or rounded rectangle shape whose long axis is aligned along the direction in which the subpixel of the second color (G) and the subpixel of the third color (R) in the same one of the first pixels are disposed)**,

the subpixel of the first color in one of the second pixels has the rectangle or rounded rectangle shape whose long axis is aligned along the direction in which the subpixel of the second color and the subpixel of the third color in the same one of the second pixels are disposed **(See annotated FIG. 2 below: the subpixel of the first color (B) in one of the second pixels has a rectangle or rounded rectangle shape whose long axis is aligned along the direction in which the subpixel of the second color (G) and the subpixel of the third color (R) in the same one of the second pixels are disposed)**, and

the subpixels in each of the first pixels are arranged identically, and the subpixels in each of the second pixels are arranged identically **(See annotated FIG. 2 below: the subpixels in each of the first pixels are arranged identically, and the subpixels in each of the second pixels are arranged identically)**.

FIG. 2



Kim does not explicitly teach:

the OLED layer of the first color is formed over the subpixel of the first color in one of the first pixels and the subpixel of the first color in one of the second pixels that is adjacent to one of the first pixels in a direction in which the subpixel of the first color in one of the first pixels is biased,

the at least one connection part connected to the subpixel of the first color in one of the first pixels is disposed at a biased position in the array direction of the subpixel of the second color and the subpixel of the third color with respect to the rectangle or rounded rectangle shape of the subpixel of the first color in one of the first pixels and in the OLED layer of the first color,

the at least one connection part connected to the subpixel of the first color in one of the second pixels is disposed at a biased position in the array direction of the subpixel of the second color and the subpixel of the third color with respect to the rectangle or rounded rectangle shape of the subpixel of the first color in one of the second pixels and in the OLED layer of the first color.

a position of the at least one connection part connected to the subpixel of the first color in one of the first pixels relative to the rectangle or rounded rectangle shape of the subpixel of the first color in the same one of the first pixels, and a position of the at least one connection part connected to the subpixel of the first color in one of the second pixels relative to the rectangle or rounded rectangle shape of the subpixel of the second color in the same one of the first pixels are different,

the at least one connection part is disposed at an identical position in each of the first pixels and the second pixels independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels.

However, in the same field of endeavor, displays **(Sung, Abstract)**, Sung teaches:

An OLED layer **(FIG. 1: 370B)** of a first color is formed over a subpixel of a first color in a first pixel and a subpixel of the first color a second pixels **(See paragraph [0084] and FIG. 11: 370B is formed over pixel electrodes 191B1 and 191B2 of a subpixel of a first color in a first pixel and a subpixel of the first color a second pixels)** that is adjacent to one of the first pixels in a direction in which the subpixel of the first color in one of the first pixels is biased **(See FIG. 10: a first pixel includes B1 and a second pixel includes B2, where the first and second pixels are adjacent in a direction in which the subpixel of the first color in one of the first pixels is biased)**

Therefore, it would have been obvious to one of ordinary skill in the art, before the effective filing date of the claimed invention, to modify the display device **(as taught by Kim)** so the OLED layer of the first color is formed over the subpixel of the first color in one of the first pixels and the subpixel of the first color in one of the second pixels that is adjacent to one of the first pixels in a direction in which the subpixel of the first color in one of the first pixels is biased **(as taught by Sung)**. Doing so would prevent reduction of the emission area and the aperture ratio by the interval between the emission layers **(See Sung, paragraph [0097])**.

Kim in view of Sung does not explicitly teach:

the at least one connection part connected to the subpixel of the first color in one of the first pixels is disposed at a biased position in the array direction of the subpixel of the second color and the subpixel of the third color with respect to the rectangle or rounded rectangle shape of the subpixel of the first color in one of the first pixels and in the OLED layer of the first color,

the at least one connection part connected to the subpixel of the first color in one of the second pixels is disposed at a biased position in the array direction of the subpixel of the second color and the subpixel of the third color with respect to the rectangle or rounded rectangle shape of the subpixel of the first color in one of the second pixels and in the OLED layer of the first color.

a position of the at least one connection part connected to the subpixel of the first color in one of the first pixels relative to the rectangle or rounded rectangle shape of the subpixel of the first color in the same one of the first pixels, and a position of the at least one connection part connected to the subpixel of the first color in one of the second pixels relative to the rectangle or rounded rectangle shape of the subpixel of the second color in the same one of the first pixels are different,

the at least one connection part is disposed at an identical position in each of the first pixels and the second pixels independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels.

However, in the same field of endeavor, a color display device **(Miller, Abstract)**, Miller teaches:

at least one connection part **(FIG. 7: 102) (See paragraph [0042])** connected to a subpixel of a first color in one of first pixels **(See FIG. 4 and paragraph [0034], lines 1-6: 56 corresponds to a first pixel; See FIG. 7: B corresponds to a subpixel of a first color)** is disposed at a biased position in an array direction of a subpixel of a second color and a subpixel of a third color with respect to a rectangle or rounded rectangle shape of the subpixel of the first color in one of the first pixels **(See FIG. 7: 102 is disposed at a biased position in an array direction of a subpixel of a second color (G) and a subpixel of a third color (R) with respect to a rectangle or rounded rectangle shape of the subpixel of the first color (B) in one of the first pixels)** and in an OLED layer of the first color **(See paragraph [0047] and FIGS. 7 and 8: 102 is disposed at a biased position in an OLED layer 110 of the first color (B))**,

at least one connection part connected to a subpixel of a first color in one of second pixels **(See FIG. 4 and paragraph [0034], lines 10-15: 66 corresponds to a second pixel; See FIG. 7: B corresponds to a subpixel of a**

first color) is disposed at a biased position in an array direction of a subpixel of a second color and a subpixel of a third color with respect to a rectangle or rounded rectangle shape of the subpixel of the first color in one of the second pixels **(See FIG. 7: 102 is disposed at a biased position in an array direction of a subpixel of a second color (G) and a subpixel of a third color (R) with respect to a rectangle or rounded rectangle shape of the subpixel of the first color (B) in one of the second pixels)** and in an OLED layer of the first color **(See paragraph [0047] and FIGS. 7 and 8: 102 is disposed at a biased position in an OLED layer 110 of the first color (B))**.

a position of the at least one connection part connected to the subpixel of the first color in one of the first pixels relative to the rectangle or rounded rectangle shape of the subpixel of the first color in the same one of the first pixels, and a position of the at least one connection part connected to the subpixel of the first color in one of the second pixels relative to the rectangle or rounded rectangle shape of the subpixel of the second color in the same one of the first pixels are different **(See FIGS. 4 and 7: a position of the at least one connection part 102 connected to the subpixel of the first color (B) in one of the first pixels 56 relative to the rectangle or rounded rectangle shape of the subpixel of the first color (B) in the same one of the first pixels 56, and a position of the at least one connection part 102 connected to the subpixel of the first color (B) in one of the second pixels 66 relative to the rectangle or rounded rectangle shape of the subpixel of the second color (B) in the same one of the first 66 pixels are different)**,

the at least one connection part is disposed at an identical position in each of the first pixels and the second pixels independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels **(See FIGS. 4 and 7: the at least one connection part 102 is disposed at an identical position in each of the first pixels 56 and the second pixels 66 independent of an arrangement of the subpixels in one of the first pixels 56 and the subpixels in one of the second pixels 66)**.

Kim in view of Sung contained **a device which differed from the claimed device by the substitution of** the at least one connection part connected to the subpixel of the first color in each of the first and second pixels, but without the specific positional arrangement that is claimed. Miller **teaches the substituted element of** at least one connection part disposed in the claimed manner. **Their functions were known in the art** to connect OLEDs to driving circuitry for each subpixel. The at least one connection part taught by Kim in view of Sung could have been substituted with the at least one connection part taught by Miller and the **results would have been predictable** and

resulted in placing the at least one connection part connected to each of the subpixels so that they are aligned in the row direction, as shown in FIG. 7 of Miller.

Therefore, the claimed subject matter would have been obvious to a person having ordinary skill in the art before the effective filing date of the claimed invention.

Regarding **Claim 2**, Kim in view of Sung, and in further view of Miller teaches all of the elements of the claimed invention, as stated above. Furthermore, Kim in view of Sung, and in further view of Miller teaches:

The display device according to claim 1, wherein

the subpixel includes an anode electrode **(See Kim, paragraph [0057] and FIG. 1: 141) (See Miller, paragraph [0042] and FIG. 8: 96)**, and

the at least one connection part is a portion that connects an output of the TFT circuit **(Miller, FIG. 6: 84 and 88)** and the anode electrode **(See Miller, paragraph [0042])**.

Regarding **Claim 3**, Kim in view of Sung, and in further view of Miller teaches all of the elements of the claimed invention, as stated above. Furthermore, Kim teaches:

The display device according to claim 1, wherein

the TFT circuit includes an identical circuit arrangement pattern for the subpixels of the first to third colors **(See paragraph [0040] and FIG. 1: the TFT has an identical circuit arrangement pattern (an identical pattern of S, G, A and D) for the subpixels of the first to third colors)**.

Regarding **Claim 4**, Kim in view of Sung, and in further view of Miller teaches all of the elements of the claimed invention, as stated above. Furthermore, Kim in view of Sung, and in further view of Miller teaches:

The display device according to claim 1, wherein

in one of the first pixels and one of the second pixels that are adjacent to each other in the row direction, a distance between a first connection part **(102)** of the at least one connection part for the subpixel of the first color **(B)** in the one of the first pixels **(56)** and a second connection part **(102)** of the at least one connection part for the subpixel of the first color **(B)** in the one of the second pixels **(66)** are consistent in the display unit independent of the biased arrangements of the subpixels **(See Miller, FIGS. 4 and 7: in one of the first pixels 56 and one of the**

second pixels 66 that are adjacent to each other in the row direction, a distance between a first connection part (102) of the at least one connection part for the subpixel of the first color (B) in the one of the first pixels (56) and a second connection part (102) of the at least one connection part for the subpixel of the first color (B) in the one of the second pixels (66) are consistent in the display unit independent of the biased arrangements of the subpixels; Furthermore, as applied to the first and second pixels of Kim, the relationship between the connection parts taught by Miller would hold true).

In addition, the same motivation is used as the rejection for claim 1.

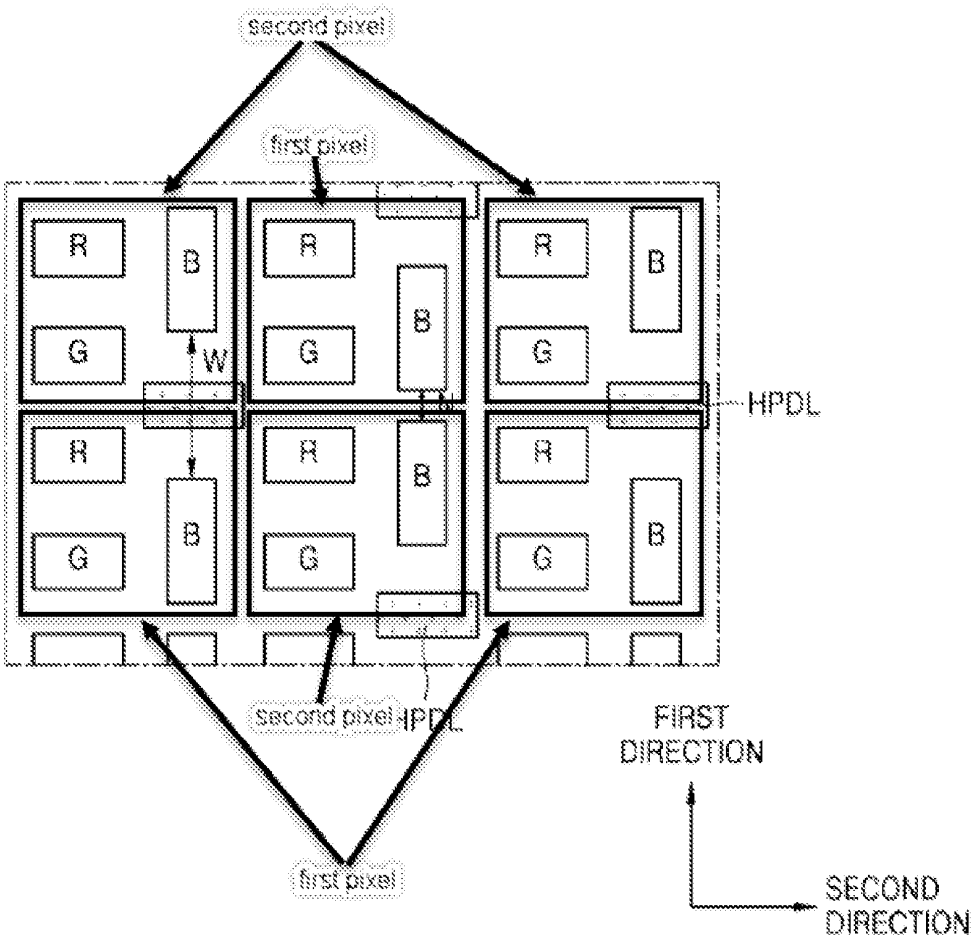
Regarding **Claim 5**, Kim in view of Sung, and in further view of Miller teaches all of the elements of the claimed invention, as stated above. Furthermore, Kim teaches:

The display device according to claim 1, wherein a first square not crossing the subpixels encloses a region including the subpixels of three colors included in one of the first pixels and excluding other subpixels (**See annotated FIG. 2 below: a first square not crossing the subpixels encloses a region including the subpixels of three colors R,G, B included in one of the first pixels (e.g., the top middle first pixel) and excluding other subpixels**),

a second square not crossing the subpixels encloses a region including the subpixels of three colors included in one of the second pixels and excluding other subpixels (**See annotated FIG. 2 below: a second square not crossing the subpixels encloses a region including the subpixels of three colors R, G, B included in one of the second pixels (e.g., the top left second pixel) and excluding other subpixels**), and

the first square and the second square are arranged without overlapping each other (**See annotated FIG. 2 below: the first square and the second square are arranged without overlapping each other**).

FIG. 2



Regarding **Claim 6**, Kim in view of Sung, and in further view of Miller teaches all of the elements of the claimed invention, as stated above. Furthermore, Kim in view of Sung, and in further view of Miller teaches:

The display device according to claim 1, wherein the OLED layer is disposed above the at least one connection part (**See Kim, FIG. 1: the OLED layer 143 is disposed above the portion of 141 disposed in the via hole VIA; See Miller, FIG. 8: the OLED layer 110 is disposed above the at least one connection part connecting 92 to 96**), and

a position where the at least one connection part is disposed overlaps with the OLED layer in a plan view **(See Miller, FIGS. 7 and 8: a position where the at least one connection part 102 is disposed overlaps with the OLED layer 110 in a plan view)**.

In addition, the same motivation is used as the rejection for claim 1.

Regarding **Claim 7**, Kim in view of Sung, and in further view of Miller teaches all of the elements of the claimed invention, as stated above. Furthermore, Kim in view of Sung, and in further view of Miller teaches:

The display device according to claim 1, wherein the TFT circuit and one of the subpixels are connected by only one of the at least one connection part **(See Miller, paragraph [0042] and FIGS. 7 and 8: the TFT circuit (shown in FIG. 6: 84 and 88) and one of the subpixels (B) are connected by only one of the at least one connection part 102)**.

In addition, the same motivation is used as the rejection for claim 1.

Regarding **Claim 8**, Kim in view of Sung, and in further view of Miller teaches all of the elements of the claimed invention, as stated above. Furthermore, Kim in view of Sung, and in further view of Miller teaches:

The display device according to claim 2, wherein a position where the at least one connection part is disposed overlaps with the anode electrode in a plan view **(See Miller, FIGS. 7 and 8: a position where the at least one connection part 102 is disposed overlaps with the anode electrode 96 in a plan view)**.

In addition, the same motivation is used as the rejection for claim 1.

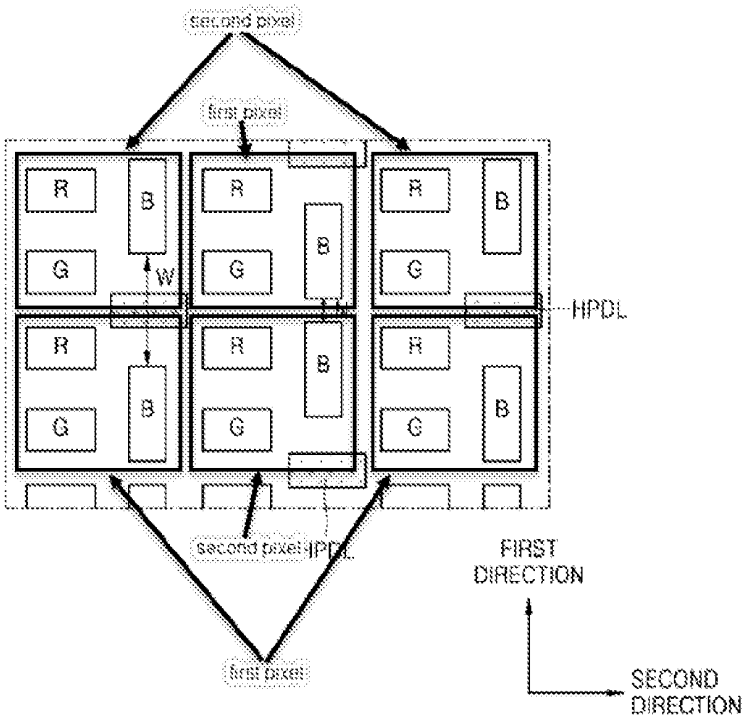
Response to Arguments

6. Applicant's arguments filed 05/31/2023 have been fully considered but they are moot on the grounds of new rejections and not persuasive in part.

Applicant argues (Remarks, page 10): "In contrast to the present invention, Kim and Sung do not disclose or suggest that the subpixel of the first color in one of the first pixels has a rectangle or rounded rectangle shape whose long axis is aligned along the direction in which the subpixel of the second color and the subpixel of the third color in the same one of the first pixels are disposed, and the subpixel of the first color in one of the second pixels has the rectangle or rounded rectangle shape whose long axis is aligned along the direction in which the subpixel of

the second color and the subpixel of the third color in the same one of the second pixels are disposed". The Examiner respectfully disagrees in part. Specifically, the Examiner submits that Kim teaches: the subpixel of the first color in one of the first pixels has a rectangle or rounded rectangle shape whose long axis is aligned along the direction in which the subpixel of the second color and the subpixel of the third color in the same one of the first pixels are disposed **(See annotated FIG. 2 below: the subpixel of the first color (B) in one of the first pixels has a rectangle or rounded rectangle shape whose long axis is aligned along the direction in which the subpixel of the second color (G) and the subpixel of the third color (R) in the same one of the first pixels are disposed)**, the subpixel of the first color in one of the second pixels has the rectangle or rounded rectangle shape whose long axis is aligned along the direction in which the subpixel of the second color and the subpixel of the third color in the same one of the second pixels are disposed **(See annotated FIG. 2 below: the subpixel of the first color (B) in one of the second pixels has a rectangle or rounded rectangle shape whose long axis is aligned along the direction in which the subpixel of the second color (G) and the subpixel of the third color (R) in the same one of the second pixels are disposed)**.

FIG. 2



Applicant argues (Remarks, page 11) that Shin does not teach the above discussed limitations. These arguments are respectfully moot on the grounds of new rejections. Specifically, Shin is no longer relied upon in the above rejections.

Applicant argues (Remarks, pages 12-13) that Kim, Sung, Shin and Park do not disclose the amended limitations directed to the at least one connection part. These arguments are respectfully moot on the grounds of new rejections. Specifically, Shin and Park are no longer relied upon in the above rejections, and Miller has been introduced to render the argued limitations obvious in combination with Kim and Sung.

For the above reasons, Applicant's arguments are not convincing to overcome the current rejections.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Benjamin X Casarez whose telephone number is (571)270-5332. The examiner can normally be reached Monday-Friday: 7:30 am - 5:00 pm.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lun Yi Lao can be reached on (571) 272-7671. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: https://patentcenter.uspto.gov. Visit https://www.uspto.gov/patents/apply/patent-center for more information about Patent Center and https://www.uspto.gov/patents/docx for information about filing in DOCX format. For additional questions, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BENJAMIN X CASAREZ/
Primary Examiner, Art Unit 2692

Notice of References Cited	Application/Control No. 17/301,517	Applicant(s)/Patent Under Reexamination MATSUEDA et al.	
	Examiner Benjamin X Casarez	Art Unit 2692	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20060170712-A1	08-2006	Miller; Michael E.	H10K59/352	345/695
	B					
	C					
	D					
	E					
	F					
	G					
	H					
	I					
	J					
	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/301,517	MATSUEDA et al.
	Examiner	**Art Unit**
	Benjamin X Casarez	2692

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	10/21/2021	03/22/2022	07/29/2022	03/06/2023					
	1	✓	✓	✓	✓					
	2	✓	✓	✓	✓					
	3	✓	✓	✓	✓					
	4	✓	✓	✓	✓					
	5	✓	✓	✓	✓					
	6				✓					
	7				✓					
	8				✓					

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/301,517	MATSUEDA et al.
	Examiner	Art Unit
	Benjamin X Casarez	2692

CPC - Searched*		
Symbol	**Date**	**Examiner**
G09G2300/0452 (with text search)	06/29/2023	BC
G09G2300/0842 (with text search)	03/03/2023	BC
G09G2300/0861 (with text search)	03/03/2023	BC
G09G2310/0262 (with text search)	03/03/2023	BC
G09G2310/0283 (with text search)	03/03/2023	BC
G09G3/2003 (with text search)	03/03/2023	BC
G09G3/3233 (with text search)	06/28/2023	BC
G09G3/3266 (with text search)	03/03/2023	BC
G09G3/3208 (with text search)	06/29/2023	BC

CPC Combination Sets - Searched*		
Symbol	**Date**	**Examiner**

US Classification - Searched*			
Class	**Subclass**	**Date**	**Examiner**

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

/BENJAMIN X CASAREZ/ Examiner, Art Unit 2692	

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/301,517	MATSUEDA et al.
	Examiner	**Art Unit**
	Benjamin X Casarez	2692

Search Notes		
Search Notes	**Date**	**Examiner**
EAST search started	10/21/2021	BC
EAST inventor and assignee name search (with text search)	10/21/2021	BC
Updated PE2E search started	03/22/2022	BC
Updated PE2E inventor and assignee name search (with text search)	03/22/2022	BC
Updated PE2E search started	07/29/2022	BC
Updated PE2E inventor and assignee name search (with text search)	07/29/2022	BC
Updated PE2E search started	03/03/2023	BC
Updated PE2E inventor and assignee name search (with text search)	03/06/2023	BC
Updated PE2E search started	06/28/2023	BC
Updated PE2E inventor and assignee name search (with text search)	06/30/2023	BC

Interference Search			
US Class/CPC Symbol	**US Subclass/CPC Group**	**Date**	**Examiner**

/BENJAMIN X CASAREZ/ Examiner, Art Unit 2692	

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
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L26	43	("9013098" | "20120056531" | "20130222217").pn. OR ("9245932" | "2015/0129856" | "2012/0056531").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 10:25 AM
L27	6	(14/526077 | 14/537522 | 13/227271).APP.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 10:25 AM
L28	69	("9013098" | "20120056531" | "20130222217" | "20070002084" | "20090121983" | "20120169682" | "20130057521" | "20130113363" | "20050225232" | "20070064020" | "20090121983" | "20090195144" | "20090322215" | "20110180825").pn. OR ("2015/0144908" | "9245932" | "2015/0129856" | "9013098" | "2012/0056531" | "8593057").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 10:25 AM
L29	69	L26 L28	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 10:26 AM
L30	4	("8552635" | "20120056531" | "20160148981").pn. OR ("10497757").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 11:17 AM
L31	13	"56011000".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA,	OR	ON	ON	2022/03/22 11:18 AM

			VN); FPRS; JPO)				
L32	7	("20060017375" | "20080116463" | "20080252200" | "20090200936" | "20100309172" | "20120025182" | "20120056531").pn. OR ("9893127").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 11:28 AM
L33	6	("20060077139" | "20160148981" | "20170352312").pn. OR ("2020/0035156" | "11107399").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 12:48 PM
L34	10	("8552635" | "20120056531" | "20160148981").pn. OR ("10497757" | "2018/0315801").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 12:50 PM
L35	6	"62147578".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2022/03/22 12:54 PM
L36	12	("20080074041" | "20110050604" | "20140240279" | "20140333852" | "20140354617" | "20080074041" | "20110050604" | "20140240279" | "20140333852" | "20140354617" | "20170061849" | "20180143721").pn. OR ("2018/0143721" | "2020/0004370" | "10452182" | "10671200").urpn. AND (PGPB | USPT |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 12:54 PM

		USOC).dbnm.					
L37	11	"56554736".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2022/03/22 01:02 PM
L38	30118	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/03/22 01:16 PM
L39	143601	(G09G2300/0842 OR G09G2300/0861 OR G09G2310/0262 OR G09G2310/0283 OR G09G3/2003 OR G09G3/3233 OR G09G3/3266).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/03/22 01:17 PM
L40	14825	L38 AND L39	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO,	OR	ON	ON	2022/03/22 01:17 PM

			NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L41	1727	L40 AND (blue WITH (pixel subpixel) WITH (divid$4 split$4 combin$4 shar$4))	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/03/22 01:17 PM
L42	237	L41 AND (TFT WITH (connect$4 coupl$4))	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/03/22 01:18 PM
L43	56	L5 and ((subpixel (sub near2 pixel)) with (color colour)) and ((thin near2 film) TFT) and bias$4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/03/22 01:24 PM
L44	2	((US-20150129856-A1 OR US-20160225833-A1).did. AND PGPB.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT;	OR	ON	ON	2022/03/22 04:23 PM

			IBM_TDB)				
L45	5	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2 OR US-9893127-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/03/22 05:09 PM
L46	2	((US-20150129856-A1 OR US-20160225833-A1).did. AND PGPB.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/18 10:09 AM
L47	31381	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/18 10:51 AM
L48	7	L41 AND (TFT WITH (connect$4 coupl$4) WITH (subpixel (sub near2 pixel)) WITH (via hole))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV,	OR	ON	ON	2022/07/18 10:52 AM

			MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L49	187	L47 AND (TFT WITH (connect$4 coupl$4) WITH (subpixel (sub near2 pixel)) WITH (via hole))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/18 11:00 AM
L50	78014	(G09G3/3233).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/18 11:18 AM
L51	4685	L47 AND L50	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/18 11:18 AM
L52	117	L51 AND (TFT WITH	(US-PGPUB; USPAT;	OR	ON	ON	2022/07/18

		(connect$4 coupl$4) WITH (via hole))	USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				11:19 AM
L53	50	((US-20150379924-A1 OR US-20090051627-A1 OR US-20060158466-A1 OR US-20060103615-A1 OR US-20210225247-A1 OR US-20170061849-A1 OR US-20200035156-A1 OR US-20180143721-A1 OR US-20160148981-A1 OR US-20110260952-A1 OR US-20180315801-A1 OR US-20150129856-A1 OR US-20170116900-A1 OR US-20200043990-A1 OR US-20140197396-A1 OR US-20120056531-A1 OR US-20120092238-A1 OR US-20110291550-A1 OR US-20100270912-A1 OR US-20090121983-A1 OR US-20110260951-A1 OR US-20170132969-A1 OR US-20170092174-A1 OR US-20160379540-A1 OR US-20160155416-A1 OR US-20160126287-A1 OR US-20160104413-A1 OR US-20160027404-A1 OR US-20160019825-A1 OR US-20150235617-A1 OR US-20150061978-A1 OR US-20150035729-A1 OR US-	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/18 11:41 AM

		20130286262-A1 OR US-20090322215-A1 OR US-20160225833-A1 OR US-20130002992-A1 OR US-20150364075-A1 OR US-20150129853-A1 OR US-20140292622-A1 OR US-20070029941-A1).did. AND PGPB.dbnm.) OR ((US-9767741-B2 OR US-11107399-B2 OR US-9245932-B2 OR US-10692938-B2 OR US-10546906-B2 OR US-10497757-B2 OR US-8552635-B2 OR US-10312295-B2 OR US-10103205-B2).did. AND USPT.dbnm.) OR ((CN-101960504-A).did. AND FTDB.dbnm.)					
L54	14	L53 AND (TFT WITH (connect$4 coupl$4) WITH (via hole))	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/18 11:41 AM
L55	5	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/20 12:35 PM
L56	2	(14/855199).APP.	(US-PGPUB; USPAT;	OR	ON	ON	2022/07/29

			USOCR)				09:09 AM
L57	12	("20060017375" | "20080116463" | "20080252200" | "20090200936" | "20100309172" | "20120025182" | "20120056531").pn. OR ("2016/0225833" | "9893127").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/07/29 09:10 AM
L58	12	"56554731".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2022/07/29 09:13 AM
L59	31450	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:15 AM
L60	151353	(G09G2300/0842 OR G09G2300/0861 OR G09G2310/0262 OR G09G2310/0283 OR G09G3/2003 OR G09G3/3233 OR G09G3/3266).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT;	OR	ON	ON	2022/07/29 09:15 AM

			IBM_TDB)				
L61	15705	L38 AND L39	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:15 AM
L62	1778	L40 AND (blue WITH (pixel subpixel) WITH (divid$4 split$4 combin$4 shar$4))	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:15 AM
L63	245	L41 AND (TFT WITH (connect$4 coupl$4))	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:15 AM
L64	1934	(nlt).IN,AANM,AS.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:15 AM
L65	916	((MATSUEDA near2 YOJIRO) (TAKATORI near2 KENICHI)).IN.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	OR	ON	ON	2022/07/29 09:16 AM

			IBM_TDB)				
L66	2717	L3 L4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:16 AM
L67	61	L5 and ((subpixel (sub near2 pixel)) with (color colour)) and ((thin near2 film) TFT) and bias$4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:16 AM
L68	54	L67 AND (TFT WITH (connect$4 coupl$4))	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:16 AM
L69	6	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 02:37 PM
L70	6	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 04:01 PM
L71	14	("20150129856"|"20140292622"|"20120056531"|"9245932"|"20160225833").PN.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO,	OR	ON	ON	2022/07/29 04:01 PM

			RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L72	1	L70 NOT L71	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 04:01 PM
L73	6	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/04 11:45 AM
L74	2	((US-20160225834-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 11:05 AM
L75	4	(14/969251 | 14/526077).APP.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 11:18 AM
L76	29	("20020149720" |	(US-PGPUB; USPAT;	OR	ON	ON	2023/03/03

		"20070200488" | "20090058271" | "20090121983" | "20100033084" | "20130021566" | "20140111757" | "20140197396" | "20140252321" | "20140319479" | "20160225833" | "9013098" | "20120056531" | "20130222217").pn. OR ("2016/0225834" | "10263054" | "2015/0144908" | "9245932").urpn. AND (PGPB | USPT | USOC).dbnm.	USOCR)				11:18 AM
L77	10	"49002264".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/03 11:35 AM
L78	25	("6940222" | "8330352" | "20020070909" | "20030052597" | "20050139834" | "20070001954" | "20070002084" | "20080111459" | "20090322215" | "20110248985" | "20110279014" | "20120056531" | "20120097933").pn. OR ("2013/0222217" | "2016/0155780" | "9972663").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 11:36 AM
L79	2	"40623242".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS,	OR	ON	ON	2023/03/03 11:43 AM

			IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)				
L80	33979	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 11:44 AM
L81	166416	(G09G2300/0842 OR G09G2300/0861 OR G09G2310/0262 OR G09G2310/0283 OR G09G3/2003 OR G09G3/3233 OR G09G3/3266).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 11:44 AM
L82	17422	L38 AND L39	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 11:45 AM
L83	5441	L82 AND (((transistor TFT) WITH (connect$4	(US-PGPUB; USPAT; USOCR; FIT (AP, AT,	OR	ON	ON	2023/03/03 11:45 AM

		coupl$4 contact$4 hole via)))	AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L84	173	L82 AND (((transistor TFT) WITH (connect$4 coupl$4 contact$4 hole via)) WITH overlap$4 WITH (OLED emission emitting))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 11:45 AM
L85	9	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 11:46 AM
L86	53	((US-20150379924-A1 OR US-20090051627-A1 OR US-20060158466-A1 OR US-20060103615-A1 OR US-20210225247-A1 OR US-20170061849-A1 OR US-20200035156-A1 OR US-20180143721-A1 OR US-	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE,	OR	ON	ON	2023/03/03 12:41 PM

		20160148981-A1 OR US-20110260952-A1 OR US-20180315801-A1 OR US-20150129856-A1 OR US-20170116900-A1 OR US-20200043990-A1 OR US-20140197396-A1 OR US-20120056531-A1 OR US-20120092238-A1 OR US-20110291550-A1 OR US-20100270912-A1 OR US-20090121983-A1 OR US-20110260951-A1 OR US-20170132969-A1 OR US-20170092174-A1 OR US-20160379540-A1 OR US-20160155416-A1 OR US-20160104413-A1 OR US-20160027404-A1 OR US-20160019825-A1 OR US-20150235617-A1 OR US-20150061978-A1 OR US-20150035729-A1 OR US-20130286262-A1 OR US-20090322215-A1 OR US-20160126287-A1 OR US-20160225833-A1 OR US-20130002992-A1 OR US-20150364075-A1 OR US-20150129853-A1 OR US-20140292622-A1 OR US-20070029941-A1 OR US-20160225834-A1 OR US-20130222217-A1).did. AND PGPB.dbnm.) OR ((US-9767741-B2 OR US-11107399-B2 OR US-9245932-B2 OR US-10692938-B2 OR US-10546906-B2 OR US-10497757-B2 OR US-8552635-B2 OR US-10312295-B2 OR US-10103205-B2 OR US-10615237-B2).did. AND USPT.dbnm.) OR ((CN-101960504-A).did.	SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				

		AND FTDB.dbnm.)					
L87	15	"56011000".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/03 12:45 PM
L88	14	"51620270".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/03 02:25 PM
L89	94	("7365488" | "8253323" | "8552635" | "20040036421" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "7365488" | "8253323" | "8552635" | "9478586" | "20040036421" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "7365488" | "8253323" | "8319906" | "8338832" | "8552635" | "9478586" | "20040036421" | "20050057460" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "20120056531" | "7365488" | "8232123" | "8253323" | "8319906" | "8338832" | "8552635" | "9231000" | "9478586" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 02:25 PM

		"20040036421" | "20040183083" | "20050057460" | "20050242712" | "20070015429" | "20090128018" | "20090289963" | "20110102402" | "20110291550" | "20120056531" | "20140132584" | "7365488" | "8232123" | "8253323" | "8319906" | "8338832" | "8552635" | "8587194" | "9231000" | "9478586" | "10084029" | "10546906" | "10923545" | "20040036421" | "20040183083" | "20050057460" | "20050242712" | "20070015429" | "20090128018" | "20090289963" | "20110102402" | "20110291550" | "20120056531" | "20140132584").pn. OR ("2014/0292622" | "2017/0012094" | "2019/0027546" | "2020/0144349" | "2021/0134908" | "9478586" | "10084029" | "10546906" | "10923545" | "11574969").urpn. AND (PGPB | USPT | USOC).dbnm.					
L90	347	L82 AND ((transistor TFT) WITH overlap$4 WITH (OLED emission emitting))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 02:52 PM
L91	174	L90 NOT L84	(US-PGPUB; USPAT;	OR	ON	ON	2023/03/03

			USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				02:52 PM
L92	2	"20210225247"	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 03:16 PM
L93	33979	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 03:16 PM
L94	202	L93 AND (((transistor TFT) WITH (connect$4 coupl$4 contact$4 hole via)) WITH overlap$4 WITH (OLED emission emitting))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 03:17 PM
L95	29	L94 NOT L84	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV,	OR	ON	ON	2023/03/03 03:17 PM

			MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L96	9	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 03:28 PM
L97	430	L93 AND ((transistor TFT) WITH overlap$4 WITH (OLED emission emitting))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 03:28 PM
L98	83	L97 NOT L90	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 03:29 PM
L99	17	(14/969251 | 14/855199	(US-PGPUB; USPAT;	OR	ON	ON	2023/03/03

		| 14/526077 | 14/537522 | 13/963987 | 14/156188 | 13/467737 | 13/227271 | 12/250225).APP.	USOCR)				03:33 PM
L100	350	("20020149720" | "20070200488" | "20090058271" | "20090121983" | "20100033084" | "20130021566" | "20140111757" | "20140197396" | "20140252321" | "20140319479" | "20160225833" | "20060017375" | "20080116463" | "20080252200" | "20090200936" | "20100309172" | "20120025182" | "20120056531" | "9013098" | "20120056531" | "20130222217" | "20070002084" | "20090121983" | "20120169682" | "20130057521" | "20130113363" | "7365488" | "8253323" | "8552635" | "20040036421" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "6294398" | "6992326" | "7132788" | "7443093" | "8110825" | "8115216" | "8124172" | "8309376" | "8330352" | "20040144975" | "20050112341" | "20080024402" | "20080111474" | "20090195144" | "20090243483" | "20110183268" | "20110229994" | "20110248247" | "20110309389" | "20120049178" | "20120091482" | "20120228602" | "20120319089" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 03:33 PM

		"20120326136" | "20120326600" | "20130109117" | "20140070175" | "20140078126" | "20050225232" | "20070064020" | "20090121983" | "20090195144" | "20090322215" | "20110180825" | "5341153" | "6008868" | "6366025" | "6429601" | "6747618" | "6801000" | "6838819" | "6867549" | "6870323" | "6903754" | "6919681" | "6940222" | "7205713" | "7239363" | "7492337" | "7508126" | "7728802" | "7791565" | "7821553" | "7825584" | "8013817" | "8247966" | "20020014837" | "20020015110" | "20030052597" | "20040036421" | "20040108818" | "20040125278" | "20040217694" | "20050001542" | "20050087740" | "20050127819" | "20050151462" | "20070001584" | "20070046185" | "20080111459" | "20080158107" | "20080224968" | "20080231554").pn. OR ("2016/0225834" | "10263054" | "2016/0225833" | "9893127" | "2015/0144908" | "9245932" | "2015/0129856" | "9013098" | "2014/0292622" | "9478586" | "2014/0197396" | "9444050" | "2013/0222217" | "2012/0056531" | "8593057" | "2009/0121983" | "8330352").urpn. AND (PGPB | USPT | USOC).dbnm.					

L101	23	L100 AND ((transistor TFT) WITH overlap$4 WITH (OLED emission emitting))	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 03:34 PM
L102	9	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 04:33 PM
L105	54	((US-20150379924-A1 OR US-20090051627-A1 OR US-20060158466-A1 OR US-20060103615-A1 OR US-20210225247-A1 OR US-20170061849-A1 OR US-20200035156-A1 OR US-20180143721-A1 OR US-20160148981-A1 OR US-20110260952-A1 OR US-20180315801-A1 OR US-20150129856-A1 OR US-20170116900-A1 OR US-20200043990-A1 OR US-20140197396-A1 OR US-20120056531-A1 OR US-20120092238-A1 OR US-20110291550-A1 OR US-20100270912-A1 OR US-20090121983-A1 OR US-20110260951-A1 OR US-20170132969-A1 OR US-20170092174-A1 OR US-20160379540-A1 OR US-20160155416-A1 OR US-20160104413-A1 OR US-20160027404-A1 OR US-20160019825-A1	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 04:34 PM

		OR US-20150235617-A1 OR US-20150061978-A1 OR US-20150035729-A1 OR US-20130286262-A1 OR US-20090322215-A1 OR US-20160126287-A1 OR US-20160225833-A1 OR US-20130002992-A1 OR US-20150364075-A1 OR US-20150129853-A1 OR US-20140292622-A1 OR US-20070029941-A1 OR US-20160225834-A1 OR US-20130222217-A1 OR US-20190074342-A1).did. AND PGPB.dbnm.) OR ((US-9767741-B2 OR US-11107399-B2 OR US-9245932-B2 OR US-10692938-B2 OR US-10546906-B2 OR US-10497757-B2 OR US-8552635-B2 OR US-10312295-B2 OR US-10103205-B2 OR US-10615237-B2).did. AND USPT.dbnm.) OR ((CN-101960504-A).did. AND FTDB.dbnm.)					
L106	10	"49002264".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/03 05:05 PM
L107	25	("6940222" | "8330352" | "20020070909" | "20030052597" | "20050139834" | "20070001954" | "20070002084" | "20080111459" | "20090322215" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 05:05 PM

		"20110248985" | "20110279014" | "20120056531" | "20120097933").pn. OR ("2013/0222217" | "2016/0155780" | "9972663").urpn. AND (PGPB | USPT | USOC).dbnm.					
L108	15	"26604413".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/03 05:19 PM
L109	175	("5604613" | "6104446" | "6300612" | "6335778" | "6498592" | "6608620").pn. OR ("2002/0070909" | "6768482").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 05:19 PM
L110	2	((US-20160225834-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 09:02 PM
L112	3	("20140197396" "8330352" "20090121983").pn.	(US-PGPUB; USPAT)	OR	ON	ON	2023/03/06 09:10 PM
L113	10	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB,	OR	ON	ON	2023/03/06 09:46 PM

		A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1 OR US-20020070909-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L114	3	((US-20160225834-A1 OR US-20090121983-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 09:50 PM
L115	15	"26604413".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/06 09:55 PM
L116	175	("5604613" | "6104446" | "6300612" | "6335778" | "6498592" | "6608620").pn. OR ("2002/0070909" | "6768482").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/06 09:56 PM
L117	4	("9013098" | "20120056531" | "20130222217").pn. OR ("9245932").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/06 10:14 PM
L118	19	(14/969251 | 14/855199 | 14/526077 |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/06 10:16 PM

		14/537522 | 13/963987 | 14/156188 | 13/467737 | 13/227271 | 12/250225 | 09/990414).APP.					
L119	495	("20020149720" | "20070200488" | "20090058271" | "20090121983" | "20100033084" | "20130021566" | "20140111757" | "20140197396" | "20140252321" | "20140319479" | "20160225833" | "20060017375" | "20080116463" | "20080252200" | "20090200936" | "20100309172" | "20120025182" | "20120056531" | "9013098" | "20120056531" | "20130222217" | "20070002084" | "20090121983" | "20120169682" | "20130057521" | "20130113363" | "7365488" | "8253323" | "8552635" | "20040036421" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "6294398" | "6992326" | "7132788" | "7443093" | "8110825" | "8115216" | "8124172" | "8309376" | "8330352" | "20040144975" | "20050112341" | "20080024402" | "20080111474" | "20090195144" | "20090243483" | "20110183268" | "20110229994" | "20110248247" | "20110309389" | "20120049178" | "20120091482" | "20120228602" | "20120319089" | "20120326136" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/06 10:16 PM

		"20120326600" | "20130109117" | "20140070175" | "20140078126" | "20050225232" | "20070064020" | "20090121983" | "20090195144" | "20090322215" | "20110180825" | "5341153" | "6008868" | "6366025" | "6429601" | "6747618" | "6801000" | "6838819" | "6867549" | "6870323" | "6903754" | "6919681" | "6940222" | "7205713" | "7239363" | "7492337" | "7508126" | "7728802" | "7791565" | "7821553" | "7825584" | "8013817" | "8247966" | "20020014837" | "20020015110" | "20030052597" | "20040036421" | "20040108818" | "20040125278" | "20040217694" | "20050001542" | "20050087740" | "20050127819" | "20050151462" | "20070001584" | "20070046185" | "20080111459" | "20080158107" | "20080224968" | "20080231554" | "5604613" | "6104446" | "6300612" | "6335778" | "6498592" | "6608620").pn. OR ("2016/0225834" | "10263054" | "2016/0225833" | "9893127" | "2015/0144908" | "9245932" | "2015/0129856" | "9013098" | "2014/0292622" | "9478586" | "2014/0197396" | "9444050" | "2013/0222217" | "2012/0056531" | "8593057" | "2009/0121983" |				

		"8330352" | "2002/0070909" | "6768482").urpn. AND (PGPB | USPT | USOC).dbnm.					
L120	33	L119 AND ((transistor TFT) WITH overlap$4 WITH (OLED emission emitting))	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/06 10:16 PM
L121	56	((US-20150379924-A1 OR US-20090051627-A1 OR US-20060158466-A1 OR US-20060103615-A1 OR US-20210225247-A1 OR US-20170061849-A1 OR US-20200035156-A1 OR US-20180143721-A1 OR US-20160148981-A1 OR US-20110260952-A1 OR US-20180315801-A1 OR US-20150129856-A1 OR US-20170116900-A1 OR US-20200043990-A1 OR US-20140197396-A1 OR US-20120056531-A1 OR US-20160126287-A1 OR US-20090322215-A1 OR US-20110291550-A1 OR US-20100270912-A1 OR US-20090121983-A1 OR US-20110260951-A1 OR US-20170132969-A1 OR US-20170092174-A1 OR US-20160379540-A1 OR US-20160155416-A1 OR US-20160104413-A1 OR US-20160027404-A1 OR US-20160019825-A1 OR US-20150235617-A1 OR US-20150061978-A1 OR US-20150035729-A1 OR US-20130286262-A1 OR US-20120092238-A1 OR US-20160225833-A1 OR US-20130002992-A1 OR	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 10:22 PM

		US-20150364075-A1 OR US-20150129853-A1 OR US-20140292622-A1 OR US-20070029941-A1 OR US-20160225834-A1 OR US-20130222217-A1 OR US-20190074342-A1 OR US-20020070909-A1).did. AND PGPB.dbnm.) OR ((US-9767741-B2 OR US-11107399-B2 OR US-9245932-B2 OR US-10692938-B2 OR US-10546906-B2 OR US-10497757-B2 OR US-8552635-B2 OR US-10312295-B2 OR US-10103205-B2 OR US-10615237-B2 OR US-11552107-B2).did. AND USPT.dbnm.) OR ((CN-101960504-A).did. AND FTDB.dbnm.)					
L122	15	"56011000".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/06 10:28 PM
L123	14	"51357853".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/06 10:29 PM
L124	14	("9013098" | "20120056531" | "20130222217").pn. OR	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/06 10:29 PM

		("2015/0144908" | "9245932").urpn. AND (PGPB | USPT | USOC).dbnm.					
L125	14	"51620270".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/06 10:35 PM
L126	94	("7365488" | "8253323" | "8552635" | "20040036421" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "7365488" | "8253323" | "8552635" | "9478586" | "20040036421" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "7365488" | "8253323" | "8319906" | "8338832" | "8552635" | "9478586" | "20040036421" | "20050057460" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "20120056531" | "7365488" | "8232123" | "8253323" | "8319906" | "8338832" | "8552635" | "9231000" | "9478586" | "20040036421" | "20040183083" | "20050057460" | "20050242712" | "20070015429" | "20090128018" | "20090289963" | "20110102402" | "20110291550" | "20120056531" | "20140132584" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/06 10:35 PM

		"7365488" | "8232123" | "8253323" | "8319906" | "8338832" | "8552635" | "8587194" | "9231000" | "9478586" | "10084029" | "10546906" | "10923545" | "20040036421" | "20040183083" | "20050057460" | "20050242712" | "20070015429" | "20090128018" | "20090289963" | "20110102402" | "20110291550" | "20120056531" | "20140132584").pn. OR ("2014/0292622" | "2017/0012094" | "2019/0027546" | "2020/0144349" | "2021/0134908" | "9478586" | "10084029" | "10546906" | "10923545" | "11574969").urpn. AND (PGPB | USPT | USOC).dbnm.					
L127	20	"45595555".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/06 10:50 PM
L128	55	("20050225232" | "20070064020" | "20090121983" | "20090195144" | "20090322215" | "20110180825" | "8593057" | "20020014837" | "20050225232" | "20070064020" | "20090121983" | "20090195144" | "20090289963" | "20090322215" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/06 10:50 PM

		"20100156279" | "20110180825" | "20120049726").pn. OR ("2012/0056531" | "2014/0042418" | "8593057" | "8786182").urpn. AND (PGPB | USPT | USOC).dbnm.					
L129	10	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1 OR US-20020070909-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 10:56 PM
L130	10	"49002264".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/06 10:58 PM
L131	10	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1 OR US-20020070909-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 11:23 PM
L132	16	("20150129856"|"20140292622"|"20120056531	(US-PGPUB; USPAT; USOCR; FIT (AU, AP,	OR	ON	ON	2023/03/06 11:23 PM

		"|"9245932"|"20160225834"|"20160225833").PN.	AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L133	4	L131 NOT L132	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 11:23 PM
L134	5	((US-20160225834-A1 OR US-20090121983-A1 OR US-20130222217-A1 OR US-20120056531-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 11:24 PM
L135	1934	(nlt).IN,AANM,AS.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 11:30 PM
L136	940	((MATSUEDA near2 YOJIRO) (TAKATORI near2 KENICHI)).IN.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 11:30 PM
L137	2741	L3 L4	(US-PGPUB; USPAT; USOCR; FPRS; EPO;	OR	ON	ON	2023/03/06 11:30 PM

			JPO; DERWENT; IBM_TDB)				
L138	63	L5 and ((subpixel (sub near2 pixel)) with (color colour)) and ((thin near2 film) TFT) and bias$4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 11:30 PM
L139	55	L67 AND (TFT WITH (connect$4 coupl$4))	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 11:30 PM
L140	5	((US-20160225834-A1 OR US-20090121983-A1 OR US-20130222217-A1 OR US-20120056531-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/28 09:30 AM
L141	9	(14/969251 | 14/526077 | 13/467737 | 13/227271 | 12/250225).APP.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/06/28 09:38 AM
L142	231	("20020149720" | "20070200488" | "20090058271" | "20090121983" | "20100033084" | "20130021566" | "20140111757" | "20140197396" | "20140252321" | "20140319479" | "20160225833" | "9013098" | "20120056531" | "20130222217" | "20050225232" | "20070064020" | "20090121983" | "20090195144" | "20090322215" | "20110180825" | "5341153" | "6008868" | "6366025" | "6429601" | "6747618" | "6801000" | "6838819" | "6867549" | "6870323" | "6903754" | "6919681" | "6940222" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/06/28 09:38 AM

		"7205713" | "7239363" | "7492337" | "7508126" | "7728802" | "7791565" | "7821553" | "7825584" | "8013817" | "8247966" | "20020014837" | "20020015110" | "20030052597" | "20040036421" | "20040108818" | "20040125278" | "20040217694" | "20050001542" | "20050087740" | "20050127819" | "20050151462" | "20070001584" | "20070046185" | "20080111459" | "20080158107" | "20080224968" | "20080231554").pn. OR ("2016/0225834" | "10263054" | "2015/0144908" | "9245932" | "2013/0222217" | "2012/0056531" | "8593057" | "2009/0121983" | "8330352").urpn. AND (PGPB | USPT | USOC).dbnm.					
L143	34647	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/28 03:42 PM
L144	45015	(G09G3/3208).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV,	OR	ON	ON	2023/06/28 03:42 PM

			MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L145	89873	(G09G3/3233).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/28 03:43 PM
L146	829	L143 AND L144 AND L145	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/28 03:43 PM
L147	1	"20140284570"	(US-PGPUB)	OR	ON	ON	2023/06/28 04:58 PM
L148	34657	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT;	OR	ON	ON	2023/06/29 09:02 AM

			IBM_TDB)				
L149	45021	(G09G3/3208).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/29 09:02 AM
L151	4772	L148 AND L149	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/29 09:02 AM
L152	1	L151 AND ((subpixel (sub near2 pixel)) WITH (color colour)) WITH ((thin near2 film) TFT) WITH (via hole contact)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/29 09:03 AM
L153	54	L151 AND ((subpixel (sub near2 pixel)) WITH (color colour)) WITH (via hole contact)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/29 09:04 AM
L154	9	L151 AND ((subpixel (sub near2 pixel)) WITH ((thin near2 film) TFT) WITH (via hole contact))	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/29 10:03 AM
L155	150	L151 AND ((subpixel (sub near2 pixel)) WITH (via hole contact))	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/29 10:04 AM
L157	461	L151 AND ((subpixel (sub near2 pixel)) WITH (via hole contact))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA,	OR	ON	ON	2023/06/29 10:05 AM

			EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L158	294	L157 NOT L153	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/29 10:05 AM
L159	23	"51568466".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/06/29 10:26 AM
L160	21	("2014/0284570" | "8952374").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/06/29 10:26 AM
L161	5	((US-20160225834-A1 OR US-20090121983-A1 OR US-20130222217-A1 OR US-20120056531-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK,	OR	ON	ON	2023/06/30 01:32 PM

			TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L162	11	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1 OR US-20020070909-A1 OR US-20060170712-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/30 01:44 PM
L163	11	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1 OR US-20020070909-A1 OR US-20060170712-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/30 02:31 PM
L164	28	("20140292622"|"20160225833"|"20160225834"|"20020070909"|"20090121983"|"20130222217"|"20140197396"|"9245932"|"20120056531"|"20150129856").PN.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/30 02:31 PM
L165	1	L163 NOT L164	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY,	OR	ON	ON	2023/06/30 02:31 PM

			CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L166	1934	(nlt).IN,AANM,AS.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/30 02:35 PM
L167	943	((MATSUEDA near2 YOJIRO) (TAKATORI near2 KENICHI)).IN.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/30 02:35 PM
L168	2744	L3 L4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/30 02:35 PM
L169	65	L5 and ((subpixel (sub near2 pixel)) with (color colour)) and ((thin near2 film) TFT) and bias$4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/30 02:35 PM
L170	57	L67 AND (TFT WITH (connect$4 coupl$4))	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/30 02:35 PM

PE2E SEARCH - Search History (Interference)

There are no Interference searches to show.

Doc code: RCEX
Doc description: Request for Continued Examination (RCE)

PTO/SB/30EFS (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	17/301,517	Filing Date	2021-04-06	Docket Number (if applicable)	8317-0050	Art Unit	2692
First Named Inventor	Yojiro MATSUEDA			Examiner Name	Benjamin Casarez		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

- ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____
- ☐ Other _____

☒ Enclosed

- ☒ Amendment/Reply
- ☐ Information Disclosure Statement (IDS)
- ☐ Affidavit(s)/ Declaration(s)
- ☐ Other _____

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____ (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

☒ **The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.**
The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 141140

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature

Applicant Signature

PTO/SB/30EFS (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Signature of Registered U.S. Patent Practitioner			
Signature	/Kari P. Footland/	Date (YYYY-MM-DD)	2023-05-31
Name	Kari P. Footland	Registration Number	55187

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

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6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

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PATENT
8317-0050

IN THE U. S. PATENT AND TRADEMARK OFFICE

In re application of

Yojiro MATSUEDA et al. Conf. 1637

Application No. 17/301,517 Group 2692

Filed: April 6, 2021 Examiner CASAREZ, BENJAMIN

Title: DISPLAY DEVICE AND COMPUTER READABLE MEDIA

AMENDMENT WITH REQUEST FOR CONTINUED EXAMINATION

Assistant Commissioner for Patents May 31, 2023
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This amendment is being filed concurrently with a Request for Continued Examination, in response to the final Office Action mailed March 10, 2023, please amend the above-identified application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks begin on page 8 of this paper.

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (currently amended) A display device comprising:

a display unit where a plurality of first pixels each including subpixels of three colors and a plurality of second pixels each including subpixels of three colors arranged differently from the subpixels in one of the first pixels are alternately arrayed in a row direction and a column direction, the subpixels of the three colors including a subpixel of a first color, a subpixel of a second color and a subpixel of a third color;

a thin film transistor (TFT) circuit disposed below each of the subpixels to control the subpixels;

at least one connection part that connects the TFT circuit and one of the subpixels; and

an organic light emitting diode (OLED) layer of the first color,

wherein the subpixel of the second color and the subpixel of the third color in one of the first pixels are arrayed in parallel with the subpixel of the second color and the subpixel of the third color in one of the second pixels,

a first arrangement in the column direction of the subpixel of the second color and the subpixel of the third color in one of the first pixels and a second arrangement of the subpixel of the second color and the subpixel of the third color in one of the second pixels are identical,

the subpixels of the second color in one of the first pixels and in one of the second pixels that are adjacent to each other in the row direction are aligned in the row direction,

~~the subpixels of the third color in one of the first pixels and in one of the second pixels that are adjacent to each other in the row direction are aligned in the row direction,~~

the subpixel of the first color in one of the first pixels has a biased arrangement and is positioned toward a side of the subpixel of the second color in an array direction of the subpixel of the second color and the subpixel of the third color,

the subpixel of the first color in one of the second pixels has a biased arrangement and is positioned toward a side of the subpixel of the third color in the array direction of the subpixel of the second color and the subpixel of the third color,

the OLED layer of the first color is formed over the subpixel of the first color in one of the first pixels and the subpixel of the first color in one of the second pixels that is adjacent to one of the first pixels in a direction in which the subpixel of the first color in one of the first pixels is biased,

~~the at least one connection part is disposed at an identical position in each of the first pixels and the second pixels independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels,~~

the subpixel of the first color in one of the first pixels has a rectangle or rounded rectangle shape whose long axis is aligned along the direction in which the subpixel of the second color and the subpixel of the third color in the same one of the first pixels are disposed,

the at least one connection part connected to the subpixel of the first color in one of the first pixels is disposed at a biased position ~~biased toward a side of the subpixel of the third color~~ in the array direction of the subpixel of the second color and the subpixel of the third color with respect to the rectangle or rounded rectangle shape of the subpixel of the first color in one of the first pixels and in the OLED layer of the first color,

the subpixel of the first color in one of the second pixels has the rectangle or rounded rectangle shape whose long axis is aligned along the direction in which the subpixel of the second color and the subpixel of the third color in the same one of the second pixels are disposed,

the at least one connection part connected to the subpixel of the first color in one of the second pixels is disposed at a biased position ~~biased toward a side of the~~

~~subpixel of the second color~~ in the array direction of the subpixel of the second color and the subpixel of the third color with respect to the rectangle or rounded rectangle shape of the subpixel of the first color in one of the second pixels and in the OLED layer of the first color,

a position of the at least one connection part connected to the subpixel of the first color in one of the first pixels relative to the rectangle or rounded rectangle shape of the subpixel of the first color in the same one of the first pixels, and a position of the at least one connection part connected to the subpixel of the first color in one of the second pixels relative to the rectangle or rounded rectangle shape of the subpixel of the second color in the same one of the first pixels are different,

the at least one connection part is disposed at an identical position in each of the first pixels and the second pixels independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels,

~~the OLED layer is disposed above the at least one connection part, a position where the at least one connection part is disposed overlaps with the OLED layer in a plan view,~~ and

the subpixels in each of the first pixels are arranged identically, and the subpixels in each of the second pixels are arranged identically.

2. (original) The display device according to claim 1, wherein

the subpixel includes an anode electrode, and

the at least one connection part is a portion that connects an output of the TFT circuit and the anode electrode.

3. (original) The display device according to claim 1, wherein

the TFT circuit includes an identical circuit arrangement pattern for the subpixels of the first to third colors.

4. (previously presented) The display device according to claim 1, wherein

in one of the first pixels and one of the second pixels that are adjacent to each other in the row direction, a distance between a first connection part of the at least one connection part for the subpixel of the first color in the one of the first pixels and a second connection part of the at least one connection part for the subpixel of the first color in the one of the second pixels are consistent in the display unit independent of the biased arrangements of the subpixels.

5. (original) The display device according to claim 1, wherein

a first square not crossing the subpixels encloses a region including the subpixels of three colors included in one of the first pixels and excluding other subpixels,

a second square not crossing the subpixels encloses a region including the subpixels of three colors included in one of the second pixels and excluding other subpixels, and

the first square and the second square are arranged without overlapping each other.

6. (new) The display device according to claim 1, wherein

the OLED layer is disposed above the at least one connection part, and

a position where the at least one connection part is disposed overlaps with the OLED layer in a plan view.

7. (new) The display device according to claim 1, wherein

the TFT circuit and one of the subpixels are connected by only one of the at least one connection part.

8. (new) The display device according to claim 2, wherein

a position where the at least one connection part is disposed overlaps with the anode electrode in a plan view.

REMARKS

Claims 1-5 were rejected.

Claim 1 is amended. Support for the amendments to independent claim 1 comes at least from Figs. 4 and 7 and the corresponding portions of the originally-filed specification (including paras. [0073]-[0078], [0098]-[0099], and [0111] of the published application).

Claims 6-8 are added. Support for new claim 6 comes at least from previously presented claim 1. Support for new claim 7 comes at least from Fig. 6 and para. [0088] of the published application. Support for new claim 8 comes at least from Figs. 6 and 11 and paras. [0084]-[0099] of the published application.

Claims 1-8 are currently pending in this application. No new matter is added.

I. Rejection under 35 U.S.C. § 103

In the Office Action, at page 2, claims 1-5 were rejected under 35 U.S.C. § 103 as being unpatentable over US 2016/0225834 to Kim ("Kim"), US 2009/0121983 to Sung ("Sung"), US 2013/0222217 to Shin ("Shin"), and US 2012/0056531 to Park ("Park"). This rejection is respectfully traversed.

In short, the combination of the teachings of Kim, Sung, Shin, and Park does not disclose or suggest:

> the subpixel of the first color in one of the first pixels has a rectangle or rounded rectangle shape whose long axis is aligned along the direction in which the subpixel of the second color and the subpixel of the third color in the same one of the first pixels are disposed,
>
> the at least one connection part connected to the subpixel of the first color in one of the first pixels is disposed at a biased position in the array direction of the subpixel of the second color and the subpixel of the third color with respect to the rectangle or rounded rectangle shape of the subpixel of the first color in one of the first pixels and in the OLED layer of the first color,
>
> the subpixel of the first color in one of the second pixels has the rectangle or rounded rectangle shape whose long axis is aligned along the direction in which the subpixel of the second color and the subpixel of the third color in the same one of the second pixels are disposed,
>
> the at least one connection part connected to the subpixel of the first color in one of the second pixels is disposed at a biased position in the array direction of the subpixel of the second color and the subpixel of the third color with respect to the rectangle or rounded rectangle shape of the subpixel of the first color in one of the second pixels and in the OLED layer of the first color,
>
> a position of the at least one connection part connected to the subpixel of the first color in one of the first pixels relative to the rectangle or rounded rectangle shape of the subpixel of the first color in the same one of the first pixels, and a position of the at least one connection part connected to the subpixel of the first color in one of the second pixels relative to the rectangle or rounded rectangle shape of the

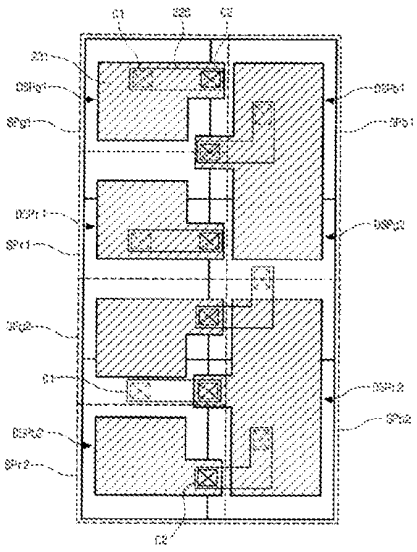
subpixel of the second color in the same one of the first pixels are different,

as recited in amended independent claim 1.

In contrast to the present invention, Kim and Sung do not disclose or suggest that the subpixel of the first color in one of the first pixels has a rectangle or rounded rectangle shape whose long axis is aligned along the direction in which the subpixel of the second color and the subpixel of the third color in the same one of the first pixels are disposed, and the subpixel of the first color in one of the second pixels has the rectangle or rounded rectangle shape whose long axis is aligned along the direction in which the subpixel of the second color and the subpixel of the third color in the same one of the second pixels are disposed.

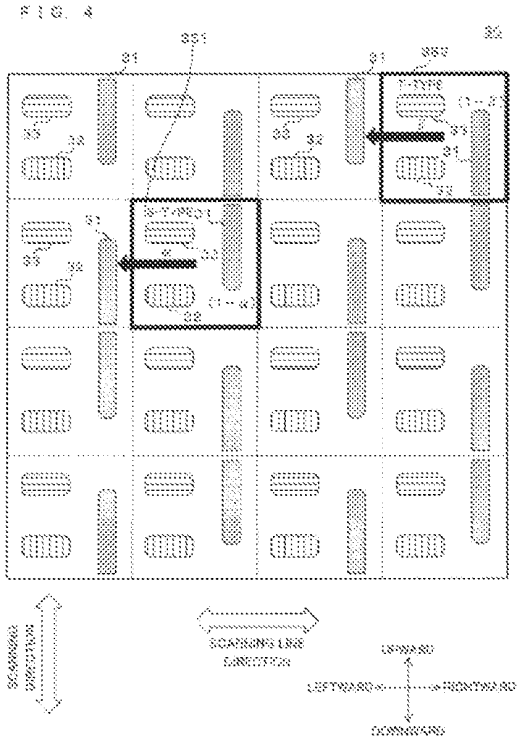
Shin is directed to an OLED device, illustrated in Fig. 7, reproduced below.

FIG. 7



In contrast to the present invention, Shin does not disclose or suggest that the subpixel of the first color in one of the first pixels has a rectangle or rounded rectangle shape whose long axis is aligned along the direction in which the subpixel of the second color and the subpixel of the third color in the same one of the first pixels are disposed, and the subpixel of the first color in one of the second pixels has the rectangle or rounded rectangle shape whose long axis is aligned along the direction in which the subpixel of the second color and the subpixel of the third color in the same one of the second pixels are disposed. Shin discloses the shape with a convex part projected toward the R/G pixel. Shin does not disclose that subpixels of the first color of one of the first pixels and one of the second pixels are rectangle or rounded rectangle shape.

On the other hand, according to the present invention, the subpixel of the first color in one of the first pixels has a rectangle or rounded rectangle shape and the subpixel of the first color in one of the second pixels has the rectangle or rounded rectangle shape (see Fig. 4, reproduced below):



In addition, Kim, Sung, and Shin do not disclose or suggest at least one connection part connected to the subpixel of the first color in one of the first pixels is disposed at a biased position in the array direction of the subpixel of the second color and the subpixel of the third color with respect to the rectangle or rounded rectangle shape of the subpixel of the first color in one of the first pixels and in the OLED layer of the first color, the at least one connection part connected to the subpixel of the first color in one of the second pixels is disposed at a biased position in the array direction of the subpixel of the second color and the subpixel of the third color with respect to the rectangle or rounded rectangle shape of the subpixel of the first color in one of the second pixels and in

the OLED layer of the first color, and a position of the at least one connection part connected to the subpixel of the first color in one of the first pixels relative to the rectangle or rounded rectangle shape of the subpixel of the first color in the same one of the first pixels, and a position of the at least one connection part connected to the subpixel of the first color in one of the second pixels relative to the rectangle or rounded rectangle shape of the subpixel of the second color in the same one of the first pixels are different.

Park fails to cure the deficiencies in Kim, Sung, and Shin.

Therefore, the combination of the teachings of Kim, Sung, Shin, and Park does not disclose or suggest all the features of amended independent claim 1 and claim 1 is patentably distinguished over the reference relied upon. Claims 2-5 depend either directly or indirectly from amended independent claim 1 and are therefore patentably distinguished over the references relied upon for at least the reasons discussed above. Accordingly, withdrawal of the § 103 rejection is respectfully requested.

II. New Claims

New claims 6-8, which ultimately depend from amended independent claim 1, are patentably distinguished over the references relied upon for at least the reasons discussed above.

III. Conclusion

In view of the present amendment and the foregoing remarks, it is believed that the present application has been placed in condition for allowance. Reconsideration and allowance are respectfully requested.

The Commissioner is hereby authorized in this, concurrent, and future submissions to charge any additional fees(s) or underpayment of fee(s) under 37 C.F.R. §§ 1.16, 1.17, and 41.20 or credit any overpayment of fee(s) to Deposit Account No. 14-1140.

Respectfully submitted,

NIXON & VANDERHYE

/Kari P. Footland/

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Arlington, VA 22203
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KPF/lrs

Electronic Patent Application Fee Transmittal

Application Number:	17301517
Filing Date:	06-Apr-2021
Title of Invention:	DISPLAY DEVICE AND COMPUTER READABLE MEDIA
First Named Inventor/Applicant Name:	Yojiro MATSUEDA
Filer:	Kari P. Footland/Linda Sayyad
Attorney Docket Number:	8317-0050

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
RCE- 2ND AND SUBSEQUENT REQUEST	1820	1	2000	2000
		Total in USD ($)		**2000**

Electronic Acknowledgement Receipt

EFS ID:	48077399
Application Number:	17301517
International Application Number:	
Confirmation Number:	1637
Title of Invention:	DISPLAY DEVICE AND COMPUTER READABLE MEDIA
First Named Inventor/Applicant Name:	Yojiro MATSUEDA
Customer Number:	466
Filer:	Kari P. Footland/Linda Sayyad
Filer Authorized By:	Kari P. Footland
Attorney Docket Number:	8317-0050
Receipt Date:	31-MAY-2023
Filing Date:	06-APR-2021
Time Stamp:	09:31:28
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$2000
RAM confirmation Number	E20235U032015358
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The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

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Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Request for Continued Examination (RCE)	8317-0050_RCE.pdf	1349952 58111f37ac6ca6efe42ec2b3070c0e005cd82622	no	3
Warnings:					
Information:					
2		8317-0050_AMD_RCE.pdf	440078 d010235bcda4cab8fabc6049e21efe6e84177422	yes	14

Multipart Description/PDF files in .zip description

Document Description	Start	End
Amendment Submitted/Entered with Filing of Continued Prosecution Application (CPA)/Request for Continued Examination(RCE)	1	1
Claims	2	7
Applicant Arguments/Remarks Made in an Amendment	8	14

Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	37745 2dbf5f2e3a615d5c2832f8dda2e0f60a3bca49b6	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	1827775		

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If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 17/301,517	Filing Date 04/06/2021	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $100 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $480 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	05/31/2023	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 8	Minus	** 20	= 0		x $100 =	0
	Independent (37 CFR 1.16(h))	* 1	Minus	*** 3	= 0		x $480 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	0

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	LIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/RAMONA D WILSON/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

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If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/301,517	04/06/2021	Yojiro MATSUEDA	8317-0050	1637

466 7590 03/10/2023

NIXON & VANDERHYE, PC
901 NORTH GLEBE ROAD
11TH FLOOR
ARLINGTON, VA 22203

EXAMINER	
CASAREZ, BENJAMIN X.	

ART UNIT	PAPER NUMBER
2692	

NOTIFICATION DATE	DELIVERY MODE
03/10/2023	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

pair_nixon@firsttofile.com
ptomail@nixonvan.com

Office Action Summary	Application No. 17/301,517	Applicant(s) MATSUEDA et al.	
	Examiner Benjamin X Casarez	Art Unit 2692	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 04 November 2022.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☑ This action is **FINAL.** 2b) ☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 1-5 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1-5 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☑ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

DETAILED ACTION

Status

This Office Action is responsive to claim amendments filed for No. 17/301,517 on November 4, 2022.

Please note: Claim 1 has been amended. Claims 1-5 are pending and have been examined.

Notice of Pre-AIA or AIA Status

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Claim Rejections - 35 USC § 103

2. In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

3. The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-5 are rejected under 35 U.S.C. 103 as being unpatentable over Kim et al. (US 20160225834 A1), hereinafter Kim, in view of Sung et al. (US 20090121983 A1), hereinafter Sung, in further view of Shin et al. (US 20130222217 A1), hereinafter Shin, and in further view of Park et al. (US 20120056531 A1; Previously cited in the IDS dated 10/26/2021), hereinafter Park.

Regarding **Claim 1**, Kim teaches:

A display device (**See paragraphs [0039] and [0067]: FIGS. 1 and 2 are views of an organic light-emitting display apparatus**) comprising:

a display unit **(See FIG. 2)** where a plurality of first pixels each including subpixels of three colors **(See annotated FIG. 2 below: the labeled pixels correspond to first pixels each including subpixels of three colors (R, G, B))** and a plurality of second pixels each including subpixels of three colors arranged differently from the subpixels in one of the first pixels **(See annotated FIG. 2 below: the labeled pixels correspond to second pixels each including subpixels of three colors (R, G, B) arranged differently from the subpixels in one of the first pixels)** are alternately arrayed in a row direction and a column direction **(See annotated FIG. 2 below: the first pixels and the second pixels are alternately arrayed in a row direction (second direction) and a column direction (first direction))**, the subpixels of the three colors including a subpixel of a first color, a subpixel of a second color and a subpixel of a third color **(See paragraph [0059]; See annotated FIG. 2 below: the subpixels of the three colors including a subpixel of a first color (B), a subpixel of a second color (G) and a subpixel of a third color (R))**;

a thin film transistor (TFT) circuit disposed below each of the subpixels **(See FIG. 1: TFT disposed below each of the subpixels, which is composed of an OLED, as discussed in paragraph [0053])** to control the subpixels **(See paragraph [0007]; Although control with the TFT shown in FIG. 1 is not explicitly discussed, it is necessarily true that the TFT element must exert some control over the subpixels in order to cause the subpixels to emit light, as disclosed. Therefore, this is an inherent feature)**;

at least one connection part that connects the TFT circuit and one of the subpixels **(See paragraph [0054], lines 1-4; See FIG. 1: the portion of 141 disposed in the via hole VIA corresponds to at least one connection part that connects the TFT circuit and one of the subpixels)**, and

an organic light emitting diode (OLED) layer of the first color **(See FIG. 1: 143; See paragraph [0056])**,

wherein the subpixel of the second color and the subpixel of the third color in one of the first pixels are arrayed in parallel with the subpixel of the second color and the subpixel of the third color in one of the second pixels **(See annotated FIG. 2 below: the subpixel of the second color (G) and the subpixel of the third color (R) in one of the first pixels (e.g., the top middle first pixel) are arrayed in parallel with the subpixel of the second color (G) and the subpixel of the third color (R) in one of the second pixels (e.g., the top left second pixel))**,

a first arrangement in the column direction of the subpixel of the second color and the subpixel of the third color in one of the first pixels and a second arrangement of the subpixel of the second color and the subpixel of the third color in one of the second pixels are identical **(See annotated FIG. 2 below: a first arrangement in the**

column direction of the subpixel of the second color (G) and the subpixel of the third color (R) in one of the first pixels (e.g., the top middle first pixel) and a second arrangement of the subpixel of the second color (G) and the subpixel of the third color (R) in one of the second pixels (e.g., the bottom middle second pixel) are identical),

the subpixels of the second color in one of the first pixels and in one of the second pixels that are adjacent to each other in the row direction are aligned in the row direction (**See annotated FIG. 2 below: the subpixels of the second color (G) in one of the first pixels (e.g., the top middle first pixel) and in one of the second pixels (e.g., the top left second pixel) that are adjacent to each other in the row direction are aligned in the row direction**),

the subpixels of the third color in one of the first pixels and in one of the second pixels that are adjacent to each other in the row direction are aligned in the row direction (**See annotated FIG. 2 below: the subpixels of the third color (R) in one of the first pixels (e.g., the top middle first pixel) and in one of the second pixels (e.g., the top left second pixel) that are adjacent to each other in the row direction are aligned in the row direction**),

the subpixel of the first color in one of the first pixels has a biased arrangement and is positioned toward a side of the subpixel of the second color in an array direction of the subpixel of the second color and the subpixel of the third color (**See annotated FIG. 2 below: the subpixel of the first color (B) in one of the first pixels (e.g., the top middle first pixel) has a biased arrangement and is positioned toward a side of the subpixel of the second color (G) in an array direction of the subpixel of the second color (G) and the subpixel of the third color (R)**),

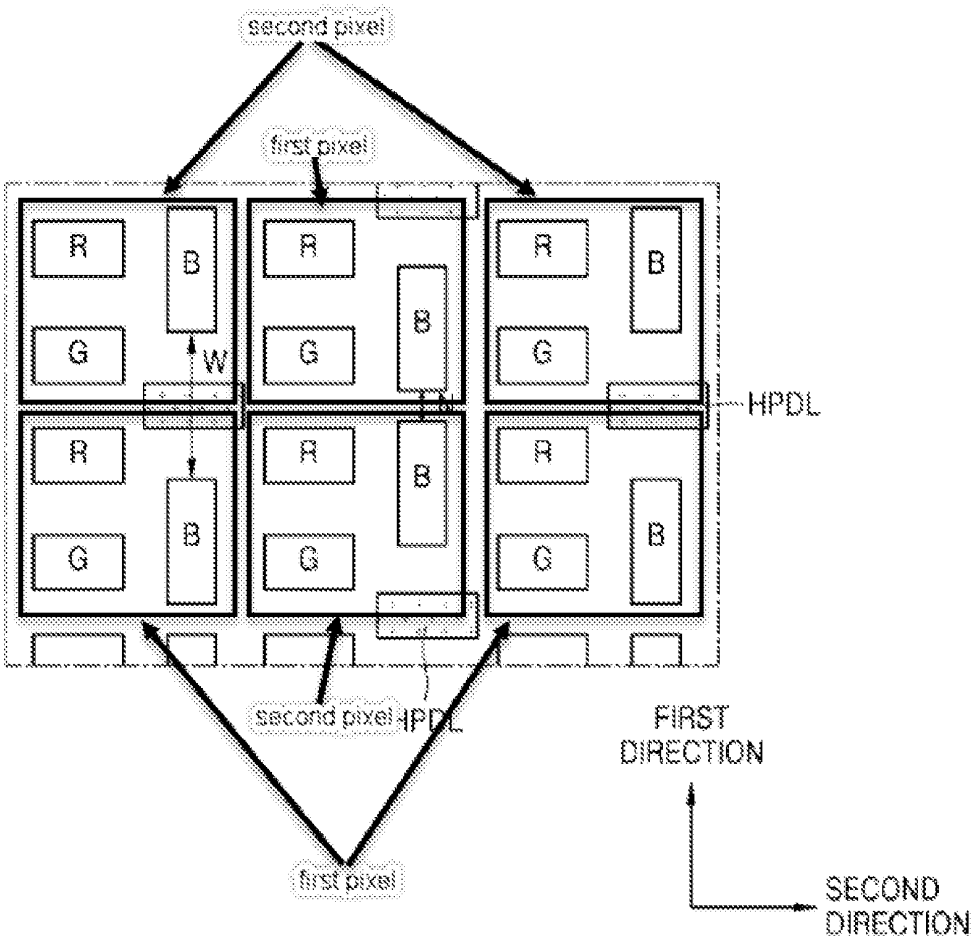
the subpixel of the first color in one of the second pixels has a biased arrangement and is positioned toward a side of the subpixel of the third color in the array direction of the subpixel of the second color and the subpixel of the third color (**See annotated FIG. 2 below: the subpixel of the first color (B) in one of the second pixels (e.g., the top left second pixel) has a biased arrangement and is positioned toward a side of the subpixel of the third color (R) in the array direction of the subpixel of the second color (G) and the subpixel of the third color (R)**),

the OLED layer of the first color is formed over the subpixel of the first color in one of the first pixels (**See paragraph [0053]**),

the OLED layer is disposed above the at least one connection part (**See FIG. 1: the OLED layer 143 is disposed above the portion of 141 disposed in the via hole VIA**), and

the subpixels in each of the first pixels are arranged identically, and the subpixels in each of the second pixels are arranged identically (**See annotated FIG. 2 below: the subpixels in each of the first pixels are arranged identically, and the subpixels in each of the second pixels are arranged identically**).

FIG. 2



Kim does not explicitly teach:

the OLED layer of the first color is formed over the subpixel of the first color in one of the first pixels and the subpixel of the first color in one of the second pixels that is adjacent to one of the first pixels in a direction in which the subpixel of the first color in one of the first pixels is biased,

the at least one connection part is disposed at an identical position in each of the first pixels and the second pixels independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels,

the at least one connection part connected to the subpixel of the first color in one of the first pixels is disposed at a position biased toward a side of the subpixel of the third color in the array direction of the subpixel of the second color and the subpixel of the third color in the OLED layer of the first color,

the at least one connection part connected to the subpixel of the first color in one of the second pixels is disposed at a position biased toward a side of the subpixel of the second color in the array direction of the subpixel of the second color and the subpixel of the third color in the OLED layer of the first color,

a position where the at least one connection part is disposed overlaps with the OLED layer in a plan view.

However, in the same field of endeavor, displays **(Sung, Abstract)**, Sung teaches:

An OLED layer **(FIG. 1: 370B)** of a first color is formed over a subpixel of a first color in a first pixel and a subpixel of the first color a second pixels **(See paragraph [0084] and FIG. 11: 370B is formed over pixel electrodes 191B1 and 191B2 of a subpixel of a first color in a first pixel and a subpixel of the first color a second pixels)** that is adjacent to one of the first pixels in a direction in which the subpixel of the first color in one of the first pixels is biased **(See FIG. 10: a first pixel includes B1 and a second pixel includes B2, where the first and second pixels are adjacent in a direction in which the subpixel of the first color in one of the first pixels is biased)**

Therefore, it would have been obvious to one of ordinary skill in the art, before the effective filing date of the claimed invention, to modify the display device **(as taught by Kim)** so the OLED layer of the first color is formed over the subpixel of the first color in one of the first pixels and the subpixel of the first color in one of the second pixels that is adjacent to one of the first pixels in a direction in which the subpixel of the first color in one of the first pixels is biased **(as taught by Sung)**. Doing so would prevent reduction of the emission area and the aperture ratio by the interval between the emission layers **(See Sung, paragraph [0097])**.

Kim in view of Sung does not explicitly teach:

the at least one connection part is disposed at an identical position in each of the first pixels and the second pixels independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels,

the at least one connection part connected to the subpixel of the first color in one of the first pixels is disposed at a position biased toward a side of the subpixel of the third color in the array direction of the subpixel of the second color and the subpixel of the third color in the OLED layer of the first color,

the at least one connection part connected to the subpixel of the first color in one of the second pixels is disposed at a position biased toward a side of the subpixel of the second color in the array direction of the subpixel of the second color and the subpixel of the third color in the OLED layer of the first color,

a position where the at least one connection part is disposed overlaps with the OLED layer in a plan view.

However, in the same field of endeavor, display devices **(Shin, Abstract)**, Shin teaches:

At least one connection part **(See paragraph [0066], last five lines; See FIG. 7: C2 connected to 231 in SPb1 and SPb2 correspond to at least one connection part)** is disposed at an identical position in each of first pixels and second pixels independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels **(See paragraph [0067], last six lines and FIG. 7: C2 are disposed at an identical horizontal position in each of first pixels and second pixels independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels)**,

the at least one connection part connected to the subpixel of the first color in one of the first pixels is disposed at a position biased toward a side of the subpixel of a third color in the array direction of the subpixel of a second color and the subpixel of the third color in the OLED layer **(See FIG. 2: 232)** of the first color **(See FIG. 7: C2 connected to SPb1 is disposed at a position biased toward a side of the subpixel of the third color (a bottom side of Spg1) in the array direction of a subpixel of the second color (Spr1) and the subpixel of the third color in an OLED layer of the first color)**,

the at least one connection part connected to the subpixel of the first color in one of the second pixels is disposed at a position biased toward a side of the subpixel of the second color in the array direction of the subpixel of the second color and the subpixel of the third color in the OLED layer of the first color **(See FIG. 7: C2 connected to SPb2 is disposed at a position biased toward a side of the subpixel of the second color (a top side of Spr2) in the array direction of the subpixel of the second color (Spr2) and the subpixel of the third color (Spg2) in the OLED layer of the first color)**.

Therefore, it would have been obvious to one of ordinary skill in the art, before the effective filing date of the claimed invention, to modify the display device **(as taught by Kim in view of Sung)** by including the at least

one connection part **(as taught by Shin)**. Specifically, by placing the at least one connection part C2 in the middle of the subpixel of the first color, as shown in FIG. 7 of Shin, the at least one connection part is disposed in the display device taught by Kim in the claimed manner. Doing so would enlarge a design area for driving elements in a pixel is by changing disposition of the driving elements with respect to sub-pixels, and also improve the degree of freedom in design and integration of the driving elements for driving a light emitting diode in a sub-pixel **(See Shin, paragraph [0069])**.

Kim in view of Sung, and in further view of Shin does not explicitly teach:

a position where the at least one connection part is disposed overlaps with the OLED layer in a plan view.

However, in the same field of endeavor, display devices **(Park, Abstract)**, Park teaches:

a position where at least one connection part is disposed overlaps with an OLED layer **(See paragraph [0045])** in a plan view **(See FIG. 5: a position where contact hole 126a is disposed overlaps with OLED layer 132 in a plan view because 132 is disposed in the contact hole 126a)**.

Kim in view of Sung, and in further view of Shin contained **a device which differed from the claimed device by the substitution of** the at least one connection part connected to a subpixel, but not explicitly so that a position where the at least one connection part is disposed overlaps with the OLED layer in a plan view. Park **teaches the substituted element of** a position where the at least one connection part is disposed overlaps with the OLED layer in a plan view. **Their functions were known in the art** to connect a transistor to an OLED element. The position of the at least one connection part relative to the OLED layer taught by Kim in view of Sung, and in further view of Shin could have been substituted with the position of the at least one connection part relative to the OLED layer taught by Park and the **results would have been predictable** and resulted in causing the OLED layer to be located above the at least one connection part in the plan view.

Therefore, the claimed subject matter would have been obvious to a person having ordinary skill in the art before the effective filing date of the claimed invention.

Regarding **Claim 2**, Kim in view of Sung, in further view of Shin, and in further view of Park teaches all of the elements of the claimed invention, as stated above. Furthermore, Kim in view of Sung, in further view of Shin, and in further view of Park teaches:

The display device according to claim 1, wherein

the subpixel includes an anode electrode **(See Kim, paragraph [0057] and FIG. 1: 141; See Yoon, FIG. 4: 190a)**, and

the at least one connection part is a portion that connects an output of the TFT circuit and the anode electrode **(See Shin, paragraph [0066], last five lines)**.

Regarding **Claim 3**, Kim in view of Sung, in further view of Shin, and in further view of Park teaches all of the elements of the claimed invention, as stated above. Furthermore, Kim teaches:

The display device according to claim 1, wherein

the TFT circuit includes an identical circuit arrangement pattern for the subpixels of the first to third colors **(See paragraph [0040] and FIG. 1: the TFT has an identical circuit arrangement pattern (an identical pattern of S, G, A and D) for the subpixels of the first to third colors)**.

Regarding **Claim 4**, Kim in view of Sung, in further view of Shin, and in further view of Park teaches all of the elements of the claimed invention, as stated above. Furthermore, Kim in view of Sung, in further view of Shin, and in further view of Park teaches:

The display device according to claim 1, wherein

in one of the first pixels and one of the second pixels that are adjacent to each other in the row direction, a distance between a first connection part **(C2)** of the at least one connection part for the subpixel of the first color **(SPb1)** in the one of the first pixels and a second connection part **(C2)** of the at least one connection part for the subpixel of the first color **(SPb2)** in the one of the second pixels are consistent in the display unit independent of the biased arrangements of the subpixels **(See Shin, FIG. 7: a distance between C2 in SPb1 and SPb2 is consistent in the display unit independent of the biased arrangements of the subpixels)**.

In addition, the same motivation is used as the rejection for claim 1.

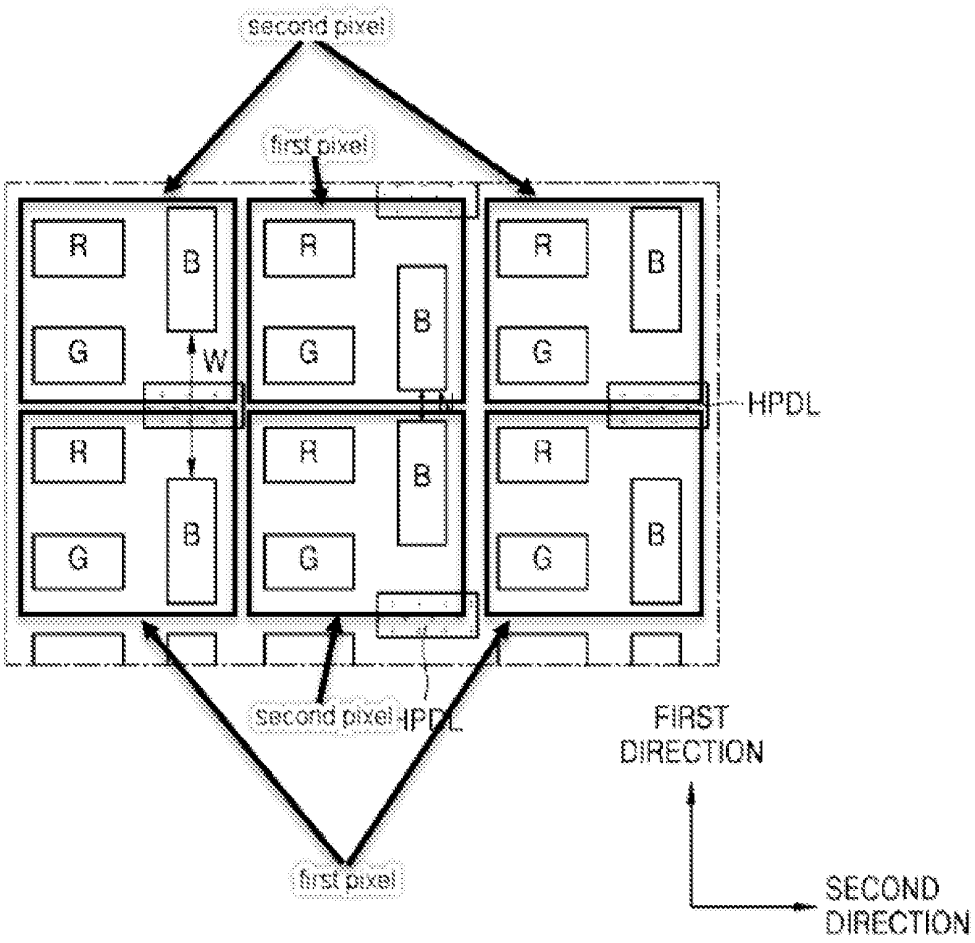
Regarding **Claim 5**, Kim in view of Sung, in further view of Shin, and in further view of Park teaches all of the elements of the claimed invention, as stated above. Furthermore, Kim teaches:

The display device according to claim 1, wherein a first square not crossing the subpixels encloses a region including the subpixels of three colors included in one of the first pixels and excluding other subpixels **(See annotated FIG. 2 below: a first square not crossing the subpixels encloses a region including the subpixels of three colors R,G, B included in one of the first pixels (e.g., the top middle first pixel) and excluding other subpixels)**,

a second square not crossing the subpixels encloses a region including the subpixels of three colors included in one of the second pixels and excluding other subpixels **(See annotated FIG. 2 below: a second square not crossing the subpixels encloses a region including the subpixels of three colors R, G, B included in one of the second pixels (e.g., the top left second pixel) and excluding other subpixels)**, and

the first square and the second square are arranged without overlapping each other **(See annotated FIG. 2 below: the first square and the second square are arranged without overlapping each other)**.

FIG. 2



Response to Arguments

5. Applicant's arguments filed 11/04/2022 have been fully considered but they are moot on the grounds of new rejections and not persuasive in part.

Applicant argues (Remarks, pages 8-10) that Kim and Yoon do not teach the amended limitations of the independent claim. This argument is rendered moot on the grounds of new rejections. Specifically, Yoon is no longer relied upon in the above rejections and Sung, Shin, and Park have been introduced to render the limitations not taught by Kim obvious.

For the above reasons, Applicant's arguments are not convincing to overcome the current rejections.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Madigan; Conor F. (US-20140197396-A1): pertinent for its teaching of the arrangement of colored subpixels (See FIG. 2).

Asano, Mitsuru (US-20020070909-A1): pertinent for its teaching of the arrangement of colored subpixels (See FIG. 6).

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Benjamin X Casarez whose telephone number is (571)270-5332. The examiner can normally be reached Monday-Friday: 7:30 am - 5:00 pm.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lun Yi Lao can be reached on (571) 272-7671. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: https://patentcenter.uspto.gov. Visit https://www.uspto.gov/patents/apply/patent-center for more information about Patent Center and https://www.uspto.gov/patents/docx for information about filing in DOCX format. For additional questions, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BENJAMIN X CASAREZ/
Examiner, Art Unit 2692

Notice of References Cited	Application/Control No. 17/301,517	Applicant(s)/Patent Under Reexamination MATSUEDA et al.	
	Examiner Benjamin X Casarez	Art Unit 2692	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20140197396-A1	07-2014	Madigan; Conor F.	H10K71/135	438/34
*	B	US-20130222217-A1	08-2013	SHIN; Aram	H10K59/352	345/80
*	C	US-20090121983-A1	05-2009	SUNG; Un-Cheol	H10K59/352	345/76
*	D	US-20020070909-A1	06-2002	Asano, Mitsuru	H10K59/35	345/76
	E					
	F					
	G					
	H					
	I					
	J					
	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/301,517	MATSUEDA et al.
	Examiner	Art Unit
	Benjamin X Casarez	2692

CPC - Searched*		
Symbol	**Date**	**Examiner**
G09G2300/0452 (with text search)	03/03/2023	BC
G09G2300/0842 (with text search)	03/03/2023	BC
G09G2300/0861 (with text search)	03/03/2023	BC
G09G2310/0262 (with text search)	03/03/2023	BC
G09G2310/0283 (with text search)	03/03/2023	BC
G09G3/2003 (with text search)	03/03/2023	BC
G09G3/3233 (with text search)	03/03/2023	BC
G09G3/3266 (with text search)	03/03/2023	BC

CPC Combination Sets - Searched*		
Symbol	**Date**	**Examiner**

US Classification - Searched*			
Class	**Subclass**	**Date**	**Examiner**

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

/BENJAMIN X CASAREZ/ Examiner, Art Unit 2692	

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/301,517	MATSUEDA et al.
	Examiner	Art Unit
	Benjamin X Casarez	2692

Search Notes		
Search Notes	**Date**	**Examiner**
EAST search started	10/21/2021	BC
EAST inventor and assignee name search (with text search)	10/21/2021	BC
Updated PE2E search started	03/22/2022	BC
Updated PE2E inventor and assignee name search (with text search)	03/22/2022	BC
Updated PE2E search started	07/29/2022	BC
Updated PE2E inventor and assignee name search (with text search)	07/29/2022	BC
Updated PE2E search started	03/03/2023	BC
Updated PE2E inventor and assignee name search (with text search)	03/06/2023	BC

Interference Search			
US Class/CPC Symbol	**US Subclass/CPC Group**	**Date**	**Examiner**

/BENJAMIN X CASAREZ/ Examiner, Art Unit 2692	

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
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	Examiner	Art Unit
	Benjamin X Casarez	2692

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	10/21/2021	03/22/2022	07/29/2022	03/06/2023					
	1	✓	✓	✓	✓					
	2	✓	✓	✓	✓					
	3	✓	✓	✓	✓					
	4	✓	✓	✓	✓					
	5	✓	✓	✓	✓					

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L1	5	("20090121983"|"20100270912"|"20110260951"|"20110260952"|"20110291550").PN.	(US-PGPUB; USPAT)	OR	ON	ON	2021/10/21 04:57 PM
L2	18	("20060103615"|"20060158466"|"20090051627"|"20090322215"|"20120092238"|"20130286262"|"20150035729"|"20150061978"|"20150235617"|"20160019825"|"20160027404"|"20160104413"|"20160126287"|"20160155416"|"20160379540"|"20170092174"|"20170132969"|"9767741").PN.	(US-PGPUB; USPAT)	OR	ON	ON	2021/10/21 05:01 PM
L3	1943	(nlt).IN,AANM,AS.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:10 PM
L4	885	((MATSUEDA near2 YOJIRO) (TAKATORI near2 KENICHI)).IN.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:10 PM
L5	2691	L3 L4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:10 PM
L6	50	L5 and ((subpixel (sub near2 pixel)) with (color colour)) and ((thin near2 film) TFT) and bias$4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:11 PM
L7	7	"56011000".FMID.	(US-PGPUB; USPAT; FPRS; JPO)	OR	ON	ON	2021/10/21 05:14 PM
L8	72	("20010030508" | "20020015110" | "20020186214" | "20030071943" | "20040113875" | "20040201558" | "20050140907" | "20050168423" | "20060077139" | "20080074041" | "20090121983" | "20090302331" | "20090322215" | "20100270912" | "20110050604" | "20110291550" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2021/10/21 05:17 PM

		"20120056531" | "20140197396" | "20140240279" | "20140246654" | "20140333852" | "20140354617" | "20150236077" | "20160148981" | "20170061849" | "20170352312" | "20180143721" | "20180315801" | "4450439" | "5563621" | "6714206" | "6771028" | "8179365" | "9013098" | "9733527").PN. OR ("10312295" | "10452182" | "10671200" | "11107399" | "2015/0379924" | "2016/0104413" | "2016/0148981" | "2018/0143721" | "2018/0254306" | "2020/0004370" | "2020/0035156" | "9508285").URPN.					
L9	7	"56011000".FMID.	(US-PGPUB; USPAT; FPRS; JPO)	OR	ON	ON	2021/10/21 05:22 PM
L10	12	"51357858".FMID.	(US-PGPUB; USPAT; FPRS; JPO)	OR	ON	ON	2021/10/21 05:37 PM
L11	2	("20210225247").PN.	(US-PGPUB; USPAT; USOCR; DERWENT)	OR	ON	ON	2021/10/21 05:42 PM
L12	19328	(G09G2300/0452).CPC.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:42 PM
L13	88828	(G09G2300/0842 OR G09G2300/0861 OR G09G2310/0262 OR G09G2310/0283 OR G09G3/2003 OR G09G3/3233 OR G09G3/3266).CPC.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:42 PM
L14	9475	L12 and L13	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:42 PM
L15	31	L14 and ((thin near2 film) TFT) and ((color colour) with (row column) with alternat$4 with arrangement)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:43 PM
L16	38	L14 and (shar$4 with	(US-PGPUB; USPAT;	OR	ON	ON	2021/10/21

		(color$3 colour$3 subpixel (sub near pixel)) with (adjacent$3 neighbour$4 neighbor$4 near$2 surround$3)) same (divid$4 division separat$4)	USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)				05:52 PM
L17	403	L12 and (alternating$2 with (column row))	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:56 PM
L18	241	L17 and ((thin near2 film) TFT)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:56 PM
L19	13	("20070002084" | "20090121983" | "20120169682" | "20130057521" | "20130113363").PN. OR ("2015/0129856" | "9013098").URPN.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2021/10/21 06:04 PM
L20	349	L12 and ((thin near2 film) TFT) with anode	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 06:12 PM
L21	36	L20 and (shar$4 with (color$3 colour$3 subpixel (sub near pixel)) with (adjacent$3 neighbour$4 neighbor$4 near$2 surround$3))	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 06:12 PM
L22	6	"54931178".FMID.	(US-PGPUB; USPAT; FPRS; JPO)	OR	ON	ON	2021/10/21 06:51 PM
L23	7	"56011000".FMID.	(US-PGPUB; USPAT; FPRS; JPO)	OR	ON	ON	2021/10/21 06:51 PM
L24	4	("20120056531" | "20130222217" | "9013098").PN. OR ("9245932").URPN.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2021/10/21 06:53 PM
L25	3	((US-20150129856-A1 OR US-20120056531-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA,	OR	ON	ON	2022/03/22 09:54 AM

			VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L26	43	("9013098" | "20120056531" | "20130222217").pn. OR ("9245932" | "2015/0129856" | "2012/0056531").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 10:25 AM
L27	6	(14/526077 | 14/537522 | 13/227271).APP.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 10:25 AM
L28	69	("9013098" | "20120056531" | "20130222217" | "20070002084" | "20090121983" | "20120169682" | "20130057521" | "20130113363" | "20050225232" | "20070064020" | "20090121983" | "20090195144" | "20090322215" | "20110180825").pn. OR ("2015/0144908" | "9245932" | "2015/0129856" | "9013098" | "2012/0056531" | "8593057").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 10:25 AM
L29	69	L26 L28	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 10:26 AM
L30	4	("8552635" | "20120056531" | "20160148981").pn. OR ("10497757").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 11:17 AM
L31	13	"56011000".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA,	OR	ON	ON	2022/03/22 11:18 AM

			VN); FPRS; JPO)				
L32	7	("20060017375" | "20080116463" | "20080252200" | "20090200936" | "20100309172" | "20120025182" | "20120056531").pn. OR ("9893127").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 11:28 AM
L33	6	("20060077139" | "20160148981" | "20170352312").pn. OR ("2020/0035156" | "11107399").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 12:48 PM
L34	10	("8552635" | "20120056531" | "20160148981").pn. OR ("10497757" | "2018/0315801").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 12:50 PM
L35	6	"62147578".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2022/03/22 12:54 PM
L36	12	("20080074041" | "20110050604" | "20140240279" | "20140333852" | "20140354617" | "20080074041" | "20110050604" | "20140240279" | "20140333852" | "20140354617" | "20170061849" | "20180143721").pn. OR ("2018/0143721" | "2020/0004370" | "10452182" | "10671200").urpn. AND (PGPB | USPT |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 12:54 PM

		USOC).dbnm.					
L37	11	"56554736".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2022/03/22 01:02 PM
L38	30118	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/03/22 01:16 PM
L39	143601	(G09G2300/0842 OR G09G2300/0861 OR G09G2310/0262 OR G09G2310/0283 OR G09G3/2003 OR G09G3/3233 OR G09G3/3266).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/03/22 01:17 PM
L40	14825	L38 AND L39	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO,	OR	ON	ON	2022/03/22 01:17 PM

			NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L41	1727	L40 AND (blue WITH (pixel subpixel) WITH (divid$4 split$4 combin$4 shar$4))	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/03/22 01:17 PM
L42	237	L41 AND (TFT WITH (connect$4 coupl$4))	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/03/22 01:18 PM
L43	56	L5 and ((subpixel (sub near2 pixel)) with (color colour)) and ((thin near2 film) TFT) and bias$4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/03/22 01:24 PM
L44	2	((US-20150129856-A1 OR US-20160225833-A1).did. AND PGPB.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT;	OR	ON	ON	2022/03/22 04:23 PM

			IBM_TDB)				
L45	5	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2 OR US-9893127-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/03/22 05:09 PM
L46	2	((US-20150129856-A1 OR US-20160225833-A1).did. AND PGPB.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/18 10:09 AM
L47	31381	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/18 10:51 AM
L48	7	L41 AND (TFT WITH (connect$4 coupl$4) WITH (subpixel (sub near2 pixel)) WITH (via hole))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV,	OR	ON	ON	2022/07/18 10:52 AM

			MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L49	187	L47 AND (TFT WITH (connect$4 coupl$4) WITH (subpixel (sub near2 pixel)) WITH (via hole))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/18 11:00 AM
L50	78014	(G09G3/3233).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/18 11:18 AM
L51	4685	L47 AND L50	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/18 11:18 AM
L52	117	L51 AND (TFT WITH	(US-PGPUB; USPAT;	OR	ON	ON	2022/07/18

		(connect$4 coupl$4) WITH (via hole))	USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				11:19 AM
L53	50	((US-20150379924-A1 OR US-20090051627-A1 OR US-20060158466-A1 OR US-20060103615-A1 OR US-20210225247-A1 OR US-20170061849-A1 OR US-20200035156-A1 OR US-20180143721-A1 OR US-20160148981-A1 OR US-20110260952-A1 OR US-20180315801-A1 OR US-20150129856-A1 OR US-20170116900-A1 OR US-20200043990-A1 OR US-20140197396-A1 OR US-20120056531-A1 OR US-20120092238-A1 OR US-20110291550-A1 OR US-20100270912-A1 OR US-20090121983-A1 OR US-20110260951-A1 OR US-20170132969-A1 OR US-20170092174-A1 OR US-20160379540-A1 OR US-20160155416-A1 OR US-20160126287-A1 OR US-20160104413-A1 OR US-20160027404-A1 OR US-20160019825-A1 OR US-20150235617-A1 OR US-20150061978-A1 OR US-20150035729-A1 OR US-	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/18 11:41 AM

		20130286262-A1 OR US-20090322215-A1 OR US-20160225833-A1 OR US-20130002992-A1 OR US-20150364075-A1 OR US-20150129853-A1 OR US-20140292622-A1 OR US-20070029941-A1).did. AND PGPB.dbnm.) OR ((US-9767741-B2 OR US-11107399-B2 OR US-9245932-B2 OR US-10692938-B2 OR US-10546906-B2 OR US-10497757-B2 OR US-8552635-B2 OR US-10312295-B2 OR US-10103205-B2).did. AND USPT.dbnm.) OR ((CN-101960504-A).did. AND FTDB.dbnm.)					
L54	14	L53 AND (TFT WITH (connect$4 coupl$4) WITH (via hole))	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/18 11:41 AM
L55	5	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/20 12:35 PM
L56	2	(14/855199).APP.	(US-PGPUB; USPAT;	OR	ON	ON	2022/07/29

			USOCR)				09:09 AM
L57	12	("20060017375" | "20080116463" | "20080252200" | "20090200936" | "20100309172" | "20120025182" | "20120056531").pn. OR ("2016/0225833" | "9893127").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/07/29 09:10 AM
L58	12	"56554731".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2022/07/29 09:13 AM
L59	31450	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:15 AM
L60	151353	(G09G2300/0842 OR G09G2300/0861 OR G09G2310/0262 OR G09G2310/0283 OR G09G3/2003 OR G09G3/3233 OR G09G3/3266).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT;	OR	ON	ON	2022/07/29 09:15 AM

			IBM_TDB)				
L61	15705	L38 AND L39	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:15 AM
L62	1778	L40 AND (blue WITH (pixel subpixel) WITH (divid$4 split$4 combin$4 shar$4))	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:15 AM
L63	245	L41 AND (TFT WITH (connect$4 coupl$4))	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:15 AM
L64	1934	(nlt).IN,AANM,AS.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:15 AM
L65	916	((MATSUEDA near2 YOJIRO) (TAKATORI near2 KENICHI)).IN.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	OR	ON	ON	2022/07/29 09:16 AM

			IBM_TDB)				
L66	2717	L3 L4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:16 AM
L67	61	L5 and ((subpixel (sub near2 pixel)) with (color colour)) and ((thin near2 film) TFT) and bias$4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:16 AM
L68	54	L67 AND (TFT WITH (connect$4 coupl$4))	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:16 AM
L69	6	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 02:37 PM
L70	6	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 04:01 PM
L71	14	("20150129856"|"20140292622"|"20120056531"|"9245932"|"20160225833").PN.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO,	OR	ON	ON	2022/07/29 04:01 PM

			RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L72	1	L70 NOT L71	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 04:01 PM
L73	6	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/04 11:45 AM
L74	2	((US-20160225834-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 11:05 AM
L75	4	(14/969251 | 14/526077).APP.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 11:18 AM
L76	29	("20020149720" |	(US-PGPUB; USPAT;	OR	ON	ON	2023/03/03

		"20070200488" | "20090058271" | "20090121983" | "20100033084" | "20130021566" | "20140111757" | "20140197396" | "20140252321" | "20140319479" | "20160225833" | "9013098" | "20120056531" | "20130222217").pn. OR ("2016/0225834" | "10263054" | "2015/0144908" | "9245932").urpn. AND (PGPB | USPT | USOC).dbnm.	USOCR)				11:18 AM
L77	10	"49002264".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/03 11:35 AM
L78	25	("6940222" | "8330352" | "20020070909" | "20030052597" | "20050139834" | "20070001954" | "20070002084" | "20080111459" | "20090322215" | "20110248985" | "20110279014" | "20120056531" | "20120097933").pn. OR ("2013/0222217" | "2016/0155780" | "9972663").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 11:36 AM
L79	2	"40623242".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS,	OR	ON	ON	2023/03/03 11:43 AM

			IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)				
L80	33979	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 11:44 AM
L81	166416	(G09G2300/0842 OR G09G2300/0861 OR G09G2310/0262 OR G09G2310/0283 OR G09G3/2003 OR G09G3/3233 OR G09G3/3266).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 11:44 AM
L82	17422	L38 AND L39	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 11:45 AM
L83	5441	L82 AND (((transistor TFT) WITH (connect$4	(US-PGPUB; USPAT; USOCR; FIT (AP, AT,	OR	ON	ON	2023/03/03 11:45 AM

		coupl$4 contact$4 hole via)))	AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L84	173	L82 AND (((transistor TFT) WITH (connect$4 coupl$4 contact$4 hole via)) WITH overlap$4 WITH (OLED emission emitting))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 11:45 AM
L85	9	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 11:46 AM
L86	53	((US-20150379924-A1 OR US-20090051627-A1 OR US-20060158466-A1 OR US-20060103615-A1 OR US-20210225247-A1 OR US-20170061849-A1 OR US-20200035156-A1 OR US-20180143721-A1 OR US-	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE,	OR	ON	ON	2023/03/03 12:41 PM

		20160148981-A1 OR US-20110260952-A1 OR US-20180315801-A1 OR US-20150129856-A1 OR US-20170116900-A1 OR US-20200043990-A1 OR US-20140197396-A1 OR US-20120056531-A1 OR US-20120092238-A1 OR US-20110291550-A1 OR US-20100270912-A1 OR US-20090121983-A1 OR US-20110260951-A1 OR US-20170132969-A1 OR US-20170092174-A1 OR US-20160379540-A1 OR US-20160155416-A1 OR US-20160104413-A1 OR US-20160027404-A1 OR US-20160019825-A1 OR US-20150235617-A1 OR US-20150061978-A1 OR US-20150035729-A1 OR US-20130286262-A1 OR US-20090322215-A1 OR US-20160126287-A1 OR US-20160225833-A1 OR US-20130002992-A1 OR US-20150364075-A1 OR US-20150129853-A1 OR US-20140292622-A1 OR US-20070029941-A1 OR US-20160225834-A1 OR US-20130222217-A1).did. AND PGPB.dbnm.) OR ((US-9767741-B2 OR US-11107399-B2 OR US-9245932-B2 OR US-10692938-B2 OR US-10546906-B2 OR US-10497757-B2 OR US-8552635-B2 OR US-10312295-B2 OR US-10103205-B2 OR US-10615237-B2).did. AND USPT.dbnm.) OR ((CN-101960504-A).did.	SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				

		AND FTDB.dbnm.)					
L87	15	"56011000".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/03 12:45 PM
L88	14	"51620270".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/03 02:25 PM
L89	94	("7365488" | "8253323" | "8552635" | "20040036421" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "7365488" | "8253323" | "8552635" | "9478586" | "20040036421" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "7365488" | "8253323" | "8319906" | "8338832" | "8552635" | "9478586" | "20040036421" | "20050057460" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "20120056531" | "7365488" | "8232123" | "8253323" | "8319906" | "8338832" | "8552635" | "9231000" | "9478586" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 02:25 PM

		"20040036421" | "20040183083" | "20050057460" | "20050242712" | "20070015429" | "20090128018" | "20090289963" | "20110102402" | "20110291550" | "20120056531" | "20140132584" | "7365488" | "8232123" | "8253323" | "8319906" | "8338832" | "8552635" | "8587194" | "9231000" | "9478586" | "10084029" | "10546906" | "10923545" | "20040036421" | "20040183083" | "20050057460" | "20050242712" | "20070015429" | "20090128018" | "20090289963" | "20110102402" | "20110291550" | "20120056531" | "20140132584").pn. OR ("2014/0292622" | "2017/0012094" | "2019/0027546" | "2020/0144349" | "2021/0134908" | "9478586" | "10084029" | "10546906" | "10923545" | "11574969").urpn. AND (PGPB | USPT | USOC).dbnm.					
L90	347	L82 AND ((transistor TFT) WITH overlap$4 WITH (OLED emission emitting))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 02:52 PM
L91	174	L90 NOT L84	(US-PGPUB; USPAT;	OR	ON	ON	2023/03/03

			USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				02:52 PM
L92	2	"20210225247"	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 03:16 PM
L93	33979	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 03:16 PM
L94	202	L93 AND (((transistor TFT) WITH (connect$4 coupl$4 contact$4 hole via)) WITH overlap$4 WITH (OLED emission emitting))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 03:17 PM
L95	29	L94 NOT L84	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV,	OR	ON	ON	2023/03/03 03:17 PM

			MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L96	9	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 03:28 PM
L97	430	L93 AND ((transistor TFT) WITH overlap$4 WITH (OLED emission emitting))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 03:28 PM
L98	83	L97 NOT L90	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 03:29 PM
L99	17	(14/969251 | 14/855199	(US-PGPUB; USPAT;	OR	ON	ON	2023/03/03

		| 14/526077 | 14/537522 | 13/963987 | 14/156188 | 13/467737 | 13/227271 | 12/250225).APP.	USOCR)				03:33 PM
L100	350	("20020149720" | "20070200488" | "20090058271" | "20090121983" | "20100033084" | "20130021566" | "20140111757" | "20140197396" | "20140252321" | "20140319479" | "20160225833" | "20060017375" | "20080116463" | "20080252200" | "20090200936" | "20100309172" | "20120025182" | "20120056531" | "9013098" | "20120056531" | "20130222217" | "20070002084" | "20090121983" | "20120169682" | "20130057521" | "20130113363" | "7365488" | "8253323" | "8552635" | "20040036421" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "6294398" | "6992326" | "7132788" | "7443093" | "8110825" | "8115216" | "8124172" | "8309376" | "8330352" | "20040144975" | "20050112341" | "20080024402" | "20080111474" | "20090195144" | "20090243483" | "20110183268" | "20110229994" | "20110248247" | "20110309389" | "20120049178" | "20120091482" | "20120228602" | "20120319089" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 03:33 PM

		"20120326136" | "20120326600" | "20130109117" | "20140070175" | "20140078126" | "20050225232" | "20070064020" | "20090121983" | "20090195144" | "20090322215" | "20110180825" | "5341153" | "6008868" | "6366025" | "6429601" | "6747618" | "6801000" | "6838819" | "6867549" | "6870323" | "6903754" | "6919681" | "6940222" | "7205713" | "7239363" | "7492337" | "7508126" | "7728802" | "7791565" | "7821553" | "7825584" | "8013817" | "8247966" | "20020014837" | "20020015110" | "20030052597" | "20040036421" | "20040108818" | "20040125278" | "20040217694" | "20050001542" | "20050087740" | "20050127819" | "20050151462" | "20070001584" | "20070046185" | "20080111459" | "20080158107" | "20080224968" | "20080231554").pn. OR ("2016/0225834" | "10263054" | "2016/0225833" | "9893127" | "2015/0144908" | "9245932" | "2015/0129856" | "9013098" | "2014/0292622" | "9478586" | "2014/0197396" | "9444050" | "2013/0222217" | "2012/0056531" | "8593057" | "2009/0121983" | "8330352").urpn. AND (PGPB | USPT | USOC).dbnm.					

L101	23	L100 AND ((transistor TFT) WITH overlap$4 WITH (OLED emission emitting))	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 03:34 PM
L102	9	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 04:33 PM
L105	54	((US-20150379924-A1 OR US-20090051627-A1 OR US-20060158466-A1 OR US-20060103615-A1 OR US-20210225247-A1 OR US-20170061849-A1 OR US-20200035156-A1 OR US-20180143721-A1 OR US-20160148981-A1 OR US-20110260952-A1 OR US-20180315801-A1 OR US-20150129856-A1 OR US-20170116900-A1 OR US-20200043990-A1 OR US-20140197396-A1 OR US-20120056531-A1 OR US-20120092238-A1 OR US-20110291550-A1 OR US-20100270912-A1 OR US-20090121983-A1 OR US-20110260951-A1 OR US-20170132969-A1 OR US-20170092174-A1 OR US-20160379540-A1 OR US-20160155416-A1 OR US-20160104413-A1 OR US-20160027404-A1 OR US-20160019825-A1	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/03 04:34 PM

		OR US-20150235617-A1 OR US-20150061978-A1 OR US-20150035729-A1 OR US-20130286262-A1 OR US-20090322215-A1 OR US-20160126287-A1 OR US-20160225833-A1 OR US-20130002992-A1 OR US-20150364075-A1 OR US-20150129853-A1 OR US-20140292622-A1 OR US-20070029941-A1 OR US-20160225834-A1 OR US-20130222217-A1 OR US-20190074342-A1).did. AND PGPB.dbnm.) OR ((US-9767741-B2 OR US-11107399-B2 OR US-9245932-B2 OR US-10692938-B2 OR US-10546906-B2 OR US-10497757-B2 OR US-8552635-B2 OR US-10312295-B2 OR US-10103205-B2 OR US-10615237-B2).did. AND USPT.dbnm.) OR ((CN-101960504-A).did. AND FTDB.dbnm.)					
L106	10	"49002264".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/03 05:05 PM
L107	25	("6940222" | "8330352" | "20020070909" | "20030052597" | "20050139834" | "20070001954" | "20070002084" | "20080111459" | "20090322215" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 05:05 PM

		"20110248985" | "20110279014" | "20120056531" | "20120097933").pn. OR ("2013/0222217" | "2016/0155780" | "9972663").urpn. AND (PGPB | USPT | USOC).dbnm.					
L108	15	"26604413".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/03 05:19 PM
L109	175	("5604613" | "6104446" | "6300612" | "6335778" | "6498592" | "6608620").pn. OR ("2002/0070909" | "6768482").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/03 05:19 PM
L110	2	((US-20160225834-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 09:02 PM
L112	3	("20140197396" "8330352" "20090121983").pn.	(US-PGPUB; USPAT)	OR	ON	ON	2023/03/06 09:10 PM
L113	10	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB,	OR	ON	ON	2023/03/06 09:46 PM

		A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1 OR US-20020070909-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L114	3	((US-20160225834-A1 OR US-20090121983-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 09:50 PM
L115	15	"26604413".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/06 09:55 PM
L116	175	("5604613" | "6104446" | "6300612" | "6335778" | "6498592" | "6608620").pn. OR ("2002/0070909" | "6768482").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/06 09:56 PM
L117	4	("9013098" | "20120056531" | "20130222217").pn. OR ("9245932").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/06 10:14 PM
L118	19	(14/969251 | 14/855199 | 14/526077 |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/06 10:16 PM

		14/537522 | 13/963987 | 14/156188 | 13/467737 | 13/227271 | 12/250225 | 09/990414).APP.					
L119	495	("20020149720" | "20070200488" | "20090058271" | "20090121983" | "20100033084" | "20130021566" | "20140111757" | "20140197396" | "20140252321" | "20140319479" | "20160225833" | "20060017375" | "20080116463" | "20080252200" | "20090200936" | "20100309172" | "20120025182" | "20120056531" | "9013098" | "20120056531" | "20130222217" | "20070002084" | "20090121983" | "20120169682" | "20130057521" | "20130113363" | "7365488" | "8253323" | "8552635" | "20040036421" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "6294398" | "6992326" | "7132788" | "7443093" | "8110825" | "8115216" | "8124172" | "8309376" | "8330352" | "20040144975" | "20050112341" | "20080024402" | "20080111474" | "20090195144" | "20090243483" | "20110183268" | "20110229994" | "20110248247" | "20110309389" | "20120049178" | "20120091482" | "20120228602" | "20120319089" | "20120326136" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/06 10:16 PM

		"20120326600" | "20130109117" | "20140070175" | "20140078126" | "20050225232" | "20070064020" | "20090121983" | "20090195144" | "20090322215" | "20110180825" | "5341153" | "6008868" | "6366025" | "6429601" | "6747618" | "6801000" | "6838819" | "6867549" | "6870323" | "6903754" | "6919681" | "6940222" | "7205713" | "7239363" | "7492337" | "7508126" | "7728802" | "7791565" | "7821553" | "7825584" | "8013817" | "8247966" | "20020014837" | "20020015110" | "20030052597" | "20040036421" | "20040108818" | "20040125278" | "20040217694" | "20050001542" | "20050087740" | "20050127819" | "20050151462" | "20070001584" | "20070046185" | "20080111459" | "20080158107" | "20080224968" | "20080231554" | "5604613" | "6104446" | "6300612" | "6335778" | "6498592" | "6608620").pn. OR ("2016/0225834" | "10263054" | "2016/0225833" | "9893127" | "2015/0144908" | "9245932" | "2015/0129856" | "9013098" | "2014/0292622" | "9478586" | "2014/0197396" | "9444050" | "2013/0222217" | "2012/0056531" | "8593057" | "2009/0121983" |				

		"8330352" | "2002/0070909" | "6768482").urpn. AND (PGPB | USPT | USOC).dbnm.					
L120	33	L119 AND ((transistor TFT) WITH overlap$4 WITH (OLED emission emitting))	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/06 10:16 PM
L121	56	((US-20150379924-A1 OR US-20090051627-A1 OR US-20060158466-A1 OR US-20060103615-A1 OR US-20210225247-A1 OR US-20170061849-A1 OR US-20200035156-A1 OR US-20180143721-A1 OR US-20160148981-A1 OR US-20110260952-A1 OR US-20180315801-A1 OR US-20150129856-A1 OR US-20170116900-A1 OR US-20200043990-A1 OR US-20140197396-A1 OR US-20120056531-A1 OR US-20160126287-A1 OR US-20090322215-A1 OR US-20110291550-A1 OR US-20100270912-A1 OR US-20090121983-A1 OR US-20110260951-A1 OR US-20170132969-A1 OR US-20170092174-A1 OR US-20160379540-A1 OR US-20160155416-A1 OR US-20160104413-A1 OR US-20160027404-A1 OR US-20160019825-A1 OR US-20150235617-A1 OR US-20150061978-A1 OR US-20150035729-A1 OR US-20130286262-A1 OR US-20120092238-A1 OR US-20160225833-A1 OR US-20130002992-A1 OR	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 10:22 PM

		US-20150364075-A1 OR US-20150129853-A1 OR US-20140292622-A1 OR US-20070029941-A1 OR US-20160225834-A1 OR US-20130222217-A1 OR US-20190074342-A1 OR US-20020070909-A1).did. AND PGPB.dbnm.) OR ((US-9767741-B2 OR US-11107399-B2 OR US-9245932-B2 OR US-10692938-B2 OR US-10546906-B2 OR US-10497757-B2 OR US-8552635-B2 OR US-10312295-B2 OR US-10103205-B2 OR US-10615237-B2 OR US-11552107-B2).did. AND USPT.dbnm.) OR ((CN-101960504-A).did. AND FTDB.dbnm.)					
L122	15	"56011000".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/06 10:28 PM
L123	14	"51357853".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/06 10:29 PM
L124	14	("9013098" | "20120056531" | "20130222217").pn. OR	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/06 10:29 PM

		("2015/0144908" | "9245932").urpn. AND (PGPB | USPT | USOC).dbnm.					
L125	14	"51620270".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2023/03/06 10:35 PM
L126	94	("7365488" | "8253323" | "8552635" | "20040036421" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "7365488" | "8253323" | "8552635" | "9478586" | "20040036421" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "7365488" | "8253323" | "8319906" | "8338832" | "8552635" | "9478586" | "20040036421" | "20050057460" | "20050242712" | "20070015429" | "20090289963" | "20110291550" | "20120056531" | "7365488" | "8232123" | "8253323" | "8319906" | "8338832" | "8552635" | "9231000" | "9478586" | "20040036421" | "20040183083" | "20050057460" | "20050242712" | "20070015429" | "20090128018" | "20090289963" | "20110102402" | "20110291550" | "20120056531" | "20140132584" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/03/06 10:35 PM

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L129	10	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1 OR US-20140197396-A1 OR US-20130222217-A1 OR US-20090121983-A1 OR US-20020070909-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 10:56 PM
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L133	4	L131 NOT L132	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 11:23 PM
L134	5	((US-20160225834-A1 OR US-20090121983-A1 OR US-20130222217-A1 OR US-20120056531-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 11:24 PM
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L136	940	((MATSUEDA near2 YOJIRO) (TAKATORI near2 KENICHI)).IN.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 11:30 PM
L137	2741	L3 L4	(US-PGPUB; USPAT; USOCR; FPRS; EPO;	OR	ON	ON	2023/03/06 11:30 PM

			JPO; DERWENT; IBM_TDB)				
L138	63	L5 and ((subpixel (sub near2 pixel)) with (color colour)) and ((thin near2 film) TFT) and bias$4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 11:30 PM
L139	55	L67 AND (TFT WITH (connect$4 coupl$4))	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/06 11:30 PM

PE2E SEARCH - Search History (Interference)

There are no Interference searches to show.

MAIL STOP AMENDMENT
PATENT
8317-0050

IN THE U. S. PATENT AND TRADEMARK OFFICE

In re application of

Yojiro MATSUEDA et al. Conf. 1637

Application No. 17/301,517 Group 2692

Filed: April 6, 2021 Examiner CASAREZ, BENJAMIN

Title: DISPLAY DEVICE AND COMPUTER READABLE MEDIA

AMENDMENT

Assistant Commissioner for Patents November 4, 2022
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the non-final Office Action mailed August 4, 2022, please amend the above-identified application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks begin on page 7 of this paper.

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (currently amended) A display device comprising:

a display unit where a plurality of first pixels each including subpixels of three colors and a plurality of second pixels each including subpixels of three colors arranged differently from the subpixels in one of the first pixels are alternately arrayed in a row direction and a column direction, the subpixels of the three colors including a subpixel of a first color, a subpixel of a second color and a subpixel of a third color;

a thin film transistor (TFT) circuit disposed below each of the subpixels to control the subpixels; [[and]]

at least one connection part that connects the TFT circuit and one of the subpixels[[,]]; and

an organic light emitting diode (OLED) layer of the first color,

wherein the subpixel of the second color and the subpixel of the third color in one of the first pixels are arrayed in parallel with the subpixel of the second color and the subpixel of the third color in one of the second pixels,

a first arrangement in the column direction of the subpixel of the second color and the subpixel of the third color in one of the first pixels and a second arrangement of the subpixel of the second color and the subpixel of the third color in one of the second pixels are identical,

the subpixels of the second color in one of the first pixels and in one of the second pixels that are adjacent to each other in the row direction are aligned in the row direction,

the subpixels of the third color in one of the first pixels and in one of the second pixels that are adjacent to each other in the row direction are aligned in the row direction,

the subpixel of the first color in one of the first pixels has a biased arrangement and is positioned toward a side of the subpixel of the second color in an array direction of the subpixel of the second color and the subpixel of the third color,

the subpixel of the first color in one of the second pixels has a biased arrangement and is positioned toward a side of the subpixel of the third color in the array direction of the subpixel of the second color and the subpixel of the third color,

the OLED layer of the first color is formed over the subpixel of the first color in one of the first pixels and the subpixel of the first color in one of the second pixels that is adjacent to one of the first pixels in a direction in which the subpixel of the first color in one of the first pixels is biased,

the at least one connection part is disposed at an identical position in each of the first pixels and the second pixels independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels,

the at least one connection part connected to the subpixel of the first color in one of the first pixels is disposed at a position biased toward a side of the subpixel of the third color in the array direction of the subpixel of the second color and the subpixel of the third color in the OLED layer of the first color,

the at least one connection part connected to the subpixel of the first color in one of the second pixels is disposed at a position biased toward a side of the subpixel of the second color in the array direction of the subpixel of the second color and the subpixel of the third color in the OLED layer of the first color,

~~one of the subpixels~~ the OLED layer is disposed above the at least one connection part,

a position where the at least one connection part is disposed overlaps with ~~one of the subpixels~~ the OLED layer in a plan view, and

the subpixels in each of the first pixels are arranged identically, and the subpixels in each of the second pixels are arranged identically.

2. (original) The display device according to claim 1, wherein

the subpixel includes an anode electrode, and

the at least one connection part is a portion that connects an output of the TFT circuit and the anode electrode.

3. (original) The display device according to claim 1, wherein

the TFT circuit includes an identical circuit arrangement pattern for the subpixels of the first to third colors.

4. (previously presented) The display device according to claim 1, wherein

in one of the first pixels and one of the second pixels that are adjacent to each other in the row direction, a distance between a first connection part of the at least one connection part for the subpixel of the first color in the one of the first pixels and a second connection part of the at least one connection part for the subpixel of the first color in the one of the second pixels are consistent in the display unit independent of the biased arrangements of the subpixels.

5. (original) The display device according to claim 1, wherein

a first square not crossing the subpixels encloses a region including the subpixels of three colors included in one of the first pixels and excluding other subpixels,

a second square not crossing the subpixels encloses a region including the subpixels of three colors included in one of the second pixels and excluding other subpixels, and

the first square and the second square are arranged without overlapping each other.

REMARKS

Claims 1-5 were rejected.

Claim 1 is amended. Support for the amendments to independent claim 1 comes at least from Figs. 4 and 7 and the corresponding portions of the originally-filed specification (including paras. [0078], [0098]-[0099], and [0111] of the published application).

Claims 1-5 are currently pending in this application. No new matter is added.

I. Statement of Substance of Interview

Applicant is appreciative of the brief examiner interview conducted on August 4, 2022. In the examiner interview, Applicant's undersigned representative inquired as to why Yoon was relied upon again when the examiner had indicated previously that clarifying the identical arrangement of the subpixels in the respective pixels would overcome both the current grounds of rejection and a potential rejection including Yoon. The examiner indicated that the introduction of the identical arrangement overcomes the previous primary reference to Kim ("Kim '833") but that another Kim reference was introduced ("Kim '834"), and that Yoon was introduced to disclose the connection part.

II. Rejection under 35 U.S.C. § 103

In the Office Action, at page 2, claims 1-5 were rejected under 35 U.S.C. § 103 as being unpatentable over US 2016/0225834 to Kim ("Kim '834") in view of US 9,245,932 to Yoon ("Yoon"). This rejection is respectfully traversed.

In short, the combination of the teachings of Kim '834 and Yoon does not disclose or suggest:

> at least one connection part that connects the TFT circuit and one of the subpixels; and
>
> an organic light emitting diode (OLED) layer of the first color…[that] is formed over the subpixel of the first color in one of the first pixels and the subpixel of the first color in one of the second pixels that is adjacent to one of the first pixels in a direction in which the subpixel of the first color in one of the first pixels is biased,
>
> the at least one connection part is disposed at an identical position in each of the first pixels and the second pixels independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels,
>
> the at least one connection part connected to the subpixel of the first color in one of the first pixels is disposed at a position biased toward a side of the subpixel of the third color in the array direction of the subpixel of the second color and the subpixel of the third color in the OLED layer of the first color,
>
> the at least one connection part connected to the subpixel of the first color in one of the second pixels is disposed at a position biased toward a side of the subpixel of the second color in the array direction of the subpixel of the second color and the subpixel of the third color in the OLED layer of the first color,

the OLED layer is disposed above the at least one connection part,

a position where the at least one connection part is disposed overlaps with the OLED layer in a plan view, and

as recited in amended independent claim 1.

Kim '834 is directed to an organic light emitting display apparatus, illustrated in Figs. 1 and 2 (annotated by Office), reproduced below.

FIG. 1

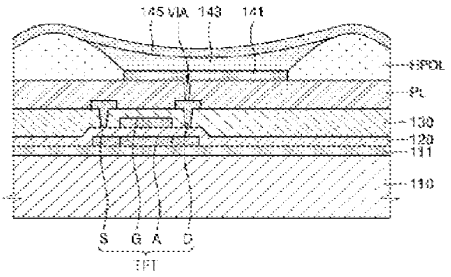
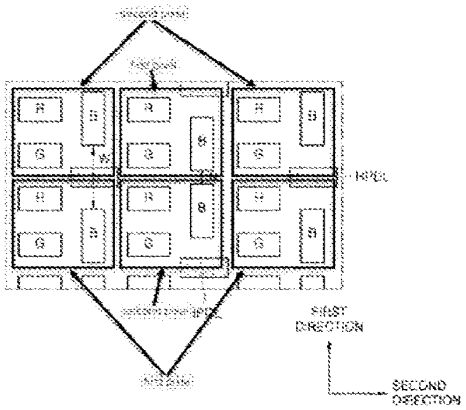


FIG. 2



Kim '834 discloses that an intermediate layer 143 that includes an organic emission layer, and an opposite electrode 145 may be formed on a pixel electrode 141.

In contrast to the present invention, Kim '834 does not disclose or suggest that an OLED layer of the first color is formed over the subpixel of the first color in one of the first pixels and the subpixel of the first color in one of the second pixels that is adjacent to one of the first pixels in a direction in which the subpixel of the first color in one of the first pixels is biased. Kim '834 does not disclose that the

intermediate layer 143 is formed over multiple sub-pixels of the same color (= pixel electrode 141).

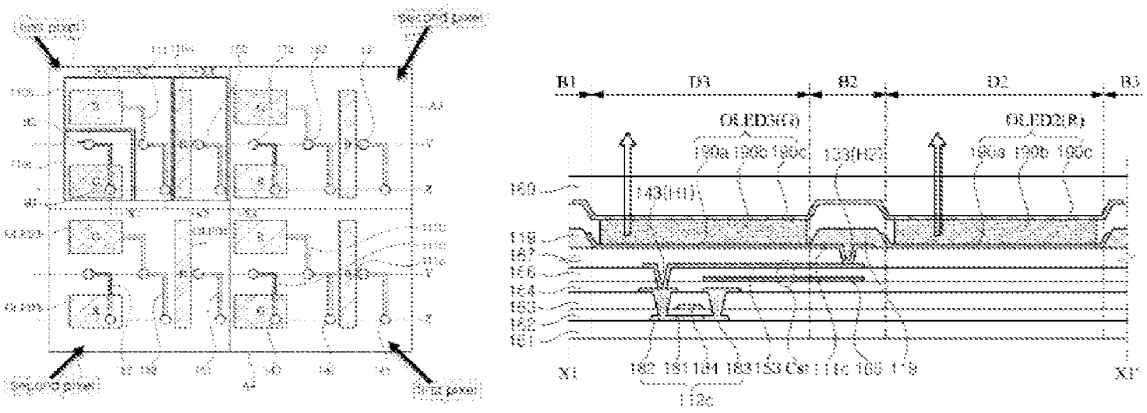
In addition, in contrast to the present invention, Kim '834 does not disclose or suggest that a connection part is disposed at an identical position in each of the first pixels and the second pixels independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels, the connection part connected to the subpixel of the first color in one of the first pixels is disposed at a position biased toward a side of the subpixel of the third color in the array direction of the subpixel of the second color and the subpixel of the third color in the OLED layer of the first color, the connection part connected to the subpixel of the first color in one of the second pixels is disposed at a position biased toward a side of the subpixel of the second color in the array direction of the subpixel of the second color and the subpixel of the third color in the OLED layer of the first color, the OLED layer is disposed above the at least one connection part, and a position where the at least one connection part is disposed overlaps with the OLED layer in a plan view. Kim '834 does not disclose or suggest the arrangement of the VIA (alleged to correspond to the connection part) when the display apparatus is seen in a plan view.

The Office asserts that Yoon cures some deficiencies in Kim '834.

Yoon is directed to an OLED panel, illustrated in Figs. 3 (annotated by the Office) and 4, reproduced below.

FIG. 4

FIG. 3



Yoon discloses an organic emission layer 190b.

In contrast to the present invention, Yoon does not disclose or suggest that an OLED layer of a first color is formed over the subpixel of the first color in one of the first pixels and the subpixel of the first color in one of the second pixels that is adjacent to one of the first pixels in a direction in which the subpixel of the first color in one of the first pixels is biased. Yoon does not disclose or suggest that the organic emission layer 190b is formed over multiple sub-pixels of the same color (= sub-pixels 110).

Additionally, in contrast to the present invention, Yoon does not disclose or suggest at least one connection part that connects a TFT circuit and one of the subpixels, where the connection part is disposed at an identical position in each of

the first pixels and the second pixels independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels, the connection part connected to the subpixel of the first color in one of the first pixels is disposed at a position biased toward a side of the subpixel of the third color in the array direction of the subpixel of the second color and the subpixel of the third color in the OLED layer of the first color, the connection part connected to the subpixel of the first color in one of the second pixels is disposed at a position biased toward a side of the subpixel of the second color in the array direction of the subpixel of the second color and the subpixel of the third color in the OLED layer of the first color, the OLED layer is disposed above the at least one connection part, and a position where the at least one connection part is disposed overlaps with the OLED layer in a plan view. In Yoon, an organic light emitting diode OLED1, an organic light emitting diode OLED2, and an organic light emitting diode OLED3 are connected to a driving TFT 112 (TFT circuit) through two VIAs of planarizing layer holes 131-132 and insulating layer holes 141-143. Yoon does not disclose a connection part that connects a TFT circuit and one of the subpixels arranged as recited in amended independent claim 1.

Therefore, the combination of the teachings of Kim '834 and Yoon does not disclose or suggest all the features of amended independent claim 1 and claim 1 is patentably

distinguished over the reference relied upon. Claims 2-5 depend either directly or indirectly from amended independent claim 1 and are therefore patentably distinguished over the references relied upon for at least the reasons discussed above. Accordingly, withdrawal of the § 103 rejection is respectfully requested.

III. Conclusion

In view of the present amendment and the foregoing remarks, it is believed that the present application has been placed in condition for allowance. Reconsideration and allowance are respectfully requested.

The Commissioner is hereby authorized in this, concurrent, and future submissions to charge any additional fees(s) or underpayment of fee(s) under 37 C.F.R. §§ 1.16, 1.17, and 41.20 or credit any overpayment of fee(s) to Deposit Account No. 14-1140.

Respectfully submitted,

NIXON & VANDERHYE

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ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/301,517	**11/04/2022 02:33:58 PM ET**	**8317-0050**

Title of Invention

DISPLAY DEVICE AND COMPUTER READABLE MEDIA

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	1637	FILED BY	Ryan Carter
PATENT CENTER #	61144511	FILING DATE	04/06/2021
CUSTOMER #	466	FIRST NAMED INVENTOR	Yojiro MATSUEDA
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	ERIC JENSEN

Documents

TOTAL DOCUMENTS: 3

DOCUMENT		PAGES	DESCRIPTION	SIZE (KB)
8317-0050 AMD.pdf		14	-	242 KB
8317-0050 AMD-A....pdf	(1-1)	1	Amendment/Request for Reconsideration-After Non-Final Rejection	67 KB
8317-0050 AMD-CLM.pdf	(2-6)	5	Claims	72 KB
8317-0050 AMD-REM.pdf	(7-14)	8	Applicant Arguments/Remarks Made in an Amendment	188 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
8317-0050 AMD.pdf	628112883AE734010F506C4A49CCE596DE1DF8EBE0C860381 55C4485282C1467D0DF651E060CA8884453107F24514C849EB F09F84DDC3BB1C6EFE7AE8CC3AE15
8317-0050 AMD-A....pdf	9940F220000D71E73AE88195DA353C835A3D4C12752E2A6C89 9EA6023E21C5A9A406FD9433C96F01B45E805388F3148A2A92 997887209DD92E40F727CE0A39B1
8317-0050 AMD-CLM.pdf	3B024E660B74BA2B18DF89EFF621A81C09476BDBE671E0EEE D5AEE59C87424BB2E1738130C744E29482B30DE742EB18A28 FB98BE6AD5B4C78C0503807DA17FF7
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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 17/301,517	Filing Date 04/06/2021	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $100 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $480 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	11/04/2022	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 5	Minus	** 20	= 0		x $100 =	0
	Independent (37 CFR 1.16(h))	* 1	Minus	*** 3	= 0		x $480 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	0

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	LIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/ALLYSON PURNELL/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/301,517	04/06/2021	Yojiro MATSUEDA	8317-0050	1637

466 7590 08/09/2022

NIXON & VANDERHYE, PC
901 NORTH GLEBE ROAD
11TH FLOOR
ARLINGTON, VA 22203

EXAMINER
CASAREZ, BENJAMIN X.

ART UNIT	PAPER NUMBER
2692	

NOTIFICATION DATE	DELIVERY MODE
08/09/2022	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

pair_nixon@firsttofile.com
ptomail@nixonvan.com

Applicant-Initiated Interview Summary	Application No. 17/301,517	Applicant(s) MATSUEDA et al.		
	Examiner Benjamin X Casarez	Art Unit 2692	AIA (First Inventor to File) Status Yes	Page 1 of 2

All Participants (applicant, applicants representative, PTO personnel)	Title	Type
Benjamin X Casarez	Primary Examiner	Telephonic
Kari Footland (Reg. No. 55187)	Attorney	

Date of Interview: 04 August 2022

Issues Discussed:

35 U.S.C. 103

Applicant's representative requested a clarification of how the references are being applied in the most recent Office Action.

The Examiner indicated that Yoon is being relied upon to teach the features related to the at least one connection part, as discussed in the advisory action mailed 07/27/2022. Furthermore, since the claims were further amended in the RCE mailed 07/22/2022 to introduce the feature of the first and second pixels having respective identical arrangements, overcoming the previous primary reference US 20160225833 A1, the Examiner introduced Kim et al. (US 20160225834 A1) in the current rejections. Kim shows in FIG. 2 the first and second pixels being arranged in the claimed manner. Therefore, the Examiner indicated that the new grounds of rejection of Kim in view of Yoon (which does not include any of the previously relied upon references) addresses the limitations introduced after-final, as discussed in the advisory action mailed 07/27/2022, as well as the limitations added with the RCE mailed 07/22/2022.

No particular agreement on allowability was reached.

/BENJAMIN X CASAREZ/ Examiner, Art Unit 2692	

Applicant is reminded that a complete written statement as to the substance of the interview must be made of record in the application file. It is the applicants responsibility to provide the written statement, unless the interview was initiated by the Examiner and the Examiner has indicated that a written summary will be provided. See MPEP 713.04
Please further see:
MPEP 713.04
Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews, paragraph (b)
37 CFR § 1.2 Business to be transacted in writing

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview.

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete

and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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466 7590 08/04/2022

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ARLINGTON, VA 22203

EXAMINER
CASAREZ, BENJAMIN X.

ART UNIT	PAPER NUMBER
2692	

NOTIFICATION DATE	DELIVERY MODE
08/04/2022	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

pair_nixon@firsttofile.com
ptomail@nixonvan.com

Office Action Summary	Application No. 17/301,517	Applicant(s) MATSUEDA et al.	
	Examiner Benjamin X Casarez	Art Unit 2692	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 22 July 2022.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL.** 2b) ☑ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 1-5 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1-5 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☑ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

DETAILED ACTION

Continued Examination

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on July 22, 2022 has been entered.

Status

This Office Action is responsive to claim amendments filed for No. 17/301,517 on July 22, 2022. Please note: Claims 1 and 4 have been amended. Claims 1-5 are pending and have been examined.

Notice of Pre-AIA or AIA Status

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Claim Rejections - 35 USC § 103

2. In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

3. The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-5 are rejected under 35 U.S.C. 103 as being unpatentable over Kim et al. (US 20160225834 A1), hereinafter Kim, in view of Yoon et al. (US 9245932 B2; Previously cited in the PTO-892 dated 10/26/2021), hereinafter Yoon.

Regarding **Claim 1**, Kim teaches:

A display device **(See paragraphs [0039] and [0067]: FIGS. 1 and 2 are views of an organic light-emitting display apparatus)** comprising:

a display unit **(See FIG. 2)** where a plurality of first pixels each including subpixels of three colors **(See annotated FIG. 2 below: the labeled pixels correspond to first pixels each including subpixels of three colors (R, G, B))** and a plurality of second pixels each including subpixels of three colors arranged differently from the subpixels in one of the first pixels **(See annotated FIG. 2 below: the labeled pixels correspond to second pixels each including subpixels of three colors (R, G, B) arranged differently from the subpixels in one of the first pixels)** are alternately arrayed in a row direction and a column direction **(See annotated FIG. 2 below: the first pixels and the second pixels are alternately arrayed in a row direction (second direction) and a column direction (first direction))**, the subpixels of the three colors including a subpixel of a first color, a subpixel of a second color and a subpixel of a third color **(See paragraph [0059]; See annotated FIG. 2 below: the subpixels of the three colors including a subpixel of a first color (B), a subpixel of a second color (G) and a subpixel of a third color (R))**;

a thin film transistor (TFT) circuit disposed below each of the subpixels **(See FIG. 1: TFT disposed below each of the subpixels, which is composed of an OLED, as discussed in paragraph [0053])** to control the subpixels **(See paragraph [0007]; Although control with the TFT shown in FIG. 1 is not explicitly discussed, it is necessarily true that the TFT element must exert some control over the subpixels in order to cause the subpixels to emit light, as disclosed. Therefore, this is an inherent feature)**; and

at least one connection part that connects the TFT circuit and one of the subpixels **(See paragraph [0054], lines 1-4; See FIG. 1: the portion of 141 disposed in the via hole VIA corresponds to at least one connection part that connects the TFT circuit and one of the subpixels)**,

wherein the subpixel of the second color and the subpixel of the third color in one of the first pixels are arrayed in parallel with the subpixel of the second color and the subpixel of the third color in one of the second pixels **(See annotated FIG. 2 below: the subpixel of the second color (G) and the subpixel of the third color (R) in one of the first pixels (e.g., the top middle first pixel) are arrayed in parallel with the subpixel of the second color (G) and the subpixel of the third color (R) in one of the second pixels (e.g., the top left second pixel))**,

a first arrangement in the column direction of the subpixel of the second color and the subpixel of the third color in one of the first pixels and a second arrangement of the subpixel of the second color and the subpixel of the third color in one of the second pixels are identical **(See annotated FIG. 2 below: a first arrangement in the column direction of the subpixel of the second color (G) and the subpixel of the third color (R) in one of the first pixels (e.g., the top middle first pixel) and a second arrangement of the subpixel of the second color (G) and the subpixel of the third color (R) in one of the second pixels (e.g., the bottom middle second pixel) are identical)**,

the subpixels of the second color in one of the first pixels and in one of the second pixels that are adjacent to each other in the row direction are aligned in the row direction **(See annotated FIG. 2 below: the subpixels of the second color (G) in one of the first pixels (e.g., the top middle first pixel) and in one of the second pixels (e.g., the top left second pixel) that are adjacent to each other in the row direction are aligned in the row direction)**,

the subpixels of the third color in one of the first pixels and in one of the second pixels that are adjacent to each other in the row direction are aligned in the row direction **(See annotated FIG. 2 below: the subpixels of the third color (R) in one of the first pixels (e.g., the top middle first pixel) and in one of the second pixels (e.g., the top left second pixel) that are adjacent to each other in the row direction are aligned in the row direction)**,

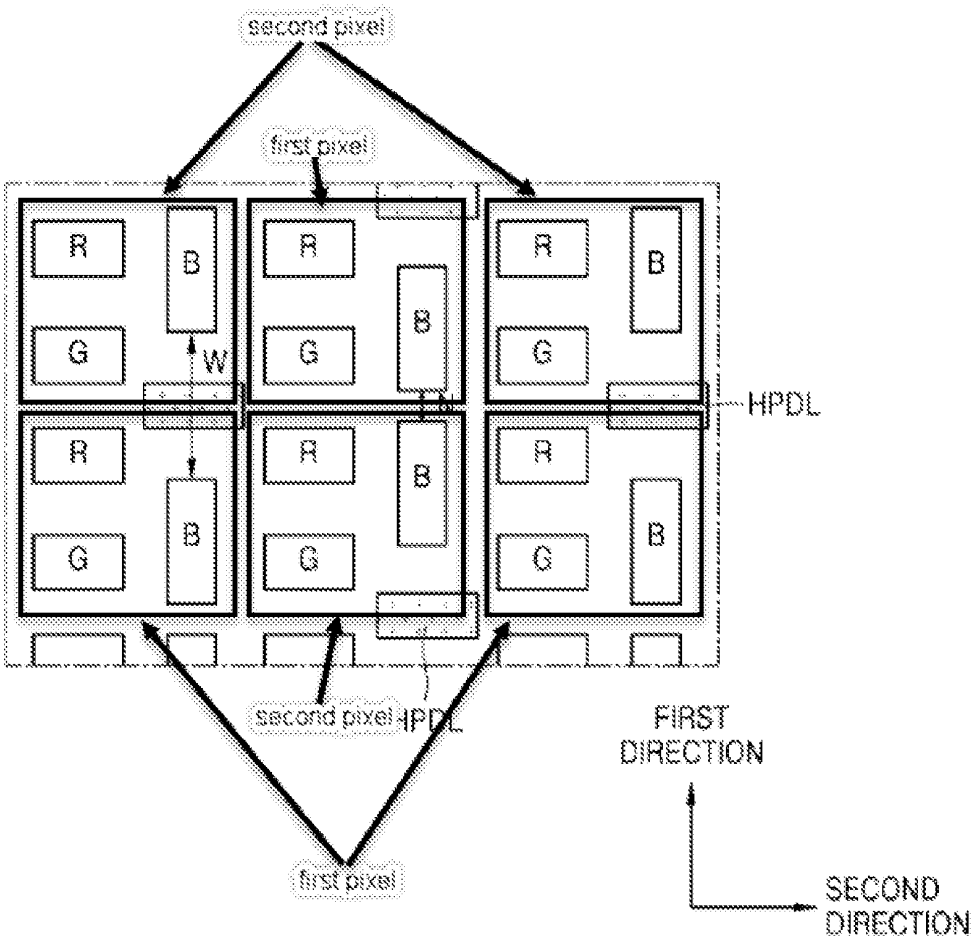
the subpixel of the first color in one of the first pixels has a biased arrangement and is positioned toward a side of the subpixel of the second color in an array direction of the subpixel of the second color and the subpixel of the third color **(See annotated FIG. 2 below: the subpixel of the first color (B) in one of the first pixels (e.g., the top middle first pixel) has a biased arrangement and is positioned toward a side of the subpixel of the second color (G) in an array direction of the subpixel of the second color (G) and the subpixel of the third color (R))**,

the subpixel of the first color in one of the second pixels has a biased arrangement and is positioned toward a side of the subpixel of the third color in the array direction of the subpixel of the second color and the subpixel of the third color **(See annotated FIG. 2 below: the subpixel of the first color (B) in one of the second pixels (e.g., the top left second pixel) has a biased arrangement and is positioned toward a side of the subpixel of the third color (R) in the array direction of the subpixel of the second color (G) and the subpixel of the third color (R))**,

one of the subpixels is disposed above the at least one connection part **(See FIG. 1: one of the subpixels is disposed above the portion of 141 disposed in the via hole VIA)**, and

the subpixels in each of the first pixels are arranged identically, and the subpixels in each of the second pixels are arranged identically (**See annotated FIG. 2 below: the subpixels in each of the first pixels are arranged identically, and the subpixels in each of the second pixels are arranged identically**).

FIG. 2



Kim does not explicitly teach:

the at least one connection part is disposed at an identical position independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels,

a position where the at least one connection part is disposed overlaps with one of the subpixels in a plan view.

However, in the same field of endeavor, display panels **(Yoon, column 1, lines 16-21)**, Yoon teaches:

a display unit **(FIG. 2: 100; See also FIG. 3)** where a plurality of first pixels each including subpixels of three colors **(See annotated FIG. 3 below: a plurality of first pixels each including subpixels of three colors)** and a plurality of second pixels each including subpixels of three colors arranged differently from the subpixels in one of the first pixels **(See annotated FIG. 3 below: a plurality of second pixels each including subpixels of three colors arranged differently from the subpixels in one of the first pixels)** are alternately arrayed in a row direction and a column direction **(See annotated FIG. 3 below: the first and second pixels are alternately arrayed in a row direction and a column direction)**, the subpixels of the three colors including a subpixel of a first color **(B in 110a)**, a subpixel of a second color **(R in 110b)** and a subpixel of a third color **(G in 110c) (See FIG. 3)**;

a thin film transistor (TFT) circuit **(112c) (See FIG. 4)** disposed below each of the subpixels to control the subpixels **(See FIG. 4: 112c disposed below each of the subpixels; See column 12, lines 34-42)**; and

at least one connection part **(FIG. 3: 150-153)** that connects the TFT circuit and one of the subpixels **(See column 12, lines 34-42)**, and

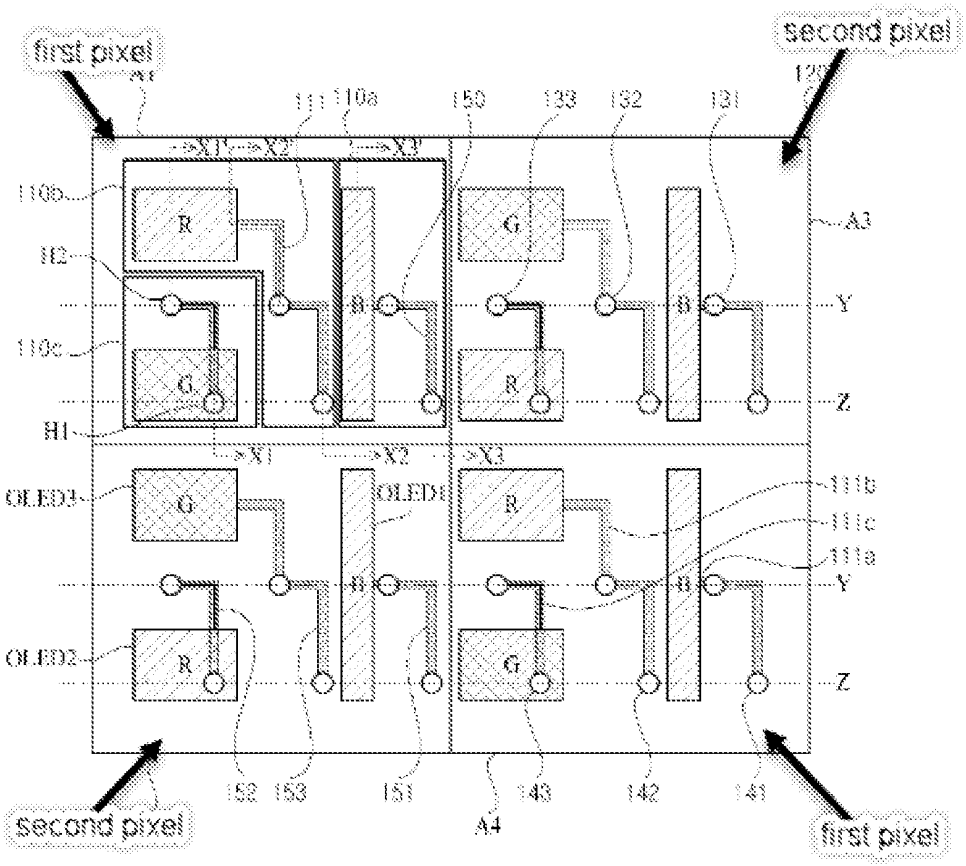
the at least one connection part is disposed at an identical position independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels **(See annotated FIG. 3 below: 153 is disposed at an identical position independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels)**,

one of the plurality of subpixels is disposed above the at least one connection part **(See FIG. 4: one of a plurality of subpixels (G) is disposed above at least one connection part 153; See also FIG. 3: 153 corresponds to 110c)**,

the at least one connection part is disposed at an identical position independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels **(See annotated FIG. 3 below: 153 is disposed at an identical position independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels)**,

a position where the at least one connection part is disposed overlaps with one of the subpixels in a plan view **(See FIG. 3: a position where the at least one connection part 153 in 110c is disposed overlaps with one of the subpixels (G) in a plan view)**.

FIG. 3



Therefore, it would have been obvious to one of ordinary skill in the art, before the effective filing date of the claimed invention, to modify the display device **(as taught by Kim)** so the at least one connection part is disposed at an identical position independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels, a position where the at least one connection part is disposed overlaps with one of the subpixels in a plan view **(as taught by Yoon)**. This would be achieved by adopting 151-153 from FIG. 3 of Yoon as the at least one connection part being located at an identical position within each of the first and second pixels in FIG. 2 of Kim to connect the subpixels to the TFT circuit. Doing so would overcome a limitation in forming the organic light emitting diode through the fine metal mask process, and remove flickers of an image **(See Yoon, column 17, line 57 – column 18, line 8)**.

Regarding **Claim 2**, Kim in view of Yoon teaches all of the elements of the claimed invention, as stated above. Furthermore, Kim in view of Yoon teaches:

The display device according to claim 1, wherein

the subpixel includes an anode electrode **(See Kim, paragraph [0057] and FIG. 1: 141; See Yoon, FIG. 4: 190a)**, and

the at least one connection part is a portion that connects an output of the TFT circuit and the anode electrode **(See Yoon, FIG. 4: 153 is a portion that connects an output of the TFT circuit 112c and the anode electrode 190a)**.

Regarding **Claim 3**, Kim in view of Yoon teaches all of the elements of the claimed invention, as stated above. Furthermore, Kim teaches:

The display device according to claim 1, wherein

the TFT circuit includes an identical circuit arrangement pattern for the subpixels of the first to third colors **(See paragraph [0040] and FIG. 1: the TFT has an identical circuit arrangement pattern (an identical pattern of S, G, A and D) for the subpixels of the first to third colors)**.

Regarding **Claim 4**, Kim in view of Yoon teaches all of the elements of the claimed invention, as stated above. Furthermore, Kim in view of Yoon teaches:

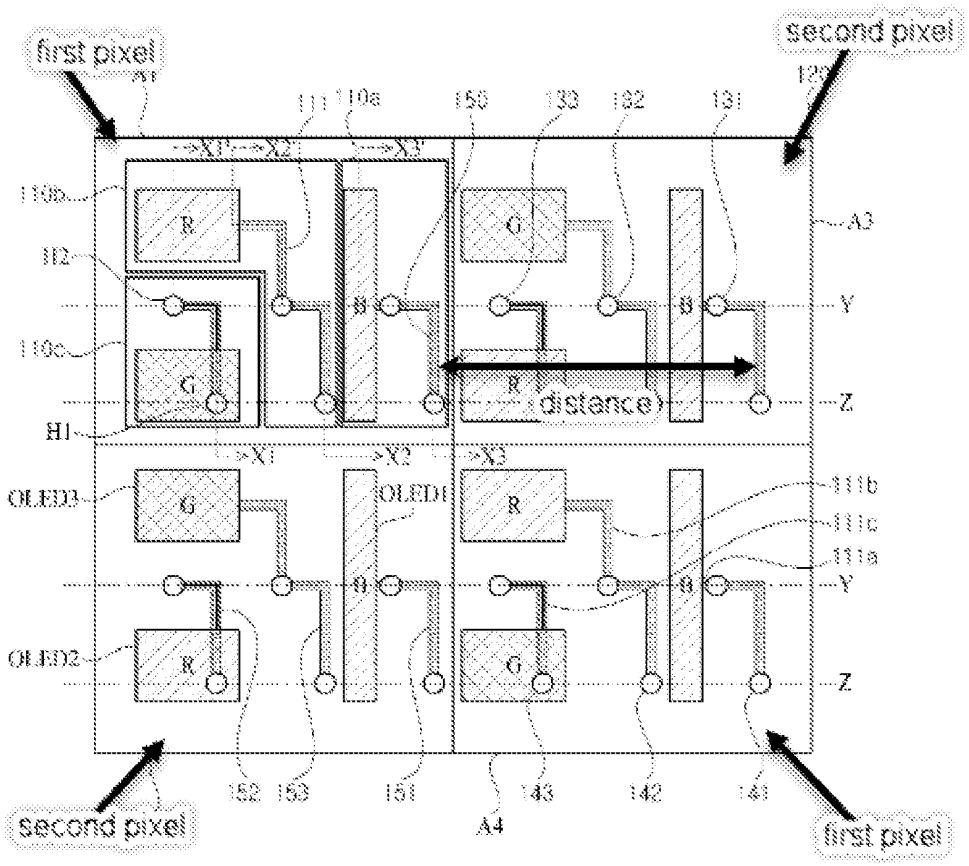
The display device according to claim 1, wherein

in one of the first pixels and one of the second pixels that are adjacent to each other in the row direction, a distance between a first connection part **(150)** of the at least one connection part for the subpixel of the first color **(B in 110a)** in the one of the first pixels and a second connection part **(150)** of the at least one connection part **(150-153)** for the subpixel of the first color **(B in the second pixel)** in the one of the second pixels are consistent in the display unit independent of the biased arrangements of the subpixels **(See annotated Yoon, FIG. 3 below, illustrating the claimed distance in one of the first pixels and one of the second pixels that are adjacent to each other in the row direction. Furthermore, this distance is consistent in the display unit independent of the biased arrangements of the subpixels. In addition, since Kim was modified according to Yoon to include the at least one connection part arranged in the manner taught by Yoon, the claimed distance would also be consistent in**

the display unit independent of the biased arrangements of the subpixels by being placed within each pixel in the same location, regardless of the arrangement of the subpixels).

In addition, the same motivation is used as the rejection for claim 1.

FIG. 3



Regarding **Claim 5**, Kim in view of Yoon teaches all of the elements of the claimed invention, as stated above. Furthermore, Kim teaches:

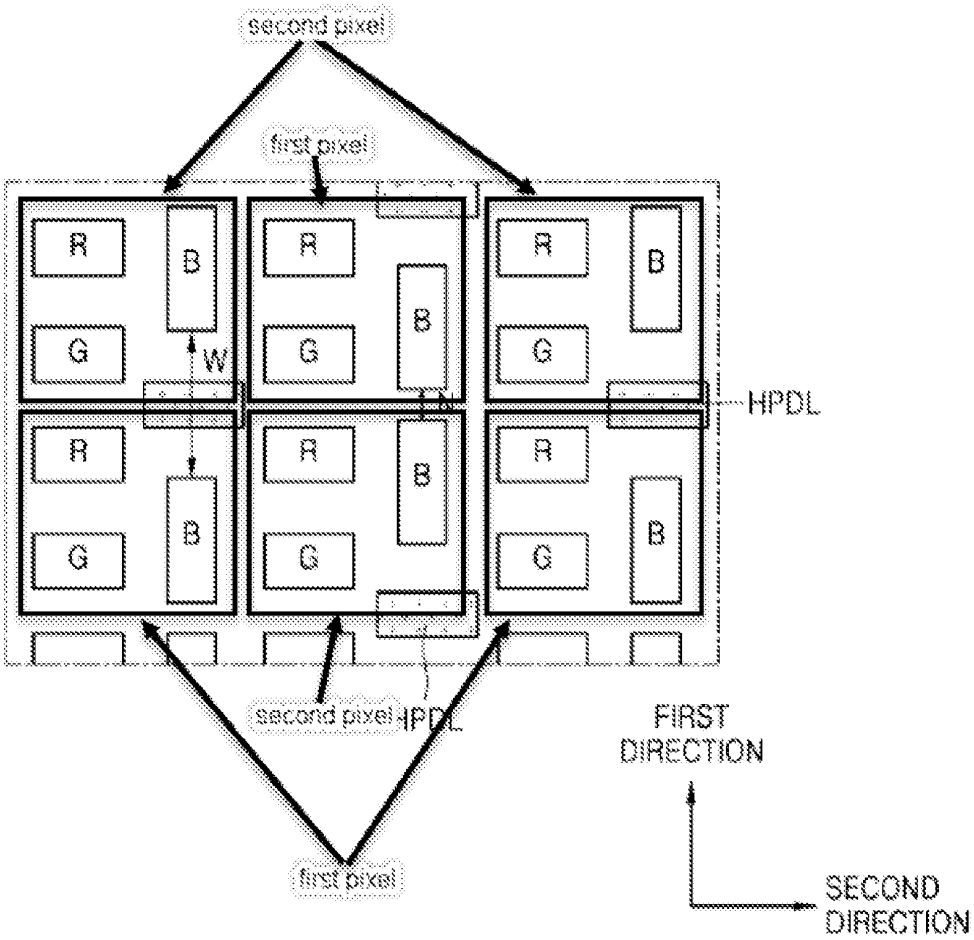
The display device according to claim 1, wherein a first square not crossing the subpixels encloses a region including the subpixels of three colors included in one of the first pixels and excluding other subpixels **(See annotated FIG. 2 below: a first square not crossing the subpixels encloses a region including the subpixels of**

three colors R,G, B included in one of the first pixels (e.g., the top middle first pixel) and excluding other subpixels),

a second square not crossing the subpixels encloses a region including the subpixels of three colors included in one of the second pixels and excluding other subpixels **(See annotated FIG. 2 below: a second square not crossing the subpixels encloses a region including the subpixels of three colors R, G, B included in one of the second pixels (e.g., the top left second pixel) and excluding other subpixels**), and

the first square and the second square are arranged without overlapping each other **(See annotated FIG. 2 below: the first square and the second square are arranged without overlapping each other**).

FIG. 2



Response to Arguments

5. Applicant's arguments filed 07/22/2022 have been fully considered but they are moot on the grounds of new rejections and not persuasive in part.

Applicant argues (Remarks, pages 6-9) that Kim (US 20160225833 A1) in view of Kim et al. (US 20150129856 A1), hereinafter Kim-2, does not teach the amended limitations of the independent claim. These arguments are respectfully moot on the grounds of new rejections. Specifically, Kim et al. (US 20160225834 A1) has been introduced as the primary reference to teach the amended limitations, with Yoon being relied upon to render obvious the limitation not explicitly teach by Kim.

Applicant argues the following (Remarks, page 14): "One skilled in the art would not have been led to combine the arrangement of subpixels disclosed in Kim with the component of Kim-2 to arrive at the present invention of at least one connection part disposed at an identical position independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels" because, e.g., PX1 and PX2' disclosed in Kim cannot have the same length of wiring connection between the connection part and subpixel. Kim thus cannot maintain the condition of the TFT circuit to be the same, and thus cannot obtain uniform emission". This argument is not persuasive because it arguing limitations which are not claimed (See MPEP 2145 – VI.). Specifically, the claim does not include any limitations directed to the length of wiring connection between the connection part and subpixel, or requiring that the first and second pixels have the same length of wiring connect to obtain uniform emission. Rather, the claims recite the at least one connection part is disposed at an identical position independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels. The Examiner submits it would be improper to import these limitations from the specification into the claims.

For the above reasons, Applicant's arguments are not convincing to overcome the current rejections.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Benjamin X Casarez whose telephone number is (571)270-5332. The examiner can normally be reached Monday-Friday: 7:30 am - 5:00 pm.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lun Yi Lao can be reached on (571) 272-7671. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: https://patentcenter.uspto.gov. Visit https://www.uspto.gov/patents/apply/patent-center for more information about Patent Center and https://www.uspto.gov/patents/docx for information about filing in DOCX format. For additional questions, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BENJAMIN X CASAREZ/
Examiner, Art Unit 2692

Notice of References Cited	Application/Control No. 17/301,517	Applicant(s)/Patent Under Reexamination MATSUEDA et al.	
	Examiner Benjamin X Casarez	Art Unit 2692	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20160225834-A1	08-2016	Kim; Hyunyoung	H01L27/3218	1/1
	B					
	C					
	D					
	E					
	F					
	G					
	H					
	I					
	J					
	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/301,517	MATSUEDA et al.
	Examiner	Art Unit
	Benjamin X Casarez	2692

CPC - Searched*		
Symbol	**Date**	**Examiner**
G09G2300/0452 (with text search)	07/29/2022	BC
G09G2300/0842 (with text search)	07/29/2022	BC
G09G2300/0861 (with text search)	07/29/2022	BC
G09G2310/0262 (with text search)	07/29/2022	BC
G09G2310/0283 (with text search)	07/29/2022	BC
G09G3/2003 (with text search)	07/29/2022	BC
G09G3/3233 (with text search)	07/29/2022	BC
G09G3/3266 (with text search)	07/29/2022	BC

CPC Combination Sets - Searched*		
Symbol	**Date**	**Examiner**

US Classification - Searched*			
Class	**Subclass**	**Date**	**Examiner**

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

/BENJAMIN X CASAREZ/ Examiner, Art Unit 2692	

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/301,517	MATSUEDA et al.
	Examiner	Art Unit
	Benjamin X Casarez	2692

Search Notes		
Search Notes	**Date**	**Examiner**
EAST search started	10/21/2021	BC
EAST inventor and assignee name search (with text search)	10/21/2021	BC
Updated PE2E search started	03/22/2022	BC
Updated PE2E inventor and assignee name search (with text search)	03/22/2022	BC
Updated PE2E search started	07/29/2022	BC
Updated PE2E inventor and assignee name search (with text search)	07/29/2022	BC

Interference Search			
US Class/CPC Symbol	**US Subclass/CPC Group**	**Date**	**Examiner**

/BENJAMIN X CASAREZ/ Examiner, Art Unit 2692	

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/301,517	MATSUEDA et al.
	Examiner	**Art Unit**
	Benjamin X Casarez	2692

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	10/21/2021	03/22/2022	07/29/2022						
	1	✓	✓	✓						
	2	✓	✓	✓						
	3	✓	✓	✓						
	4	✓	✓	✓						
	5	✓	✓	✓						

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
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L2	18	("20060103615"|"20060158466"|"20090051627"|"20090322215"|"20120092238"|"20130286262"|"20150035729"|"20150061978"|"20150235617"|"20160019825"|"20160027404"|"20160104413"|"20160126287"|"20160155416"|"20160379540"|"20170092174"|"20170132969"|"9767741").PN.	(US-PGPUB; USPAT)	OR	ON	ON	2021/10/21 05:01 PM
L3	1943	(nlt).IN,AANM,AS.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:10 PM
L4	885	((MATSUEDA near2 YOJIRO) (TAKATORI near2 KENICHI)).IN.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:10 PM
L5	2691	L3 L4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:10 PM
L6	50	L5 and ((subpixel (sub near2 pixel)) with (color colour)) and ((thin near2 film) TFT) and bias$4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:11 PM
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L13	88828	(G09G2300/0842 OR G09G2300/0861 OR G09G2310/0262 OR G09G2310/0283 OR G09G3/2003 OR G09G3/3233 OR G09G3/3266).CPC.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:42 PM
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L15	31	L14 and ((thin near2 film) TFT) and ((color colour) with (row column) with alternat$4 with arrangement)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:43 PM
L16	38	L14 and (shar$4 with	(US-PGPUB; USPAT;	OR	ON	ON	2021/10/21

		(color$3 colour$3 subpixel (sub near pixel)) with (adjacent$3 neighbour$4 neighbor$4 near$2 surround$3)) same (divid$4 division separat$4)	USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)				05:52 PM
L17	403	L12 and (alternating$2 with (column row))	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:56 PM
L18	241	L17 and ((thin near2 film) TFT)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:56 PM
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L20	349	L12 and ((thin near2 film) TFT) with anode	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 06:12 PM
L21	36	L20 and (shar$4 with (color$3 colour$3 subpixel (sub near pixel)) with (adjacent$3 neighbour$4 neighbor$4 near$2 surround$3))	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 06:12 PM
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L23	7	"56011000".FMID.	(US-PGPUB; USPAT; FPRS; JPO)	OR	ON	ON	2021/10/21 06:51 PM
L24	4	("20120056531" | "20130222217" | "9013098").PN. OR ("9245932").URPN.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2021/10/21 06:53 PM
L25	3	((US-20150129856-A1 OR US-20120056531-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA,	OR	ON	ON	2022/03/22 09:54 AM

			VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L26	43	("9013098" | "20120056531" | "20130222217").pn. OR ("9245932" | "2015/0129856" | "2012/0056531").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 10:25 AM
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L28	69	("9013098" | "20120056531" | "20130222217" | "20070002084" | "20090121983" | "20120169682" | "20130057521" | "20130113363" | "20050225232" | "20070064020" | "20090121983" | "20090195144" | "20090322215" | "20110180825").pn. OR ("2015/0144908" | "9245932" | "2015/0129856" | "9013098" | "2012/0056531" | "8593057").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 10:25 AM
L29	69	L26 L28	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 10:26 AM
L30	4	("8552635" | "20120056531" | "20160148981").pn. OR ("10497757").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 11:17 AM
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			VN); FPRS; JPO)				
L32	7	("20060017375" | "20080116463" | "20080252200" | "20090200936" | "20100309172" | "20120025182" | "20120056531").pn. OR ("9893127").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 11:28 AM
L33	6	("20060077139" | "20160148981" | "20170352312").pn. OR ("2020/0035156" | "11107399").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 12:48 PM
L34	10	("8552635" | "20120056531" | "20160148981").pn. OR ("10497757" | "2018/0315801").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 12:50 PM
L35	6	"62147578".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2022/03/22 12:54 PM
L36	12	("20080074041" | "20110050604" | "20140240279" | "20140333852" | "20140354617" | "20080074041" | "20110050604" | "20140240279" | "20140333852" | "20140354617" | "20170061849" | "20180143721").pn. OR ("2018/0143721" | "2020/0004370" | "10452182" | "10671200").urpn. AND (PGPB | USPT |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 12:54 PM

		USOC).dbnm.					
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L38	30118	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/03/22 01:16 PM
L39	143601	(G09G2300/0842 OR G09G2300/0861 OR G09G2310/0262 OR G09G2310/0283 OR G09G3/2003 OR G09G3/3233 OR G09G3/3266).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/03/22 01:17 PM
L40	14825	L38 AND L39	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO,	OR	ON	ON	2022/03/22 01:17 PM

			NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
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L42	237	L41 AND (TFT WITH (connect$4 coupl$4))	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/03/22 01:18 PM
L43	56	L5 and ((subpixel (sub near2 pixel)) with (color colour)) and ((thin near2 film) TFT) and bias$4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/03/22 01:24 PM
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			IBM_TDB)				
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L46	2	((US-20150129856-A1 OR US-20160225833-A1).did. AND PGPB.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/18 10:09 AM
L47	31381	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/18 10:51 AM
L48	7	L41 AND (TFT WITH (connect$4 coupl$4) WITH (subpixel (sub near2 pixel)) WITH (via hole))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV,	OR	ON	ON	2022/07/18 10:52 AM

			MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L49	187	L47 AND (TFT WITH (connect$4 coupl$4) WITH (subpixel (sub near2 pixel)) WITH (via hole))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/18 11:00 AM
L50	78014	(G09G3/3233).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/18 11:18 AM
L51	4685	L47 AND L50	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/18 11:18 AM
L52	117	L51 AND (TFT WITH	(US-PGPUB; USPAT;	OR	ON	ON	2022/07/18

		(connect$4 coupl$4) WITH (via hole))	USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				11:19 AM
L53	50	((US-20150379924-A1 OR US-20090051627-A1 OR US-20060158466-A1 OR US-20060103615-A1 OR US-20210225247-A1 OR US-20170061849-A1 OR US-20200035156-A1 OR US-20180143721-A1 OR US-20160148981-A1 OR US-20110260952-A1 OR US-20180315801-A1 OR US-20150129856-A1 OR US-20170116900-A1 OR US-20200043990-A1 OR US-20140197396-A1 OR US-20120056531-A1 OR US-20120092238-A1 OR US-20110291550-A1 OR US-20100270912-A1 OR US-20090121983-A1 OR US-20110260951-A1 OR US-20170132969-A1 OR US-20170092174-A1 OR US-20160379540-A1 OR US-20160155416-A1 OR US-20160126287-A1 OR US-20160104413-A1 OR US-20160027404-A1 OR US-20160019825-A1 OR US-20150235617-A1 OR US-20150061978-A1 OR US-20150035729-A1 OR US-	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/18 11:41 AM

		20130286262-A1 OR US-20090322215-A1 OR US-20160225833-A1 OR US-20130002992-A1 OR US-20150364075-A1 OR US-20150129853-A1 OR US-20140292622-A1 OR US-20070029941-A1).did. AND PGPB.dbnm.) OR ((US-9767741-B2 OR US-11107399-B2 OR US-9245932-B2 OR US-10692938-B2 OR US-10546906-B2 OR US-10497757-B2 OR US-8552635-B2 OR US-10312295-B2 OR US-10103205-B2).did. AND USPT.dbnm.) OR ((CN-101960504-A).did. AND FTDB.dbnm.)					
L54	14	L53 AND (TFT WITH (connect$4 coupl$4) WITH (via hole))	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/18 11:41 AM
L55	5	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/20 12:35 PM
L56	2	(14/855199).APP.	(US-PGPUB; USPAT;	OR	ON	ON	2022/07/29

			USOCR)				09:09 AM
L57	12	("20060017375" | "20080116463" | "20080252200" | "20090200936" | "20100309172" | "20120025182" | "20120056531").pn. OR ("2016/0225833" | "9893127").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/07/29 09:10 AM
L58	12	"56554731".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2022/07/29 09:13 AM
L59	31450	(G09G2300/0452).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:15 AM
L60	151353	(G09G2300/0842 OR G09G2300/0861 OR G09G2310/0262 OR G09G2310/0283 OR G09G3/2003 OR G09G3/3233 OR G09G3/3266).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT;	OR	ON	ON	2022/07/29 09:15 AM

			IBM_TDB)				
L61	15705	L38 AND L39	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:15 AM
L62	1778	L40 AND (blue WITH (pixel subpixel) WITH (divid$4 split$4 combin$4 shar$4))	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:15 AM
L63	245	L41 AND (TFT WITH (connect$4 coupl$4))	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:15 AM
L64	1934	(nlt).IN,AANM,AS.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:15 AM
L65	916	((MATSUEDA near2 YOJIRO) (TAKATORI near2 KENICHI)).IN.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	OR	ON	ON	2022/07/29 09:16 AM

			IBM_TDB)				
L66	2717	L3 L4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:16 AM
L67	61	L5 and ((subpixel (sub near2 pixel)) with (color colour)) and ((thin near2 film) TFT) and bias$4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:16 AM
L68	54	L67 AND (TFT WITH (connect$4 coupl$4))	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 09:16 AM
L69	6	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 02:37 PM
L70	6	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1 OR US-20140292622-A1 OR US-20160225834-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 04:01 PM
L71	14	("20150129856"|"20140292622"|"20120056531"|"9245932"|"20160225833").PN.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO,	OR	ON	ON	2022/07/29 04:01 PM

			RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L72	1	L70 NOT L71	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/07/29 04:01 PM

PE2E SEARCH - Search History (Interference)

There are no Interference searches to show.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/301,517	04/06/2021	Yojiro MATSUEDA	8317-0050	1637

466 7590 07/27/2022

NIXON & VANDERHYE, PC
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11TH FLOOR
ARLINGTON, VA 22203

EXAMINER	
CASAREZ, BENJAMIN X.	

ART UNIT	PAPER NUMBER
2692	

NOTIFICATION DATE	DELIVERY MODE
07/27/2022	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

pair_nixon@firsttofile.com
ptomail@nixonvan.com

Advisory Action Before the Filing of an Appeal Brief	**Application No.** 17/301,517	**Applicant(s)** MATSUEDA et al.	
	Examiner Benjamin X Casarez	**Art Unit** 2692	**AIA (FITF) Status** Yes

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED 27 June 2022 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

NO NOTICE OF APPEAL FILED

1. ☑ The reply was filed after a final rejection. No Notice of Appeal has been filed. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114 if this is a utility or plant application. Note that RCEs are not permitted in design applications. The reply must be filed within one of the following time periods:
   a) ☑ The period for reply expires 3 months from the mailing date of the final rejection.
   b) ☐ The period for reply expires on: (1) the mailing date of this Advisory Action; or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.
   c) ☐ A prior Advisory Action was mailed more than 3 months after the mailing date of the final rejection in response to a first after-final reply filed within 2 months of the mailing date of the final rejection.The current period for reply expires ____ months from the mailing date of *the prior Advisory Action* or SIX MONTHS from the mailing date of the final rejection, whichever is earlier.

   Examiner Note: If box 1 is checked, check either box (a), (b) or (c). ONLY CHECK BOX (b) WHEN THIS ADVISORY ACTION IS THE FIRST RESPONSE TO APPLICANTS FIRST AFTER-FINAL REPLY WHICH WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. ONLY CHECK BOX (c) IN THE LIMITED SITUATION SET FORTH UNDER BOX (c). See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) or (c) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

NOTICE OF APPEAL

2. ☐ The Notice of Appeal was filed on _____. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37CFR 41.37(a).

AMENDMENTS

3. ☑ The proposed amendments filed after a final rejection, but prior to the date of filing a brief, will not be entered because
   a) ☑ They raise new issues that would require further consideration and/or search (see NOTE below);
   b) ☐ They raise the issue of new matter (see NOTE below);
   c) ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
   d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.

   NOTE: See Continuation Sheet (See 37 CFR 1.116 and 41.33(a)).
4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).
5. ☐ Applicant's reply has overcome the following rejection(s): _____
6. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).
7. ☑ For purposes of appeal, the proposed amendment(s):(a) ☑ will not be entered, or (b) ☐ will be entered, and an explanation of how the new or amended claims would be rejected is provided below or appended.

AFFIDAVIT OR OTHER EVIDENCE

8. ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____
9. ☐ The affidavit or other evidence filed after final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).
10. ☐ The affidavit or other evidence filed after the date of filing the Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing of good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).
11. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

12. ☐ The request for reconsideration has been considered but does NOT place the application in condition for allowance because: _____.
13. ☐ Note the attached Information *Disclosure Statement*(s). (PTO/SB/08) Paper No(s). _____
14. ☑ Other: See attached PTO-413; See attached PTO-2323; See attached PTO-892.

STATUS OF CLAIMS

15. The status of the claim(s) is (or will be) as follows:
    Claim(s) allowed:_____.
    Claim(s) objected to:_____.
    Claim(s) rejected:1-5.
    Claim(s) withdrawn from consideration:_____.

/BENJAMIN X CASAREZ/ Examiner, Art Unit 2692	

Continuation of 3. NOTE: The proposed amendments add the following to claim 1: “one of the subpixels is disposed above the at least one connection part, and a position where the at least one connection part is disposed overlaps with one of the subpixels in a plan view”. Regarding the amended limitations, Kim-2 teaches: one of the subpixels is disposed above the at least one connection part (See FIG. 6: one of the subpixels OLED1_1, OLED1_2 (corresponding to R, G and B in FIG. 3) is disposed above 130 (corresponding to 131, 132 and 133 in FIG. 3)). Kim-2 does not explicitly teach: a position where the at least one connection part is disposed overlaps with one of the subpixels in a plan view. Specifically, as shown in FIG. 3, in the plan view a position of 131, 132 and 133 is not overlapping with one of the subpixels R, G and B. Therefore, the proposed amendment to claim 1 would overcome the current rejections.
Claim 4 has been amended to read: “a distance between a first connection part of the at least one connection part for the subpixel of the first color in the one of the first pixels and a second connection part of the at least one connection part for the subpixel of the first color in the one of the second pixels are consistent in the display unit independent of the biased arrangements of the subpixels”. Regarding the amended limitations, Kim-2 teaches: a distance between a first connection part (131) of the at least one connection part for the subpixel of the first color (B in 110a) in the one of the first pixels and a second connection part (131) of the at least one connection part for the subpixel of the second color (B in 110b) in the one of the second pixels are consistent in the display unit independent of the biased arrangements of the subpixels (See annotated Kim-2, FIG. 3 in the final Office Action, the claimed distance is between one of the first pixels and one of the second pixels that are adjacent to each other in the row direction. Furthermore, this distance is consistent in the display unit independent of the biased arrangements of the subpixels. In addition, since Kim was modified according to Kim-2 to include the at least one connection part arranged in the manner taught by Kim-2, the claimed distance would also be consistent in the display unit independent of the biased arrangements of the subpixels by being placed within each pixel in the same location, regardless of the arrangement of the subpixels).
US 9245932 B2 (cited in the PTO-892 dated 10/26/2021) teaches one of the subpixels is disposed above at least one connection part (See FIG. 3: in 110c: the G subpixel is disposed above at least one connection part 153; See also FIG. 4, showing OLED3(G) disposed above 153), and a position where the at least one connection part is disposed overlaps with one of the subpixels in a plan view (See FIG. 3: in 110c: a position where the at least one connection part 153 is disposed overlaps with one of the subpixels G in a plan view).
Updated search yielded US 20140292622 A1, which shows a position where at least one connection part is disposed overlaps with an anode of one of the subpixels in a plan view (See FIG. 10: a position where at least one connection part VIA_A is disposed overlaps with an anode 122 of one of the subpixels in a plan view).
Additional time would be required to determine how the newly discovered prior art may be relied upon as well as to determine how US 9245932 B2 might be combined with the existing prior art to teach the amended limitations. Furthermore, additional time would be required to perform a more complete search in view of the amended limitations.
Applicant's arguments filed 06/27/2022 have been fully considered but they are not persuasive in part.
Applicant argues that (Remarks, pages 10-11) that Kim-2 does not teach the amended limitations of claim 1. For the reasons discussed above, the Examiner agrees.
Applicant argues the following (Remarks, pages 12-13): “Claim 1 of the present invention recites, inter alia , "a plurality of second pixels each including subpixels 12 of three colors arranged differently from the subpixels in one of the first pixels." The present invention clarifies that second pixels and the first pixels have different arrangements of subpixels of three colors arrangements. Therefore, it should be interpreted that the second pixels have the same arrangement of subpixels of three colors and the first pixels have the same arrangement of subpixels of three colors”. The Examiner respectfully disagrees. This is arguing limitations which are not claimed (See MPEP 2145 – VI.). Specifically, the claim language requires that the plurality of second pixels each include subpixels of three colors arranged differently from the subpixels in one of the first pixels, but does not require that the subpixels are arranged identically in all of the second pixels or all of the first pixels. Therefore, the Examiner maintains, based on the broadest reasonable

interpretation of the claim language (See MPEP 2111), that Kim teaches: a plurality of first pixels (See FIG . 16: the Examiner is interpreting PX1 and PX2' as corresponding to a plurality of first pixels) each including subpixels of three colors (See FIG. 16: each of PX1 and PX2' include subpixels of three colors corresponding to OL1-OL3; See paragraph [0056] and [0065]) and a plurality of second pixels (See FIG. 16: the Examiner is interpreting PX2 and PX1' as corresponding to a plurality of second pixels) each including subpixels of three colors arranged differently from the subpixels in one of the first pixels (See FIG. 16: PX2 and PX1' include subpixels of three colors corresponding to OL1-OL3 arranged differently from the subpixels in one of the first pixels PX1 and PX2').

Applicant argues the following (Remarks, page 13): "One skilled in the art would not have been led to combine the arrangement of subpixels disclosed in Kim with the component of Kim-2 to arrive at the present invention of at least one connection part disposed at an identical position independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels" because, e.g., PX1 and PX2' disclosed in Kim cannot have the same length of wiring connection between the connection part and subpixel. Kim thus cannot maintain the condition of the TFT circuit to be the same , and thus cannot obtain uniform emission". This argument is not persuasive because it arguing limitations which are not claimed (See MPEP 2145 – VI.). Specifically, the claim does not include any limitations directed to the length of wiring connection between the connection part and subpixel, or requiring that the first and second pixels have the same length of wiring connect to obtain uniform emission. Rather, the claims recite the at least one connection part is disposed at an identical position independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels. The Examiner would maintain that Kim-2 teaches the at least one connection part is disposed at an identical position independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels (See annotated FIG. 3 below: 131, 132 and 133 are disposed at an identical position independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels). According to the teachings of Kim-2, one of ordinary skill in the art would have recognized that Kim could be modified to include 131-133 from FIG. 3 of Kim-2 as the at least one connection part being located at an identical position within each of the first and second pixels in FIG. 16 of Kim to connect the subpixels to the TFT circuit. Doing so would enable a fine metal mask to be easily manufactured by placing the at least one connection part adjacent to a boundary of the pixels, and contribute to an increased width of an emission area (See Kim-2, paragraphs [0023] and [0027]).

Examiner-Initiated Interview Summary	Application No. 17/301,517	Applicant(s) MATSUEDA et al.		
	Examiner Benjamin X Casarez	Art Unit 2692	AIA (First Inventor to File) Status Yes	Page 1 of 2

All Participants (applicant, applicants representative, PTO personnel)	Title	Type
Benjamin X Casarez	Primary Examiner	Telephonic
Kari Footland (Reg. No. 55187)	Attorney	

Date of Interview: 20 July 2022

Issues Discussed:

Proposed Amendment(s)

The Examiner presented the results of updated search and/or completed additional consideration under AFCP 2.0.
The Examiner indicated that the after final amendment will not be entered because it raises new issues, but would overcome all of the rejections in the most recent final Office action. The Examiner indicated that the proposed amendments would overcome the current rejections because Kim-2 does not explicitly teach a position where the at least one connection part is disposed overlaps with one of the subpixels in a plan view. The Examiner indicated that US 9245932 B2 (cited in the PTO-892 dated 10/26/2021) may be relied upon to teach the amended limitations. The Examiner indicated that updated search yielded US 20140292622 A1, which shows a position where at least one connection part is disposed overlaps with an anode of one of the subpixels in a plan view (See FIG. 10: a position where at least one connection part VIA_A is disposed overlaps with an anode 122 of one of the subpixels in a plan view).
The Examiner suggested including language to specify that the subpixels are arranged identically in all of the second pixels and all of the first pixels (as shown in FIG. 4, for example) in order to overcome the teachings of Kim.
No particular agreement on allowability was reached.

/BENJAMIN X CASAREZ/ Examiner, Art Unit 2692	

Applicant is reminded that a complete written statement as to the substance of the interview must be made of record in the application file. It is the applicants responsibility to provide the written statement, unless the interview was initiated by the Examiner and the Examiner has indicated that a written summary will be provided. See MPEP 713.04
Please further see:
MPEP 713.04
Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews, paragraph (b)
37 CFR § 1.2 Business to be transacted in writing

Applicant recordation instructions: It is not necessary for applicant to provide a separate record of the substance of interview.

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete

and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

Notice of References Cited	Application/Control No. 17/301,517	Applicant(s)/Patent Under Reexamination MATSUEDA et al.	
	Examiner Benjamin X Casarez	Art Unit 2692	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20140292622-A1	10-2014	Lee; Won-Se	H01L27/3216	345/80
	B					
	C					
	D					
	E					
	F					
	G					
	H					
	I					
	J					
	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

AFCP 2.0 Decision

Application No.	Applicant(s)	
17/301,517	MATSUEDA et al.	
Examiner	**Art Unit**	**AIA (FITF) Status**
Benjamin X Casarez	2692	Yes

This is in response to the After Final Consideration Pilot request filed 27 June 2022.

1. **Improper Request** – The AFCP 2.0 request is improper for the following reason(s) and the after final amendment submitted with the request will be treated under pre-pilot procedure.

   ☐ An AFCP 2.0 request form PTO/SB/434 (or equivalent document) was not submitted.

   ☐ A non-broadening amendment to at least one independent claim was not submitted.

   ☐ The request is not the first proper AFCP 2.0 request submitted in response to the most recent final rejection.

   ☐ Other: _____

2. **Proper Request**

   A. After final amendment submitted with the request will not be treated under AFCP 2.0.
   The after final amendment cannot be reviewed and a search conducted within the guidelines of the pilot program.

   ☐ The after final amendment will be treated under pre-pilot procedure.

   B. Updated search and/or completed additional consideration.
   The examiner performed an updated search and/or completed additional consideration of the after final amendment within the time authorized for the pilot program. The result(s) of the updated search and/or completed additional consideration are:

   ☐ 1. All of the rejections in the most recent final Office action are overcome and a Notice of Allowance is issued herewith.

   ☐ 2. The after final amendment would not overcome all of the rejections in the most recent final Office action . See attached interview summary for further details.

   ☐ 3. The after final amendment was reviewed, and it raises a new issue(s). See attached interview summary for further details.

   ☑ 4. The after final amendment raises new issues, but would overcome all of the rejections in the most recent final Office action. A decision on determining allowability could not be made within the guidelines of the pilot. See attached interview summary for further details, including any newly discovered prior art.

   ☐ 5. Other: _____

   Examiner Note: Please attach an interview summary when necessary as described above.

DO NOT ENTER: /B.X.C/ 07/18/2022

MAIL STOP AF
PATENT
8317-0050

IN THE U. S. PATENT AND TRADEMARK OFFICE

In re application of

Yojiro MATSUEDA et al. Conf. 1637

Application No. 17/301,517 Group 2692

Filed: April 6, 2021 Examiner CASAREZ, BENJAMIN

Title: DISPLAY DEVICE AND COMPUTER READABLE MEDIA

AMENDMENT WITH AFTER FINAL CONSIDERATION PILOT PROGRAM 2.0 REQUEST FOR RECONSIDERATION

Assistant Commissioner for Patents June 27, 2022
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This amendment is being filed concurrently with an After Final Consideration Pilot Program 2.0 Request for Reconsideration, in response to the final Office Action mailed March 25, 2022. Please amend the above-identified application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks begin on page 6 of this paper.

PTO/SB/30EFS (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	17/301,517	Filing Date	2021-04-06	Docket Number (if applicable)	8317-0050	Art Unit	2692
First Named Inventor	Yojiro MATSUEDA			Examiner Name	Benjamin Casarez		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

- ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____
- ☐ Other _____

☒ Enclosed

- ☒ Amendment/Reply
- ☐ Information Disclosure Statement (IDS)
- ☐ Affidavit(s)/ Declaration(s)
- ☐ Other _____

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____ (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☒ Other A one-month extension of time is being paid simultaneously on line by our credit card.

FEES

The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.

☒ The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 141140

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature

Applicant Signature

PTO/SB/30EFS (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Signature of Registered U.S. Patent Practitioner			
Signature	/Kari P. Footland/	Date (YYYY-MM-DD)	2022-07-22
Name	Kari P. Footland	Registration Number	55187

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

MAIL STOP RCE
PATENT
8317-0050

IN THE U. S. PATENT AND TRADEMARK OFFICE

In re application of

Yojiro MATSUEDA et al. Conf. 1637

Application No. 17/301,517 Group 2692

Filed: April 6, 2021 Examiner CASAREZ, BENJAMIN

Title: DISPLAY DEVICE AND COMPUTER READABLE MEDIA

AMENDMENT WITH REQUEST FOR CONTINUED EXAMINATION

Assistant Commissioner for Patents July 22, 2022
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This amendment is being filed concurrently with a Request for Continued Examination, in response to the final Office Action mailed March 25, 2022, for which the period for response has been extended one month. Please amend the above-identified application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks begin on page 6 of this paper.

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (currently amended) A display device comprising:

a display unit where a plurality of first pixels each including subpixels of three colors and a plurality of second pixels each including subpixels of three colors arranged differently from the subpixels in one of the first pixels are alternately arrayed in a row direction and a column direction, the subpixels of the three colors including a subpixel of a first color, a subpixel of a second color and a subpixel of a third color;

a thin film transistor (TFT) circuit disposed below each of the subpixels to control the subpixels; and

at least one connection part that connects the TFT circuit and one of the subpixels,

wherein the subpixel of the second color and the subpixel of the third color in one of the first pixels are arrayed in parallel with the subpixel of the second color and the subpixel of the third color in one of the second pixels,

a first arrangement in the column direction of the subpixel of the second color and the subpixel of the third color in one of the first pixels and a second arrangement of

the subpixel of the second color and the subpixel of the third color in one of the second pixels are identical,

the subpixels of the second color in one of the first pixels and in one of the second pixels that are adjacent to each other in the row direction are aligned in the row direction,

the subpixels of the third color in one of the first pixels and in one of the second pixels that are adjacent to each other in the row direction are aligned in the row direction,

the subpixel of the first color in one of the first pixels has a biased arrangement and is positioned toward a side of the subpixel of the second color in an array direction of the subpixel of the second color and the subpixel of the third color,

the subpixel of the first color in one of the second pixels has a biased arrangement and is positioned toward a side of the subpixel of the third color in the array direction of the subpixel of the second color and the subpixel of the third color, [[and]]

the at least one connection part is disposed at an identical position independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels,

one of the subpixels is disposed above the at least one connection part,

a position where the at least one connection part is disposed overlaps with one of the subpixels in a plan view, and

the subpixels in each of the first pixels are arranged identically, and the subpixels in each of the second pixels are arranged identically.

2. (original) The display device according to claim 1, wherein

the subpixel includes an anode electrode, and

the at least one connection part is a portion that connects an output of the TFT circuit and the anode electrode.

3. (original) The display device according to claim 1, wherein

the TFT circuit includes an identical circuit arrangement pattern for the subpixels of the first to third colors.

4. (currently amended) The display device according to claim 1, wherein

in one of the first pixels and one of the second pixels that are adjacent to each other in the row direction, a

distance between a first connection part of the at least one connection part for the subpixel of the first color in the one of the first pixels and a second connection part of the at least one connection part for the subpixel of the ~~second~~ first color in the one of the second pixels are consistent in the display unit independent of the biased arrangements of the subpixels.

5. (original) The display device according to claim 1, wherein

a first square not crossing the subpixels encloses a region including the subpixels of three colors included in one of the first pixels and excluding other subpixels,

a second square not crossing the subpixels encloses a region including the subpixels of three colors included in one of the second pixels and excluding other subpixels, and

the first square and the second square are arranged without overlapping each other.

REMARKS

Claims 1-5 were rejected.

Claim 1 is amended. Support for the amendments to independent claims 1 and 4 comes at least from Figs. 4 and 7 and the corresponding portions of the originally-filed specification (including para. [0099] of the published application).

Claims 1-5 are currently pending in this application. No new matter is added.

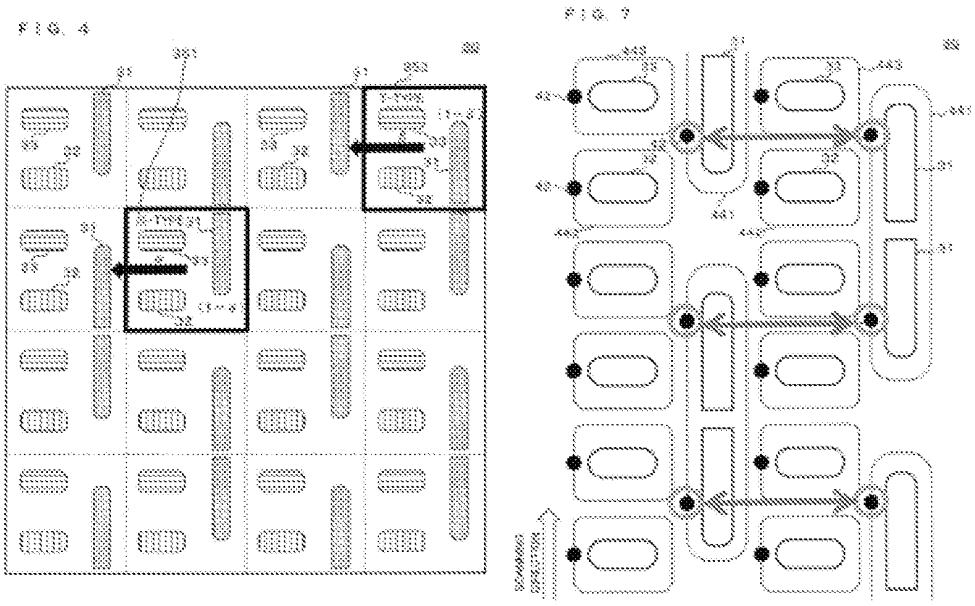
I. Statement of Substance of Interview

Applicant is appreciative of the examiner interview conducted on July 21, 2022. In the examiner interview, the Examiner indicated that the claim amendments overcome the current grounds of rejection. However, upon additional review of other references, the Examiner noted that US 9,245,932 (Yoon), Figs. 3 and 4 appeared to illustrate a connection part 153 that overlaps with one of the subpixels. The Examiner also noted a reference that could be relevant: US 2014/0292622 (Lee), in which Fig. 10 illustrates the overlapping connecting structure, but not an overlapping OLED structure. Applicant's undersigned representative inquired as to further amendments that would overcome a potential additional rejection in light of Yoon.

The Examiner indicated that clarifying the identical arrangement of the subpixels in the respective pixels would overcome both the current grounds of rejection and a potential rejection including Yoon. Applicant's undersigned representative discussed specifically reciting that "the subpixels in each of the first pixels are arranged identically, and the subpixels in each of the second pixels are arranged identically." The claims are amended accordingly.

II. Amendment to Claim 4

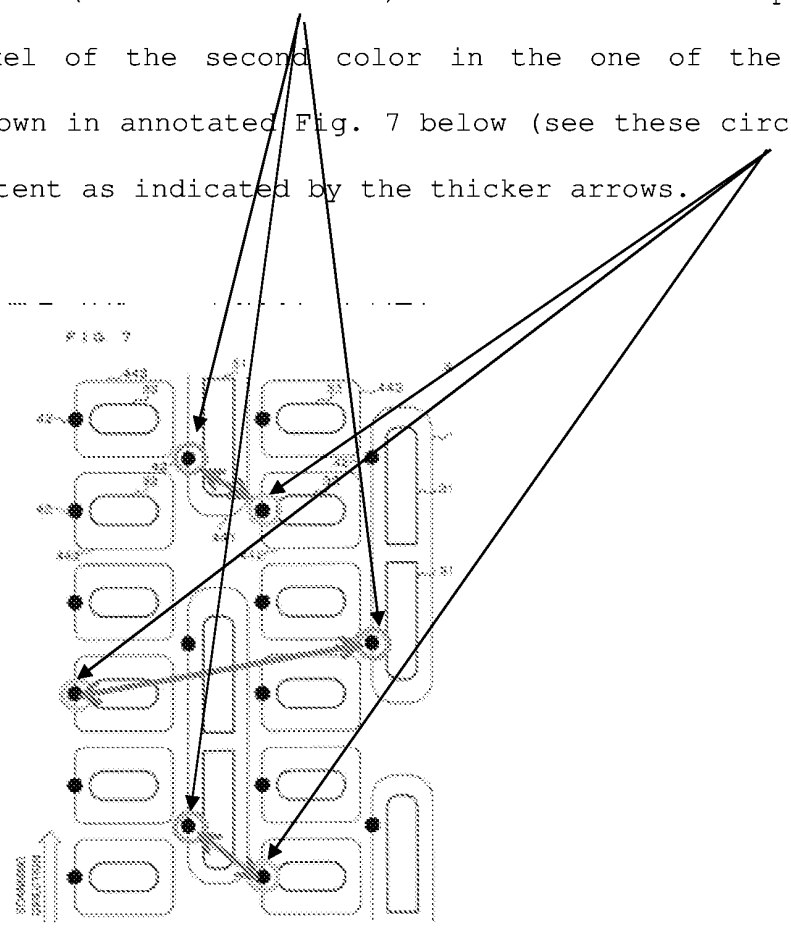
The amendment to claim 4 is supported by Figs. 4 and 7 (reproduced below, Fig. 7 being annotated).



The connection parts corresponding to subpixels of the first color is indicated by the circles. As indicated by

the arrows, the distance between the connection parts corresponding to the subpixels of the first color is constant.

As illustrated in Fig. 7, annotated below, Fig. 7 does not disclose that the distance between "one connection part for the subpixel of the first color in the one of the first pixels" (see these circles) and "one connection part for the subpixel of the second color in the one of the second pixels" shown in annotated Fig. 7 below (see these circles) is not consistent as indicated by the thicker arrows.



Thus, claim 4 was amended to correct the typographical error.

III. Rejection under 35 U.S.C. § 103

In the Office Action, at page 2, claims 1-5 were rejected under 35 U.S.C. § 103 as being unpatentable over US 2016/0225833 to Kim ("Kim") in view of US 2015/0129856 to Kim ("Kim-2"). This rejection is respectfully traversed.

According to the present invention, at least one connection part is disposed at an identical position independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels. Because the TFT circuit output connection portion is arranged at the same portion without being changed according to the position of the anode electrode arrangement pattern of the OLED layer 44, although the positions of the anode electrodes 43 are deviated according to the column in the upward/downward direction similarly to the deposition pattern of the first OLED layer 441, uniform emission can be obtained.

In short, the combination of the teachings of Kim and Kim-2 does not disclose or suggest:

> the at least one connection part is disposed at an identical position independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels,
>
> one of the subpixels is disposed above the at least one connection part,

as recited in amended independent claim 1.

As conceded by the Office, Kim does not disclose or suggest that at least one connection part is disposed at an

identical position independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels. The Office asserts that Kim-2 cures these deficiencies in Kim.

Kim-2 is directed to an organic light emitting display panel, illustrated in Figs. 3 (annotated by Office) and 6, reproduced below.

FIG. 3

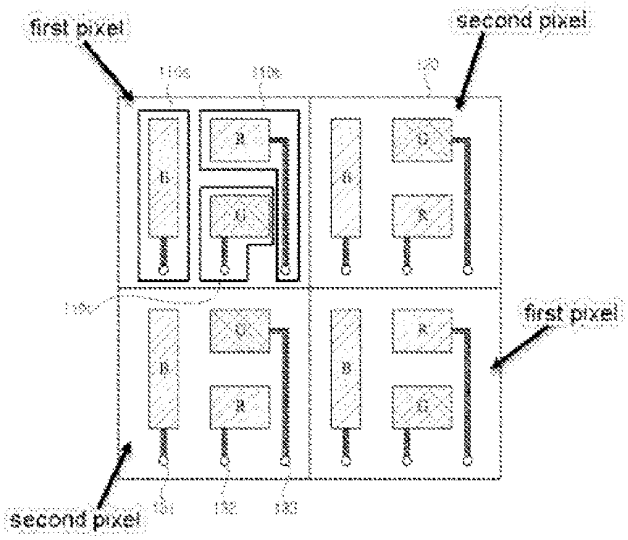
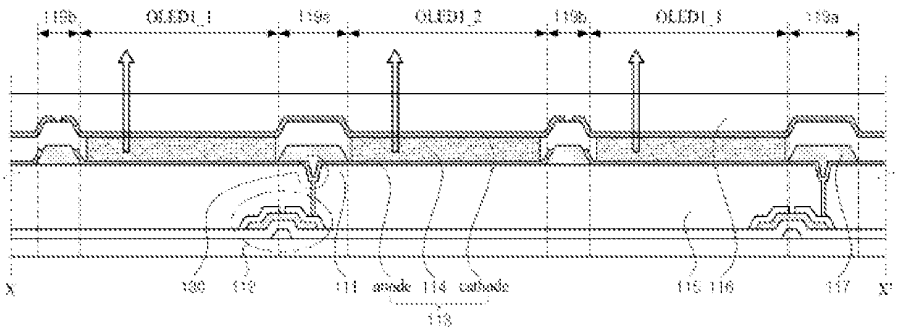


FIG. 6



Kim-2 discloses structures in which a contact hole 130 (=TFT circuit output connection portion) and an emission layer 114 (=OLED layer) do not overlap in a plan view. As there is no overlap, Kim-2 needs the connecting line shown in Fig. 3.

Thus, in contrast to the present invention, Kim-2 does not disclose or suggest that at least one connection part is disposed at an identical position independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels, one of the subpixels is disposed above the at least one connection part, and a position where the at least one connection part is disposed overlaps with one of the subpixels in a plan view. As is clear from Fig. 3 of Kim-2, the length of the connecting line is different in each subpixel.

Therefore, in Kim-2, the condition of the TFT circuit cannot be maintained to be the same and cannot provide the effect of obtaining uniform emission.

According to the cross-section view of Fig. 6, since the contact hole 130 (131, 132, 133 of Fig. 3) is located directly above the drive TFT 112, it can be understood that the connection line disclosed in Fig. 3 is arranged in the layer forming the anode electrode. In such a structure, if the wiring of the connection line becomes long, wiring space is required, so the size of the anode electrode must be reduced.

When the anode electrode becomes smaller, then the light emitting area of the OLED element is decreased and there is also a problem that the emitting light of the subpixel becomes dark, as in Kim-2.

In addition, when the light emitting area becomes smaller and the current density flowing through the element is high, there is also a problem that the life of the display device of Kim-2 is shortened.

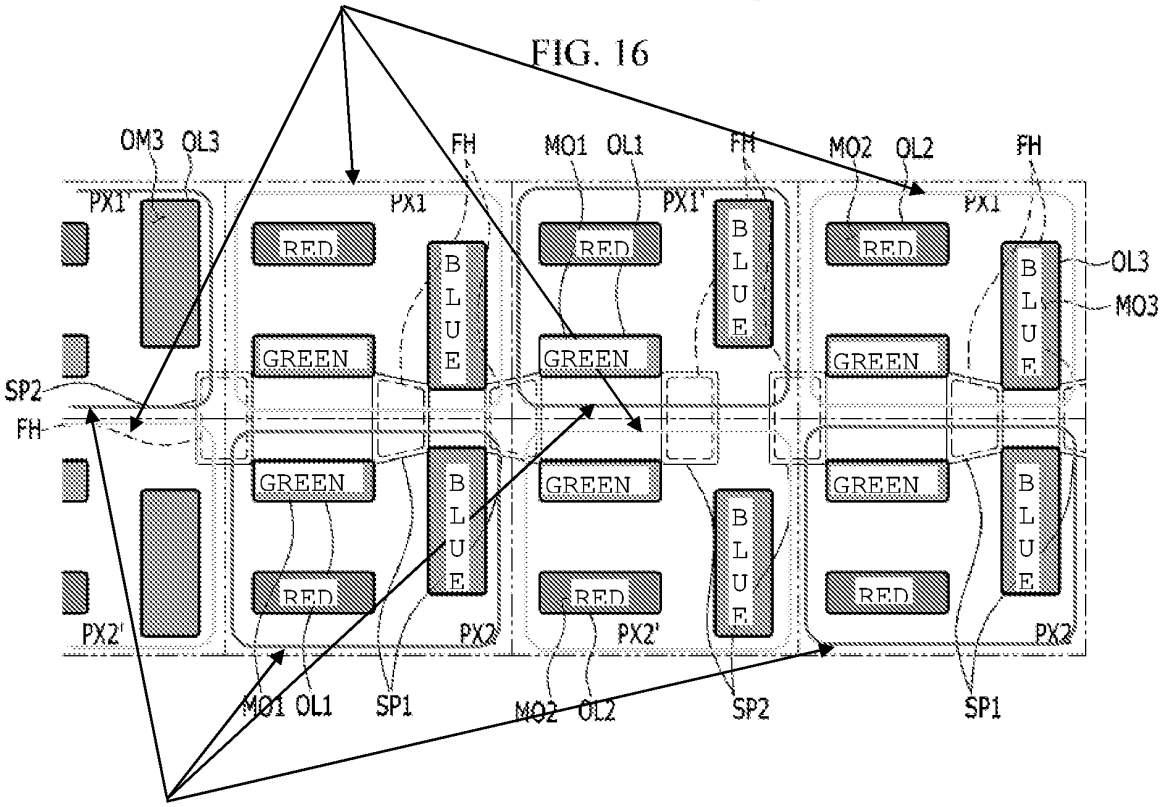
According to the present invention, on the other hand, these problems do not occur due to the structure of the present invention.

The Office asserts that one skilled in the art would have been led to combine the connection part of Kim-2 with the arrangement of subpixels disclosed in Kim. Applicant respectfully disagrees.

Kim is directed to an OLED display, illustrated in Fig. 16 (annotated by Applicant), reproduced below.

These circles indicate the first pixels.

FIG. 16



These circles indicate the second pixels.

PX1, PX2' is interpreted as the first pixels by the Office, the placement of the subpixels being mirror inverted. PX1', PX2 is interpreted as the second pixels by the Office, the placement of the subpixels being mirror inverted.

The Office asserts that OL3 corresponds to the first color (blue), OL1 corresponds to the second color (green), and OL2 corresponds to the third color (red).

Claim 1 of the present invention recites, *inter alia*, "a plurality of second pixels each including subpixels of three colors arranged differently from the subpixels in one of the first pixels." The present invention clarifies that

second pixels and the first pixels have different arrangements of subpixels of three colors arrangements. Therefore, it should be interpreted that the second pixels have the same arrangement of subpixels of three colors and the first pixels have the same arrangement of subpixels of three colors.

One skilled in the art would not have been led to combine the arrangement of subpixels disclosed in Kim with the component of Kim-2 to arrive at the present invention of at least one connection part disposed at an identical position independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels" because, e.g., PX1 and PX2' disclosed in Kim cannot have the same length of wiring connection between the connection part and subpixel. Kim thus cannot maintain the condition of the TFT circuit to be the same, and thus cannot obtain uniform emission.

Therefore, the combination of the teachings of Kim and Kim-2 does not disclose or suggest all the features of amended independent claim 1, and claim 1 is patentably distinguished over the reference relied upon. Claims 2-5 depend either directly or indirectly from amended independent claim 1 and are therefore patentably distinguished over the references relied upon for at least the reasons discussed above. Accordingly, withdrawal of the § 103 rejection is respectfully requested.

IV. Conclusion

In view of the present amendment and the foregoing remarks, it is believed that the present application has been placed in condition for allowance. Reconsideration and allowance are respectfully requested.

The Commissioner is hereby authorized in this, concurrent, and future submissions to charge any additional fees(s) or underpayment of fee(s) under 37 C.F.R. §§ 1.16, 1.17, and 41.20 or credit any overpayment of fee(s) to Deposit Account No. 14-1140.

Respectfully submitted,

NIXON & VANDERHYE

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KPF/lrs

Electronic Patent Application Fee Transmittal

Application Number:	17301517
Filing Date:	06-Apr-2021
Title of Invention:	DISPLAY DEVICE AND COMPUTER READABLE MEDIA
First Named Inventor/Applicant Name:	Yojiro MATSUEDA
Filer:	Kari P. Footland/Linda Sayyad
Attorney Docket Number:	8317-0050

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension - 1 month with $0 paid	1251	1	220	220
Miscellaneous:				
RCE- 1ST REQUEST	1801	1	1360	1360
		Total in USD ($)		**1580**

Electronic Acknowledgement Receipt

EFS ID:	46249426
Application Number:	17301517
International Application Number:	
Confirmation Number:	1637
Title of Invention:	DISPLAY DEVICE AND COMPUTER READABLE MEDIA
First Named Inventor/Applicant Name:	Yojiro MATSUEDA
Customer Number:	466
Filer:	Kari P. Footland/Linda Sayyad
Filer Authorized By:	Kari P. Footland
Attorney Docket Number:	8317-0050
Receipt Date:	22-JUL-2022
Filing Date:	06-APR-2021
Time Stamp:	10:58:47
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$1580
RAM confirmation Number	E20227LA59033608
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Request for Continued Examination (RCE)	8317-0050_RCE.pdf	1350056 270bbe52895495e66a70222d4683e00e2d93f65d	no	3
Warnings:					
Information:					
2		8317-0050_AMD_RCE.pdf	257759 7760a94dd5d4b54723231b694dedbc0904c9f453	yes	15

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment Submitted/Entered with Filing of Continued Prosecution Application (CPA)/Request for Continued Examination(RCE)	1	1
	Claims	2	5
	Applicant Arguments/Remarks Made in an Amendment	6	15

Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	40514 b97df0adf2b4923ab2b0967c24522c011bcb2ff6	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	1648329		

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 17/301,517	Filing Date 04/06/2021	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $100 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $480 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	07/22/2022	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 5	Minus	** 20	= 0		x $100 =	0
	Independent (37 CFR 1.16(h))	* 1	Minus	*** 3	= 0		x $480 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	0

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	LIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/MONICA D FRANCIS/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 17/301,517	Filing Date 04/06/2021	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	5 minus 20 =	* 0		x $100 =	0
INDEPENDENT CLAIMS (37 CFR 1.16(h))	1 minus 3 =	* 0		x $480 =	0
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	0

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	06/27/2022	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
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	Independent (37 CFR 1.16(h))	* 1	Minus	*** 3	= 0		x $480 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	0

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	LIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/GERALDINE L STANLEY/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

MAIL STOP AF
PATENT
8317-0050

IN THE U. S. PATENT AND TRADEMARK OFFICE

In re application of

Yojiro MATSUEDA et al. Conf. 1637

Application No. 17/301,517 Group 2692

Filed: April 6, 2021 Examiner CASAREZ, BENJAMIN

Title: DISPLAY DEVICE AND COMPUTER READABLE MEDIA

AMENDMENT WITH AFTER FINAL CONSIDERATION PILOT PROGRAM 2.0 REQUEST FOR RECONSIDERATION

Assistant Commissioner for Patents June 27, 2022
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This amendment is being filed concurrently with an After Final Consideration Pilot Program 2.0 Request for Reconsideration, in response to the final Office Action mailed March 25, 2022. Please amend the above-identified application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks begin on page 6 of this paper.

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (currently amended) A display device comprising:

a display unit where a plurality of first pixels each including subpixels of three colors and a plurality of second pixels each including subpixels of three colors arranged differently from the subpixels in one of the first pixels are alternately arrayed in a row direction and a column direction, the subpixels of the three colors including a subpixel of a first color, a subpixel of a second color and a subpixel of a third color;

a thin film transistor (TFT) circuit disposed below each of the subpixels to control the subpixels; and

at least one connection part that connects the TFT circuit and one of the subpixels,

wherein the subpixel of the second color and the subpixel of the third color in one of the first pixels are arrayed in parallel with the subpixel of the second color and the subpixel of the third color in one of the second pixels,

a first arrangement in the column direction of the subpixel of the second color and the subpixel of the third color in one of the first pixels and a second arrangement of

the subpixel of the second color and the subpixel of the third color in one of the second pixels are identical,

the subpixels of the second color in one of the first pixels and in one of the second pixels that are adjacent to each other in the row direction are aligned in the row direction,

the subpixels of the third color in one of the first pixels and in one of the second pixels that are adjacent to each other in the row direction are aligned in the row direction,

the subpixel of the first color in one of the first pixels has a biased arrangement and is positioned toward a side of the subpixel of the second color in an array direction of the subpixel of the second color and the subpixel of the third color,

the subpixel of the first color in one of the second pixels has a biased arrangement and is positioned toward a side of the subpixel of the third color in the array direction of the subpixel of the second color and the subpixel of the third color, [[and]]

the at least one connection part is disposed at an identical position independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels,

one of the subpixels is disposed above the at least one connection part, and

a position where the at least one connection part is disposed overlaps with one of the subpixels in a plan view.

2. (original) The display device according to claim 1, wherein

the subpixel includes an anode electrode, and

the at least one connection part is a portion that connects an output of the TFT circuit and the anode electrode.

3. (original) The display device according to claim 1, wherein

the TFT circuit includes an identical circuit arrangement pattern for the subpixels of the first to third colors.

4. (currently amended) The display device according to claim 1, wherein

in one of the first pixels and one of the second pixels that are adjacent to each other in the row direction, a distance between a first connection part of the at least one connection part for the subpixel of the first color in the one of the first pixels and a second connection part of the at least one connection part for the subpixel of the ~~second~~ first

color in the one of the second pixels are consistent in the display unit independent of the biased arrangements of the subpixels.

5. (original) The display device according to claim 1, wherein

a first square not crossing the subpixels encloses a region including the subpixels of three colors included in one of the first pixels and excluding other subpixels,

a second square not crossing the subpixels encloses a region including the subpixels of three colors included in one of the second pixels and excluding other subpixels, and

the first square and the second square are arranged without overlapping each other.

REMARKS

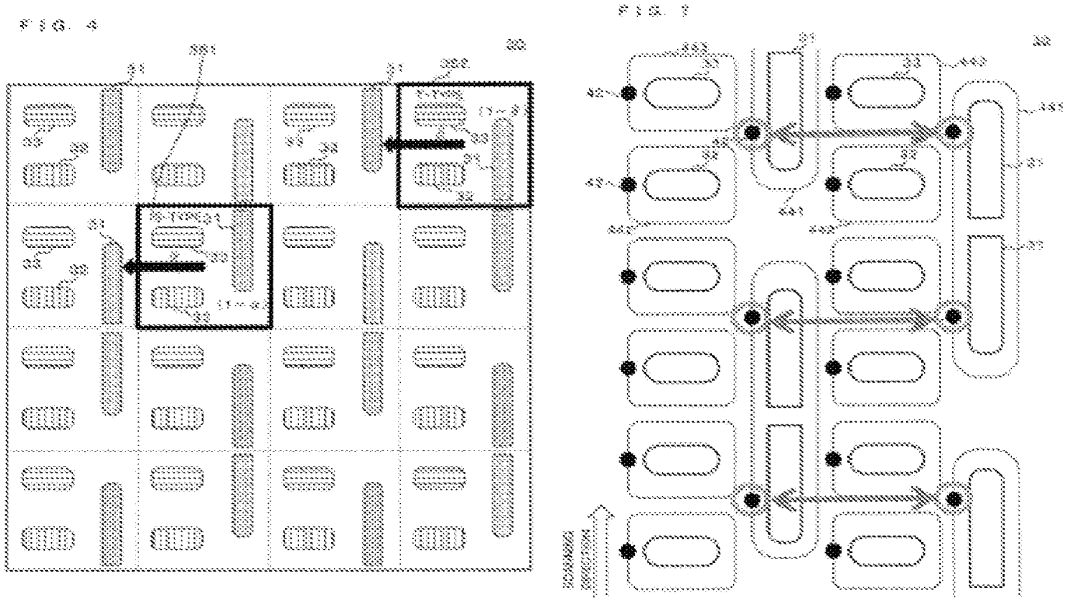
Claims 1-5 were rejected.

Claim 1 is amended. Support for the amendments to independent claims 1 and 4 comes at least from Figs. 4 and 7 and the corresponding portions of the originally-filed specification (including para. [0099] of the published application).

Claims 1-5 are currently pending in this application. No new matter is added.

I. Amendment to Claim 4

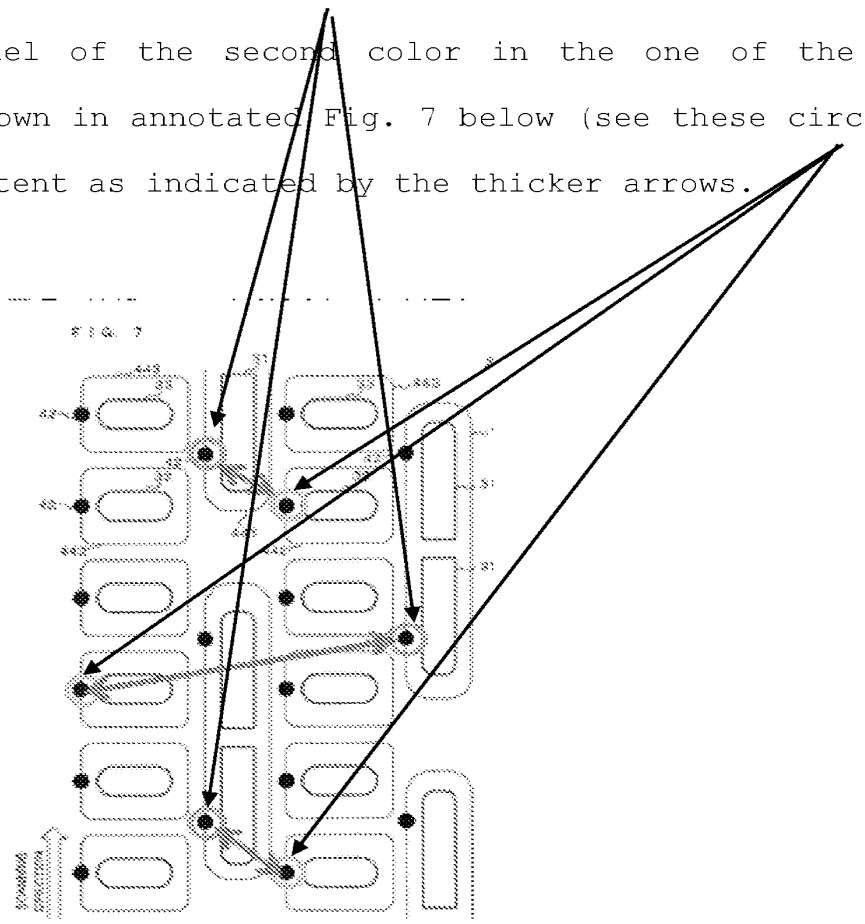
The amendment to claim 4 is supported by Figs. 4 and 7 (reproduced below, Fig. 7 being annotated).



The connection parts corresponding to subpixels of the first color is indicated by the circles. As indicated by

the arrows, the distance between the connection parts corresponding to the subpixels of the first color is constant.

As illustrated in Fig. 7, annotated below, Fig. 7 does not disclose that the distance between "one connection part for the subpixel of the first color in the one of the first pixels" (see these circles) and "one connection part for the subpixel of the second color in the one of the second pixels" shown in annotated Fig. 7 below (see these circles) is not consistent as indicated by the thicker arrows.



Thus, claim 4 was amended to correct the typographical error.

II. Rejection under 35 U.S.C. § 103

In the Office Action, at page 2, claims 1-5 were rejected under 35 U.S.C. § 103 as being unpatentable over US 2016/0225833 to Kim ("Kim") in view of US 2015/0129856 to Kim ("Kim-2"). This rejection is respectfully traversed.

According to the present invention, at least one connection part is disposed at an identical position independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels. Because the TFT circuit output connection portion is arranged at the same portion without being changed according to the position of the anode electrode arrangement pattern of the OLED layer 44, although the positions of the anode electrodes 43 are deviated according to the column in the upward/downward direction similarly to the deposition pattern of the first OLED layer 441, uniform emission can be obtained.

In short, the combination of the teachings of Kim and Kim-2 does not disclose or suggest:

> the at least one connection part is disposed at an identical position independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels,
>
> one of the subpixels is disposed above the at least one connection part, and
>
> a position where the at least one connection part is disposed overlaps with one of the subpixels in a plan view,

as recited in amended independent claim 1.

As conceded by the Office, Kim does not disclose or suggest that at least one connection part is disposed at an identical position independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels. The Office asserts that Kim-2 cures these deficiencies in Kim.

Kim-2 is directed to an organic light emitting display panel, illustrated in Figs. 3 (annotated by Office) and 6, reproduced below.

FIG. 3

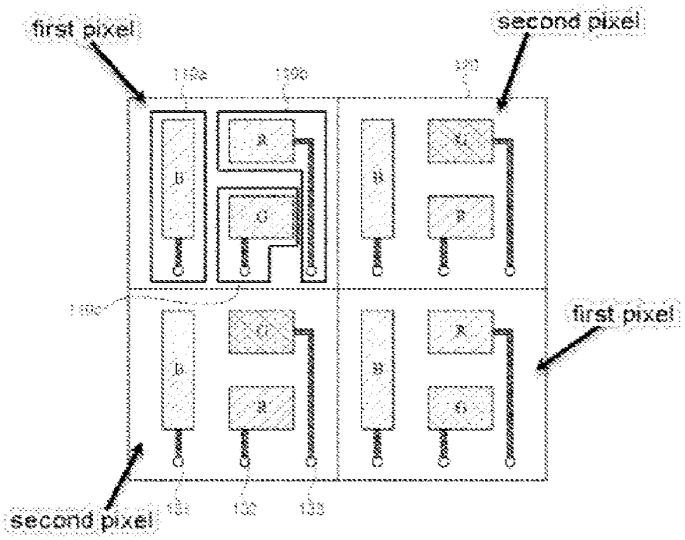
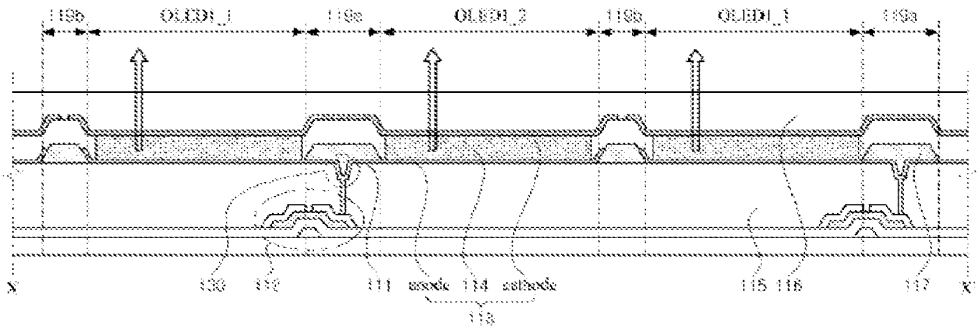


FIG. 6



Kim-2 discloses structures in which a contact hole 130 (=TFT circuit output connection portion) and an emission layer 114 (=OLED layer) do not overlap in a plan view. As there is no overlap, Kim-2 needs the connecting line shown in Fig. 3.

Thus, in contrast to the present invention, Kim-2 does not disclose or suggest that at least one connection part is disposed at an identical position independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels, one of the subpixels is disposed above the at least one connection part, and a position where the at least one connection part is disposed overlaps with one of the subpixels in a plan view. As is clear from Fig. 3 of Kim-2, the length of the connecting line is different in each subpixel.

Therefore, in Kim-2, the condition of the TFT circuit cannot be maintained to be the same" and cannot provide the effect of obtaining uniform emission.

According to the cross-section view of Fig. 6, since the contact hole 130 (131, 132, 133 of Fig. 3) is located directly above the drive TFT 112, it can be understood that the connection line disclosed in Fig. 3 is arranged in the layer forming the anode electrode. In such a structure, if the wiring of the connection line becomes long, wiring space is required, so the size of the anode electrode must be reduced. When the anode electrode become smaller, then the light emitting area of the OLED element is decreased and there is also a problem that the emitting light of the subpixel becomes dark, as in Kim-2.

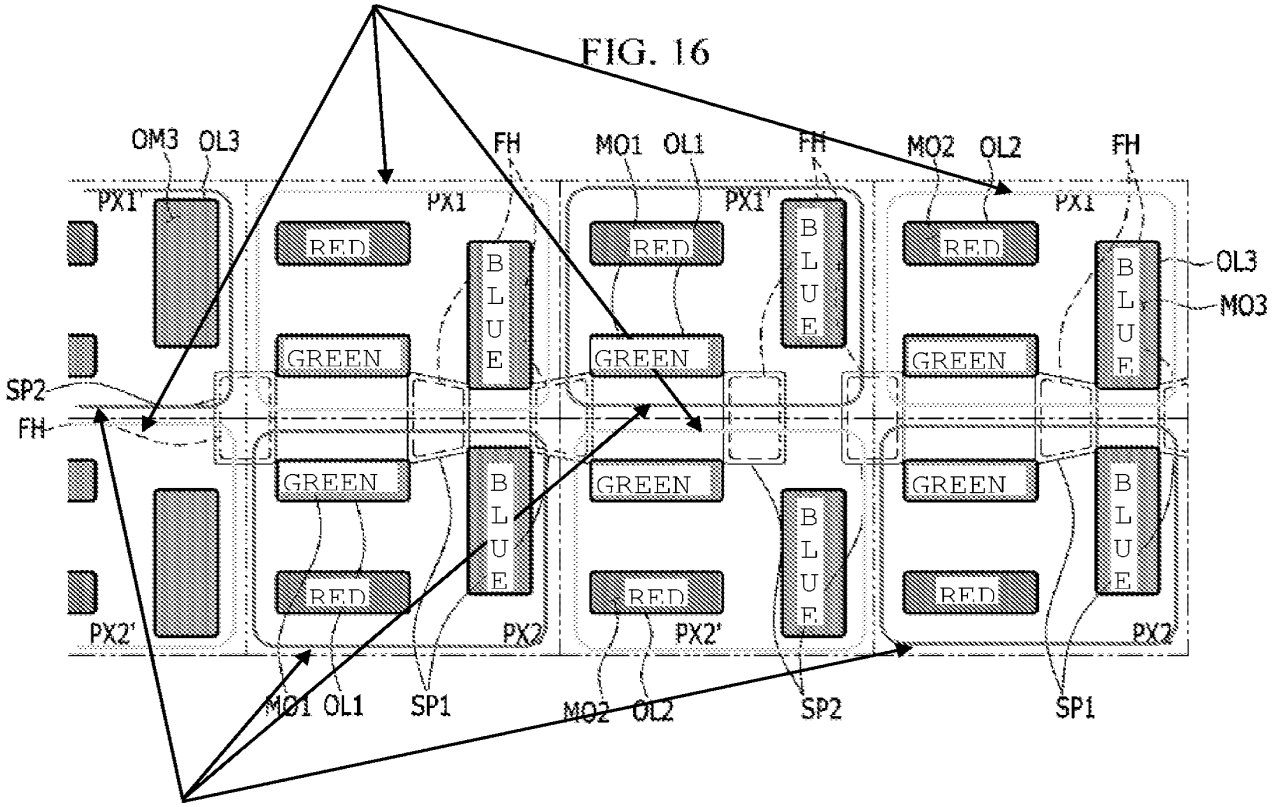
In addition, when the light emitting area becomes smaller and the current density flowing through the element is high, there is also a problem that the life of the display device of Kim-2 is shortened.

According to the present invention, on the other hand, these problems do not occur due to the structure of the present invention.

The Office asserts that one skilled in the art would have been led to combine the connection part of Kim-2 with the arrangement of subpixels disclosed in Kim. Applicant respectfully disagrees.

Kim is directed to an OLED display, illustrated in Fig. 16 (annotated by Applicant), reproduced below.

These circles indicate the first pixels.



These circles indicate the second pixels.

PX1, PX2' is interpreted as the first pixels by the Office, the placement of the subpixels being mirror inverted. PX1', PX2 is interpreted as the second pixels by the Office, the placement of the subpixels being mirror inverted.

The Office asserts that OL3 corresponds to the first color (blue), OL1 corresponds to the second color (green), and OL2 corresponds to the third color (red).

Claim 1 of the present invention recites, *inter alia*, "a plurality of second pixels each including subpixels

of three colors arranged differently from the subpixels in one of the first pixels." The present invention clarifies that second pixels and the first pixels have different arrangements of subpixels of three colors arrangements. Therefore, it should be interpreted that the second pixels have the same arrangement of subpixels of three colors and the first pixels have the same arrangement of subpixels of three colors.

One skilled in the art would not have been led to combine the arrangement of subpixels disclosed in Kim with the component of Kim-2 to arrive at the present invention of at least one connection part disposed at an identical position independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels" because, e.g., PX1 and PX2' disclosed in Kim cannot have the same length of wiring connection between the connection part and subpixel. Kim thus cannot maintain the condition of the TFT circuit to be the same, and thus cannot obtain uniform emission.

Therefore, the combination of the teachings of Kim and Kim-2 does not disclose or suggest all the features of amended independent claim 1, and claim 1 is patentably distinguished over the reference relied upon. Claims 2-5 depend either directly or indirectly from amended independent claim 1 and are therefore patentably distinguished over the references relied upon for at least the reasons discussed

above. Accordingly, withdrawal of the § 103 rejection is respectfully requested.

III. Conclusion

In view of the present amendment and the foregoing remarks, it is believed that the present application has been placed in condition for allowance. Reconsideration and allowance are respectfully requested.

The Commissioner is hereby authorized in this, concurrent, and future submissions to charge any additional fees(s) or underpayment of fee(s) under 37 C.F.R. §§ 1.16, 1.17, and 41.20 or credit any overpayment of fee(s) to Deposit Account No. 14-1140.

Respectfully submitted,

NIXON & VANDERHYE

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ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/301,517	**06/27/2022 03:36:08 PM ET**	**8317-0050**

Title of Invention

DISPLAY DEVICE AND COMPUTER READABLE MEDIA

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	1637	FILED BY	Ryan Carter
PATENT CENTER #	60742838	FILING DATE	04/06/2021
CUSTOMER #	466	FIRST NAMED INVENTOR	Yojiro MATSUEDA
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	ERIC JENSEN

Documents

TOTAL DOCUMENTS: 4

DOCUMENT		PAGES	DESCRIPTION	SIZE (KB)
8317-0050 AMD AF.pdf		14	-	322 KB
8317-0050 AMD AF-A.NE.pdf	(1-1)	1	Response After Final Action	69 KB
8317-0050 AMD AF-CLM.pdf	(2-5)	4	Claims	73 KB
8317-0050 AMD AF-REM.pdf	(6-14)	9	Applicant Arguments/Remarks Made in an Amendment	259 KB
8317-0050 AFCP.pdf		2	After Final Consideration Program Request	221 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
8317-0050 AMD AF.pdf	A39A5C5F3D828D924C51852A8F4CAAD07DC07C82D5EC4567 BB7581E37B32B1DF1661D0481EDAFB63BAB7BC8BF8A056AF D164507664B344B15170535D1011129A
8317-0050 AMD AF-A.NE.pdf	4B755BEDBA1467A7D93A28DF587E79DB1F1623261464C6760 4A89266395CBA4E5E945EB84FACA040D38314FFA68F3F11461 978E6AD94CB0514A9B4FA1B9C0B3E
8317-0050 AMD AF-CLM.pdf	0E2B75B105D572DC9425DCEE363512D16FEBF23AF711E904F CC8DA60E03AC29D00DD3EC4792CD82865F2632E2A95F03723 DDF1D7E8F2AA33F5CD8A2736D5BF37
8317-0050 AMD AF-REM.pdf	DE6EDE579CC006007AFEABCD2CB613C9B4CDC78804581B89 647B12498DCB1932B2C19C16C5F947ED36B5B813B9A66A38A C5E557E3E1E89DA4D4C4D74715D97FA
8317-0050 AFCP.pdf	FBBB8D11FE691D257FAECEF921021B6A2617A2C25D1728A0E 0E52912AC091E5D996B701EF18C14FE08D44DB9616E5BF15D 0860F26BA551C2F4370B234D7C08E7

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Doc Code: A.NE.AFCP
Document Description: After Final Consideration Pilot Program Request

PTO/SB/434 (05-13)

CERTIFICATION AND REQUEST FOR CONSIDERATION UNDER THE AFTER FINAL CONSIDERATION PILOT PROGRAM 2.0

Practitioner Docket No.:	Application No.:	Filing Date:
8317-0050	17/301,517	April 6, 2021
First Named Inventor:	**Title:**	
Yojiro MATSUEDA	DISPLAY DEVICE AND COMPUTER READABLE MEDIA	

APPLICANT HEREBY CERTIFIES THE FOLLOWING AND REQUESTS CONSIDERATION UNDER THE AFTER FINAL CONSIDERATION PILOT PROGRAM 2.0 (AFCP 2.0) OF THE ACCOMPANYING RESPONSE UNDER 37 CFR 1.116.

1. The above-identified application is (i) an original utility, plant, or design nonprovisional application filed under 35 U.S.C. 111(a) [a continuing application (*e.g.*, a continuation or divisional application) is filed under 35 U.S.C. 111(a) and is eligible under (i)], or (ii) an international application that has entered the national stage in compliance with 35 U.S.C. 371(c).
2. The above-identified application contains an outstanding final rejection.
3. Submitted herewith is a response under 37 CFR 1.116 to the outstanding final rejection. The response includes an amendment to at least one independent claim, and the amendment does not broaden the scope of the independent claim in any aspect.
4. This certification and request for consideration under AFCP 2.0 is the only AFCP 2.0 certification and request filed in response to the outstanding final rejection.
5. Applicant is willing and available to participate in any interview requested by the examiner concerning the present response.
6. This certification and request is being filed electronically using the Office's electronic filing system (EFS-Web).
7. Any fees that would be necessary consistent with current practice concerning responses after final rejection under 37 CFR 1.116, *e.g.*, extension of time fees, are being concurrently filed herewith. [There is no additional fee required to request consideration under AFCP 2.0.]
8. By filing this certification and request, applicant acknowledges the following:

- Reissue applications and reexamination proceedings are not eligible to participate in AFCP 2.0.
- The examiner will verify that the AFCP 2.0 submission is compliant, *i.e.*, that the requirements of the program have been met (see items 1 to 7 above). For compliant submissions:
  - The examiner will review the response under 37 CFR 1.116 to determine if additional search and/or consideration (i) is necessitated by the amendment and (ii) could be completed within the time allotted under AFCP 2.0. If additional search and/or consideration is required but cannot be completed within the allotted time, the examiner will process the submission consistent with current practice concerning responses after final rejection under 37 CFR 1.116, *e.g.*, by mailing an advisory action.
  - If the examiner determines that the amendment does not necessitate additional search and/or consideration, or if the examiner determines that additional search and/or consideration is required and could be completed within the allotted time, then the examiner will consider whether the amendment places the application in condition for allowance (after completing the additional search and/or consideration, if required). If the examiner determines that the amendment does not place the application in condition for allowance, then the examiner will contact the applicant and request an interview.
    - The interview will be conducted by the examiner, and if the examiner does not have negotiation authority, a primary examiner and/or supervisory patent examiner will also participate.
    - If the applicant declines the interview, or if the interview cannot be scheduled within ten (10) calendar days from the date that the examiner first contacts the applicant, then the examiner will proceed consistent with current practice concerning responses after final rejection under 37 CFR 1.116.

Signature	Date
/Kari P. Footland/	June 27, 2022
Name (Print/Typed) Kari P. Footland	**Practitioner Registration No.** 55,187

***Note**: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.*

☑ * Total of 1 forms are submitted.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/301,517	04/06/2021	Yojiro MATSUEDA	8317-0050	1637

466 7590 03/25/2022

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EXAMINER	
CASAREZ, BENJAMIN X.	

ART UNIT	PAPER NUMBER
2692	

NOTIFICATION DATE	DELIVERY MODE
03/25/2022	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

pair_nixon@firsttofile.com
ptomail@nixonvan.com

Office Action Summary	Application No. 17/301,517	Applicant(s) MATSUEDA et al.	
	Examiner Benjamin X Casarez	Art Unit 2692	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 26 January 2022.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☑ This action is **FINAL.** 2b) ☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 1-5 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1-5 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☑ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

DETAILED ACTION

Status

This Office Action is responsive to claim amendments filed for No. 17/301,517 on January 26, 2022.

Please note: Claim 1 has been amended. Claims 1-5 are pending and have been examined.

Notice of Pre-AIA or AIA Status

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Claim Rejections - 35 USC § 103

2. In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

3. The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-5 are rejected under 35 U.S.C. 103 as being unpatentable over Kim (US 20160225833 A1), in view of Kim et al. (US 20150129856 A1), hereinafter Kim-2.

Regarding **Claim 1**, Kim teaches:

A display device **(See paragraph [0047]: an organic light emitting diode display)** comprising:

a display unit **(See FIG. 16)** where a plurality of first pixels **(See FIG. 16: the Examiner is interpreting PX1 and PX2' as corresponding to a plurality of first pixels)** each including subpixels of three colors **(See FIG. 16: each of PX1 and PX2' include subpixels of three colors corresponding to OL1-OL3; See paragraph [0056] and [0065])** and a plurality of second pixels **(See FIG. 16: the Examiner is interpreting PX2 and PX1' as**

corresponding to a plurality of second pixels) each including subpixels of three colors arranged differently from the subpixels in one of the first pixels (**See FIG. 16: PX2 and PX1' include subpixels of three colors corresponding to OL1-OL3 arranged differently from the subpixels in one of the first pixels PX1 and PX2'**) are alternately arrayed in a row direction and a column direction (**See FIG. 16: PX1 and PX2', corresponding to the plurality of first pixels, and PX2 and PX1', corresponding to the plurality of second pixels, are alternately arrayed in a row direction and a column direction**), the subpixels of the three colors including a subpixel of a first color, a subpixel of a second color and a subpixel of a third color (**See paragraph [0056] and [0065]; The Examiner is interpreting the subpixel corresponding to OL3 as being a subpixel of a first color, OL1 as being a subpixel of a second color and OL2 as being a subpixel of a third color**);

a thin film transistor (TFT) circuit disposed below each of the subpixels to control the subpixels (**See paragraph [0058] and FIG. 3: the circuit layer FC includes a thin film transistor (TFT) circuit disposed below each of the subpixels to control the subpixels**); and

at least one connection part that connects the TFT circuit and one of the subpixels (**See paragraph [0048], lines 1-5**),

wherein the subpixel of the second color and the subpixel of the third color in one of the first pixels are arrayed in parallel with the subpixel of the second color and the subpixel of the third color in one of the second pixels (**See FIG. 16: the subpixel of the second color OL1 and the subpixel of the third color OL2 in one of the first pixels PX1 are arrayed in parallel with the subpixel of the second color OL1 and the subpixel of the third color OL2 in one of the second pixels PX1'**),

a first arrangement in the column direction of the subpixel of the second color and the subpixel of the third color in one of the first pixels and a second arrangement of the subpixel of the second color and the subpixel of the third color in one of the second pixels are identical (**See FIG. 16: a first arrangement in the column direction of the subpixel of the second color OL1 and the subpixel of the third color OL2 in one of the first pixels PX1 and a second arrangement of the subpixel of the second color OL1 and the subpixel of the third color OL2 in one of the second pixels PX1' are identical**),

the subpixels of the second color in one of the first pixels and in one of the second pixels that are adjacent to each other in the row direction are aligned in the row direction (**See FIG. 16: the subpixels of the second color**

OL1 in one of the first pixels PX1 and in one of the second pixels PX1' that are adjacent to each other in the row direction are aligned in the row direction),

the subpixels of the third color in one of the first pixels and in one of the second pixels that are adjacent to each other in the row direction are aligned in the row direction (**See FIG. 16: the subpixels of the third color OL2 in one of the first pixels PX1 and in one of the second pixels PX1' that are adjacent to each other in the row direction are aligned in the row direction**),

the subpixel of the first color in one of the first pixels has a biased arrangement and is positioned toward a side of the subpixel of the second color in an array direction of the subpixel of the second color and the subpixel of the third color (**See FIG. 16: the subpixel of the first color OL3 in one of the first pixels PX1 has a biased arrangement and is positioned toward a side of the subpixel of the second color OL1 in an array direction of the subpixel of the second color OL1 and the subpixel of the third color OL2**),

the subpixel of the first color in one of the second pixels has a biased arrangement and is positioned toward a side of the subpixel of the third color in the array direction of the subpixel of the second color and the subpixel of the third color (**See FIG. 16: the subpixel of the first color OL3 in one of the second pixels PX1' has a biased arrangement and is positioned toward a side of the subpixel of the third color OL2 in the array direction of the subpixel of the second color OL1 and the subpixel of the third color OL2**).

Kim does not explicitly teach:

the at least one connection part is disposed at an identical position independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels.

However, in the same field of endeavor, display devices (**Kim-2, paragraph [0003]**), Kim-2 teaches:

a display unit (**FIG. 2: 100; See also FIG. 3**) where a plurality of first pixels each including subpixels of three colors (**See annotated FIG. 3 below: a plurality of first pixels each including subpixels of three colors**) and a plurality of second pixels each including subpixels of three colors arranged differently from the subpixels in one of the first pixels (**See annotated FIG. 3 below: a plurality of second pixels each including subpixels of three colors arranged differently from the subpixels in one of the first pixels**) are alternately arrayed in a row direction and a column direction (**See annotated FIG. 3 below: the first and second pixels are alternately arrayed in a row direction and a column direction**), the subpixels of the three colors including a subpixel of a

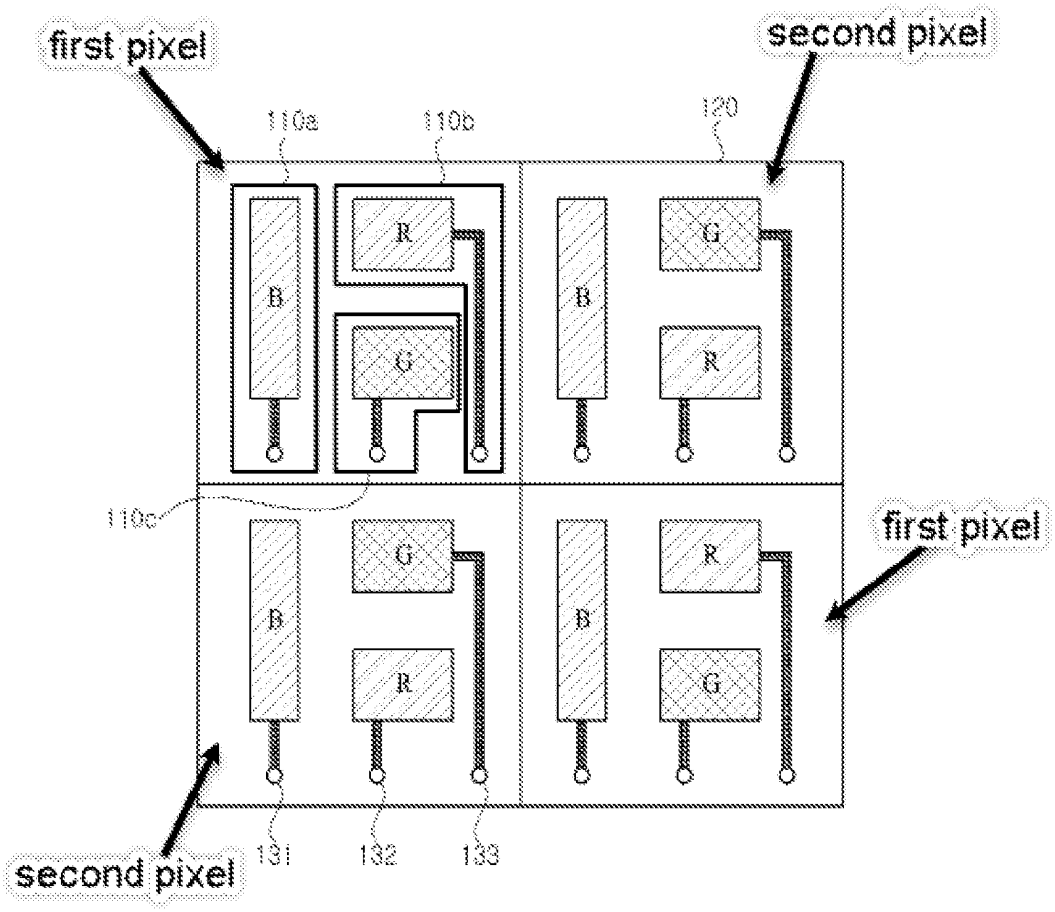
first color **(B in 110a)**, a subpixel of a second color **(R in 110b)** and a subpixel of a third color **(G in 110c)** **(See FIG. 3)**;

a thin film transistor (TFT) circuit **(112)** **(See FIG. 6 and paragraph [0045])** disposed below each of the subpixels to control the subpixels **(See FIG. 6: 112 disposed below each of the subpixels; See paragraph [0045])**; and

at least one connection part **(FIG. 3: 131, 132 and 133)** that connects the TFT circuit and one of the subpixels **(See paragraph [0068], lines 9-14)**, and

the at least one connection part is disposed at an identical position independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels **(See annotated FIG. 3 below: 131, 132 and 133 are disposed at an identical position independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels)**.

FIG. 3



Therefore, it would have been obvious to one of ordinary skill in the art, before the effective filing date of the claimed invention, to modify the display device **(as taught by Kim)** so the at least one connection part is disposed at an identical position independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels **(as taught by Kim-2)**. This would be achieved by adopting 131-133 from FIG. 3 of Kim-2 as the at least one connection part being located at an identical position within each of the first and second pixels in FIG. 16 of Kim to connect the subpixels to the TFT circuit. Doing so would enable a fine metal mask to be easily manufactured by placing the at least one connection part adjacent to a boundary of the pixels, and contribute to an increased width of an emission area **(See Kim-2, paragraphs [0023] and [0027])**.

Regarding **Claim 2**, Kim in view of Kim-2 teaches all of the elements of the claimed invention, as stated above. Furthermore, Kim in view of Kim-2 teaches:

The display device according to claim 1, wherein

the subpixel includes an anode electrode (**See Kim, paragraph [0057] and FIG. 3: E1, E2 and E3 correspond to an anode electrode of respective subpixels; See Kim-2, FIG. 6: 113 includes an anode**), and

the at least one connection part is a portion that connects an output of the TFT circuit and the anode electrode (**See paragraph [0068], lines 9-14; See paragraph [0105]**).

In addition, the same motivation is used as the rejection for claim 1.

Regarding **Claim 3**, Kim in view of Kim-2 teaches all of the elements of the claimed invention, as stated above. Furthermore, Kim in view of Kim-2 teaches:

The display device according to claim 1, wherein

the TFT circuit includes an identical circuit arrangement pattern for the subpixels of the first to third colors (**See Kim-2, FIG. 6 and paragraph [0049]: 112 includes an identical circuit arrangement pattern for the subpixels of the first to third colors. Specifically, 112 is included in each subpixel, and therefore has the same arrangement pattern of the gate, source and drain, as shown in FIG. 6 for the subpixels of the first to third colors**).

In addition, it would have been obvious to one of ordinary skill in the art, before the effective filing date of the claimed invention, to modify the display device (**as taught by Kim**) to include the additional features taught by Kim-2. Adopting the identical circuit arrangement pattern of the TFT circuit for the subpixels of the first to third colors would simplify manufacturing for the display device by employing the same TFT structure for each subpixel (**See Kim-2, FIG. 6, showing how the TFT 112 is the same for each subpixel, making manufacturing simple by not requiring separate manufacturing steps for each TFT**).

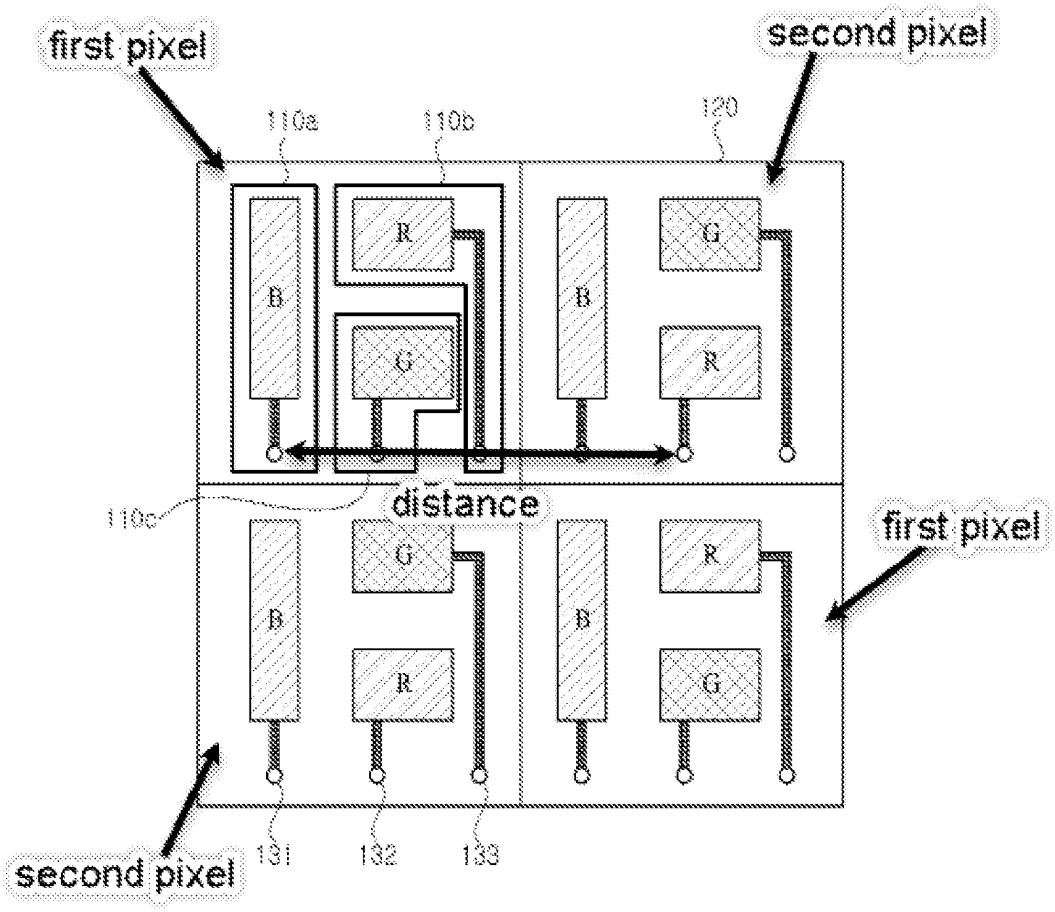
Regarding **Claim 4**, Kim in view of Kim-2 teaches all of the elements of the claimed invention, as stated above. Furthermore, Kim in view of Kim-2 teaches:

The display device according to claim 1, wherein

in one of the first pixels and one of the second pixels that are adjacent to each other in the row direction, a distance between a first connection part **(131)** of the at least one connection part for the subpixel of the first color **(B in 110a)** in the one of the first pixels and a second connection part **(132)** of the at least one connection part **(132)** for the subpixel of the second color **(R in 110b)** in the one of the second pixels are consistent in the display unit independent of the biased arrangements of the subpixels **(See annotated Kim-2, FIG. 3 below, illustrating the claimed distance in one of the first pixels and one of the second pixels that are adjacent to each other in the row direction. Furthermore, this distance is consistent in the display unit independent of the biased arrangements of the subpixels. In addition, since Kim was modified according to Kim-2 to include the at least one connection part arranged in the manner taught by Kim-2, the claimed distance would also be consistent in the display unit independent of the biased arrangements of the subpixels by being placed within each pixel in the same location, regardless of the arrangement of the subpixels)**.

In addition, the same motivation is used as the rejection for claim 1.

FIG. 3



Regarding **Claim 5**, Kim in view of Kim-2 teaches all of the elements of the claimed invention, as stated above. Furthermore, Kim teaches:

The display device according to claim 1, wherein

a first square not crossing the subpixels encloses a region including the subpixels of three colors included in one of the first pixels and excluding other subpixels, a second square not crossing the subpixels encloses a region including the subpixels of three colors included in one of the second pixels and excluding other subpixels **(See FIG. 16: a first square (see the dashed square in the figure) not crossing the subpixels encloses a region including the subpixels of three colors OL1-OL3 included in one of the first pixels (PX1 in the upper left corner) and**

excluding other subpixels, a second square (see the dashed square in the figure) not crossing the subpixels encloses a region including the subpixels of three colors OL1-OL3 included in one of the second pixels (PX2 in the lower right corner) and excluding other subpixels), and

the first square and the second square are arranged without overlapping each other (**See FIG. 16: the first square (the dashed square corresponding to PX1 in the upper left corner) and the second square (the dashed square corresponding to PX2 in the lower right corner) are arranged without overlapping each other**).

Response to Arguments

5. Applicant's arguments filed 01/26/2022 have been fully considered but they are moot on the grounds of new rejections and not persuasive in part.

Applicant argues (Remarks, pages 6-9) that Kim et al. (US 20150129856 A1), hereinafter Kim-2, does not teach the amended limitations of the independent claim. These arguments are respectfully moot on the grounds of new rejections. Specifically, Kim (US 20160225833 A1) has been introduced as the primary reference to teach the amended limitations, with Kim-2 being relied upon to render obvious the limitation not explicitly teach by Kim.

Applicant argues the following (Remarks, page 9): "Fig. 6 of Kim is indicated as being the X-X cross-section of Fig. 5. Fig. 6 merely shows a connection part provided between the first color separated into two and a diagrammatic representation of the cross-section of the TFT. Kim does not disclose or suggest that a TFT circuit includes an identical circuit arrangement pattern for the subpixels of the first to third colors". The Examiner disagrees and maintains that Kim-2 teaches the argued limitations based on the broadest reasonable interpretation of the claim language. Specifically, as discussed in the above rejections, Kim-2 teaches the TFT circuit includes an identical circuit arrangement pattern for the subpixels of the first to third colors (**See Kim-2, FIG. 6 and paragraph [0049]: 112 includes an identical circuit arrangement pattern for the subpixels of the first to third colors. Specifically, 112 is included in each subpixel, and therefore has the same arrangement pattern of the gate, source and drain, as shown in FIG. 6 for the subpixels of the first to third colors**). In summary, because 112 is included is the TFT circuit for each subpixel, it necessarily follows, that the circuit arrangement for 112 will be identical for each color. Therefore, the Examiner maintains that Kim-2 teaches the argued limitation.

Applicant argues the following (Remarks, page 9): "Thus, claims 2-5 are patentably distinguished over the reference relied upon by virtue of their dependency from amended independent claim 1 and also by virtue of their

additionally-recited features". Applicant provides no specific argument regarding which additionally-recited features of claims 2, 4 and 5 allegedly distinguish the claims from the prior art. As discussed in the above rejections, the Examiner respectfully submits that the prior art teaches each of the limitations of the dependent claims.

Applicant presents arguments (Remarks, pages 10-12) regarding the other cited references that have not been relied upon in the above rejections. These arguments are considered moot because they do not apply to any of the references being currently relied upon in the above rejections.

For the above reasons, Applicant's arguments are not convincing to overcome the current rejections.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Benjamin X Casarez whose telephone number is (571)270-5332. The examiner can normally be reached Monday-Friday: 7:30 am - 5:00 pm.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lun Yi Lao can be reached on (571) 272-7671. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: https://patentcenter.uspto.gov. Visit https://www.uspto.gov/patents/apply/patent-center for more information about Patent Center and https://www.uspto.gov/patents/docx for information about filing in DOCX format. For additional questions, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BENJAMIN X CASAREZ/
Examiner, Art Unit 2692

Notice of References Cited	Application/Control No. 17/301,517	Applicant(s)/Patent Under Reexamination MATSUEDA et al.	
	Examiner Benjamin X Casarez	Art Unit 2692	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20160225833-A1	08-2016	KIM; Do-Hoon	H01L27/3218	1/1
	B					
	C					
	D					
	E					
	F					
	G					
	H					
	I					
	J					
	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/301,517	MATSUEDA et al.
	Examiner	**Art Unit**
	Benjamin X Casarez	2692

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	10/21/2021	03/22/2022							
	1	✓	✓							
	2	✓	✓							
	3	✓	✓							
	4	✓	✓							
	5	✓	✓							

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/301,517	MATSUEDA et al.
	Examiner	Art Unit
	Benjamin X Casarez	2692

CPC - Searched*		
Symbol	**Date**	**Examiner**
G09G2300/0452 (with text search)	03/22/2022	BC
G09G2300/0842 (with text search)	03/22/2022	BC
G09G2300/0861 (with text search)	03/22/2022	BC
G09G2310/0262 (with text search)	03/22/2022	BC
G09G2310/0283 (with text search)	03/22/2022	BC
G09G3/2003 (with text search)	03/22/2022	BC
G09G3/3233 (with text search)	03/22/2022	BC
G09G3/3266 (with text search)	03/22/2022	BC

CPC Combination Sets - Searched*		
Symbol	**Date**	**Examiner**

US Classification - Searched*			
Class	**Subclass**	**Date**	**Examiner**

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	**Date**	**Examiner**
EAST search started	10/21/2021	BC
EAST inventor and assignee name search (with text search)	10/21/2021	BC
Updated PE2E search started	03/22/2022	BC
Updated PE2E inventor and assignee name search (with text search)	03/22/2022	BC

/BENJAMIN X CASAREZ/ Examiner, Art Unit 2692	

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/301,517	MATSUEDA et al.
	Examiner	**Art Unit**
	Benjamin X Casarez	2692

Interference Search			
US Class/CPC Symbol	**US Subclass/CPC Group**	**Date**	**Examiner**

/BENJAMIN X CASAREZ/ Examiner, Art Unit 2692	

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L1	5	("20090121983"|"20100270912"|"20110260951"|"20110260952"|"20110291550").PN.	(US-PGPUB; USPAT)	OR	ON	ON	2021/10/21 04:57 PM
L2	18	("20060103615"|"20060158466"|"20090051627"|"20090322215"|"20120092238"|"20130286262"|"20150035729"|"20150061978"|"20150235617"|"20160019825"|"20160027404"|"20160104413"|"20160126287"|"20160155416"|"20160379540"|"20170092174"|"20170132969"|"9767741").PN.	(US-PGPUB; USPAT)	OR	ON	ON	2021/10/21 05:01 PM
L3	1943	(nlt).IN,AANM,AS.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:10 PM
L4	885	((MATSUEDA near2 YOJIRO) (TAKATORI near2 KENICHI)).IN.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:10 PM
L5	2691	L3 L4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:10 PM
L6	50	L5 and ((subpixel (sub near2 pixel)) with (color colour)) and ((thin near2 film) TFT) and bias$4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:11 PM
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L13	88828	(G09G2300/0842 OR G09G2300/0861 OR G09G2310/0262 OR G09G2310/0283 OR G09G3/2003 OR G09G3/3233 OR G09G3/3266).CPC.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:42 PM
L14	9475	L12 and L13	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:42 PM
L15	31	L14 and ((thin near2 film) TFT) and ((color colour) with (row column) with alternat$4 with arrangement)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 05:43 PM
L16	38	L14 and (shar$4 with	(US-PGPUB; USPAT;	OR	ON	ON	2021/10/21

		(color$3 colour$3 subpixel (sub near pixel)) with (adjacent$3 neighbour$4 neighbor$4 near$2 surround$3)) same (divid$4 division separat$4)	USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)				05:52 PM
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L21	36	L20 and (shar$4 with (color$3 colour$3 subpixel (sub near pixel)) with (adjacent$3 neighbour$4 neighbor$4 near$2 surround$3))	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/10/21 06:12 PM
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			VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
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L29	69	L26 L28	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 10:26 AM
L30	4	("8552635" | "20120056531" | "20160148981").pn. OR ("10497757").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 11:17 AM
L31	13	"56011000".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA,	OR	ON	ON	2022/03/22 11:18 AM

			VN); FPRS; JPO)				
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L36	12	("20080074041" | "20110050604" | "20140240279" | "20140333852" | "20140354617" | "20080074041" | "20110050604" | "20140240279" | "20140333852" | "20140354617" | "20170061849" | "20180143721").pn. OR ("2018/0143721" | "2020/0004370" | "10452182" | "10671200").urpn. AND (PGPB | USPT |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/03/22 12:54 PM

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L40	14825	L38 AND L39	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO,	OR	ON	ON	2022/03/22 01:17 PM

			NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
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L42	237	L41 AND (TFT WITH (connect$4 coupl$4))	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/03/22 01:18 PM
L43	56	L5 and ((subpixel (sub near2 pixel)) with (color colour)) and ((thin near2 film) TFT) and bias$4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/03/22 01:24 PM
L44	2	((US-20150129856-A1 OR US-20160225833-A1).did. AND PGPB.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT;	OR	ON	ON	2022/03/22 04:23 PM

			IBM_TDB)				
L45	5	((US-20150129856-A1 OR US-20120056531-A1 OR US-20160225833-A1).did. AND PGPB.dbnm.) OR ((US-9245932-B2 OR US-9893127-B2).did. AND USPT.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/03/22 05:09 PM

PE2E SEARCH - Search History (Interference)

There are no Interference searches to show.

MAIL STOP AMENDMENT
PATENT
8317-0050

IN THE U. S. PATENT AND TRADEMARK OFFICE

In re application of

Yojiro MATSUEDA et al. Conf. 1637

Application No. 17/301,517 Group 2692

Filed: April 6, 2021 Examiner CASAREZ, BENJAMIN

Title: DISPLAY DEVICE AND COMPUTER READABLE MEDIA

AMENDMENT

Assistant Commissioner for Patents January 26, 2022
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the non-final Office Action mailed October 26, 2021, please amend the above-identified application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks begin on page 6 of this paper.

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (currently amended) A display device comprising:

a display unit where a plurality of first pixels each including subpixels of three colors and a plurality of second pixels each including subpixels of three colors arranged differently from the subpixels in one of the first pixels are alternately arrayed in a row direction and a column direction, the subpixels of the three colors including a subpixel of a first color, a subpixel of a second color and a subpixel of a third color;

a thin film transistor (TFT) circuit disposed below each of the subpixels to control the subpixels; and

at least one connection part that connects the TFT circuit and one of the subpixels,

wherein the subpixel of the second color and the subpixel of the third color in one of the first pixels are arrayed in parallel with the subpixel of the second color and the subpixel of the third color in one of the second pixels,

a first arrangement in the column direction of the subpixel of the second color and the subpixel of the third color in one of the first pixels and a second arrangement of

the subpixel of the second color and the subpixel of the third color in one of the second pixels are identical,

the subpixels of the second color in one of the first pixels and in one of the second pixels that are adjacent to each other in the row direction are aligned in the row direction,

the subpixels of the third color in one of the first pixels and in one of the second pixels that are adjacent to each other in the row direction are aligned in the row direction,

the subpixel of the first color in one of the first pixels has a biased arrangement and is positioned toward a side of the subpixel of the second color in an array direction of the subpixel of the second color and the subpixel of the third color,

the subpixel of the first color in one of the second pixels has a biased arrangement and is positioned toward a side of the subpixel of the third color in the array direction of the subpixel of the second color and the subpixel of the third color, and

the at least one connection part is disposed at an identical position independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels.

2. (original) The display device according to claim 1, wherein

the subpixel includes an anode electrode, and

the at least one connection part is a portion that connects an output of the TFT circuit and the anode electrode.

3. (original) The display device according to claim 1, wherein

the TFT circuit includes an identical circuit arrangement pattern for the subpixels of the first to third colors.

4. (original) The display device according to claim 1, wherein

in one of the first pixels and one of the second pixels that are adjacent to each other in the row direction, a distance between a first connection part of the at least one connection part for the subpixel of the first color in the one of the first pixels and a second connection part of the at least one connection part for the subpixel of the second color in the one of the second pixels are consistent in the display unit independent of the biased arrangements of the subpixels.

5. (original) The display device according to claim 1, wherein

a first square not crossing the subpixels encloses a region including the subpixels of three colors included in one of the first pixels and excluding other subpixels,

a second square not crossing the subpixels encloses a region including the subpixels of three colors included in one of the second pixels and excluding other subpixels, and

the first square and the second square are arranged without overlapping each other.

REMARKS

Claims 1-5 were rejected.

Claim 1 is amended. Support for the amendments to independent claim 1 comes at least from Fig. 4 and the corresponding portions of the originally-filed specification (paras. [0074]-[0075] of the published application).

Claims 1-5 are currently pending in this application. No new matter is added.

I. Rejection under 35 U.S.C. § 102

In the Office Action, at page 3, claims 1-5 were rejected under 35 U.S.C. § 102 as being anticipated by US 2015/0129856 to Kim ("Kim"). This rejection is respectfully traversed.

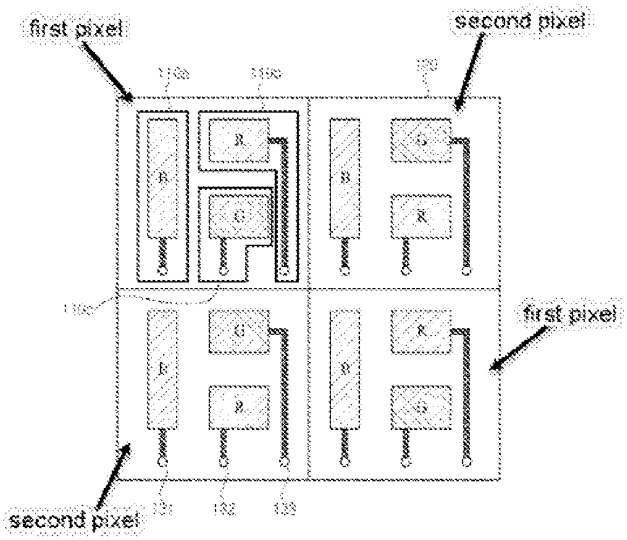
In short, Kim does not disclose:

> a first arrangement in the column direction of the subpixel of the second color and the subpixel of the third color in one of the first pixels and a second arrangement of the subpixel of the second color and the subpixel of the third color in one of the second pixels are identical,
>
> the subpixels of the second color in one of the first pixels and in one of the second pixels that are adjacent to each other in the row direction are aligned in the row direction, [and]
>
> the subpixels of the third color in one of the first pixels and in one of the second pixels that are adjacent to each other in the row direction are aligned in the row direction,

as recited in amended independent claim 1.

Kim is directed to an organic light emitting display panel, illustrated in Fig. 3 (annotated by Office), reproduced below.

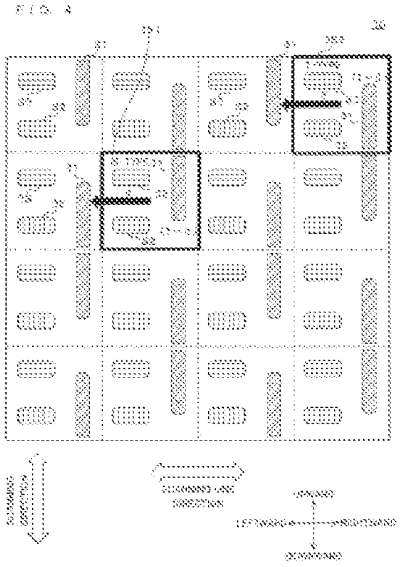
FIG. 3



In contrast to the present invention, Kim does not disclose a first arrangement in the column direction of the subpixel of the second color (alleged to correspond to R in 110b) and the subpixel of the third color (alleged to correspond to G in 110c) in one of the first pixels and a second arrangement of the subpixel of the second color and the subpixel of the third color in one of the second pixels are identical, the subpixels of the second color (alleged to correspond to R in 110b) in one of the first pixels and in one of the second pixels that are adjacent to each other in the row direction are aligned in the row direction, and the subpixels of the third color (alleged to correspond to G in

110c) in one of the first pixels and in one of the second pixels that are adjacent to each other in the row direction are aligned in the row direction.

According to the present invention, on the other hand, a first arrangement in the column direction of the subpixel of the second color and the subpixel of the third color in one of the first pixels and a second arrangement of the subpixel of the second color and the subpixel of the third color in one of the second pixels are identical, the subpixels of the second color in one of the first pixels and in one of the second pixels that are adjacent to each other in the row direction are aligned in the row direction, and the subpixels of the third color in one of the first pixels and in one of the second pixels that are adjacent to each other in the row direction are aligned in the row direction (see Fig. 4, below).



Therefore, Kim does not disclose all the features of amended independent claim 1, and claim 1 is patentably distinguished over the reference relied upon. Claims 2-5 depend either directly or indirectly from amended independent claim 1 and are therefore patentably distinguished over the references relied upon for at least the reasons discussed above.

For example, claim 3 recites "the TFT circuit includes an identical circuit arrangement pattern for the subpixels of the first to third colors." The Office asserts that Fig. 6 of Kim discloses such. Applicant respectfully disagrees.

Fig. 6 of Kim is indicated as being the X-X cross-section of Fig. 5. Fig. 6 merely shows a connection part provided between the first color separated into two and a diagrammatic representation of the cross-section of the TFT. Kim does not disclose or suggest that a TFT circuit includes an identical circuit arrangement pattern for the subpixels of the first to third colors.

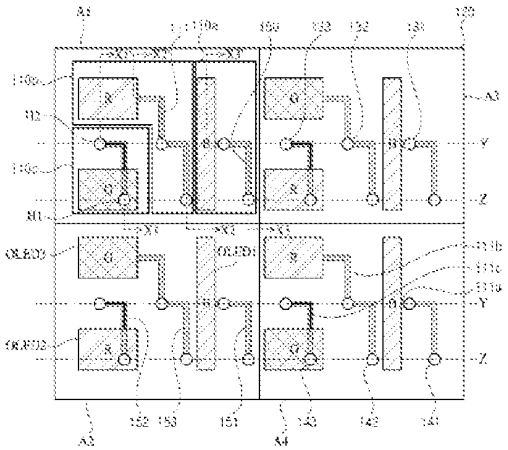
Thus, claims 2-5 are patentably distinguished over the reference relied upon by virtue of their dependency from amended independent claim 1 and also by virtue of their additionally-recited features.

Accordingly, withdrawal of the § 102 rejection is respectfully requested.

II. Other Cited References

Yoon is directed to an organic light emitting display panel and device, illustrated in Fig. 3 (below).

FIG. 3



Yoon does not disclose or suggest:

> a display unit where a plurality of first pixels each including subpixels of three colors and a plurality of second pixels each including subpixels of three colors arranged differently from the subpixels in one of the first pixels are alternately arrayed in a row direction and a column direction, the subpixels of the three colors including a subpixel of a first color, a subpixel of a second color and a subpixel of a third color;…
>
> the subpixels of the second color in one of the first pixels and in one of the second pixels that are adjacent to each other in the row direction are aligned in the row direction,
>
> the subpixels of the third color in one of the first pixels and in one of the second pixels that are adjacent to each other in the row direction are aligned in the row direction,

as recited in amended independent claim 1.

Park is directed to an organic electroluminescent display device, illustrated in Figs. 3 and 8 (below).

FIG. 3

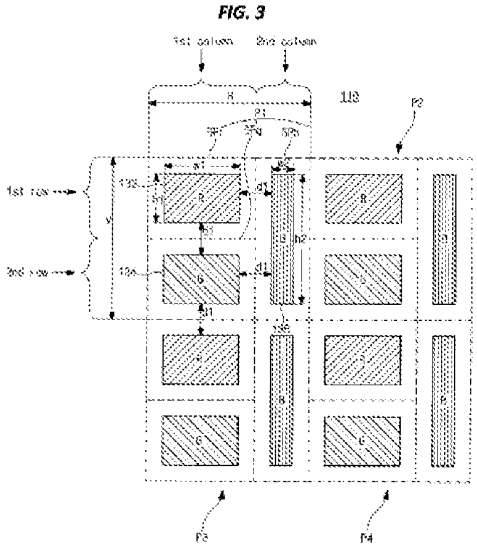
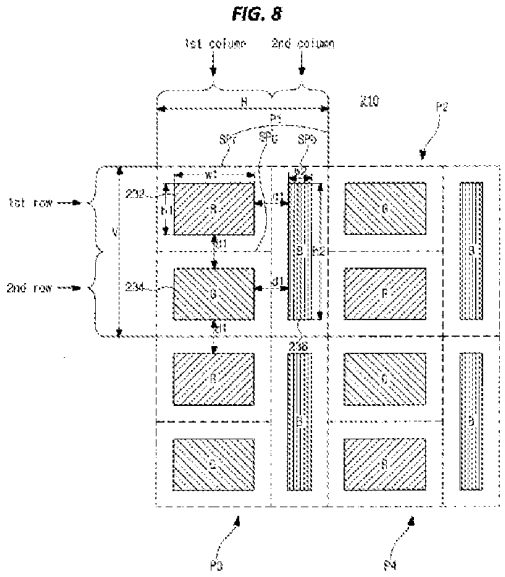


FIG. 8



Park does not disclose or suggest:

a display unit where a plurality of first pixels each including subpixels of three colors and a plurality of second pixels each including subpixels of three colors arranged differently from the subpixels in one of the first pixels are alternately arrayed in a row direction and a column direction, the subpixels of the three colors including a subpixel of a first color, a subpixel of a second color and a subpixel of a third color;…

wherein the subpixel of the second color and the subpixel of the third color in one of the first pixels are arrayed in parallel with the subpixel of the second color and the subpixel of the third color in one of the second pixels,

a first arrangement in the column direction of the subpixel of the second color and the subpixel of the third color in one of the first pixels and a second arrangement of the subpixel of the second color and the subpixel of the third color in one of the second pixels are identical,

the subpixels of the second color in one of the first pixels and in one of the second pixels that are adjacent to each other in the row direction are aligned in the row direction,

the subpixels of the third color in one of the first pixels and in one of the second pixels that are adjacent to each other in the row direction are aligned in the row direction,

the subpixel of the first color in one of the first pixels has a biased arrangement and is positioned toward a side of the subpixel of the second color in an array direction of the subpixel of the second color and the subpixel of the third color,

the subpixel of the first color in one of the second pixels has a biased arrangement and is positioned toward a side of the subpixel of the third color in the array direction of the subpixel of the second color and the subpixel of the third color,

as recited in amended independent claim 1.

III. Conclusion

In view of the present amendment and the foregoing remarks, it is believed that the present application has been placed in condition for allowance. Reconsideration and allowance are respectfully requested.

The Commissioner is hereby authorized in this, concurrent, and future submissions to charge any additional fees(s) or underpayment of fee(s) under 37 C.F.R. §§ 1.16, 1.17, and 41.20 or credit any overpayment of fee(s) to Deposit Account No. 14-1140.

Respectfully submitted,

NIXON & VANDERHYE

/Kari P. Footland/

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Arlington, VA 22203
Telephone: 703-395-3627

KPF/lrs

Electronic Acknowledgement Receipt

EFS ID:	44843689
Application Number:	17301517
International Application Number:	
Confirmation Number:	1637
Title of Invention:	DISPLAY DEVICE AND COMPUTER READABLE MEDIA
First Named Inventor/Applicant Name:	Yojiro MATSUEDA
Customer Number:	466
Filer:	Eric Jensen/Linda Sayyad
Filer Authorized By:	Eric Jensen
Attorney Docket Number:	8317-0050
Receipt Date:	26-JAN-2022
Filing Date:	06-APR-2021
Time Stamp:	17:15:32
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		8317-0050_AMD.pdf	266618 847f5f1d5716f7107a2122c8dd0ffdb8748fc33f	yes	13

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Claims	2	5
	Applicant Arguments/Remarks Made in an Amendment	6	13
Warnings:			
Information:			
	Total Files Size (in bytes):	266618	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.
National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.
New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 17/301,517	Filing Date 04/06/2021	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $100 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $480 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

AMENDMENT	01/26/2022	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 5	Minus	** 20	= 0		x $100 =	0
	Independent (37 CFR 1.16(h))	* 1	Minus	*** 3	= 0		x $480 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	0

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	LIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/TARA J WITCHER/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/301,517	04/06/2021	Yojiro MATSUEDA	8317-0050	1637

466 7590 10/26/2021

NIXON & VANDERHYE, PC
901 NORTH GLEBE ROAD
11TH FLOOR
ARLINGTON, VA 22203

EXAMINER	
CASAREZ, BENJAMIN X.	

ART UNIT	PAPER NUMBER
2692	

NOTIFICATION DATE	DELIVERY MODE
10/26/2021	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

pair_nixon@firsttofile.com
ptomail@nixonvan.com

Office Action Summary	Application No. 17/301,517	Applicant(s) MATSUEDA et al.	
	Examiner Benjamin X Casarez	Art Unit 2692	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 06 April 2021.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL.** 2b) ☑ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 1-5 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1-5 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☑ The drawing(s) filed on 06 April 2021 is/are: a)☑ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☑ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☑ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☑ Certified copies of the priority documents have been received in Application No. 15/255,377.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☑ Notice of References Cited (PTO-892)

2) ☑ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date 04/06/2021 and 04/07/2021.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

DETAILED ACTION

Status

This Office Action is responsive to claims filed for No. 17/301,517 on April 6, 2021. Claims 1-5 are pending and have been examined.

Notice of Pre-AIA or AIA Status

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Priority

2. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119 (a)-(d). The certified copy has been filed in parent Application No. 15/255,377, filed on 09/02/2016.

Information Disclosure Statement

3. The information disclosure statements (IDS's) submitted on 04/06/2021 and 04/07/2021 were filed. The submissions are in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statements are being considered by the examiner.

Claim Rejections - 35 USC § 102

4. In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a)(2) the claimed invention was described in a patent issued under section 151, or in an application for patent published or deemed published under section 122(b), in which the patent or application, as the case may be, names another inventor and was effectively filed before the effective filing date of the claimed invention.

6. Claims 1-5 are rejected under 35 U.S.C. 102(a)(2) as being anticipated by Kim et al. (US 20150129856 A1), hereinafter Kim.

Regarding **Claim 1**, Kim teaches:

A display device **(FIG. 2)** comprising:

a display unit **(FIG. 2: 100; See also FIG. 3)** where a plurality of first pixels each including subpixels of three colors **(See annotated FIG. 3 below: a plurality of first pixels each including subpixels of three colors)** and a plurality of second pixels each including subpixels of three colors arranged differently from the subpixels in one of the first pixels **(See annotated FIG. 3 below: a plurality of second pixels each including subpixels of three colors arranged differently from the subpixels in one of the first pixels)** are alternately arrayed in a row direction and a column direction **(See annotated FIG. 3 below: the first and second pixels are alternately arrayed in a row direction and a column direction)**, the subpixels of the three colors including a subpixel of a first color **(B in 110a)**, a subpixel of a second color **(R in 110b)** and a subpixel of a third color **(G in 110c)** **(See FIG. 3)**;

a thin film transistor (TFT) circuit **(112)** **(See FIG. 6 and paragraph [0045])** disposed below each of the subpixels to control the subpixels **(See FIG. 6: 112 disposed below each of the subpixels; See paragraph [0045])**; and

at least one connection part **(FIG. 3: 131, 132 and 133)** that connects the TFT circuit and one of the subpixels **(See paragraph [0068], lines 9-14)**,

wherein the subpixel of the second color **(R in 110b)** and the subpixel of the third color **(G in 110c)** in one of the first pixels are arrayed in parallel with the subpixel of the second color **(R in 110b)** and the subpixel of the third color **G in (110c)** in one of the second pixels **(See annotated FIG. 3 below: R in 110b and G in 110c in one of the first pixels are arrayed in parallel with R in 110b and G in 110c in one of the second pixels)**,

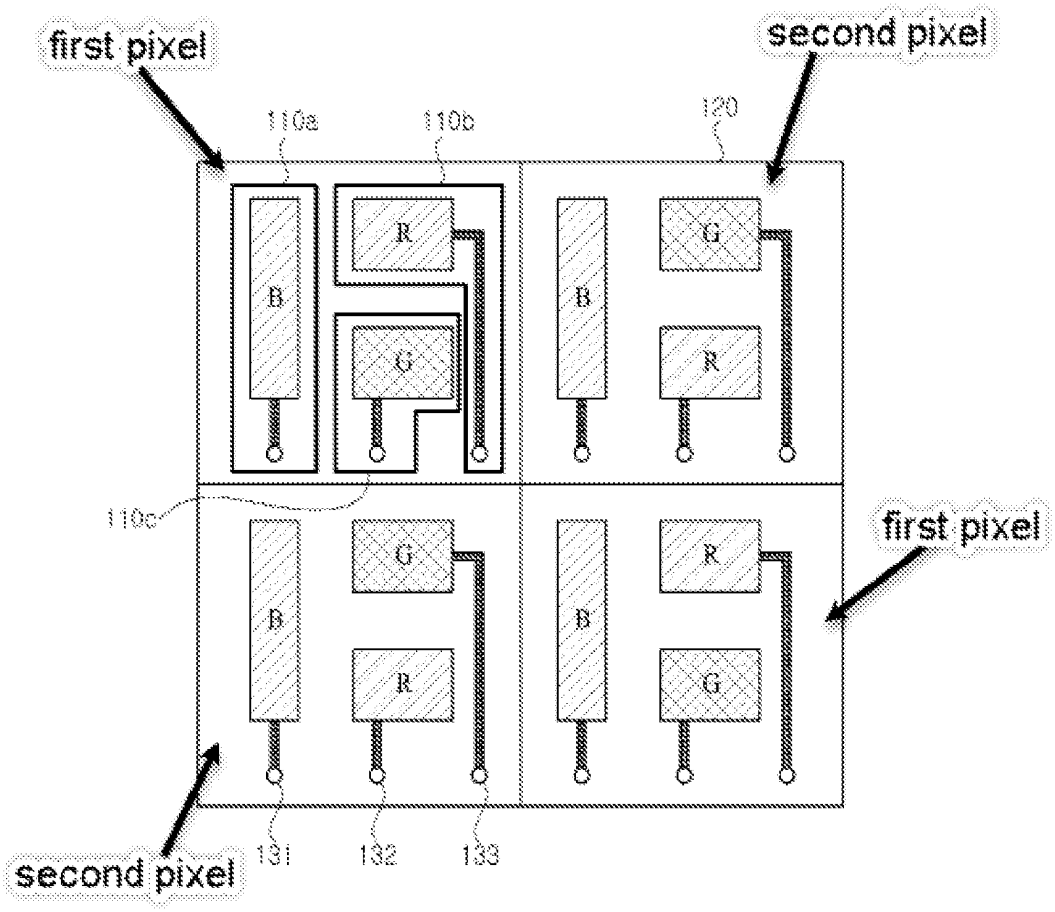
the subpixel of the first color **(B in 110a)** in one of the first pixels has a biased arrangement **(See annotated FIG. 3 below: B in 110a in one of the first pixels has a biased arrangement, meaning it is arranged towards an upper side of the pixel)** and is positioned toward a side of the subpixel of the second color in an array direction of the subpixel of the second color and the subpixel of the third color **(See annotated FIG. 3 below: B in 110a is**

positioned toward a side of R in 110b in an array direction of R in 110b and G in 110c, such that the upper side of B in 110a is aligned with an upper side of R in 110b),

the subpixel of the first color (**B in 110a**) in one of the second pixels has a biased arrangement (**See annotated FIG. 3 below: B in 110a in one of the second pixels has a biased arrangement, meaning it is arranged towards an upper side of the pixel**) and is positioned toward a side of the subpixel of the third color in the array direction of the subpixel of the second color and the subpixel of the third color (**See annotated FIG. 3 below: B in 110a is positioned toward a side of G in 110c in the array direction of R in 110b and G in 110c, such that the upper side of B in 110a is aligned with an upper side of G in 110c**), and

the at least one connection part is disposed at an identical position independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels (**See annotated FIG. 3 below: 131, 132 and 133 are disposed at an identical position independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels**).

FIG. 3



Regarding **Claim 2**, Kim teaches:

The display device according to claim 1, wherein

the subpixel includes an anode electrode (**See FIG. 6: 113 includes an anode**), and

the at least one connection part is a portion that connects an output of the TFT circuit and the anode electrode (**See paragraph [0068], lines 9-14; See paragraph [0105]**).

Regarding **Claim 3**, Kim teaches:

The display device according to claim 1, wherein

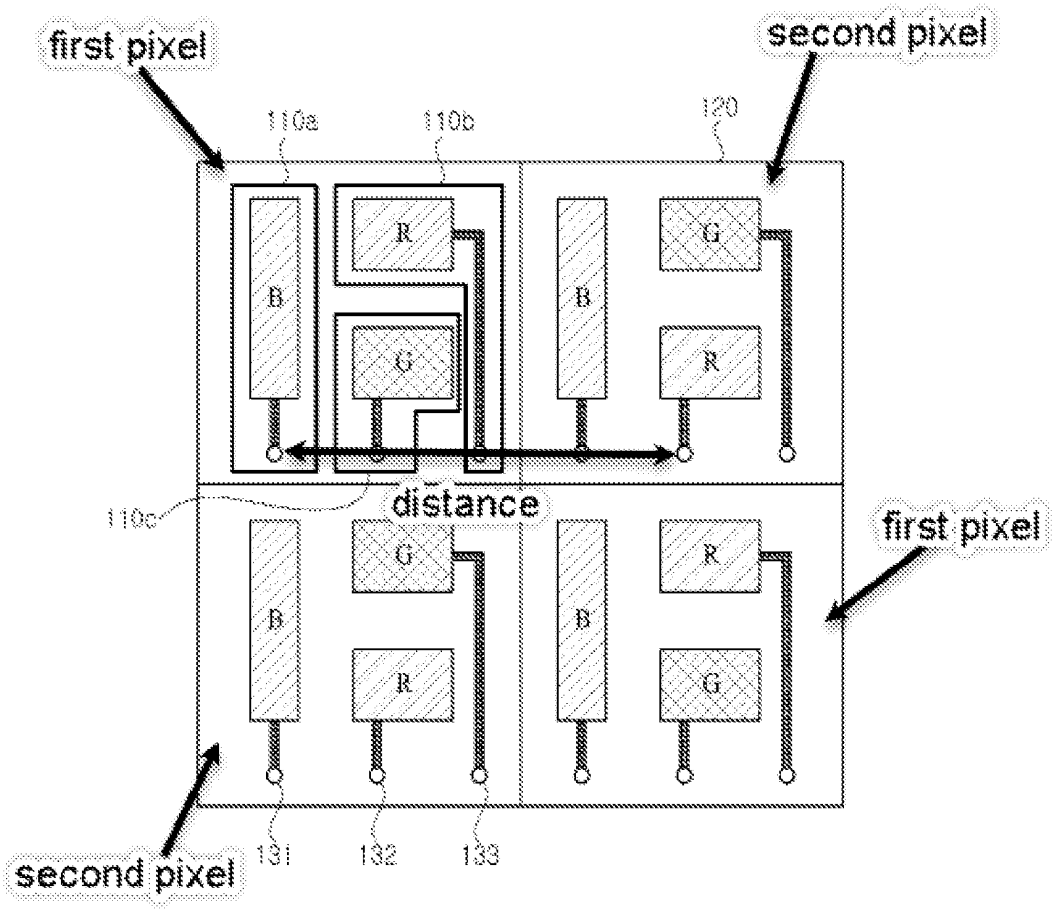
the TFT circuit includes an identical circuit arrangement pattern for the subpixels of the first to third colors (**See FIG. 6: 112 includes an identical circuit arrangement pattern for the subpixels of the first to third colors**).

Regarding **Claim 4**, Kim teaches:

The display device according to claim 1, wherein

in one of the first pixels and one of the second pixels that are adjacent to each other in the row direction, a distance between a first connection part **(131)** of the at least one connection part for the subpixel of the first color **(B in 110a)** in the one of the first pixels and a second connection part **(132)** of the at least one connection part **(132)** for the subpixel of the second color **(R in 110b)** in the one of the second pixels are consistent in the display unit independent of the biased arrangements of the subpixels **(See annotated FIG. 3 below, illustrating the claimed distance in one of the first pixels and one of the second pixels that are adjacent to each other in the row direction. Furthermore, this distance is consistent in the display unit independent of the biased arrangements of the subpixels**).

FIG. 3



Regarding **Claim 5**, Kim teaches:

The display device according to claim 1, wherein

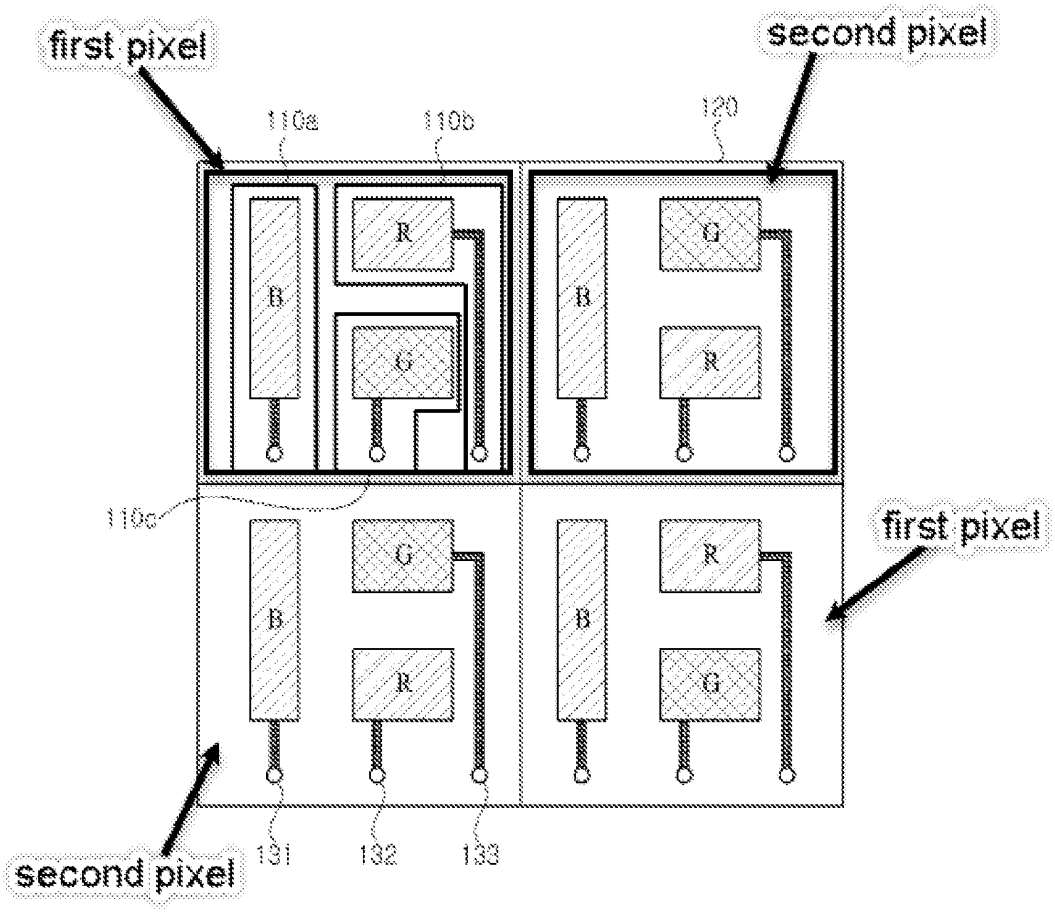
a first square not crossing the subpixels encloses a region including the subpixels of three colors included in one of the first pixels and excluding other subpixels (**See annotated FIG. 3 below: a first square not crossing the subpixels encloses a region including the subpixels of three colors included in one of the first pixels and excluding other subpixels**),

a second square not crossing the subpixels encloses a region including the subpixels of three colors included in one of the second pixels and excluding other subpixels (**See annotated FIG. 3 below: a second square**

not crossing the subpixels encloses a region including the subpixels of three colors included in one of the second pixels and excluding other subpixels), and

the first square and the second square are arranged without overlapping each other (**See annotated FIG. 3 below: the first square and the second square are arranged without overlapping each other**).

FIG. 3



Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Yoon; Sung Wook (US-9245932-B2): pertinent for its disclosure of the arrangement of subpixels in different pixels (See FIG. 3).

PARK; Jong-Hyun (US-20120056531-A1): pertinent for its disclosure of the arrangement of subpixels in different pixels (See FIG. 3).

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Benjamin X Casarez whose telephone number is (571)270-5332. The examiner can normally be reached Monday-Friday: 7:30 am - 5:00 pm.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lun Yi Lao can be reached on (571) 272-7671. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: https://patentcenter.uspto.gov. Visit https://www.uspto.gov/patents/apply/patent-center for more information about Patent Center and https://www.uspto.gov/patents/docx for information about filing in DOCX format. For additional questions, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BENJAMIN X CASAREZ/
Examiner, Art Unit 2692

Notice of References Cited	Application/Control No. 17/301,517	Applicant(s)/Patent Under Reexamination MATSUEDA et al.	
	Examiner Benjamin X Casarez	Art Unit 2692	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20150129856-A1	05-2015	KIM; SO HYUN	H01L27/3248	257/40
*	B	US-9245932-B2	01-2016	Yoon; Sung Wook	H01L27/3216	1/1
*	C	US-20120056531-A1	03-2012	PARK; Jong-Hyun	G09G3/3233	313/506
	D					
	E					
	F					
	G					
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	I					
	J					
	K					
	L					
	M					

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*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/301,517	MATSUEDA et al.
	Examiner	**Art Unit**
	Benjamin X Casarez	2692

CPC - Searched*		
Symbol	**Date**	**Examiner**
G09G2300/0452 (with text search)	10/21/2021	BC
G09G2300/0842 (with text search)	10/21/2021	BC
G09G2300/0861 (with text search)	10/21/2021	BC
G09G2310/0262 (with text search)	10/21/2021	BC
G09G2310/0283 (with text search)	10/21/2021	BC
G09G3/2003 (with text search)	10/21/2021	BC
G09G3/3233 (with text search)	10/21/2021	BC
G09G3/3266 (with text search)	10/21/2021	BC

CPC Combination Sets - Searched*		
Symbol	**Date**	**Examiner**

US Classification - Searched*			
Class	**Subclass**	**Date**	**Examiner**

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	**Date**	**Examiner**
EAST search started	10/21/2021	BC
EAST inventor and assignee name search (with text search)	10/21/2021	BC

/BENJAMIN X CASAREZ/ Examiner, Art Unit 2692	

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/301,517	MATSUEDA et al.
	Examiner	**Art Unit**
	Benjamin X Casarez	2692

Interference Search			
US Class/CPC Symbol	**US Subclass/CPC Group**	**Date**	**Examiner**

/BENJAMIN X CASAREZ/ Examiner, Art Unit 2692	

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/301,517	MATSUEDA et al.
	Examiner	Art Unit
	Benjamin X Casarez	2692

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	10/21/2021								
	1	✓								
	2	✓								
	3	✓								
	4	✓								
	5	✓								

Bibliographic Data

Application No: 17/301,517

Foreign Priority claimed: (•) Yes ( ) No

35 USC 119 (a-d) conditions met: [✓] Yes [ ] No [ ] Met After Allowance

Verified and Acknowledged: /BENJAMIN X CASAREZ/ (Examiner's Signature) BC (Initials)

Title: DISPLAY DEVICE AND COMPUTER READABLE MEDIA

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
04/06/2021	345	2692	8317-0050
RULE			

APPLICANTS

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INVENTORS

Yojiro MATSUEDA, Kanagawa, JAPAN

Kenichi TAKATORI, Kanagawa, JAPAN

CONTINUING DATA

This application is a CON of 15255377 09/02/2016ABN

FOREIGN APPLICATIONS

JAPAN JP2015-173215 09/02/2015

JAPAN JP2016-104437 05/25/2016

IF REQUIRED, FOREIGN LICENSE GRANTED**

04/14/2021

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FILING FEE RECEIVED

$1,820

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	5	("20090121983" | "20100270912" | "20110260951" | "20110260952" | "20110291550").PN.	US-PGPUB; USPAT	OR	ON	2021/10/21 16:57
S2	18	("20060103615" | "20060158466" | "20090051627" | "20090322215" | "20120092238" | "20130286262" | "20150035729" | "20150061978" | "20150235617" | "20160019825" | "20160027404" | "20160104413" | "20160126287" | "20160155416" | "20160379540" | "20170092174" | "20170132969" | "9767741").PN.	US-PGPUB; USPAT	OR	ON	2021/10/21 17:01
S3	1,943	(nlt).IN,AANM,AS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/10/21 17:10
S4	885	((MATSUEDA near2 YOJIRO) (TAKATORI near2 KENICHI)).IN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/10/21 17:10
S5	2,691	S3 S4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/10/21 17:10
S6	50	S5 and ((subpixel (sub near2 pixel)) with (color colour)) and ((thin near2 film) TFT) and bias$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/10/21 17:11
S7	7	"56011000".FMID.	US-PGPUB; USPAT; FPRS; JPO	OR	ON	2021/10/21 17:14

S8	72	("20010030508" | "20020015110" | "20020186214" | "20030071943" | "20040113875" | "20040201558" | "20050140907" | "20050168423" | "20060077139" | "20080074041" | "20090121983" | "20090302331" | "20090322215" | "20100270912" | "20110050604" | "20110291550" | "20120056531" | "20140197396" | "20140240279" | "20140246654" | "20140333852" | "20140354617" | "20150236077" | "20160148981" | "20170061849" | "20170352312" | "20180143721" | "20180315801" | "4450439" | "5563621" | "6714206" | "6771028" | "8179365" | "9013098" | "9733527").PN. OR ("10312295" | "10452182" | "10671200" | "11107399" | "2015/0379924" | "2016/0104413" | "2016/0148981" | "2018/0143721" | "2018/0254306" | "2020/0004370" | "2020/0035156" | "9508285").URPN.	US-PGPUB; USPAT; USOCR	OR	ON	2021/10/21 17:17
S9	7	"56011000".FMID.	US-PGPUB; USPAT; FPRS; JPO	OR	ON	2021/10/21 17:22
S10	12	"51357858".FMID.	US-PGPUB; USPAT; FPRS; JPO	OR	ON	2021/10/21 17:37
S11	2	("20210225247").PN.	US-PGPUB; USPAT; USOCR; DERWENT	OR	ON	2021/10/21 17:42
S12	19,328	(G09G2300/0452).CPC.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/10/21 17:42
S13	88,828	(G09G2300/0842 OR G09G2300/0861 OR G09G2310/0262 OR G09G2310/0283 OR G09G3/2003 OR G09G3/3233 OR G09G3/3266).CPC.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/10/21 17:42
S14	9,475	S12 and S13	US-PGPUB; USPAT; USOCR; FPRS; EPO;	OR	ON	2021/10/21 17:42

			JPO; DERWENT; IBM_TDB			
S15	31	S14 and ((thin near2 film) TFT) and ((color colour) with (row column) with alternat$4 with arrangement)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/10/21 17:43
S16	38	S14 and (shar$4 with (color$3 colour$3 subpixel (sub near pixel)) with (adjacent$3 neighbour$4 neighbor$4 near$2 surround$3)) same (divid$4 division separat$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/10/21 17:52
S17	403	S12 and (alternating$2 with (column row))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/10/21 17:56
S18	241	S17 and ((thin near2 film) TFT)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/10/21 17:56
S19	13	("20070002084" | "20090121983" | "20120169682" | "20130057521" | "20130113363").PN. OR ("2015/0129856" | "9013098").URPN.	US-PGPUB; USPAT; USOCR	OR	ON	2021/10/21 18:04
S20	349	S12 and ((thin near2 film) TFT) with anode	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/10/21 18:12
S21	36	S20 and (shar$4 with (color$3 colour$3 subpixel (sub near pixel)) with (adjacent$3 neighbour$4 neighbor$4 near$2 surround$3))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/10/21 18:12

S22	6	"54931178".FMID.	US-PGPUB; USPAT; FPRS; JPO	OR	ON	2021/10/21 18:51
S23	7	"56011000".FMID.	US-PGPUB; USPAT; FPRS; JPO	OR	ON	2021/10/21 18:51
S24	4	("20120056531" | "20130222217" | "9013098").PN. OR ("9245932").URPN.	US-PGPUB; USPAT; USOCR	OR	ON	2021/10/21 18:53

EAST Search History (Interference)

<This search history is empty>

10/21/2021 7:01:45 PM
C:\Users\bcasarez\Documents\EAST\Workspaces\17301517.wsp

PATENT
8317-0050

IN THE U.S. PATENT AND TRADEMARK OFFICE

In re application of

Yojiro MATSUEDA et al. Conf.

Application No. **NEW CONTINUATION** Group

Filed April 6, 2021 Examiner

DISPLAY DEVICE AND COMPUTER READABLE MEDIA

INFORMATION DISCLOSURE STATEMENT
(SUBMISSION WITH CONTINUATION-IN-PART OR RULE 1.53(b) CONTINUATION OR DIVISIONAL APPLICATION)

Assistant Commissioner for Patents April 6, 2021
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Pursuant to 37 C.F.R. §§ 1.97 and 1.98, applicant(s) hereby submit(s) an Information Disclosure Statement for consideration by the Examiner.

I. LIST OF PATENTS, PUBLICATIONS OR OTHER INFORMATION

The patents, publications, or other information submitted for consideration by the Office are listed on the PTO-1449 form(s), attached hereto.

II. REFERENCES PREVIOUSLY CITED OR SUBMITTED

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /B.X.C/

Docket No. 8317-0050

Pursuant to 37 C.F.R. § 1.98(d), consideration of information listed on the PTO-1449 form(s) is requested since any patents, publications, or other information which are listed on the PTO-1449 form(s) but for which copies are not enclosed herewith, were previously cited by or submitted to the PTO in one of the following applications which has been relied upon for an earlier filing date under 35 U.S.C. § 120:

U.S. Appl. No(s).	U.S. Filing Date(s)
15/255,377	September 2, 2016

III. FEES

This Information Disclosure Statement is being filed concurrent with the filing of a continuation-in-part, continuation, or divisional patent application; therefore, no fee is required.

If the Examiner has any questions concerning this IDS or requires a copy of any of the references cited but not provided, he/she is requested to contact the undersigned. If it is determined that this IDS has been filed under the wrong rule, the PTO is requested to consider this IDS under the proper rule (with a petition if necessary) and charge the appropriate fee to Deposit Account No. 14-1140.

The Commissioner is hereby authorized in this, concurrent, and future submissions to charge any additional fees(s) or underpayment of fee(s) under 37 C.F.R. §§ 1.16 and 1.17 or credit any overpayment of fee(s) to Deposit Account No. 14-1140.

Respectfully submitted,

NIXON & VANDERHYE

/Eric Jensen/

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EJ/rc

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Docket No. 8317-0050

Enclosures: ☒ PTO/SB/08a

☐ References

☐ Foreign Search Report

☐ Other:

/BENJAMIN X CASAREZ/ 10/21/2021

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Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	17301517
Filing Date	2021-04-06
First Named Inventor	Yojiro MATSUEDA
Art Unit	2611
Examiner Name	
Attorney Docket Number	8317-0050

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	9767741	B2	2017-09-19	Bai et al.	

If you wish to add additional U.S. Patent citation information please click the Add button. Add

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20060103615	A1	2006-05-18	Shih et al.	
	2	20060158466	A1	2006-07-20	Chien et al.	
	3	20090051627	A1	2009-02-26	Ihata et al.	
	4	20150035729	A1	2015-02-05	HUANG	
	5	20150235617	A1	2015-08-20	GUO et al.	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /B.X.C/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17301517
	Filing Date	2021-04-06
	First Named Inventor	Yojiro MATSUEDA
	Art Unit	2611
	Examiner Name	
	Attorney Docket Number	8317-0050

	6	20160019825	A1	2016-01-21	GUO et al.	
	7	20160027404	A1	2016-01-28	Nakanishi et al.	
	8	20160104413	A1	2016-04-14	MATSUEDA et al.	
	9	20160126287	A1	2016-05-05	Her et al.	
	10	20160155416	A1	2016-06-02	Lee	
	11	20160379540	A1	2016-12-29	GUO et al.	
	12	20170092174	A1	2017-03-30	Cote et al.	
	13	20170132969	A1	2017-05-11	GUO et al.	
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	15	20130286262	A1	2013-10-31	HAYASHI et al.	
	16	20090322215	A1	2009-12-31	SUNG et al.	

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17301517
	Filing Date	2021-04-06
	First Named Inventor	Yojiro MATSUEDA
	Art Unit	2611
	Examiner Name	
	Attorney Docket Number	8317-0050

	17	20150061978	A1	2015-03-05	Shih et al.	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2]	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
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	1	Non-Final Office Action issued in co-pending U.S. Application No. 15/255,377 dated June 28, 2018	
	2	Final Office Action issued in co-pending U.S. Application No. 15/255,377 dated January 24, 2019	
	3	Non-Final Office Action issued in co-pending U.S. Application No. 15/255,377 dated May 1, 2019	
	4	Final Office Action issued in co-pending U.S. Application No. 15/255,377 dated November 8, 2019	
	5	Non-Final Office Action issued in co-pending U.S. Application No. 15/255,377 dated March 19, 2020	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /B.X.C/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17301517
	Filing Date	2021-04-06
	First Named Inventor	Yojiro MATSUEDA
	Art Unit	2611
	Examiner Name	
	Attorney Docket Number	8317-0050

	6	Final Office Action issued in co-pending U.S. Application No. 15/255,377 dated September 21, 2020
	7	Non-Final Office Action issued in co-pending U.S. Application No. 15/255,377 dated January 6, 2021

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EXAMINER SIGNATURE

Examiner Signature	/BENJAMIN X CASAREZ/	Date Considered	10/21/2021

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /B.X.C/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	17301517
Filing Date	2021-04-06
First Named Inventor	Yojiro MATSUEDA
Art Unit	2611
Examiner Name	
Attorney Docket Number	8317-0050

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Eric Jensen/	Date (YYYY-MM-DD)	2021-04-07
Name/Print	Eric Jensen	Registration Number	37855

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /B.X.C/

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /B.X.C/

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	
Filing Date	2021-04-06
First Named Inventor	Yojiro MATSUEDA
Art Unit	
Examiner Name	
Attorney Docket Number	8317-0050

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20110260951	A1	2011-10-27	HWANG et al.	
	2	20110260952	A1	2011-10-27	HWANG et al.	
	3	20110291550	A1	2011-12-01	KIM et al.	Corresponds to JP2011-249334
	4	20100270912	A1	2010-10-28	KO	
	5	20090121983	A1	2009-05-14	SUNG et al.	

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	
Filing Date	2021-04-06
First Named Inventor	Yojiro MATSUEDA
Art Unit	
Examiner Name	
Attorney Docket Number	8317-0050

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2]	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	2002-044570	JP	A	2002-02-08	MITSUBISHI ELECTRIC CORP	English abstract and translation provided	☒
	2	H09-179529	JP	A	1997-07-11	SHARP KK	English abstract and translation provided	☒
	3	101373575	CN	A	2009-02-25	CANNON KK	Cited in the Chinese Office Action; English abstract and translation provided	☒
	4	2011-249334	JP		2011-12-08		Cited in the specification	☐

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Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	Office Action issued in Japanese Patent Application No. 2016-104437 dated March 31, 2020 with English abstract provided	
	2	Office Action issued in Chinese Patent Application No. 201610772958.1 dated December 17, 2019 with English translation provided	☒
	3	Office Action issued in Japanese Patent Application No. 2016-104437 dated November 10, 2020	☒

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	2021-04-06
	First Named Inventor	Yojiro MATSUEDA
	Art Unit	
	Examiner Name	
	Attorney Docket Number	8317-0050

EXAMINER SIGNATURE			
Examiner Signature	/BENJAMIN X CASAREZ/	Date Considered	10/21/2021

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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	First Named Inventor	Yojiro MATSUEDA
	Art Unit	
	Examiner Name	
	Attorney Docket Number	8317-0050

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See attached certification statement.

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☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Eric Jensen/	Date (YYYY-MM-DD)	2021-04-06
Name/Print	Eric Jensen	Registration Number	37855

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www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
17/301,517	04/06/2021	Yojiro MATSUEDA	8317-0050

CONFIRMATION NO. 1637

466
NIXON & VANDERHYE, PC
901 NORTH GLEBE ROAD
11TH FLOOR
ARLINGTON, VA 22203

PUBLICATION NOTICE

OC000000127161172

Title:DISPLAY DEVICE AND COMPUTER READABLE MEDIA

Publication No.US-2021-0225247-A1
Publication Date:07/22/2021

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Public Records Division. The Public Records Division can be reached by telephone at (571) 272-3150 or (800) 972-6382, by facsimile at (571) 273-3250, by mail addressed to the United States Patent and Trademark Office, Public Records Division, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently https://portal.uspto.gov/pair/PublicPair. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Managment, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

PTO/AIA/14 (02-18)
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	8317-0050
	Application Number	
Title of Invention	DISPLAY DEVICE AND COMPUTER READABLE MEDIA	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2:

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Yojiro		MATSUEDA	

Residence Information (Select One) ○ US Residency ◉ Non US Residency ○ Active US Military Service

City	Kanagawa	Country of Residence	JP

Mailing Address of Inventor:

Address 1	~~c/o NLT Technologies, Ltd.~~ c/o Tianma Japan, Ltd.		
Address 2	~~1753, Shimonumabe, Nakahara-ku, Kawasaki~~ 1-1-2, Kashimada, Saiwai-ku, Kawasaki		
City	Kanagawa	**State/Province**	
Postal Code	~~211-8666~~ 212-0058	**Country**	JP

Inventor 2 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Kenichi		TAKATORI	

Residence Information (Select One) ○ US Residency ◉ Non US Residency ○ Active US Military Service

City	Kanagawa	Country of Residence	JP

Mailing Address of Inventor:

Address 1	~~c/o NLT Technologies, Ltd.~~ c/o Tianma Japan, Ltd.		
Address 2	~~1753, Shimonumabe, Nakahara-ku, Kawasaki~~ 1-1-2, Kashimada, Saiwai-ku, Kawasaki		
City	Kanagawa	**State/Province**	
Postal Code	~~211-8666~~ 212-0058	**Country**	JP

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

PTO/AIA/14 (02-18)
Approved for use through 11/30/2020. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	8317-0050
	Application Number	
Title of Invention	DISPLAY DEVICE AND COMPUTER READABLE MEDIA	

Enter either Customer Number or complete the Correspondence Information section below. For further information see 37 CFR 1.33(a).			
☐ An Address is being provided for the correspondence Information of this application.			
Customer Number	466		
Email Address	pair_nixon@firsttofile.com	Add Email	Remove Email

Application Information:

Title of the Invention	DISPLAY DEVICE AND COMPUTER READABLE MEDIA		
Attorney Docket Number	8317-0050	**Small Entity Status Claimed**	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	34	**Suggested Figure for Publication (if any)**	

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	◉ Customer Number	○ US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	466		

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	8317-0050
	Application Number	
Title of Invention	DISPLAY DEVICE AND COMPUTER READABLE MEDIA	

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	Continuation of	15255377	2016-09-02

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button.

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)[i] the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

			Remove
Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)
2015-173215	JP	2015-09-02	
			Remove
Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)
2016-104437	JP	2016-05-25	

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button.

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	8317-0050
	Application Number	
Title of Invention	DISPLAY DEVICE AND COMPUTER READABLE MEDIA	

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

PTO/AIA/14 (02-18)
Approved for use through 11/30/2020. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	8317-0050
	Application Number	
Title of Invention	DISPLAY DEVICE AND COMPUTER READABLE MEDIA	

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant 1

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

◉ Assignee	○ Legal Representative under 35 U.S.C. 117	○ Joint Inventor
○ Person to whom the inventor is obligated to assign.	○ Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor:

If the Applicant is an Organization check here. ☒

Organization Name	~~NLT Technologies, Ltd.~~ TIANMA MICROELECTRONICS CO., LTD.		
Mailing Address Information For Applicant:			
Address 1	~~1753, Shimonumabe, Nakahara-ku~~ ROOM 1918, TIANMA BUILDING		
Address 2	~~Kawasaki~~ LIUXIAN AVE, NORTH STATION COMMUNITY, MINZHI STREET, LONGHUA DISTRICT,		
City	~~Kanagawa~~ SHENZHEN	**State/Province**	
Country	~~JP~~ CN	Postal Code	~~211-8666~~
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button.

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

PTO/AIA/14 (02-18)
Approved for use through 11/30/2020. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	8317-0050
	Application Number	
Title of Invention	DISPLAY DEVICE AND COMPUTER READABLE MEDIA	

Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

If the Assignee or Non-Applicant Assignee is an Organization check here. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1			
Address 2			
City		**State/Province**	
Country		Postal Code	
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button.

Signature:

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). **However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).**

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Eric Jensen/			Date (YYYY-MM-DD)	2021-04-06
First Name	Eric	Last Name	Jensen	Registration Number	37855

Additional Signature may be generated within this form by selecting the Add button.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	8317-0050
	Application Number	
Title of Invention	DISPLAY DEVICE AND COMPUTER READABLE MEDIA	

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1 The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3 A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent CooperationTreaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/301,517	**04/20/2021 11:32:10 AM ET**	**8317-0050**

Title of Invention

DISPLAY DEVICE AND COMPUTER READABLE MEDIA

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	1637	FILED BY	Ryan Carter
PATENT CENTER #	60179556	FILING DATE	04/06/2021
CUSTOMER #	466	FIRST NAMED INVENTOR	Yojiro MATSUEDA
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	ERIC JENSEN

Documents

TOTAL DOCUMENTS: 2

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
8317-0050 ADS_CORRECTED.pdf	8	Application Data Sheet	160 KB
Warning: This is not a USPTO supplied ADS fillable form. Data in the form cannot be automatically loaded to other USPTO systems.			
8317-0050 3_73_STATEMENT.pdf	3	Assignee showing of ownership per 37 CFR 3.73	117 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)

8317-0050 ADS_CORRECTED.pdf	C6F3CB3424FEF40C74611D7BBD92E380DEAF972D3CEC8BA3 D918250C064A4EE269528E6C430400D90B37DD7BDCC549598 77531447AA53A80ABC38DCE84DAB4EA
8317-0050 3_73_STATEMENT.pdf	3866FCE02C553B0DBC3B324835485BB1BD27063500A4D3F08 6CF494A0EECD33330B16EC9CD59B4C699D4636FFF073EE919 D4D0D7940934C2988F02DB6B999714

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: TIANMA MICROELECTRONICS CO., LTD.

Application No./Patent No.: 17/301,517 Filed/Issue Date: April 6, 2021

Titled: DISPLAY DEVICE AND COMPUTER READABLE MEDIA

TIANMA MICROELECTRONICS CO., LTD., a corporation

(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☑ The assignee of the entire right, title, and interest.

2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):

   ☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.

   ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (*e.g.*, bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

B. ☑ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: Yojiro MATSUEDA and Kenichi TAKATORI To: NLT TECHNOLOGIES, LTD.

   The document was recorded in the United States Patent and Trademark Office at
   Reel 055830, Frame 0074, or for which a copy thereof is attached.

2. From: TIANMA JAPAN, LTD. (FORMERLY NLT TECHNOLOGIES, LTD.) To: TIANMA MICROELECTRONICS CO., LTD.

   The document was recorded in the United States Patent and Trademark Office at
   Reel 055946, Frame 0252, or for which a copy thereof is attached.

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450**.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(c)

3. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

4. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

5. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

6. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☑ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Eric Jensen/	April 20, 2021
Signature	Date
Eric Jensen	37855
Printed or Typed Name	Title or Registration Number

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 17/301,517

APPLICATION AS FILED - PART I

	(Column 1)	(Column 2)	SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE($)	FEE($)		RATE($)	FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	320
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	700
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	800
TOTAL CLAIMS (37 CFR 1.16(i))	5 minus 20 =	*			OR	x 100 =	0.00
INDEPENDENT CLAIMS (37 CFR 1.16(h))	1 minus 3 =	*				x 480 =	0.00
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						0.00
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							0.00
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	1820

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
17/301,517	04/06/2021	2611	1820	8317-0050	5	1

CONFIRMATION NO. 1637

FILING RECEIPT

466
NIXON & VANDERHYE, PC
901 NORTH GLEBE ROAD
11TH FLOOR
ARLINGTON, VA 22203

OC000000124878664

Date Mailed: 04/15/2021

Receipt is acknowledged of this non-provisional utility patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF FIRST INVENTOR, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection.

Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please submit a written request for a corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections provided that the request is grantable.

Inventor(s)

Yojiro MATSUEDA, Kanagawa, JAPAN;
Kenichi TAKATORI, Kanagawa, JAPAN;

Applicant(s)

NLT Technologies, Ltd., Kanagawa, JAPAN;

Power of Attorney: The patent practitioners associated with Customer Number 00466

Domestic Priority data as claimed by applicant

This application is a CON of 15/255,377 09/02/2016

Foreign Applications (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.)
JAPAN 2015-173215 09/02/2015 No Access Code Provided
JAPAN 2016-104437 05/25/2016 No Access Code Provided

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

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If Required, Foreign Filing License Granted: 04/14/2021

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 17/301,517**

Projected Publication Date: 07/22/2021

Non-Publication Request: No

Early Publication Request: No
Title

DISPLAY DEVICE AND COMPUTER READABLE MEDIA

Preliminary Class

345

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

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Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

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PTO/SB/08a (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	17301517
Filing Date	2021-04-06
First Named Inventor	Yojiro MATSUEDA
Art Unit	2611
Examiner Name	
Attorney Docket Number	8317-0050

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	9767741	B2	2017-09-19	Bai et al.	

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20060103615	A1	2006-05-18	Shih et al.	
	2	20060158466	A1	2006-07-20	Chien et al.	
	3	20090051627	A1	2009-02-26	Ihata et al.	
	4	20150035729	A1	2015-02-05	HUANG	
	5	20150235617	A1	2015-08-20	GUO et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17301517
	Filing Date	2021-04-06
	First Named Inventor	Yojiro MATSUEDA
	Art Unit	2611
	Examiner Name	
	Attorney Docket Number	8317-0050

	6	20160019825	A1	2016-01-21	GUO et al.	
	7	20160027404	A1	2016-01-28	Nakanishi et al.	
	8	20160104413	A1	2016-04-14	MATSUEDA et al.	
	9	20160126287	A1	2016-05-05	Her et al.	
	10	20160155416	A1	2016-06-02	Lee	
	11	20160379540	A1	2016-12-29	GUO et al.	
	12	20170092174	A1	2017-03-30	Cote et al.	
	13	20170132969	A1	2017-05-11	GUO et al.	
	14	20120092238	A1	2012-04-19	HWANG et al.	
	15	20130286262	A1	2013-10-31	HAYASHI et al.	
	16	20090322215	A1	2009-12-31	SUNG et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17301517
	Filing Date	2021-04-06
	First Named Inventor	Yojiro MATSUEDA
	Art Unit	2611
	Examiner Name	
	Attorney Docket Number	8317-0050

	17	20150061978	A1	2015-03-05	Shih et al.	

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FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							

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NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	Non-Final Office Action issued in co-pending U.S. Application No. 15/255,377 dated June 28, 2018	
	2	Final Office Action issued in co-pending U.S. Application No. 15/255,377 dated January 24, 2019	
	3	Non-Final Office Action issued in co-pending U.S. Application No. 15/255,377 dated May 1, 2019	
	4	Final Office Action issued in co-pending U.S. Application No. 15/255,377 dated November 8, 2019	
	5	Non-Final Office Action issued in co-pending U.S. Application No. 15/255,377 dated March 19, 2020	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17301517
	Filing Date	2021-04-06
	First Named Inventor	Yojiro MATSUEDA
	Art Unit	2611
	Examiner Name	
	Attorney Docket Number	8317-0050

	6	Final Office Action issued in co-pending U.S. Application No. 15/255,377 dated September 21, 2020
	7	Non-Final Office Action issued in co-pending U.S. Application No. 15/255,377 dated January 6, 2021

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EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17301517
	Filing Date	2021-04-06
	First Named Inventor	Yojiro MATSUEDA
	Art Unit	2611
	Examiner Name	
	Attorney Docket Number	8317-0050

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Eric Jensen/	Date (YYYY-MM-DD)	2021-04-07
Name/Print	Eric Jensen	Registration Number	37855

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

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9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/301,517	**04/07/2021 09:05:46 AM ET**	**8317-0050**

Title of Invention

DISPLAY DEVICE AND COMPUTER READABLE MEDIA

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	1637	FILED BY	Ryan Carter
PATENT CENTER #	60172081	FILING DATE	-
CUSTOMER #	466	FIRST NAMED INVENTOR	Yojiro MATSUEDA
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	ERIC JENSEN

Documents

TOTAL DOCUMENTS: 8

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
8317-0050 IDS_1.pdf	6	Information Disclosure Statement (IDS) Form (SB08)	1011 KB
20191108_8317-0035_OAF.pdf	27	Other Reference-Patent/App/Search documents	1301 KB
20200921_8317-0035_OAF.pdf	35	Other Reference-Patent/App/Search documents	1757 KB
20200319_8317-0035_OA.pdf	-	Other Reference-Patent/App/Search documents	1479 KB
20210106_8317-0035_OA.pdf	37	Other Reference-Patent/App/Search documents	1883 KB

20180628_8317-0035_OA.pdf	20	Other Reference-Patent/App/Search documents	907 KB
20190124_8317-0035_OAF.pdf	24	Other Reference-Patent/App/Search documents	2641 KB
20190501_8317-0035_OA.pdf	30	Other Reference-Patent/App/Search documents	1383 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
8317-0050 IDS_1.pdf	802A106C4FEDE5728F296F85095531C32198F99DF7FA9C1ACC49FA130457F6869FC94EBD4170F1FCEF71C86212D949FBCC063E366ABAB6AF2295EC65846E6ED9
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20210106_8317-0035_OA.pdf	7C7C10C58C8C34AAF688965E929F71DEA20358F310DBC20CE2108DB5F9C7A267AF08EA88C5A657DCB2DAB414E17507AAA8408172FA890615373C915E07FED5C8
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20190124_8317-0035_OAF.pdf	F48099930CADE12BDECA7E9A58CE0684C4363024262F18998

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20190501_8317-0035_OA.pdf	7C803731F473E2BD17C39F835CE5AA833E94E5ACBA8036B23 E1B35F12AFF65A05634B3CFA5DE27B8C644A7D66B29E56E23 8DE73C3A62531FAF3131EA40C24D43

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New International Application Filed with the USPTO as a Receiving Office

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Y&T Form C (form PTO/AIA/82B equivalent)
Attorney Docket No.

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I hereby revoke all previous powers of attorney given in the application identified in the attached transmittal

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Customer Number
00466

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c/o YOUNG & THOMPSON
209 Madison Street, Suite 500
Alexandria, VA 22314

Customer Number
00466

Address all telephone calls to Young & Thompson at 703-521-2297. Facsimile: 703-685-0573.

I am the Applicant:

- ☐ Inventor or Joint Inventor
- ☐ Legal Representative of a Deceased or Legally Incapacitated Inventor
- ☒ Assignee or Person to Whom the Inventor is Under an Obligation to Assign
- ☐ Person Who Otherwise Shows Sufficient *Proprietary* Interest (*e.g.*, a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document)

SIGNATURE of Applicant for Patent

Signature	Susumu Ohi	Date	14/Oct/2014
Name	Susumu Ohi		
Title and Company	President NLT Technologies, Ltd.		

NOTE: Signature - This form must be signed by the applicant or applicant's representative in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications.

☐ Total of form(s) is submitted.

FIG. 1

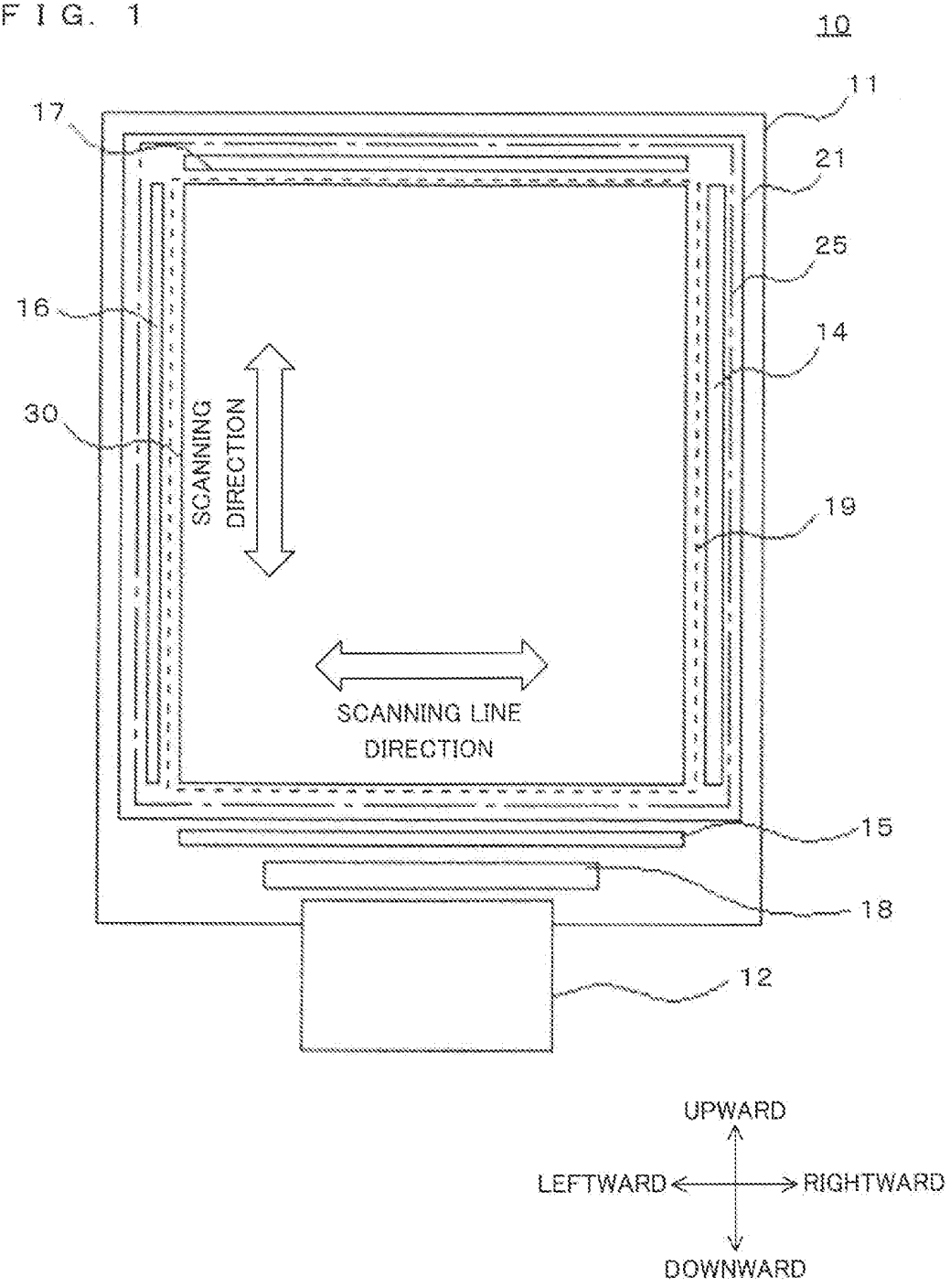
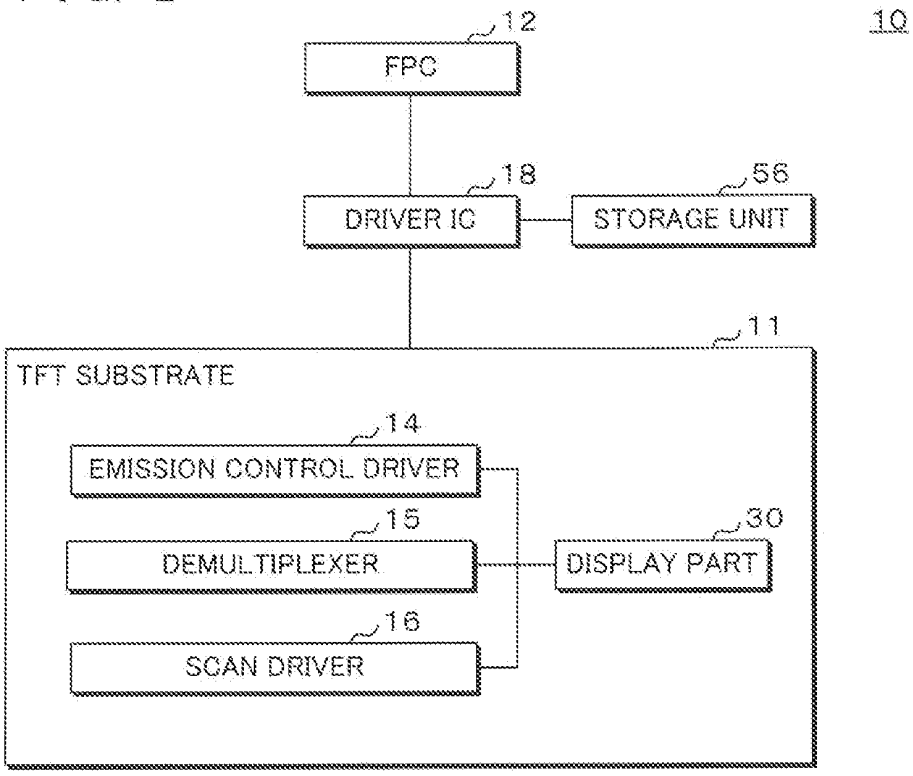
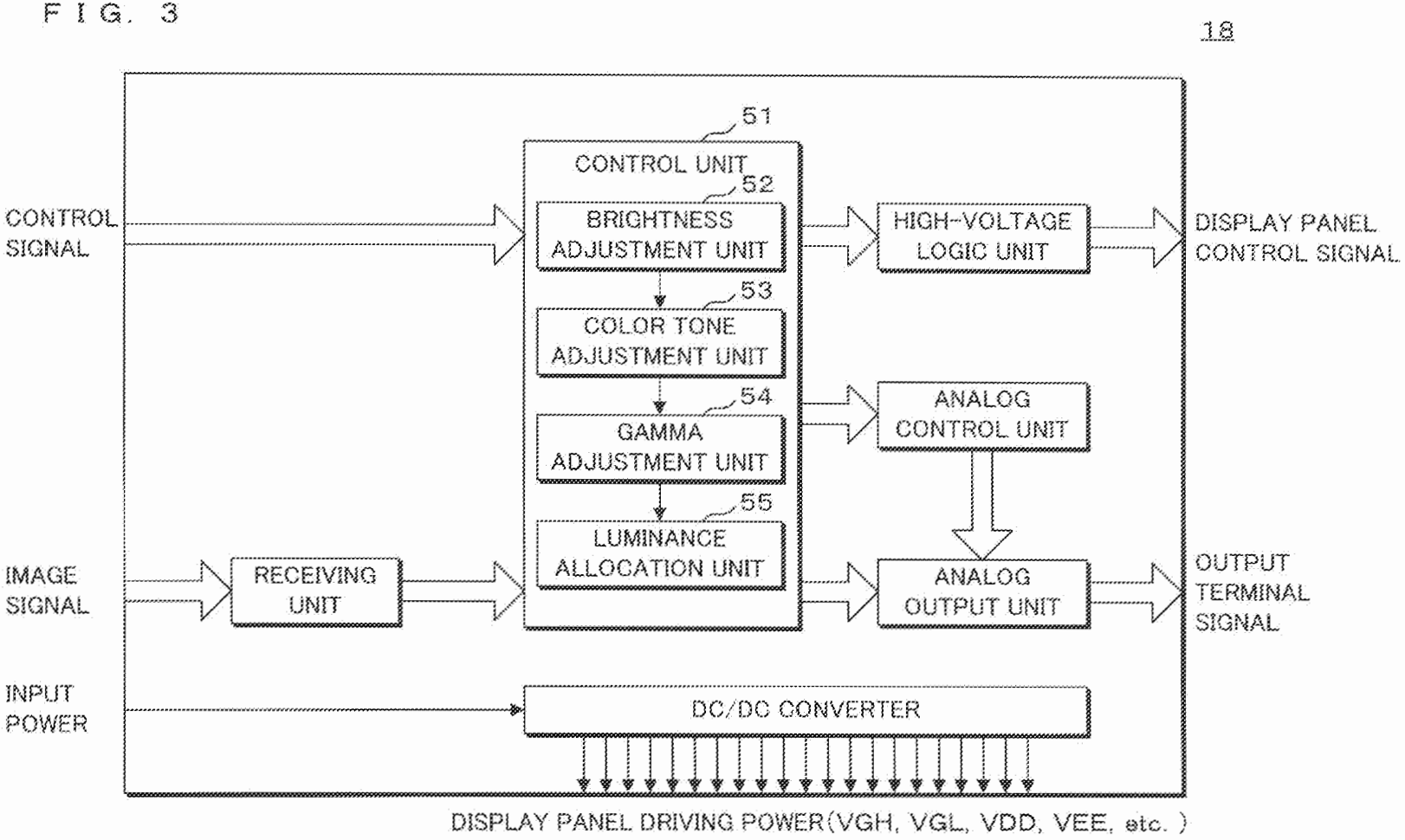

10
11
17
21
25
16
14
30
SCANNING DIRECTION
19
SCANNING LINE DIRECTION
15
18
12
UPWARD
LEFTWARD
RIGHTWARD
DOWNWARD

FIG. 2


10
12
FPC
18
DRIVER IC
56
STORAGE UNIT
11
TFT SUBSTRATE
14
EMISSION CONTROL DRIVER
15
DEMULTIPLEXER
30
DISPLAY PART
16
SCAN DRIVER

F I G. 3


18
51
CONTROL UNIT
52
BRIGHTNESS ADJUSTMENT UNIT
53
COLOR TONE ADJUSTMENT UNIT
54
GAMMA ADJUSTMENT UNIT
55
LUMINANCE ALLOCATION UNIT
CONTROL SIGNAL
IMAGE SIGNAL
INPUT POWER
RECEIVING UNIT
HIGH-VOLTAGE LOGIC UNIT
ANALOG CONTROL UNIT
ANALOG OUTPUT UNIT
DC/DC CONVERTER
DISPLAY PANEL CONTROL SIGNAL
OUTPUT TERMINAL SIGNAL
DISPLAY PANEL DRIVING POWER(VGH, VGL, VDD, VEE, etc.)

687

FIG. 4

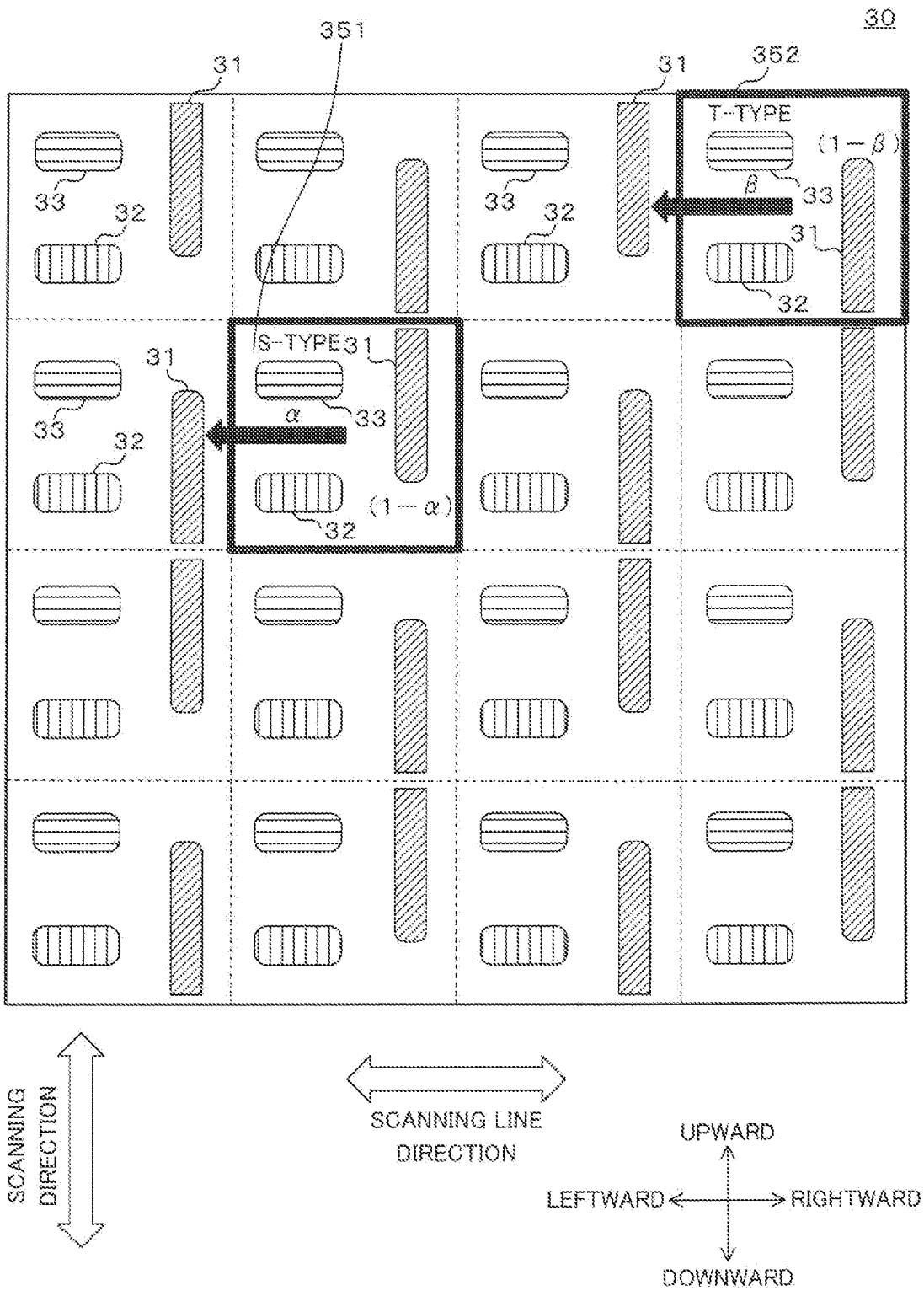

30
351
352
31
T-TYPE
(1−β)
β
33
32
S-TYPE
α
(1−α)
SCANNING DIRECTION
SCANNING LINE DIRECTION
UPWARD
LEFTWARD
RIGHTWARD
DOWNWARD

FIG. 5A

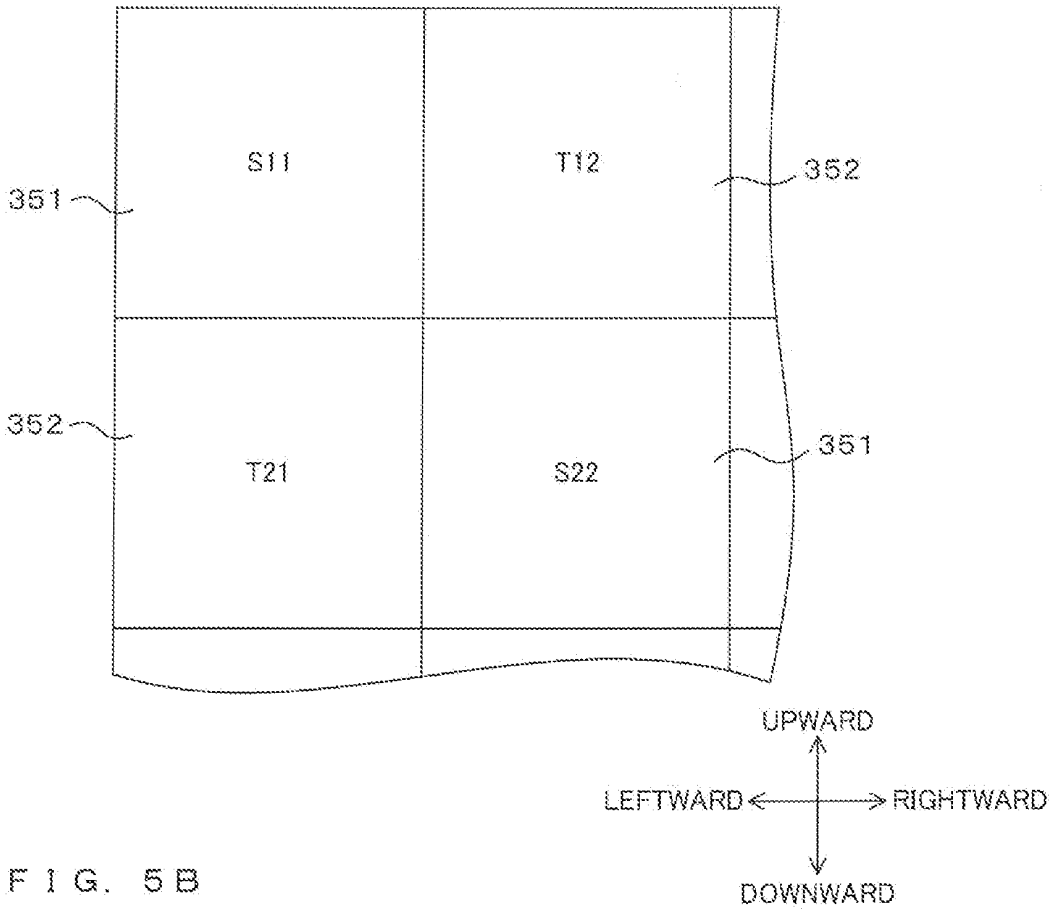

S11
T12
351
352
352
T21
S22
351
UPWARD
LEFTWARD
RIGHTWARD
DOWNWARD

FIG. 5B

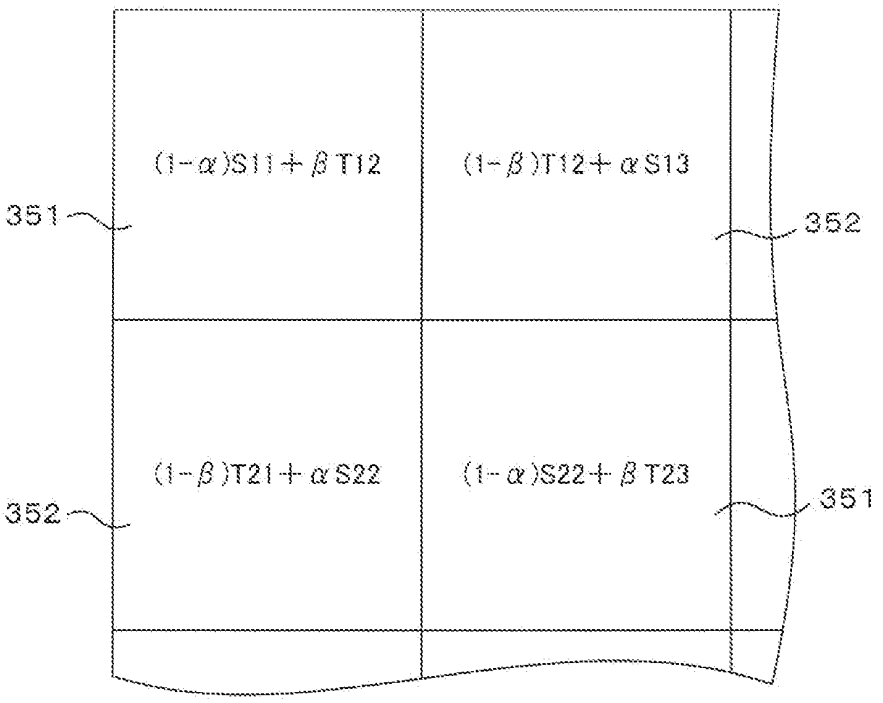

(1−α)S11+βT12
(1−β)T12+αS13
351
352
(1−β)T21+αS22
(1−α)S22+βT23
352
351

FIG. 6

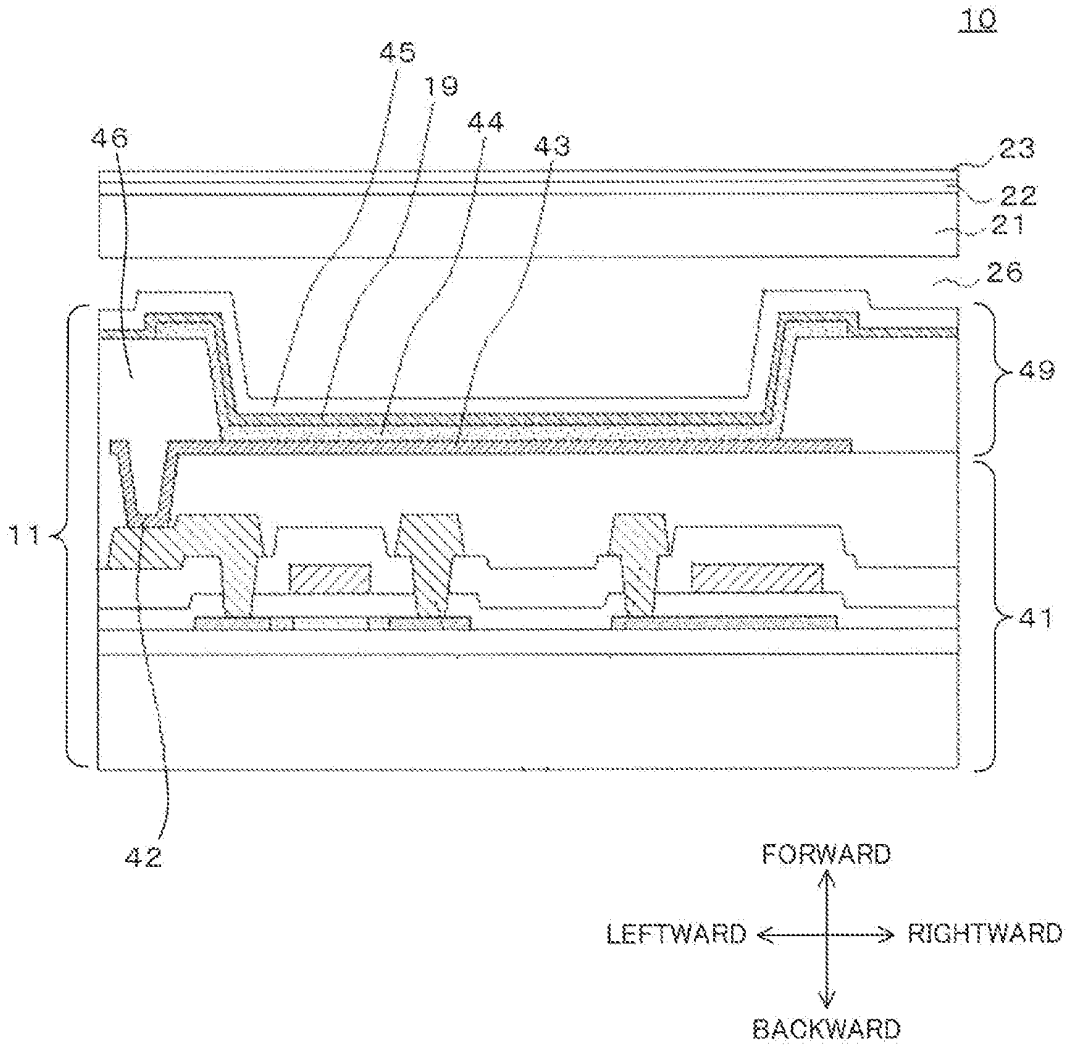

10
45
19
44
43
46
23
22
21
26
49
11
41
42
FORWARD
LEFTWARD
RIGHTWARD
BACKWARD

FIG. 7

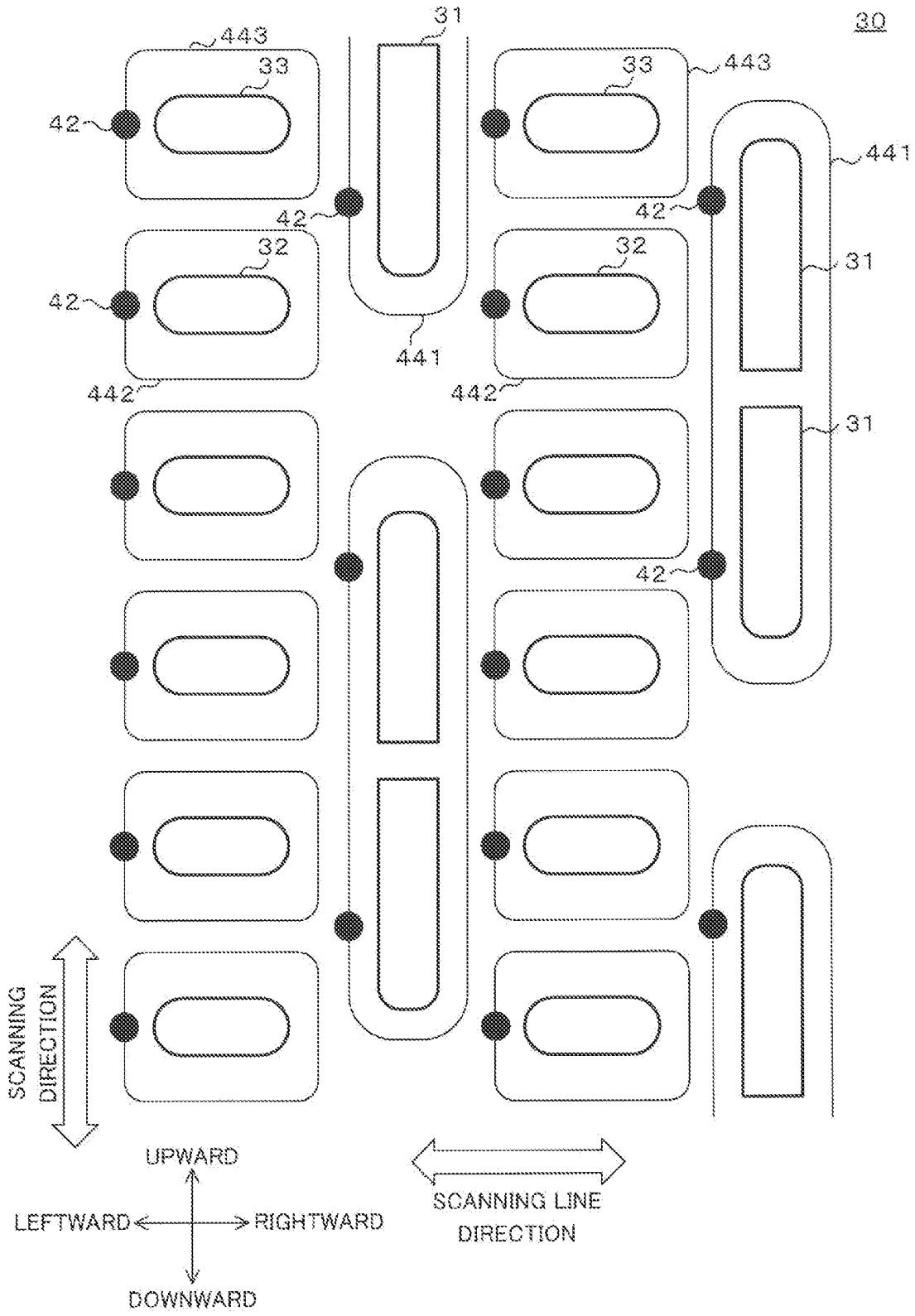

30
31
443
33
42
32
441
442
SCANNING DIRECTION
UPWARD
LEFTWARD
RIGHTWARD
DOWNWARD
SCANNING LINE DIRECTION

FIG. 8

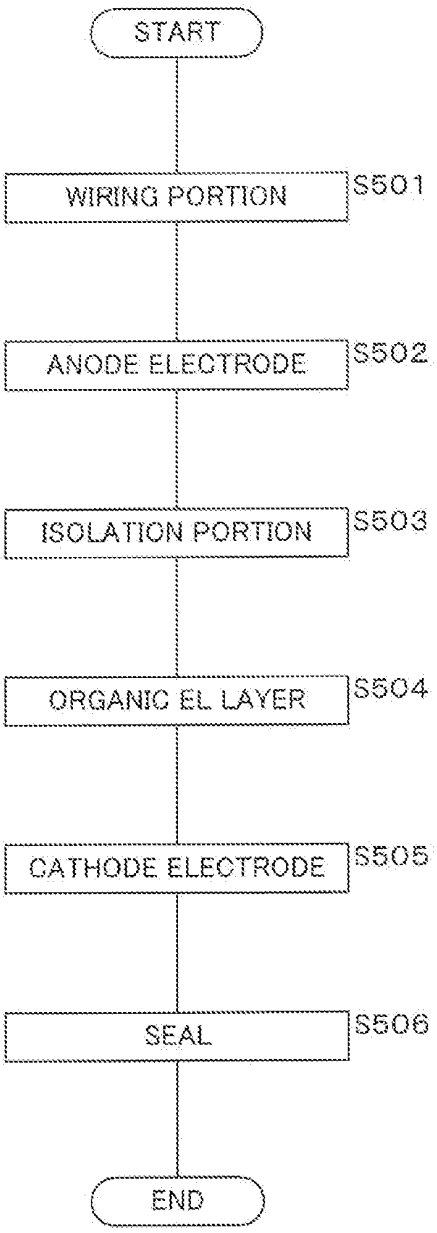
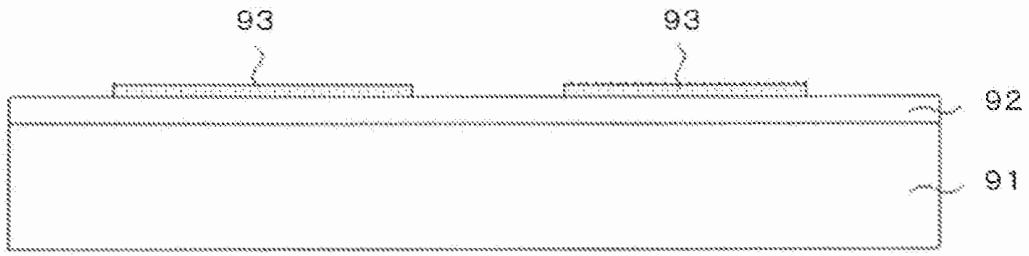

START
WIRING PORTION
S501
ANODE ELECTRODE
S502
ISOLATION PORTION
S503
ORGANIC EL LAYER
S504
CATHODE ELECTRODE
S505
SEAL
S506
END

FIG. 9



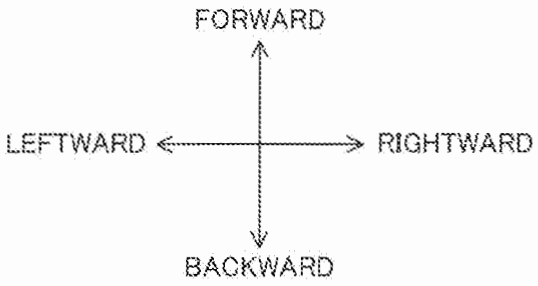
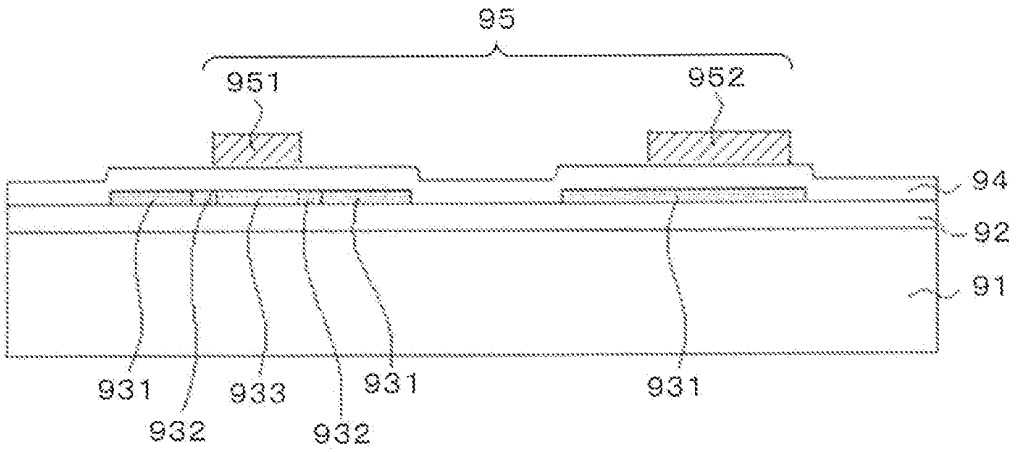


FIG. 10


95
951
952
94
92
91
931
933
931
931
932
932

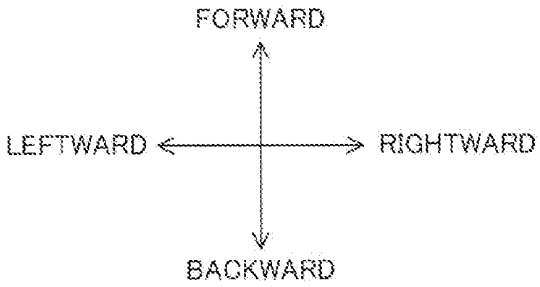
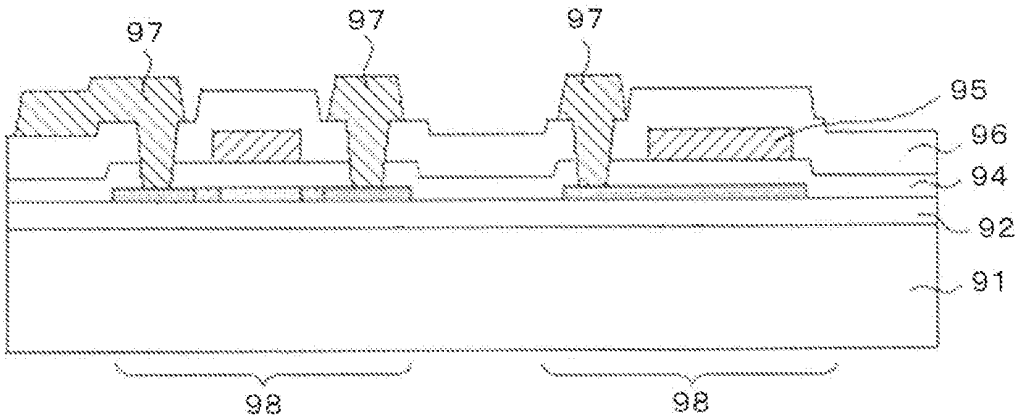

FORWARD
LEFTWARD
RIGHTWARD
BACKWARD

FIG. 11


97
97
97
95
96
94
92
91
98
98

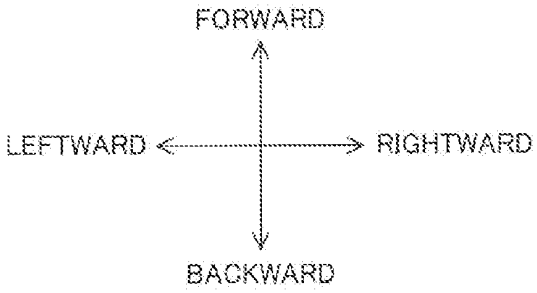

FORWARD
LEFTWARD
RIGHTWARD
BACKWARD

FIG. 12

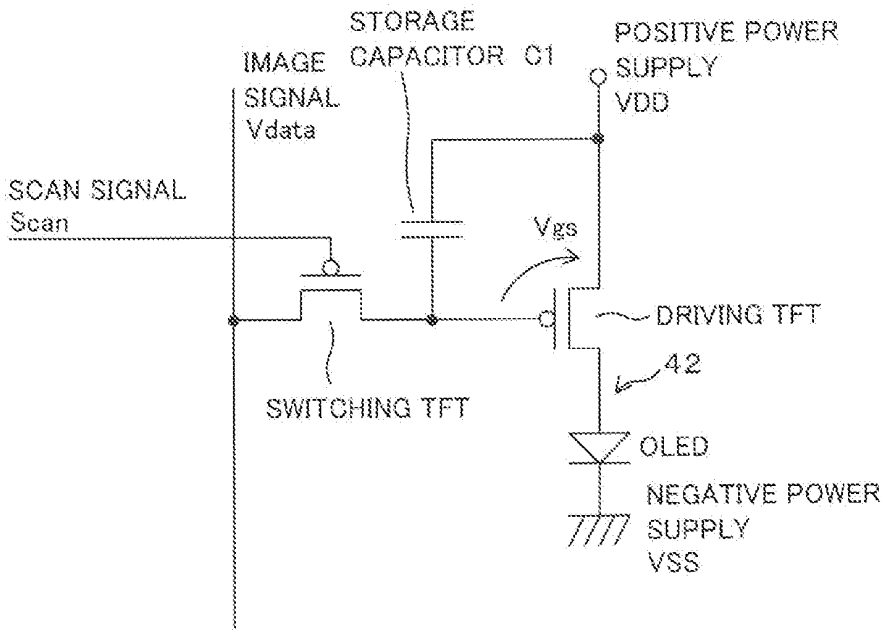

STORAGE
CAPACITOR C1
POSITIVE POWER
SUPPLY
VDD
IMAGE
SIGNAL
Vdata
SCAN SIGNAL
Scan
Vgs
DRIVING TFT
42
SWITCHING TFT
OLED
NEGATIVE POWER
SUPPLY
VSS

FIG. 13

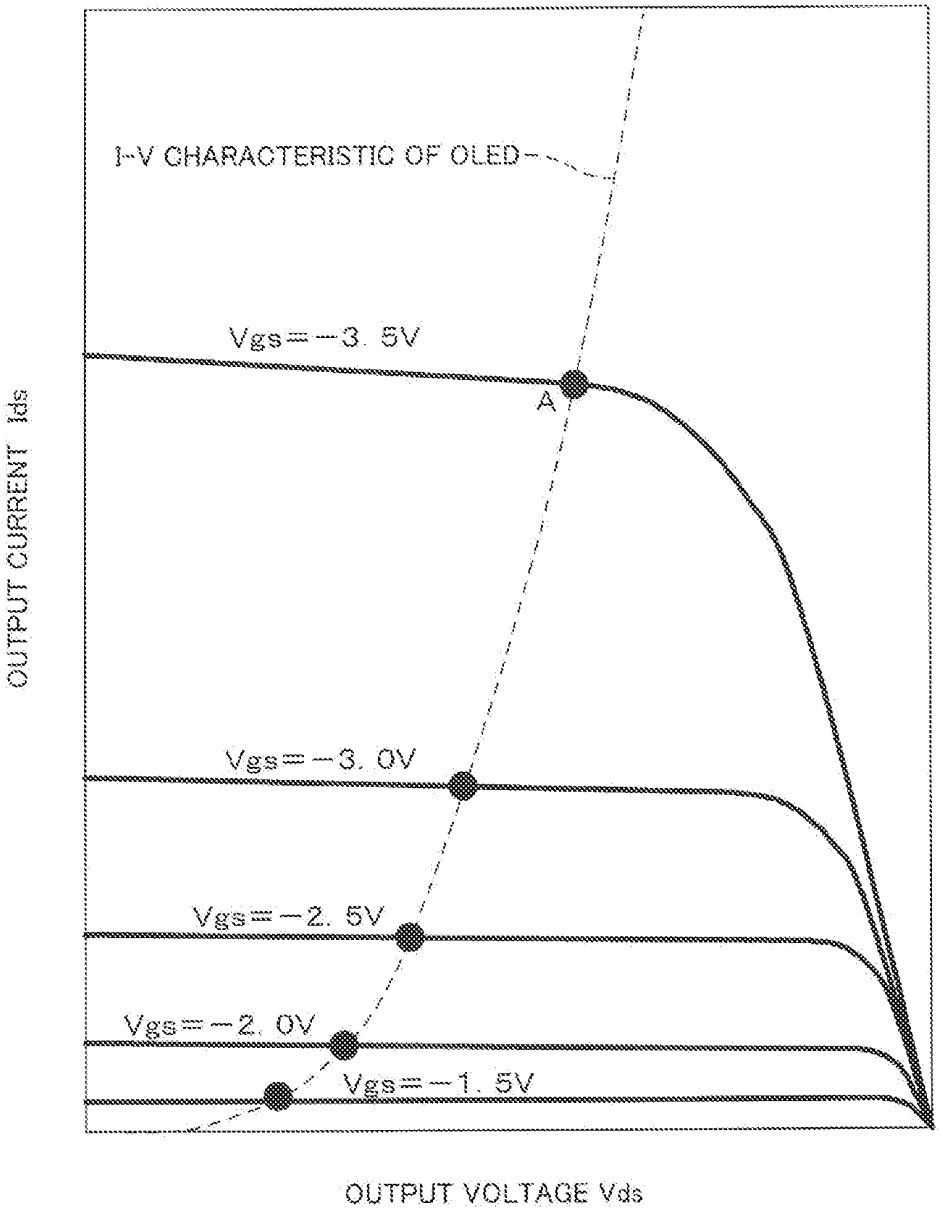

I-V CHARACTERISTIC OF OLED
Vgs=−3.5V
A
Vgs=−3.0V
Vgs=−2.5V
Vgs=−2.0V
Vgs=−1.5V
OUTPUT CURRENT Ids
OUTPUT VOLTAGE Vds

FIG. 14

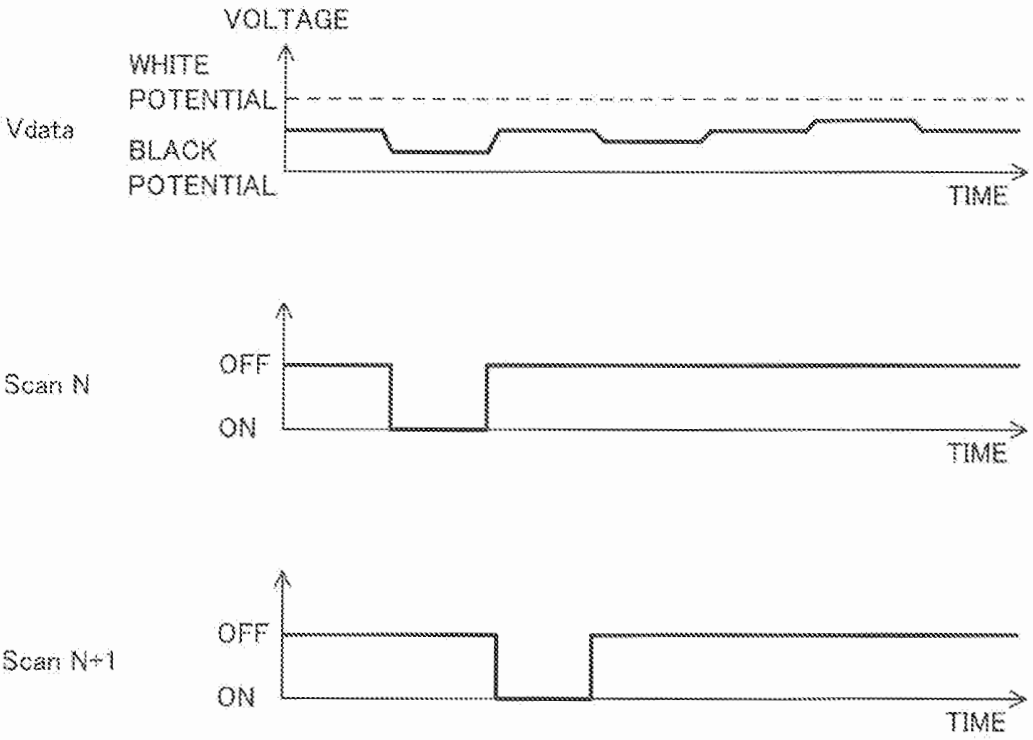

VOLTAGE
WHITE POTENTIAL
BLACK POTENTIAL
Vdata
TIME
Scan N
OFF
ON
TIME
Scan N+1
OFF
ON
TIME

FIG. 15

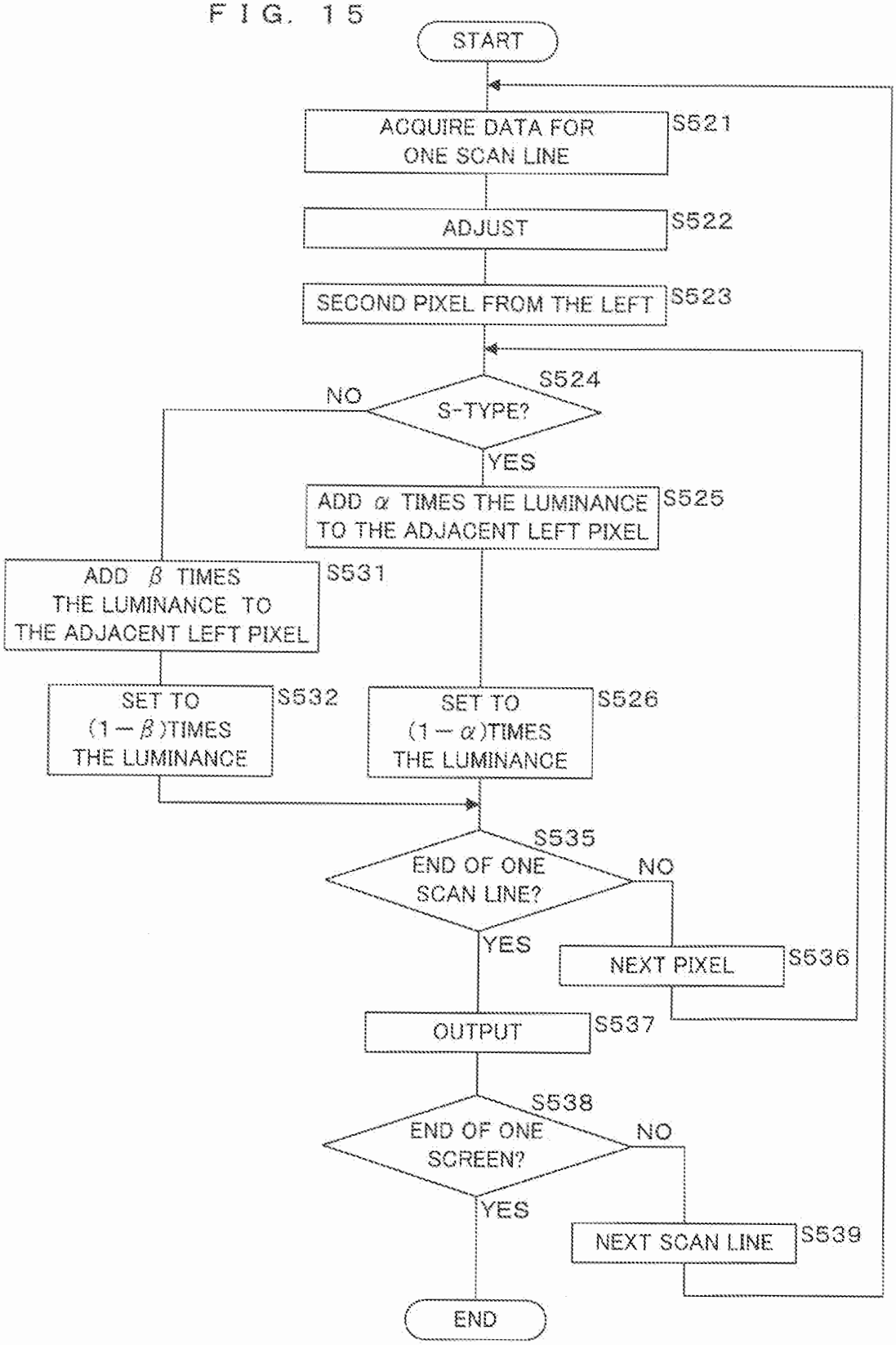

START
ACQUIRE DATA FOR ONE SCAN LINE
S521
ADJUST
S522
SECOND PIXEL FROM THE LEFT
S523
S524
S-TYPE?
NO
YES
ADD α TIMES THE LUMINANCE TO THE ADJACENT LEFT PIXEL
S525
ADD β TIMES THE LUMINANCE TO THE ADJACENT LEFT PIXEL
S531
SET TO (1−β)TIMES THE LUMINANCE
S532
SET TO (1−α)TIMES THE LUMINANCE
S526
S535
END OF ONE SCAN LINE?
NO
YES
NEXT PIXEL
S536
OUTPUT
S537
S538
END OF ONE SCREEN?
NO
YES
NEXT SCAN LINE
S539
END

FIG. 16A

0%	0%	0%	0%
0%	80%	100%	0%
0%	90%	100%	0%
0%	0%	0%	0%

$\alpha = 0.6$
$\beta = 0.4$

FIG. 16B

0%	0%	0%	0%
48%	72%	60%	0%
36%	114%	40%	0%
0%	0%	0%	0%

FIG. 16C

0%	0%	0%	0%
48%	72%	60%	0%
36%	100%	54%	0%
0%	0%	0%	0%

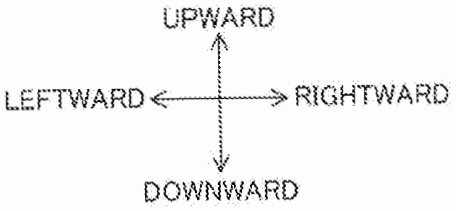


FIG. 17

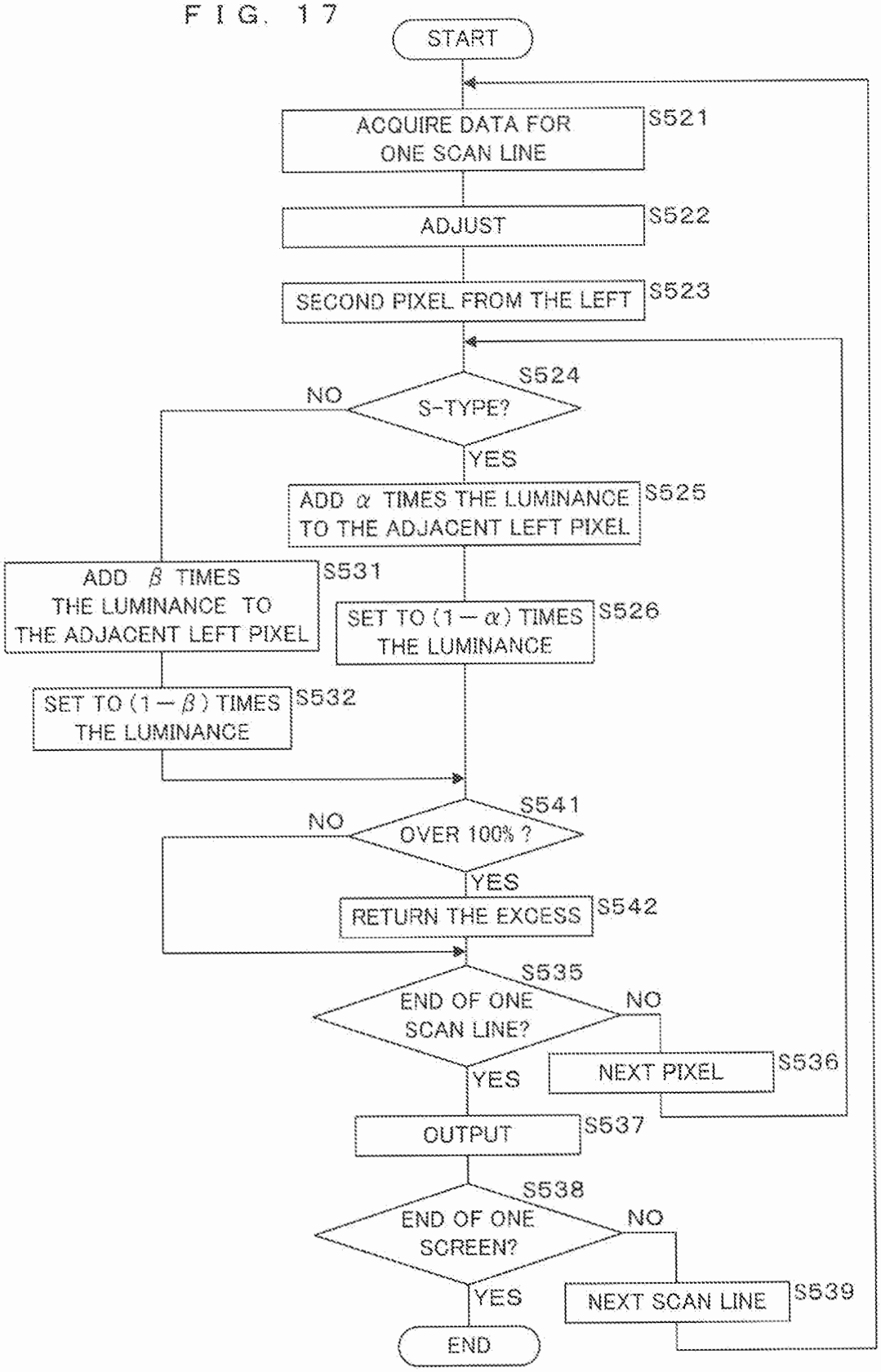

START
ACQUIRE DATA FOR ONE SCAN LINE
S521
ADJUST
S522
SECOND PIXEL FROM THE LEFT
S523
S524
S-TYPE?
NO
YES
ADD α TIMES THE LUMINANCE TO THE ADJACENT LEFT PIXEL
S525
ADD β TIMES THE LUMINANCE TO THE ADJACENT LEFT PIXEL
S531
SET TO (1−α) TIMES THE LUMINANCE
S526
SET TO (1−β) TIMES THE LUMINANCE
S532
S541
OVER 100% ?
NO
YES
RETURN THE EXCESS
S542
S535
END OF ONE SCAN LINE?
NO
YES
NEXT PIXEL
S536
OUTPUT
S537
S538
END OF ONE SCREEN?
NO
YES
NEXT SCAN LINE
S539
END

FIG. 18

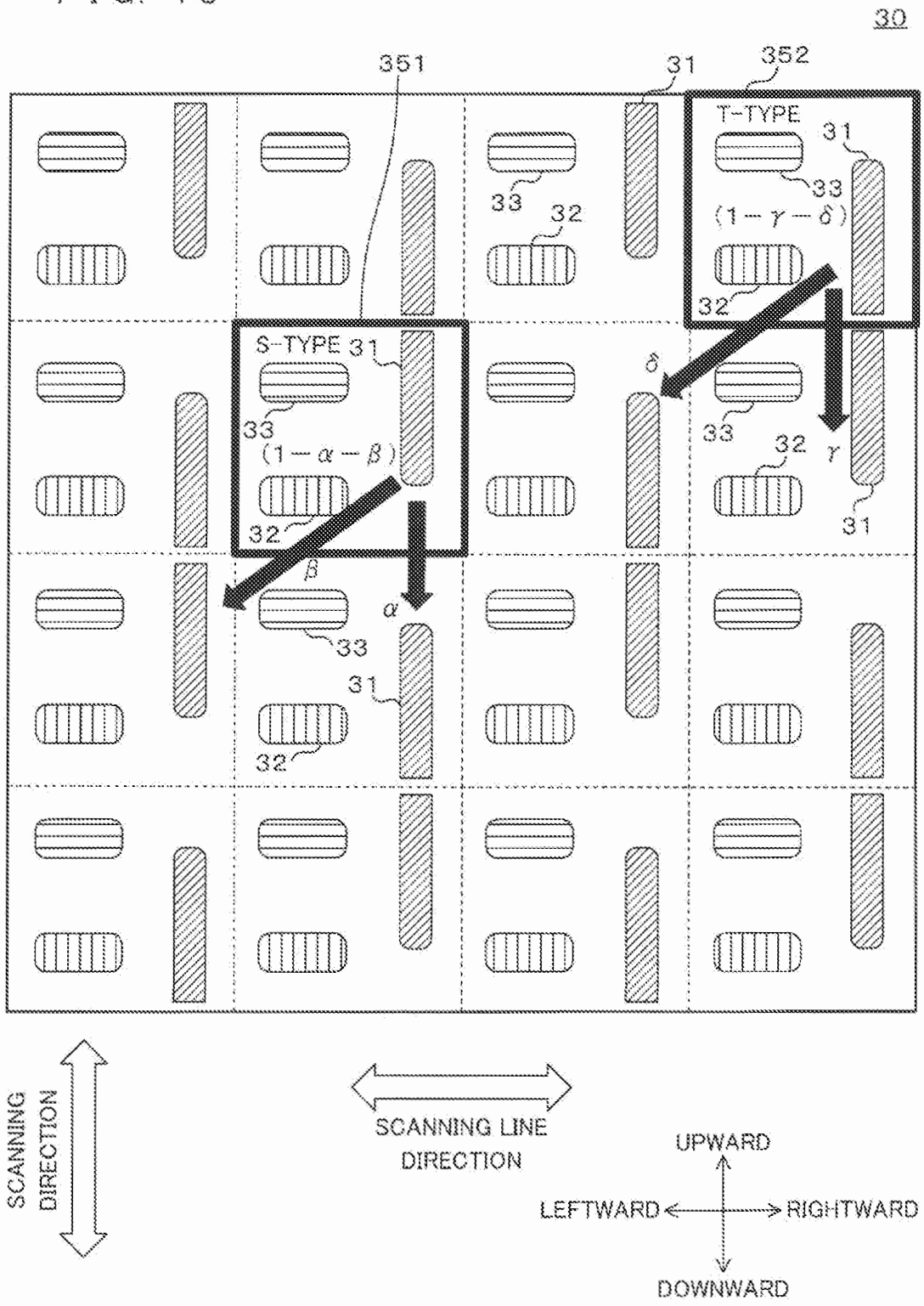

30
351
31
352
T-TYPE
31
33
(1−γ−δ)
33
32
32
S-TYPE
31
δ
33
(1−α−β)
33
32
γ
32
31
β
α
33
31
32
SCANNING DIRECTION
SCANNING LINE DIRECTION
UPWARD
LEFTWARD
RIGHTWARD
DOWNWARD

FIG. 19A

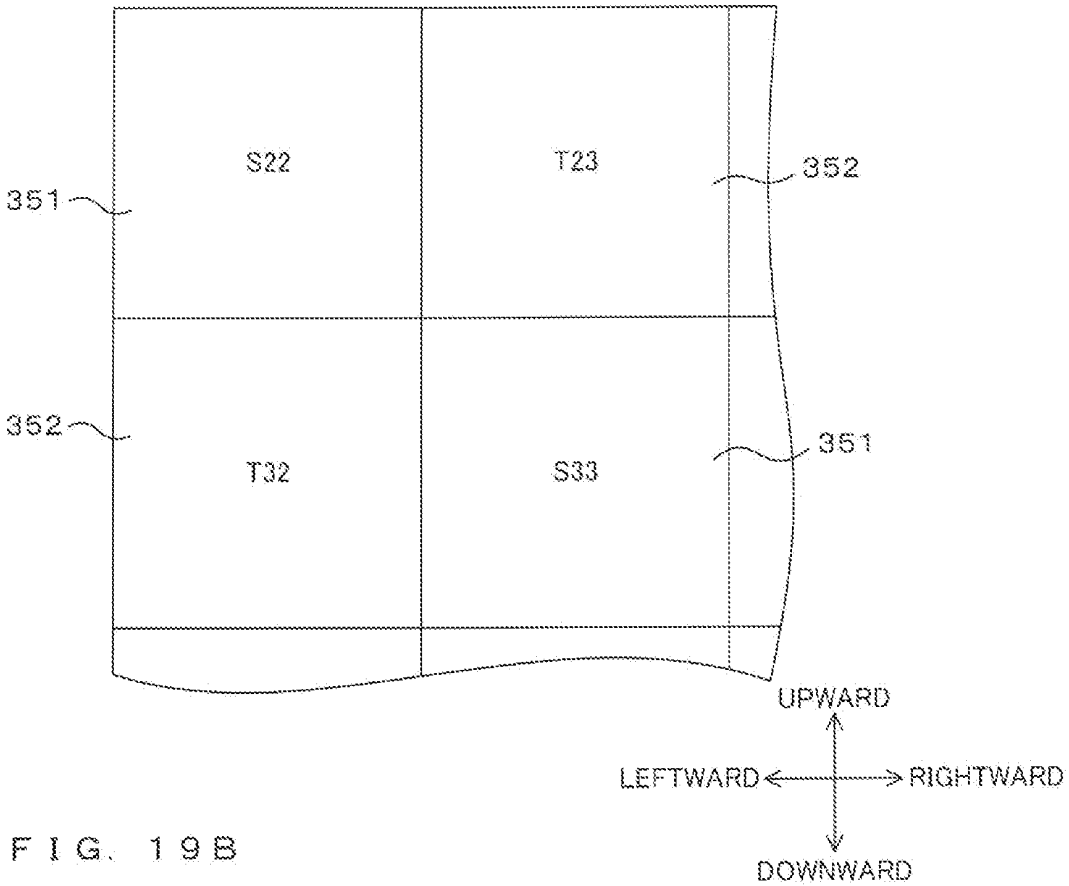


FIG. 19B

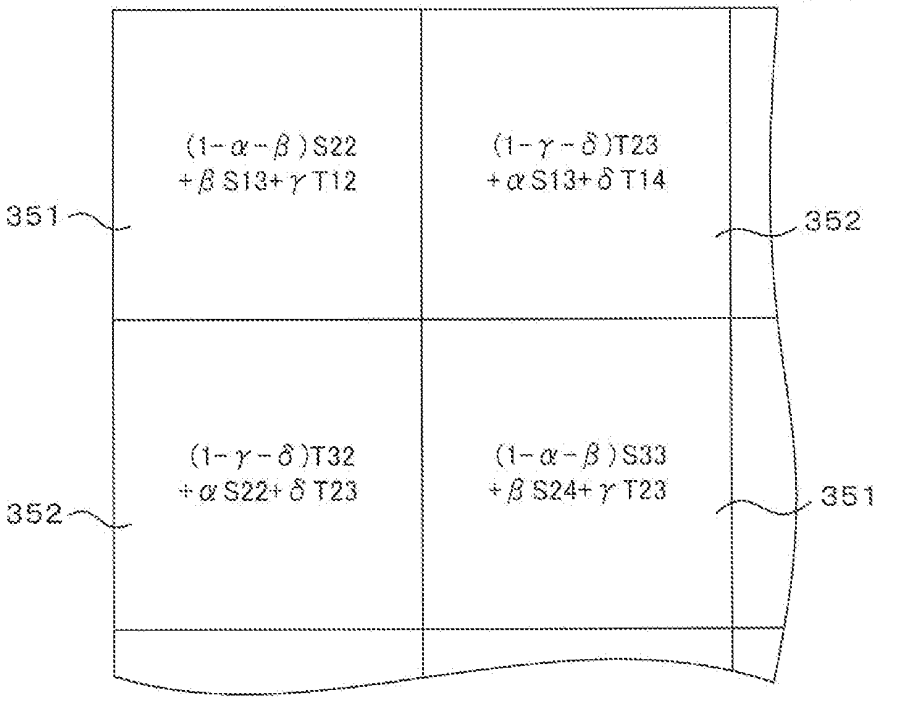


FIG. 20A

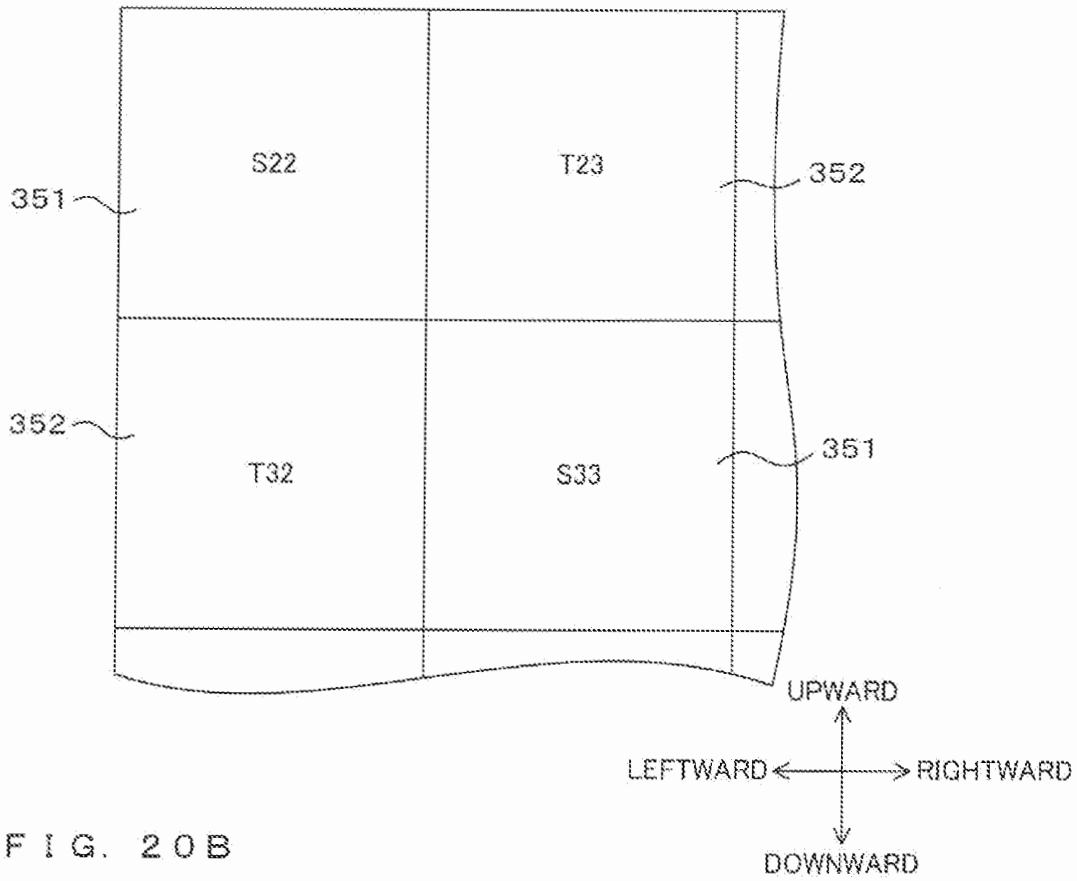


FIG. 20B

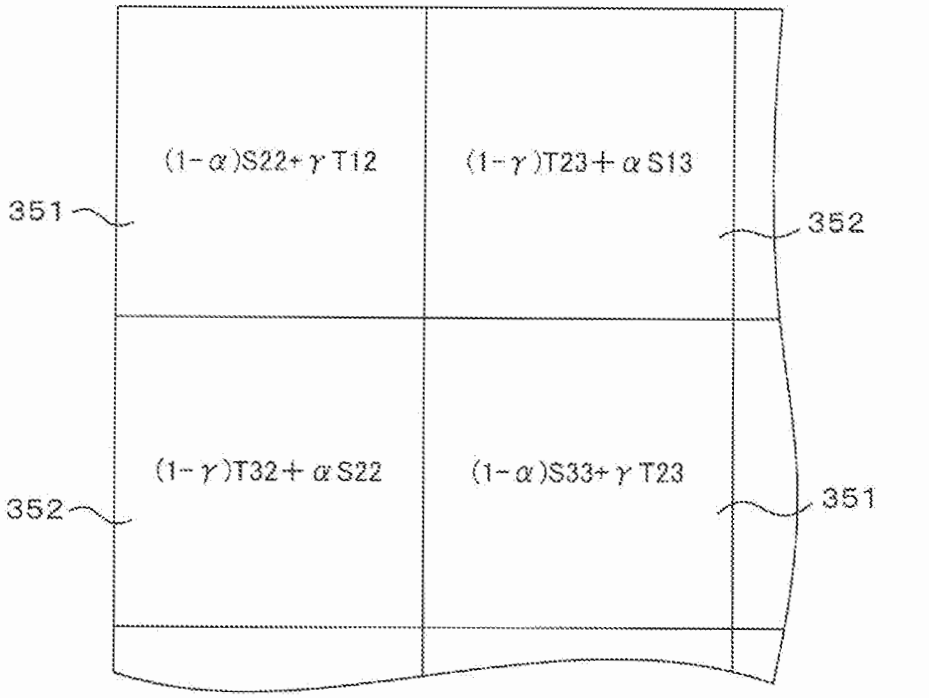


FIG. 21

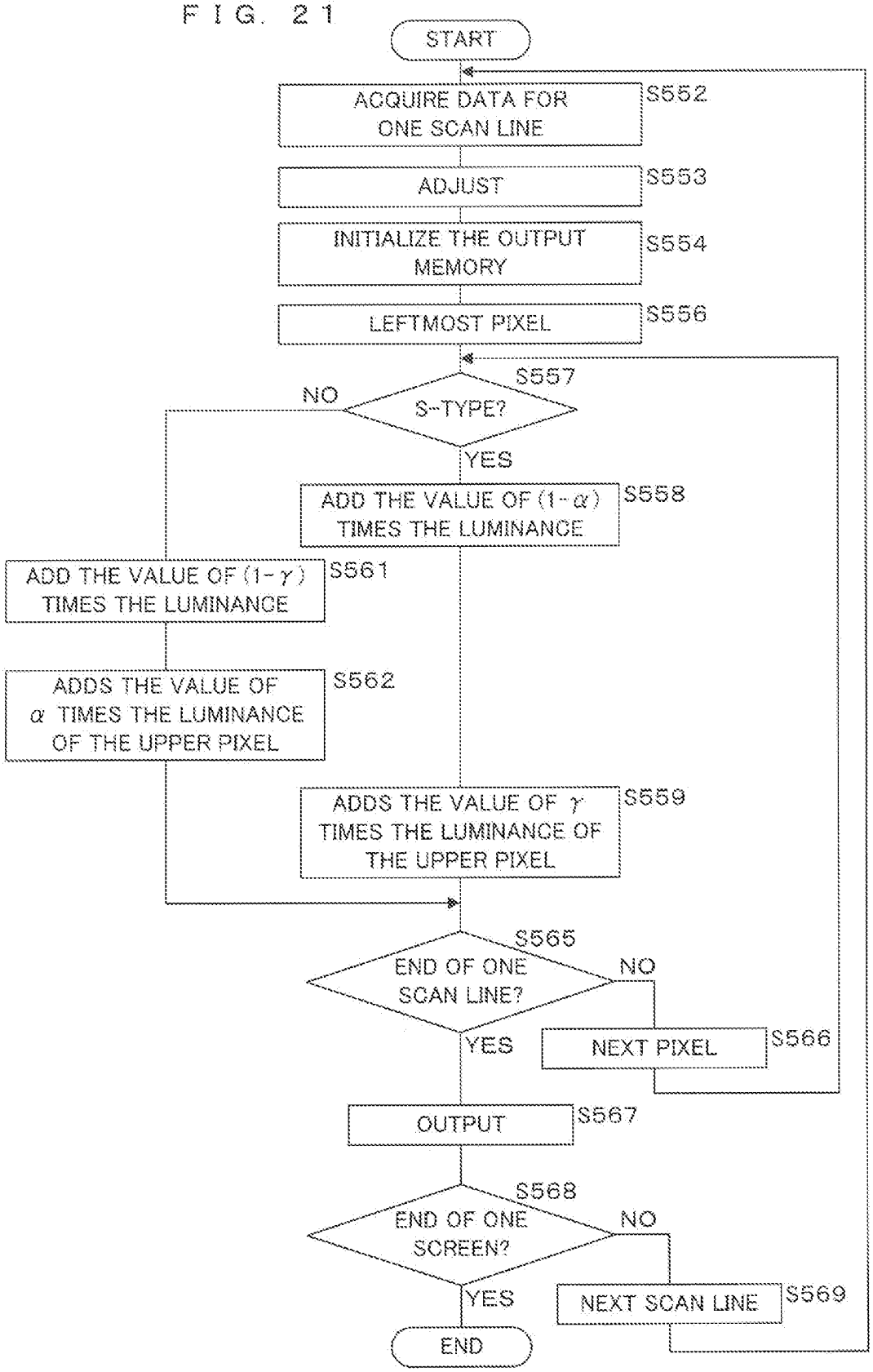

START
ACQUIRE DATA FOR ONE SCAN LINE
S552
ADJUST
S553
INITIALIZE THE OUTPUT MEMORY
S554
LEFTMOST PIXEL
S556
S557
S-TYPE?
NO
YES
ADD THE VALUE OF (1-α) TIMES THE LUMINANCE
S558
ADD THE VALUE OF (1-γ) TIMES THE LUMINANCE
S561
ADDS THE VALUE OF α TIMES THE LUMINANCE OF THE UPPER PIXEL
S562
ADDS THE VALUE OF γ TIMES THE LUMINANCE OF THE UPPER PIXEL
S559
S565
END OF ONE SCAN LINE?
NO
YES
NEXT PIXEL
S566
OUTPUT
S567
S568
END OF ONE SCREEN?
NO
YES
NEXT SCAN LINE
S569
END

FIG. 22

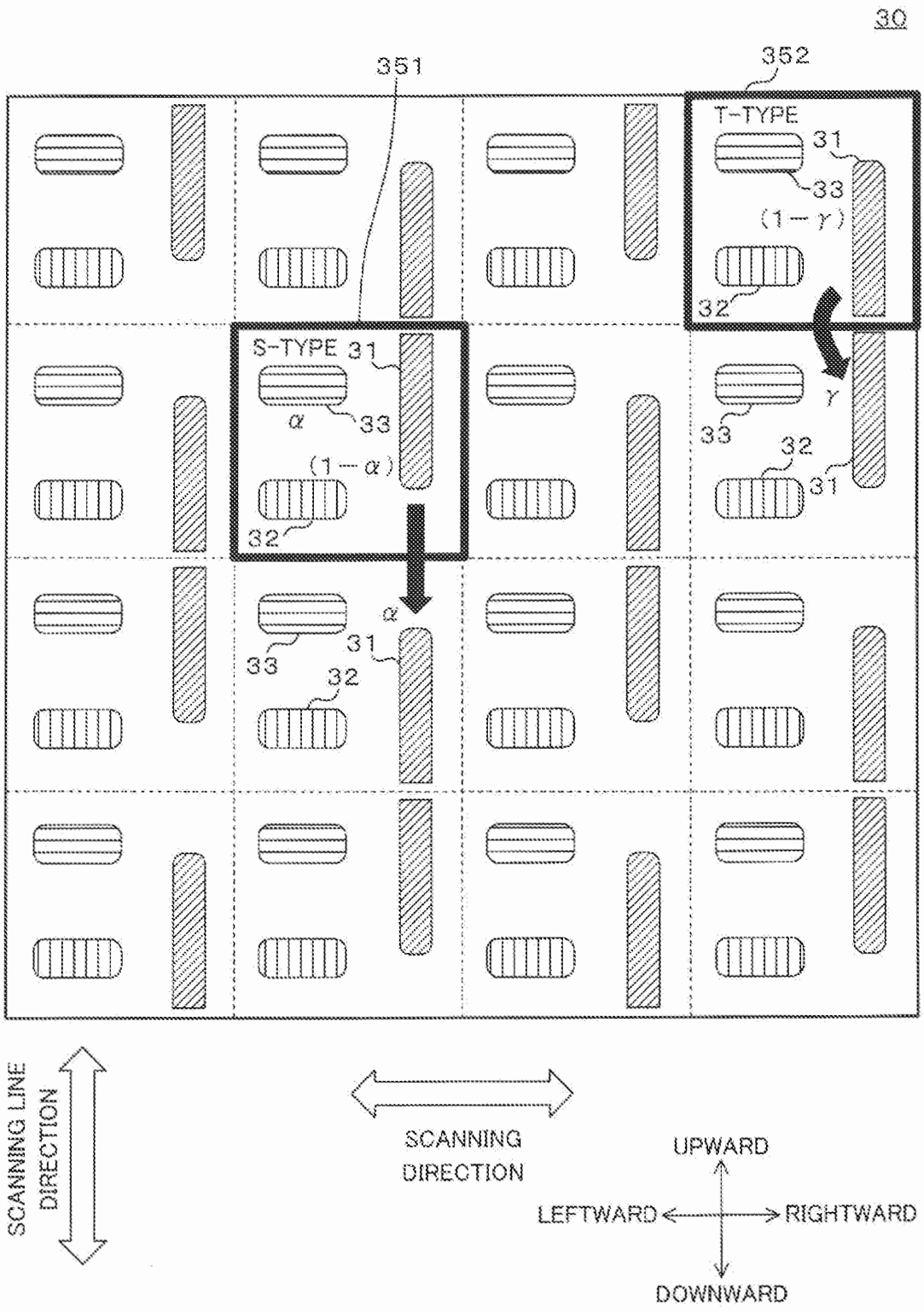

30
351
352
T-TYPE
31
33
(1−γ)
32
S-TYPE
31
α
33
(1−α)
32
γ
33
32
31
α
33
31
32
SCANNING LINE DIRECTION
SCANNING DIRECTION
UPWARD
LEFTWARD
RIGHTWARD
DOWNWARD

FIG. 23

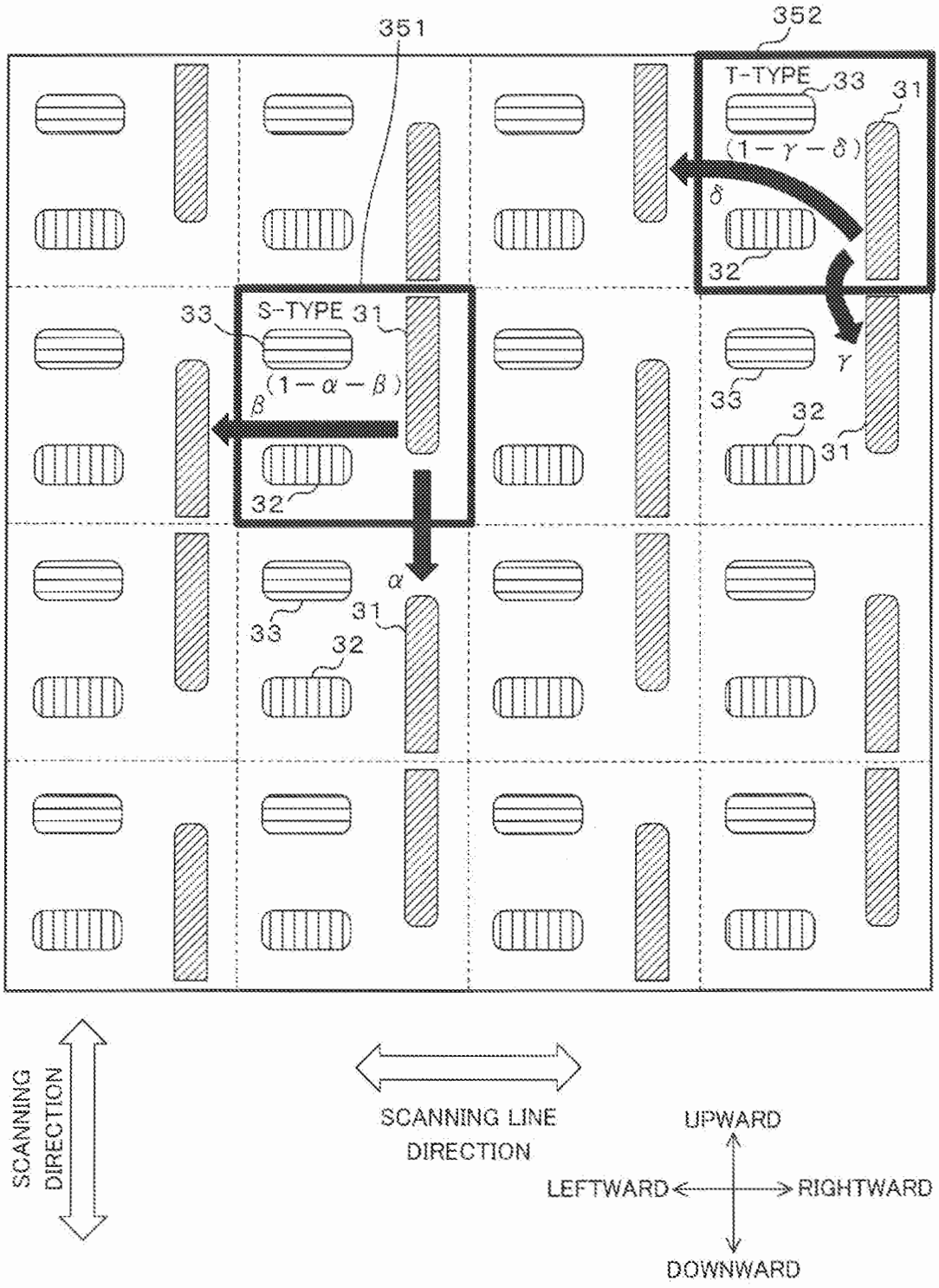

30
351
352
T-TYPE
33
31
(1−γ−δ)
δ
32
S-TYPE
33
31
(1−α−β)
β
γ
33
32
31
32
α
33
31
32
SCANNING DIRECTION
SCANNING LINE DIRECTION
UPWARD
LEFTWARD
RIGHTWARD
DOWNWARD

FIG. 24

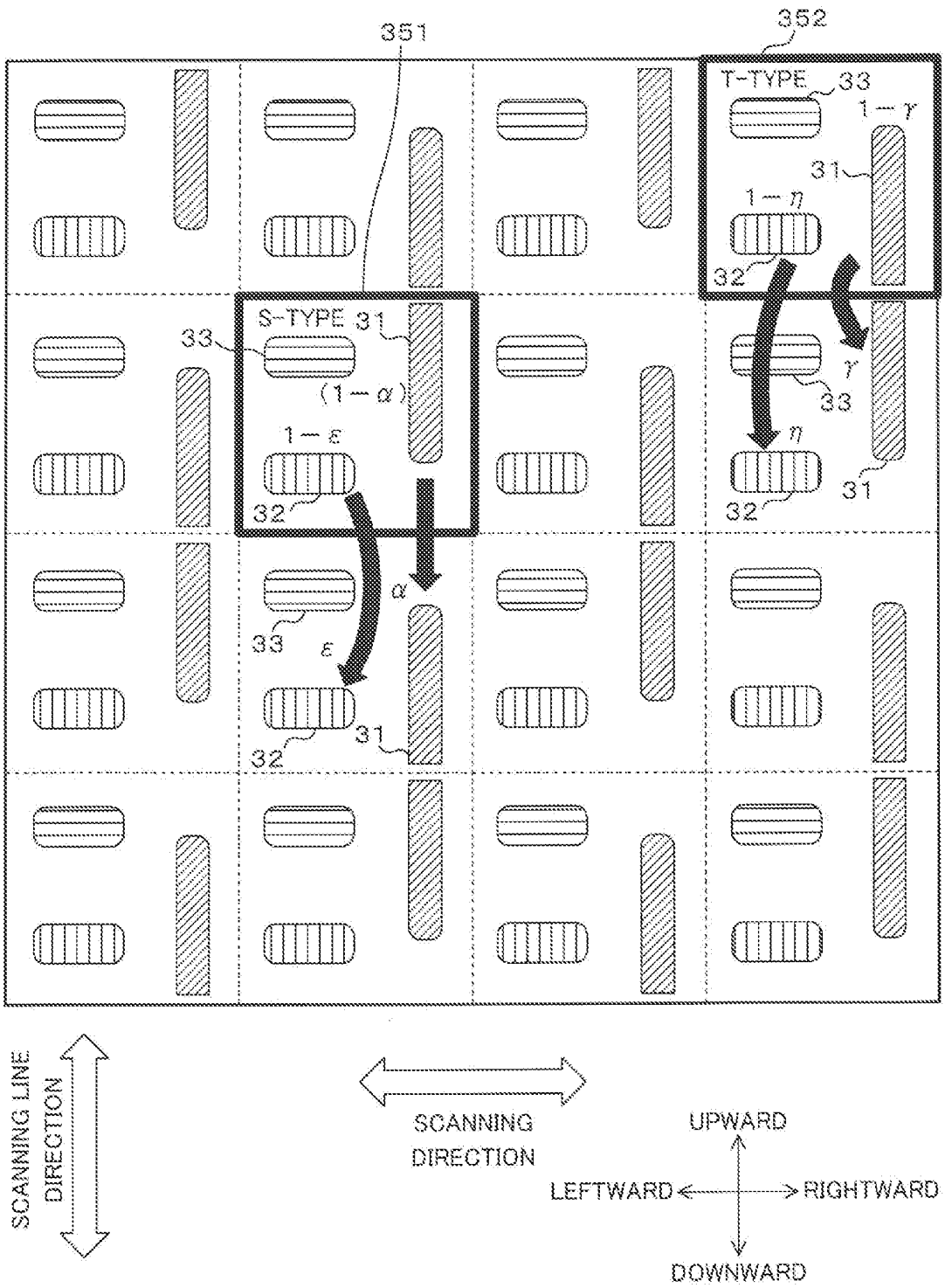

30
351
352
T-TYPE
33
1−γ
31
1−η
32
S-TYPE
31
33
(1−α)
1−ε
32
γ
33
η
31
32
α
33
ε
31
32
SCANNING LINE DIRECTION
SCANNING DIRECTION
UPWARD
LEFTWARD
RIGHTWARD
DOWNWARD

FIG. 25

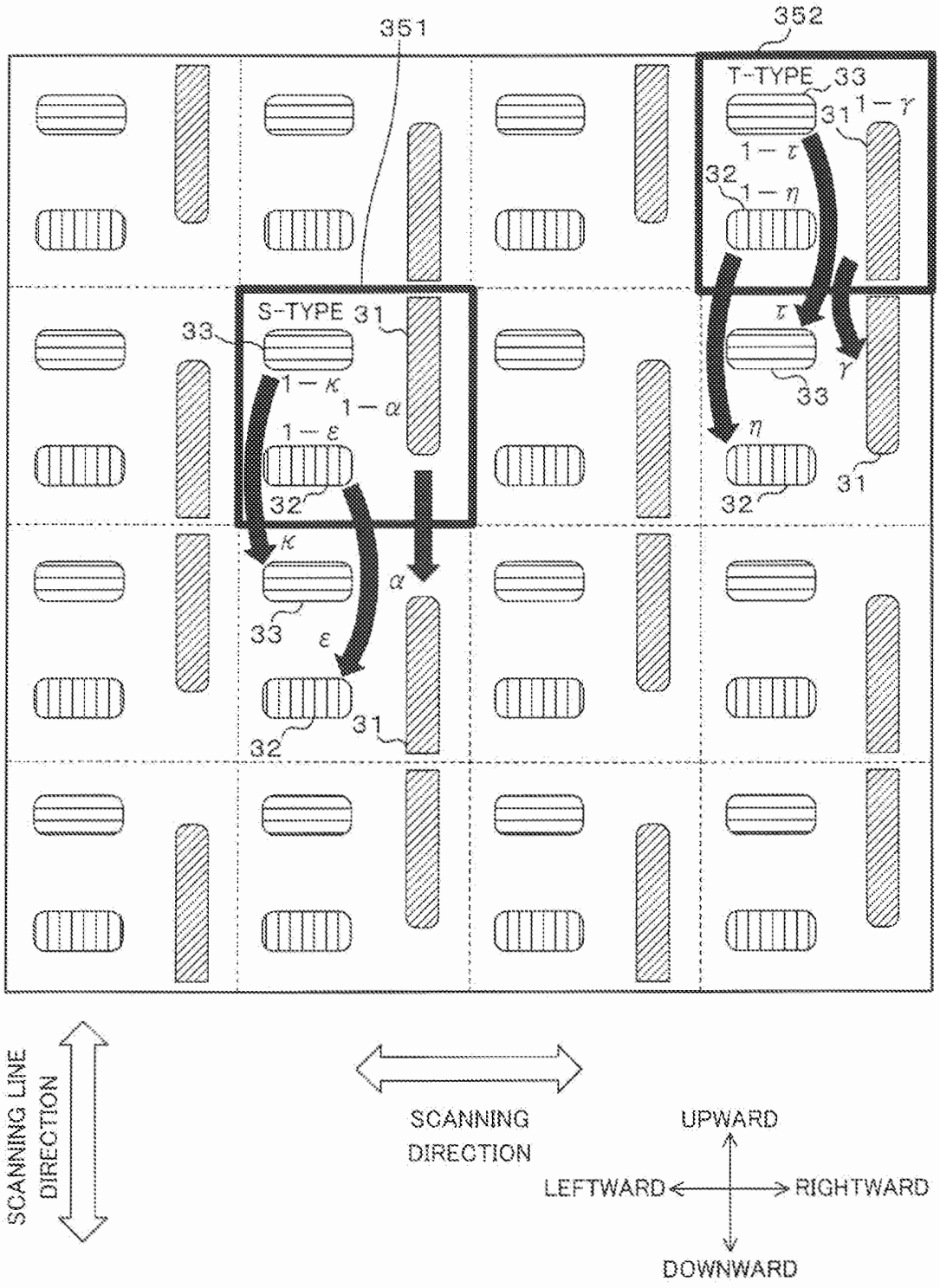

30
351
352
T-TYPE
33
31
1 − γ
1 − ε
32
1 − η
S-TYPE
31
33
1 − κ
1 − α
1 − ε
32
ε
γ
33
η
32
31
κ
α
33
ε
32
31
SCANNING LINE DIRECTION
SCANNING DIRECTION
UPWARD
LEFTWARD
RIGHTWARD
DOWNWARD

FIG. 26

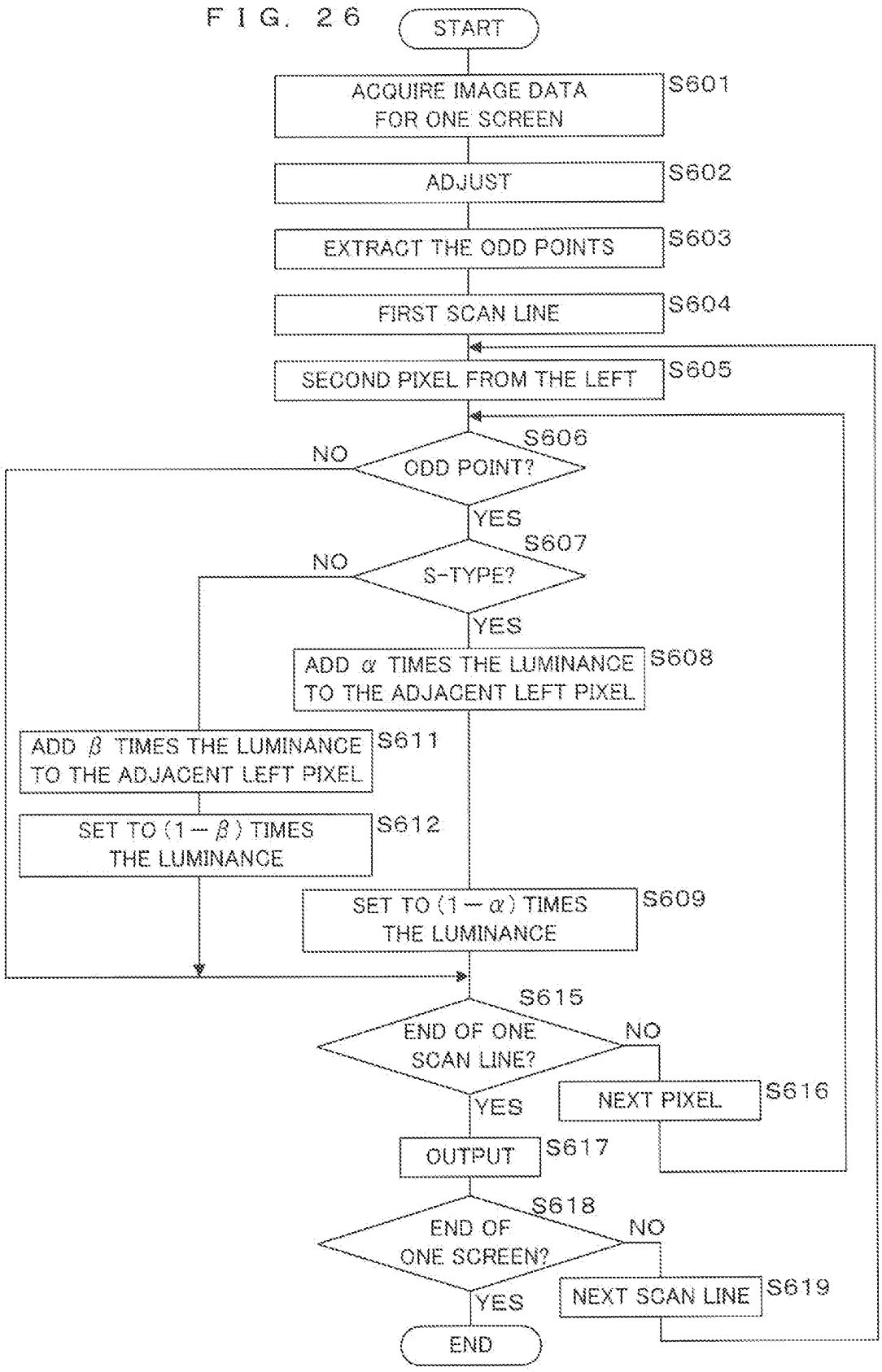

START
ACQUIRE IMAGE DATA FOR ONE SCREEN
S601
ADJUST
S602
EXTRACT THE ODD POINTS
S603
FIRST SCAN LINE
S604
SECOND PIXEL FROM THE LEFT
S605
S606
ODD POINT?
NO
YES
S607
S-TYPE?
NO
YES
ADD α TIMES THE LUMINANCE TO THE ADJACENT LEFT PIXEL
S608
ADD β TIMES THE LUMINANCE TO THE ADJACENT LEFT PIXEL
S611
SET TO (1 − β) TIMES THE LUMINANCE
S612
SET TO (1 − α) TIMES THE LUMINANCE
S609
S615
END OF ONE SCAN LINE?
NO
YES
NEXT PIXEL
S616
OUTPUT
S617
S618
END OF ONE SCREEN?
NO
YES
NEXT SCAN LINE
S619
END

FIG. 27

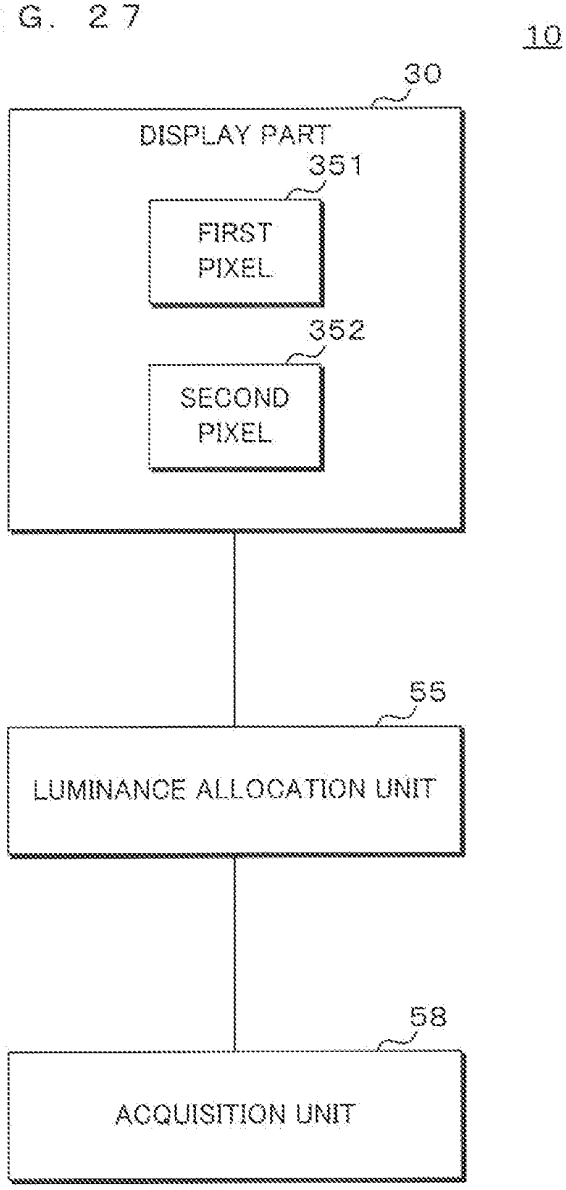

10
30
DISPLAY PART
351
FIRST PIXEL
352
SECOND PIXEL
55
LUMINANCE ALLOCATION UNIT
58
ACQUISITION UNIT

FIG. 28

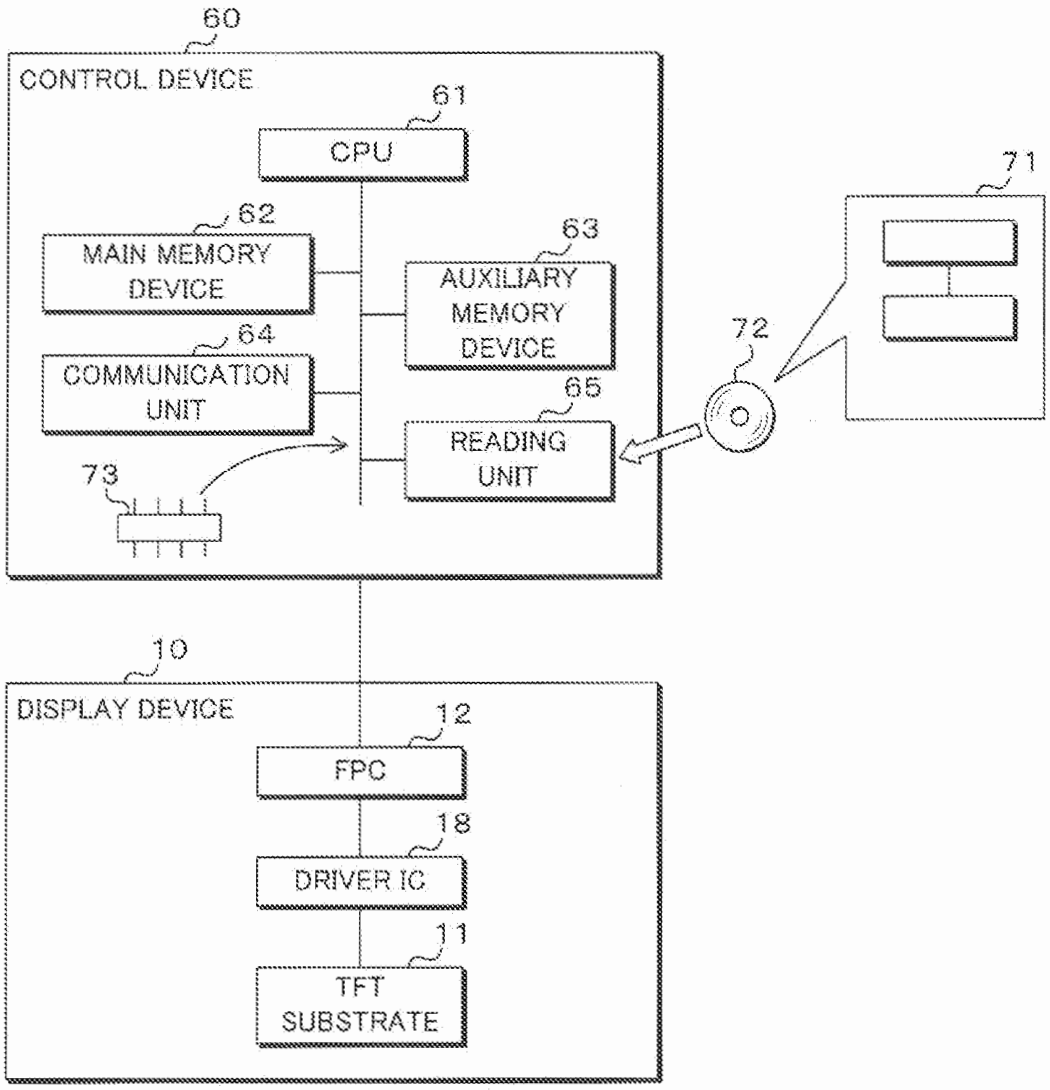

60
CONTROL DEVICE
61
CPU
62
MAIN MEMORY DEVICE
63
AUXILIARY MEMORY DEVICE
64
COMMUNICATION UNIT
65
READING UNIT
73
71
72
10
DISPLAY DEVICE
12
FPC
18
DRIVER IC
11
TFT SUBSTRATE

FIG. 29

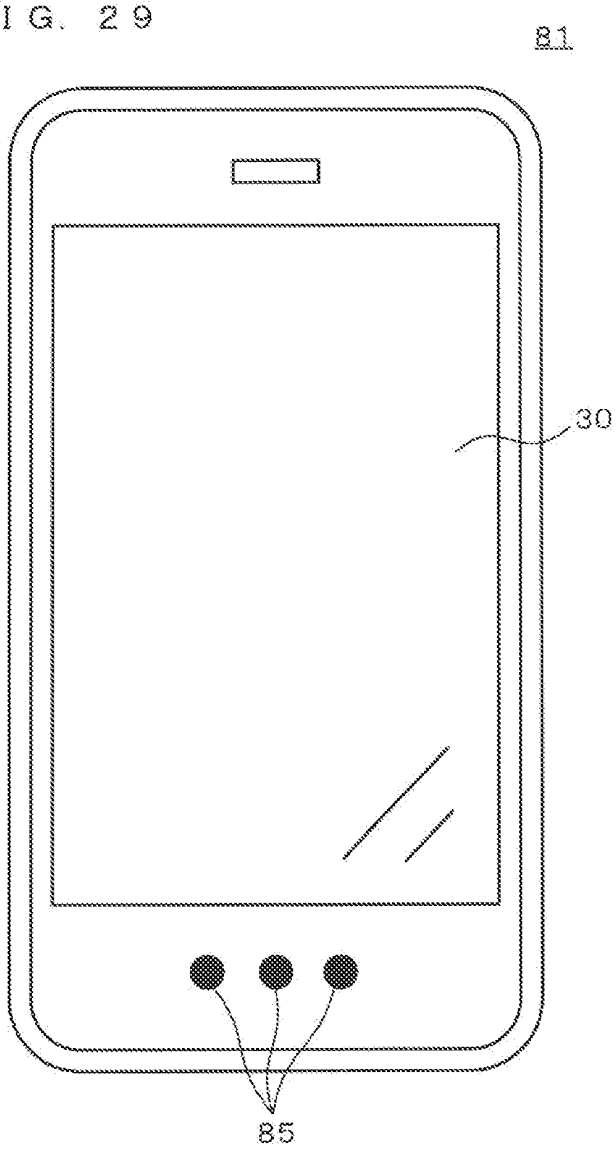
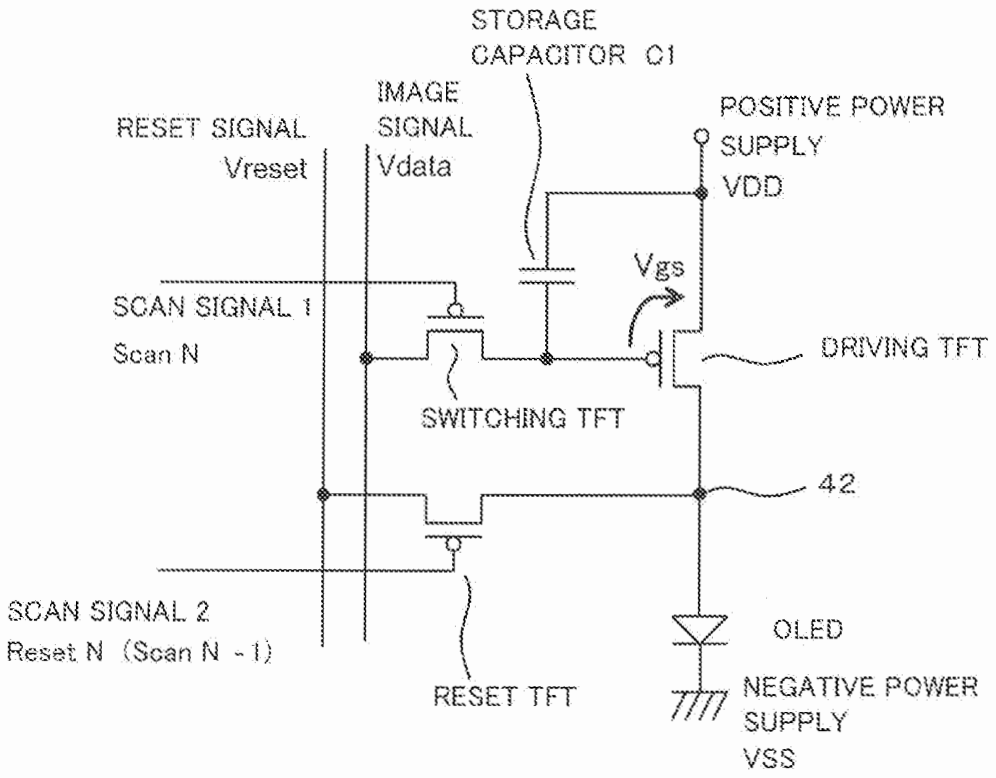


FIG. 30


STORAGE
CAPACITOR C1
IMAGE
SIGNAL
Vdata
RESET SIGNAL
Vreset
POSITIVE POWER
SUPPLY
VDD
Vgs
SCAN SIGNAL 1
Scan N
DRIVING TFT
SWITCHING TFT
42
SCAN SIGNAL 2
Reset N (Scan N - 1)
OLED
RESET TFT
NEGATIVE POWER
SUPPLY
VSS

F I G. 3 1

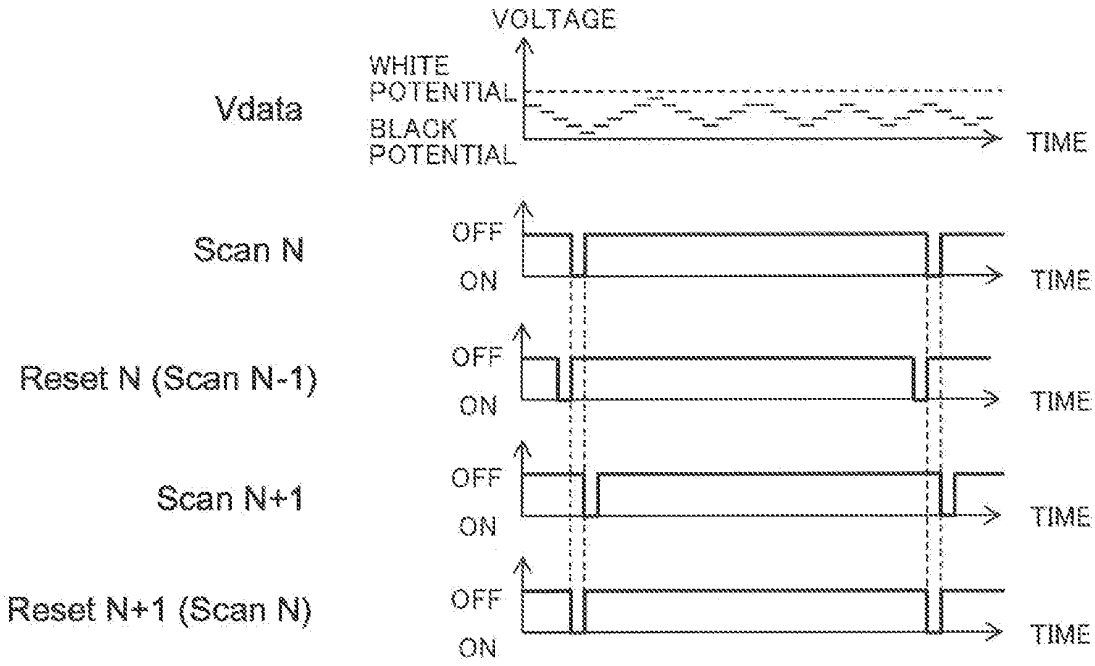

VOLTAGE
Vdata
WHITE POTENTIAL
BLACK POTENTIAL
TIME
Scan N
OFF
ON
TIME
Reset N (Scan N-1)
OFF
ON
TIME
Scan N+1
OFF
ON
TIME
Reset N+1 (Scan N)
OFF
ON
TIME

FIG. 32

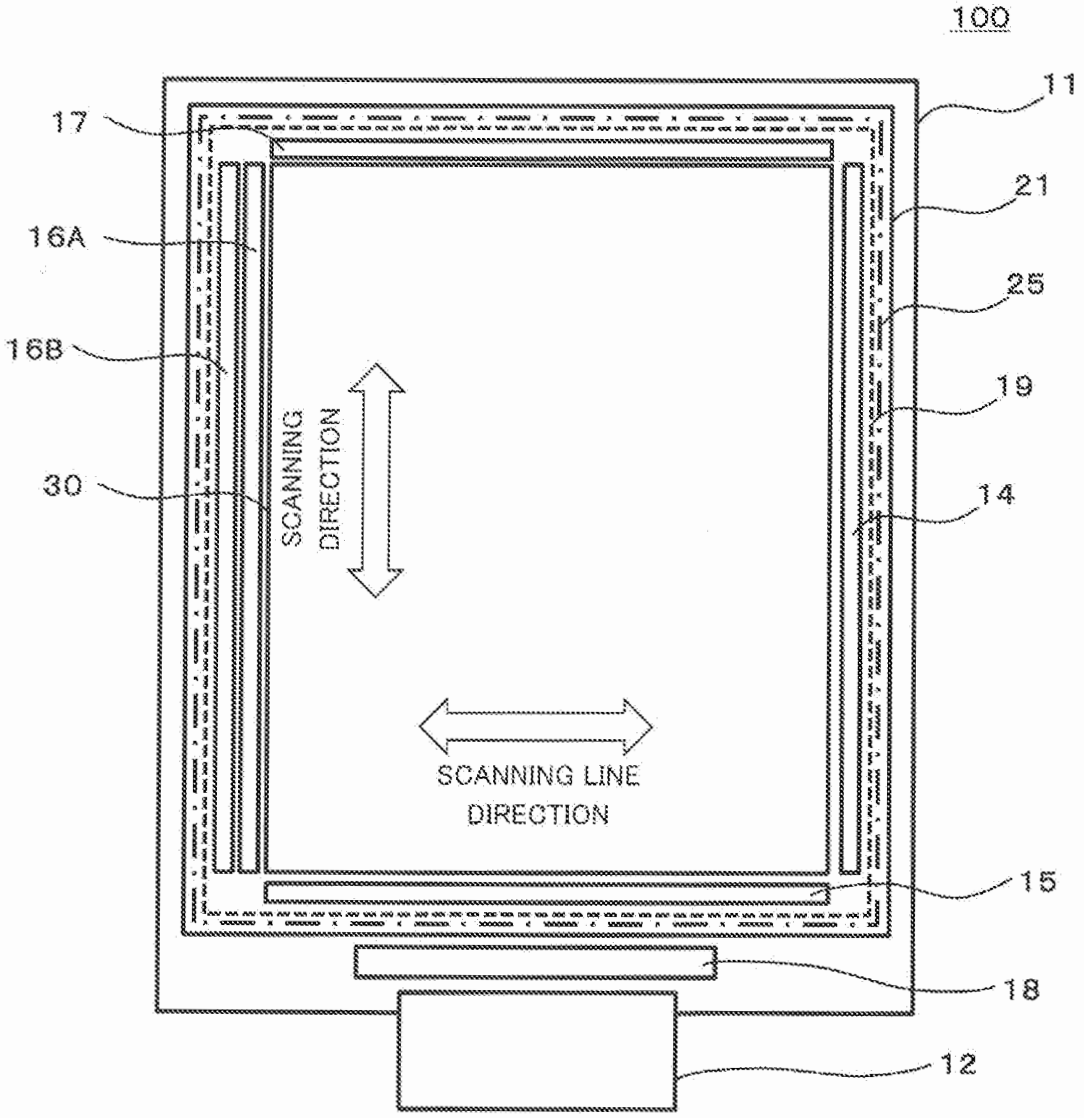
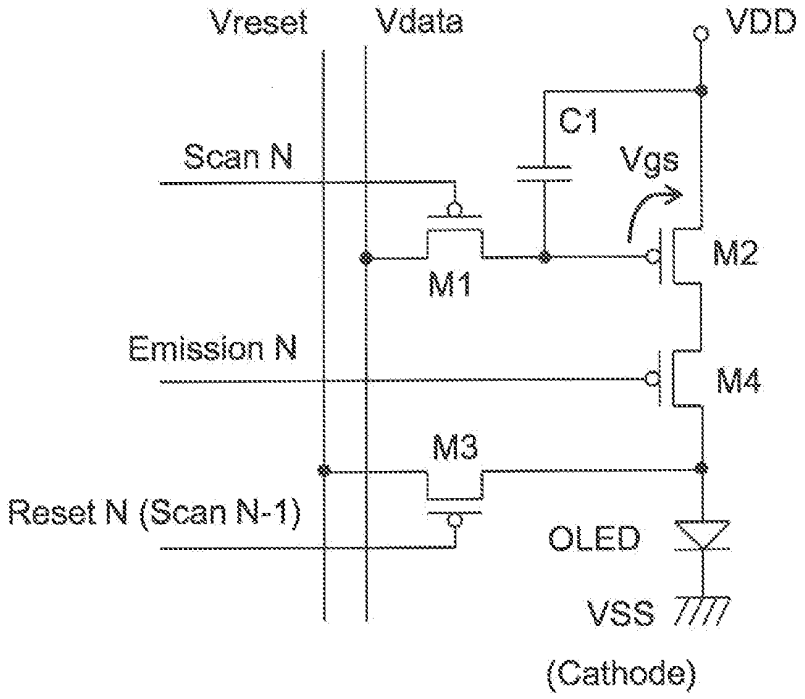
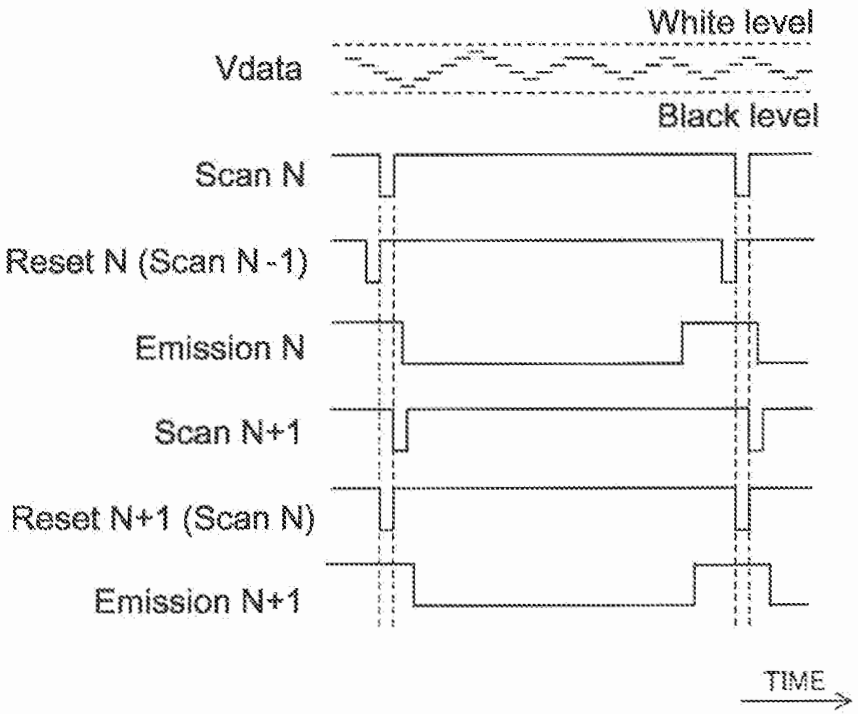

100
11
17
21
16A
25
16B
19
30
14
SCANNING DIRECTION
SCANNING LINE DIRECTION
15
18
12

FIG. 33


Vreset
Vdata
VDD
C1
Scan N
Vgs
M2
M1
Emission N
M4
M3
Reset N (Scan N-1)
OLED
VSS
(Cathode)

F I G. 3 4


White level
Vdata
Black level
Scan N
Reset N (Scan N-1)
Emission N
Scan N+1
Reset N+1 (Scan N)
Emission N+1
TIME

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Atty. Dkt.: 8317-0050

Date: April 6, 2021

Attached for filing is the **UTILITY** patent application of:
First Named Inventor: Yojiro MATSUEDA
Entitled: DISPLAY DEVICE AND COMPUTER READABLE MEDIA
including the attachments as noted below:

Application and Signed Documents
66 pages of Specification, Claims and Abstract (including 5 numbered claims)
34 sheets of Drawing(s) (Figures 1 - 34)
☐ Declaration ☒ Combined Declaration and Assignment (submitted via EPAS) ☐ Verified Translation of Declaration
☐ Newly executed; ☒ A copy from a prior application (37 CFR 1.63(d))
☐ Assignment and Recordation Form Cover Sheet (paper filing) ☐ Assignment (submitted via EPAS)
☒ Power of Attorney ☐ 37 CFR 3.73(b) or 37 CFR 3.73(c) Statement ☐ General Power of Attorney Transmittal Letter
☒ Application Data Sheet
☐ English Translation

Priority Claim (Domestic and/or Foreign) (**must** be included in Application Data Sheet)
☐ Provisional/Nonprovisional Application(s) are identified in attached Application Data Sheet
☒ Continuation/Division/Continuation-In-Part parent application(s) are identified in attached Application Data Sheet
☒ PCT/foreign application(s) is/are identified in attached Application Data Sheet
☒ Incorporation by Reference statement is in the specification or Preliminary Amendment
☒ Copy the incorporation by reference from the specification or Preliminary Amendment and insert text here:
This is a continuation of U.S. Application No. 15/255,377 filed on September 2, 2016, which claims priority under 35 U.S.C. §119(a) on Patent Application No. 2015-173215 filed in Japan on September, 2, 2015 and Patent Application No. 2016-104437 filed in Japan on May, 25, 2016, the entire contents of which are hereby incorporated by reference.

Certified Copy/Copies
☐ Certified copy(ies) of foreign application(s) attached
☒ Certified copy(ies) filed on February 1, 2017 in prior Application No. 15/255,377 filed September 2, 2016
☐ Interim copy(ies) of priority document(s) (effective March 16, 2013)
☐ Request to Retrieve Electronic Priority Application(s) (for a non-EPO priority doc that is of record in an EPO application or a non-JPO priority document that is of record in a JPO application)

Prior U.S. Application(s)
☐ Request under 37 CFR 1.48(a) to delete inventor(s) named in prior application
☐ Petition filed in prior application to extend its life to ensure co-pendency of parent application

Preliminary Amendment
☐ Preliminary Amendment (Please enter the attached Preliminary Amendment prior to calculation of claims fees.)

Information Disclosure Statement
☒ Information Disclosure Statement (IDS) and Form(s) PTO/SB/08 or equivalent
☐ Copies of newly cited publications, other than U.S. patents and U.S. patent application publications, are attached
☐ English language and/or "concise explanation" is/was provided for each foreign language document
☒ Form(s) PTO/SB/08 or equivalent listing the references cited in the parent application(s) (for continuing cases)

Other Documents
☐ Non-Publication Request
☐ Nucleotide and/or Amino Acid Sequence Submission ☐ Computer Readable Form (CRF)/☐ Specification Sequence Listing on ☐ CD-ROM or CD-R (2 copies) or ☐ Paper/☐ Statements verifying identity of above copies
☐ Authorization to Permit Access to Search Results by the European Patent Office (EPO) (Form PTO/SB/69 or equivalent)
☐ Other (itemize each attachment):

Small Entity

☐ Applicant claims "small entity" status. ☐ "Small entity" statement(s) attached

Micro Entity

☐ Applicant claims "micro entity" status. ☐ Micro entity certification statement filed herewith.

Fee Calculation

Utility Basic Filing Fee					$320.00 (1011)/$160.00 (2011)/$80.00 (3011) $80.00 (4011)	$	320.00
Utility Search Fee					$700.00 (1111)/$350.00 (2111)/$175.00 (3111)	$	700.00
Utility Examination Fee					$800.00 (1311)/$400.00 (2311)/$200.00 (3311)	$	800.00
Utility Application Size Fee ($420.00 (1081)/$210.00 (2081)/$105.00 (3081))for each additional 50 pages that exceeds 100 pages):							
Paper filing: Total pages:	-100 = 0	=	0	$0.00 (1081)	/$0.00 (2081)/$0.00 (3081)	$	
Surcharge for Paper Filing					$400.00 (1090)/$200.00 (2090)/$200.00 (3090)	$	
E-filing:				$0.00(1081)	/$0.00 (2081)/$0.00 (3081)	$	0.00
Total pages: 100 *.75 = 75–100 = 0/50		=	0				
Total effective claims	5 - 20 (at least 20) =	0	x $100.00	= $0.00 (1202)/$0.00 (2202)/$0.00 (3202)		$	0.00
Independent claims	1 - 3 (at least 3) =	0	x $480.00	= $0.00 (1201)/$0.00 (2201)/$0.00 (3201)		$	0.00
If any proper multiple dependent claims now added for first time, add (ignore improper)				$860.00 (1203)/$430.00 (2203)/$215.00 (3203)		$	
Assignment Recording Fee				$50.00 (8021) /**$0 if filed electronically**		$	
Prepayment of Surcharge for Late Declaration				$160.00 (1051)/$80.00 (2051)/$40.00 (3051)		$	
English translation of specification and claims				$140.00 (1053)/$70.00 (2053)/$35.00 (3053)		$	
					TOTAL FEE	**$**	**1,820.00**

☒ CREDIT CARD OR DEPOSIT ACCOUNT PAYMENT (CREDIT CARD FORM ATTACHED IF PAPER FILING).

Extension of Time

Any future submission requiring an extension of time is hereby stated to include a petition for such time extension.

Deposit Account Authorization

The Commissioner is hereby authorized to charge any deficiency, or credit any overpayment, in the fee(s) filed, or asserted to be filed, or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to Deposit Account No. 14-1140. However, **authorization is NOT given** hereby **to charge any extra claims fees or multiple dependent claims fees**.

Correspondence Address:
Customer Number: **466**
Telephone: (703) 816-4000
Facsimile: (703) 816-4100
EJ:rc

NIXON & VANDERHYE P.C.
By Attorney: Eric Jensen, Reg. No. 37,855

Signature: /Eric Jensen/

PATENT
8317-0050

IN THE U.S. PATENT AND TRADEMARK OFFICE

In re application of

Yojiro MATSUEDA et al. Conf.

Application No. **NEW CONTINUATION** Group

Filed April 6, 2021 Examiner

DISPLAY DEVICE AND COMPUTER READABLE MEDIA

INFORMATION DISCLOSURE STATEMENT
(SUBMISSION WITH CONTINUATION-IN-PART OR RULE 1.53(b) CONTINUATION OR DIVISIONAL APPLICATION)

Assistant Commissioner for Patents April 6, 2021
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Pursuant to 37 C.F.R. §§ 1.97 and 1.98, applicant(s) hereby submit(s) an Information Disclosure Statement for consideration by the Examiner.

I. LIST OF PATENTS, PUBLICATIONS OR OTHER INFORMATION

The patents, publications, or other information submitted for consideration by the Office are listed on the PTO-1449 form(s), attached hereto.

II. REFERENCES PREVIOUSLY CITED OR SUBMITTED

Pursuant to 37 C.F.R. § 1.98(d), consideration of information listed on the PTO-1449 form(s) is requested since any patents, publications, or other information which are listed on the PTO-1449 form(s) but for which copies are not enclosed herewith, were previously cited by or submitted to the PTO in one of the following applications which has been relied upon for an earlier filing date under 35 U.S.C. § 120:

U.S. Appl. No(s).	U.S. Filing Date(s)
15/255,377	September 2, 2016

III. FEES

This Information Disclosure Statement is being filed concurrent with the filing of a continuation-in-part, continuation, or divisional patent application; therefore, no fee is required.

If the Examiner has any questions concerning this IDS or requires a copy of any of the references cited but not provided, he/she is requested to contact the undersigned. If it is determined that this IDS has been filed under the wrong rule, the PTO is requested to consider this IDS under the proper rule (with a petition if necessary) and charge the appropriate fee to Deposit Account No. 14-1140.

The Commissioner is hereby authorized in this, concurrent, and future submissions to charge any additional fees(s) or underpayment of fee(s) under 37 C.F.R. §§ 1.16 and 1.17 or credit any overpayment of fee(s) to Deposit Account No. 14-1140.

Respectfully submitted,

NIXON & VANDERHYE

/Eric Jensen/

Eric Jensen, Reg. No. 37,855
901 N. Glebe Road, 11th Floor
Arlington, VA 22203
Telephone (703) 816-4000
Facsimile (703) 816-4100

EJ/rc

Enclosures:

- ☒ PTO/SB/08a
- ☐ References
- ☐ Foreign Search Report
- ☐ Other:

UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/301,517	**04/06/2021 08:13:38 AM ET**	**8317-0050**

Title of Invention

DISPLAY DEVICE AND COMPUTER READABLE MEDIA

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	1637	FILED BY	Ryan Carter
PATENT CENTER #	60170921	FILING DATE	-
CUSTOMER #	466	FIRST NAMED INVENTOR	Yojiro MATSUEDA
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	ERIC JENSEN

Documents

TOTAL DOCUMENTS: 10

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
8317-0050 ADS.pdf	8	Application Data Sheet	1227 KB
8317-0050 IDS.pdf	5	Information Disclosure Statement (IDS) Form (SB08)	1011 KB
8317-0050 IDS_TRANSMITTAL.pdf	3	Transmittal Letter	77 KB
8317-0050 POA.pdf	1	Power of Attorney	2447 KB
8317-0050 SPEC.pdf	62	Specification	552 KB
8317-0050 TRANSMITTAL_CONT.pdf	2	Transmittal of New Application	118 KB

8317-0050 ABSTRACT.pdf	1	Abstract	53 KB
8317-0050 CLAIMS.pdf	3	Claims	73 KB
8317-0050 DEC-ASSMT.pdf	1	Oath or Declaration filed	1433 KB
8317-0050 DWGS.pdf	34	Drawings-only black and white line drawings	10465 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
8317-0050 ADS.pdf	D3BF7C68DB07619767642E9E896E9EB9FD72A9A354EC27991BEEE661F5A6FF788B8D9124A5CD22074097A92972EB8004F7B301B12763917F11D84618FE587605
8317-0050 IDS.pdf	D82D4401B131FFF9B8E8371ADFE2B8D84485C284C65359F6CF4E892F58CAE0F8A71C314226C7B50C50403E7F5DD624848433AFDA297A24D5EADF795927EFD41A
8317-0050 IDS_TRANSMITTAL.pdf	3C4FBF43496B9F294E0817247507493E23CAE6B4915ABD3D3ACF27934DF2CAE4B52AE9654B3A85F4CFE496A093B4ADD7526D9BA32C27A78982F4874145FE714D
8317-0050 POA.pdf	0267B22B4DA5EC5982343A9E45776B634D8A8AD2604A67BC83F5314E4005A4C6C3D5285D6DD9D9C7E6A352AFE2EAB608D3B5B5C3986C06D42519B856EDE1AD08
8317-0050 SPEC.pdf	39270A937F209EB1B890B14E99596621EBCD162CFE23A3E050E1255C2507B3F5A385007FD5901B43A533F7CE9300DA644FD8432BD968E3FC5C7B3305975674D3
8317-0050 TRANSMITTAL_CONT.pdf	37A058D076B8AB27E5F249331F499397D31D57519FF6223AA10421AD3729AFFBDAA92F7858BEFBACB4D4EFABF04ED54C1171294B56FB58966F56C207A26B8DFE
8317-0050 ABSTRACT.pdf	7C475151496A690E53EC15186A4AA70A05C75B6745553072CC

	453DAB3FAE8E81589BDDA5DE26623783C10415BAB5C4E7DA65F579E40F9C19FEEFA5C8421023C3
8317-0050 CLAIMS.pdf	72F9F6C7C21B12FE76DE9E065D5500DE76B2ABA00B4681E14AC14C10E3CDC4B849B49BB6B596A00B250E57B1C105BFD59A8770865951E7B60448E3CF1802576C
8317-0050 DEC-ASSMT.pdf	DC049FBA06CBE993C666AC0B37A9C421A29EA1B87F8FBA81471CFF82D87183AC4EEAA37C214298D0EF5C6D86B2ED766FC51508A4C660596357F75BBFFEAAB698
8317-0050 DWGS.pdf	A85742C390B6000CEE700F21881BA924903C998BDC87583792FC12B3A877FB58A0C45AC151AAFF9615E37BA3841D31465CE3BD2725EB960CEE1386F3BD6EDC70

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

ELECTRONIC PAYMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/301,517	04/06/2021 08:13:38 AM ET	8317-0050

Title of Invention

DISPLAY DEVICE AND COMPUTER READABLE MEDIA

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	1637	FILED BY	Ryan Carter
PATENT CENTER #	60170921	AUTHORIZED BY	ERIC JENSEN
CUSTOMER #	466	FILING DATE	-
CORRESPONDENCE ADDRESS	-	FIRST NAMED INVENTOR	Yojiro MATSUEDA

Payment Information

PAYMENT METHOD	PAYMENT TRANSACTION ID	PAYMENT AUTHORIZED BY
CARD / 4027	E202146914473121	Ryan Carter

FEE CODE	DESCRIPTION	ITEM PRICE($)	QUANTITY	ITEM TOTAL($)
1111	UTILITY PATENT APPL. SEARCH FEE	700.00	1	700.00
1011	BASIC FILING FEE - UTILITY (PAPER FILING ALSO REQUIRES NON-ELECTRONIC FILING FEE UNDER 1.16(T))	320.00	1	320.00
1311	PATENT APPL. EXAMINATION FEE	800.00	1	800.00
			TOTAL AMOUNT:	$1,820.00

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized

by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Y&T Form B (includes equivalent to form PTO/AIA/01)
Attorney Docket No.

ASSIGNMENT AND INVENTOR'S DECLARATION

WHEREAS I/we, the undersigned inventor(s), hereafter also referred to as "assignor(s)", have invented certain new and useful improvements described in the application identified below; and

WHEREAS, **NLT Technologies, Ltd.**, hereinafter referred to as "assignee(s)", whose address is **1753, Shimonumabe, Nakahara-ku, Kawasaki, Kanagawa 2118668 Japan**, is desirous of acquiring the entire right, title and interest in and to the application and invention, and to any United States patents to be obtained therefor;

NOW, THEREFORE, for valuable consideration, the receipt and sufficiency of which is hereby acknowledged, I/we, the above-named assignor(s), hereby sell, assign and transfer to the above named assignee(s), its successors and assigns, the entire right, title and interest in the application and the invention disclosed therein for the United States of America, including all divisions, and continuations thereof, and all Letters Patent of the United States that may be granted thereon, and all reissues thereof, including any right to bring or maintain an action for infringement under the provisional rights granted pursuant to Title 35, Section 154 of the United States Code or any other cause of action for acts which would constitute infringement occurring prior to this assignment, and including the right to claim priority under the International Convention of Paris (1883), as amended, of or in any corresponding foreign patent application, and I/we request the Director of the U.S. Patent and Trademark Office to issue any Letters Patent granted upon the invention set forth in the application to the assignee(s), its successors and assigns.

As a below named inventor, I hereby declare that:

This assignment and declaration is directed to:

☒ The attached application, or

☐ United States Application or PCT International Application Number _____ filed on _____ (Confirmation No. _____).

The application is entitled: **DISPLAY DEVICE AND COMPUTER READABLE MEDIA**

The above-identified application was made or was authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this assignment with declaration is punishable under 18 USC 1001 by fine or imprisonment of not more than five (5) years, or both.

Given Name(s)	Yojiro	Family Name/Surname(s)	Matsueda
Inventor's Signature:	Yojiro Matsueda	Date	31th Aug. 2016
Given Name(s)	Kenichi	Family Name/Surname(s)	Takatori
Inventor's Signature:	Kenichi Takatori	Date	31th Aug. 2016
Given Name(s)		Family Name/Surname(s)	
Inventor's Signature:		Date	
Given Name(s)		Family Name/Surname(s)	
Inventor's Signature:		Date	

PTO/SB/08a (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	
Filing Date	2021-04-06
First Named Inventor	Yojiro MATSUEDA
Art Unit	
Examiner Name	
Attorney Docket Number	8317-0050

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20110260951	A1	2011-10-27	HWANG et al.	
	2	20110260952	A1	2011-10-27	HWANG et al.	
	3	20110291550	A1	2011-12-01	KIM et al.	Corresponds to JP2011-249334
	4	20100270912	A1	2010-10-28	KO	
	5	20090121983	A1	2009-05-14	SUNG et al.	

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	2021-04-06
	First Named Inventor	Yojiro MATSUEDA
	Art Unit	
	Examiner Name	
	Attorney Docket Number	8317-0050

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2]	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	2002-044570	JP	A	2002-02-08	MITSUBISHI ELECTRIC CORP	English abstract and translation provided	☒
	2	H09-179529	JP	A	1997-07-11	SHARP KK	English abstract and translation provided	☒
	3	101373575	CN	A	2009-02-25	CANNON KK	Cited in the Chinese Office Action; English abstract and translation provided	☒
	4	2011-249334	JP		2011-12-08		Cited in the specification	☐

If you wish to add additional Foreign Patent Document citation information please click the Add button Add

NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	Office Action issued in Japanese Patent Application No. 2016-104437 dated March 31, 2020 with English abstract provided	
	2	Office Action issued in Chinese Patent Application No. 201610772958.1 dated December 17, 2019 with English translation provided	☒
	3	Office Action issued in Japanese Patent Application No. 2016-104437 dated November 10, 2020	☒

If you wish to add additional non-patent literature document citation information please click the Add button Add

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	2021-04-06
	First Named Inventor	Yojiro MATSUEDA
	Art Unit	
	Examiner Name	
	Attorney Docket Number	8317-0050

EXAMINER SIGNATURE			
Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	2021-04-06
	First Named Inventor	Yojiro MATSUEDA
	Art Unit	
	Examiner Name	
	Attorney Docket Number	8317-0050

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Eric Jensen/	Date (YYYY-MM-DD)	2021-04-06
Name/Print	Eric Jensen	Registration Number	37855

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	8317-0050
	Application Number	
Title of Invention	DISPLAY DEVICE AND COMPUTER READABLE MEDIA	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
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☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
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Residence Information (Select One) US Residency ● Non US Residency Active US Military Service

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Country [i]	JP

Inventor 2 Remove

Legal Name

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Residence Information (Select One) US Residency ◉ Non US Residency Active US Military Service

City	Kanagawa	Country of Residence [i]	JP

Mailing Address of Inventor:

Address 1	c/o NLT Technologies, Ltd.
Address 2	1753, Shimonumabe, Nakahara-ku, Kawasaki
City	Kanagawa
State/Province	
Postal Code	211-8666
Country [i]	JP

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

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	Application Number	
Title of Invention	DISPLAY DEVICE AND COMPUTER READABLE MEDIA	

Enter either Customer Number or complete the Correspondence Information section below.
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☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	466		
Email Address	pair_nixon@firsttofile.com	Add Email	Remove Email

Application Information:

Title of the Invention	DISPLAY DEVICE AND COMPUTER READABLE MEDIA		
Attorney Docket Number	8317-0050	**Small Entity Status Claimed**	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	34	**Suggested Figure for Publication (if any)**	

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For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	8317-0050
	Application Number	
Title of Invention	DISPLAY DEVICE AND COMPUTER READABLE MEDIA	

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This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	Continuation of	15255377	2016-09-02

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Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)
2015-173215	JP	2015-09-02	

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Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)
2016-104437	JP	2016-05-25	

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Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	8317-0050
	Application Number	
Title of Invention	DISPLAY DEVICE AND COMPUTER READABLE MEDIA	

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

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The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	8317-0050
	Application Number	
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Applicant 1 — Remove

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

● Assignee	Legal Representative under 35 U.S.C. 117	Joint Inventor
Person to whom the inventor is obligated to assign.	Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor:

If the Applicant is an Organization check here. ☒

Organization Name	NLT Technologies, Ltd.		
Mailing Address Information For Applicant:			
Address 1	1753, Shimonumabe, Nakahara-ku		
Address 2	Kawasaki		
City	Kanagawa	**State/Province**	
Country	JP	Postal Code	211-8666
Phone Number		Fax Number	
Email Address			

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	8317-0050
	Application Number	
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Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

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Address 1			
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See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Eric Jensen/			Date (YYYY-MM-DD)	2021-04-06
First Name	Eric	Last Name	Jensen	Registration Number	37855

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	Application Number	
Title of Invention	DISPLAY DEVICE AND COMPUTER READABLE MEDIA	

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ABSTRACT

A display device includes pixels having different arrangements of subpixels and reducing a color edge. The display device includes a display unit where a plurality of first pixels including subpixels of three colors and second pixels including subpixels of the three colors are alternately arrayed in row and column directions, an arrangement of the subpixels in the first pixel and an arrangement of the subpixels in the second pixel differing from each other, and a luminance allocation unit allocating luminance of a subpixel of a first color among the three colors in the first pixel to a subpixel of the first color in the second pixel adjacent to the first pixel with a predetermined ratio and allocating luminance of the subpixel of the first color in the second pixel to the subpixel of the first color in the first pixel adjacent to the second pixel with a predetermined ratio.

DISPLAY DEVICE AND COMPUTER READABLE MEDIA

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001]

This is a continuation of U.S. Application No. 15/255,377 filed on September 2, 2016 claims priority under 35 U.S.C. §119(a) on Patent Application No. 2015-173215 filed in Japan on September, 2, 2015 and Patent Application No. 2016-104437 filed in Japan on May, 25, 2016, the entire contents of which are hereby incorporated by reference.

FIELD

[0002]

The present invention relates to a display device and a program.

BACKGROUND

[0003]

Display devices displaying a color image by using pixels configured by combining subpixels of three colors that are red, green, and blue have been used. Particularly, in order to secure an opening ratio (aperture ratio) at a high resolution in an OLED display device, a pixel array where columns including alternately-arranged subpixels of red and green and columns including subpixels of blue are alternately arranged has been proposed. In the description hereinafter, an organic light emitting diode is referred to an OLED.

[0004]

First, the reason why the pixel array of Japanese Patent Application Laid-Open No 2011-249334 (hereinafter, referred to as Patent Document 1) is proposed will be described. In an OLED display device, a color image is displayed by combining subpixels of, for example, three colors that are red, green, and blue. Herein, each subpixel emits light of any one of red, green, and blue. Black material is placed around each subpixel. The black material prevents color mixing and light leakage between the adjacent subpixels. On the

other hand, the existence of the black material which does not emit light decreases the opening ratio.

[0005]

In the manufacturing process of the OLED display device, a frame having a predetermined shape is formed on a plate shape base member by a black material, and after that, a layer of a light-emitting material is formed by using a metal mask. The metal mask is a mask which arranged a plurality of openings to a thin metal plate. The size of the opening is slightly larger than the inner edge of the frame of the black material where a predetermined light-emitting material is arranged. The layer of the light-emitting material is formed in a shape corresponding to each opening of the metal mask by deposition. Therefore, the layer of the light-emitting material is formed inside of the frame of the black material without a gap.

[0006]

However, a sufficient distance is needed between the openings of the metal mask. If the openings are too close to each other, it is difficult to manufacture the metal mask, and during the use, the portion may be broken to form a hole, so that there is a possibility that the metal mask cannot fulfill the function. In order to solve the problem, when subpixels of the same color are arranged in a line, a slit-shaped metal mask which use a gap between a pluralities of wires fixed to a framework as a strip-shaped opening may be used. By using the slit-shaped metal mask, the distance between the subpixels of the same color which are adjacent to each other is decreased, so that the opening ratio can be increased.

[0007]

In the case of manufacturing a high resolution OLED display device, that is, an OLED display device which individual subpixels are small, a metal mask having small openings is needed. Therefore, in the above-described slit-shaped metal mask, a wire may bent to be in contact with an adjacent wire, so that it is difficult to form a layer of a light-emitting material

having a predetermined shape.

[0008]

When manufacturing a high resolution OLED display device, even though the subpixels of the same color are arranged in a line, the slot-shaped metal mask obtained by forming a plurality of holes in the metal plate is used. As described above, in the slot-shaped metal mask, it is difficult to increase the opening ratio by decreasing the distance between the subpixels of the same color which are adjacent to each other.

[0009]

In the pixel array of Patent Document 1, a slot-shaped metal mask manufacturing two adjacent subpixels of blue by one opening is used. Therefore, an effective area of the subpixel of blue can be increased. Namely, the pixel array of Patent Document 1 is a pixel array effective in increasing the opening ratio of a high resolution OLED display device.

[0010]

However, the pixel array of Patent Document 1 is a pixel array including two types of pixels having different arrangements of subpixels of blue in the pixels. In a display device having such a pixel array, for example, in a case a black letter is displayed on white background, the edge of the letter may seem to be slightly colored.

[0011]

Like this, a portion where color which should not be originally displayed is visible, is referred to as color edge in the description hereinafter. The color edge easily occurs when a high-contrast image such as a black letter, a black straight line, or a black point on white background is displayed. The color edge is the problem in using the pixel array of Patent Document 1.

SUMMARY

[0012]

According to an aspect of the disclosure, there is provided a display device including:

a display unit where a plurality of first pixels including subpixels of three colors and a plurality of second pixels including subpixels of the three colors are alternately arrayed in row and column directions, an arrangement of the subpixels in the first pixel and an arrangement of the subpixels in the second pixel being different from each other; and a luminance allocation unit which allocates luminance of a subpixel of a first color among the three colors in the first pixel to a subpixel of the first color in the second pixel adjacent to the first pixel with a predetermined ratio and allocates luminance of the subpixel of the first color in the second pixel to the subpixel of the first color in the first pixel adjacent to the second pixel with a predetermined ratio.

[0013]

It is to be understood that both the foregoing general description and the following detailed description are exemplary and explanatory and are not restrictive of this disclosure.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014]

Fig. 1 is a diagram illustrating outer appearance of a display device;

Fig. 2 is a diagram illustrating a configuration of the display device;

Fig. 3 is a diagram illustrating a configuration of a driver IC;

Fig. 4 is a diagram illustrating an arrangement of pixels as improvement of an array of pixels according to Patent Document 1 and allocation of luminance;

Figs. 5A and 5B are diagrams illustrating allocation of luminance;

Fig. 6 is a schematic cross sectional diagram illustrating arrangement of components of a subpixel in a display device;

Fig. 7 is a diagram illustrating an array of subpixels;

Fig. 8 is a flowchart illustrating a process of manufacturing an OLED panel;

Fig. 9 is a diagram illustrating a process of manufacturing a wiring portion;

Fig. 10 is a diagram illustrating a process of manufacturing a wiring portion;

Fig. 11 is a diagram illustrating a process of manufacturing a wiring portion;

Fig. 12 is a circuit diagram illustrating a pixel circuit allowing one OLED to emit light;

Fig. 13 is a diagram illustrating an output characteristic of a driving TFT;

Fig. 14 is a time chart illustrating an image signal and driving signals;

Fig. 15 is a flowchart illustrating a flow of processes of a program;

Figs. 16A to 16C are diagrams illustrating luminance allocation according to a second embodiment;

Fig. 17 is a flowchart illustrating a flow of processes of a program according to the second embodiment;

Fig. 18 is a diagram illustrating an arrangement of pixels and luminance allocation according to a third embodiment;

Figs. 19A and 19B are diagrams illustrating luminance allocation according to the third embodiment;

Figs. 20A and 20B are diagrams illustrating luminance allocation of No. 3-S in Table 2;

Fig. 21 is a flowchart illustrating a flow of processes of a program according to the third embodiment;

Fig. 22 is a diagram illustrating an arrangement of pixels and luminance allocation according to a fourth embodiment;

Fig. 23 is a diagram illustrating an arrangement of pixels and luminance allocation according to a fifth embodiment;

Fig. 24 is a diagram illustrating an arrangement of pixels and luminance allocation according to a sixth embodiment;

Fig. 25 is a diagram illustrating an arrangement of pixels and luminance allocation according to a seventh embodiment;

Fig. 26 is a flowchart illustrating a flow of processes of a program according to an eighth embodiment;

Fig. 27 is a functional block diagram illustrating operations of a display device according to a ninth embodiment;

Fig. 28 is a diagram illustrating a configuration of a display device according to a tenth embodiment;

Fig. 29 is a diagram illustrating outer appearance of an electronic device according to an eleventh embodiment;

Fig. 30 is a circuit diagram illustrating another pixel circuit allowing one OLED to emit light;

Fig. 31 is a time chart illustrating an image signal and driving signals with respect to the circuit diagram of Fig. 30;

Fig. 32 is a diagram illustrating outer appearance of a display device;

Fig. 33 is a circuit diagram illustrating still another pixel circuit allowing one OLED to emit light; and

Fig. 34 is a time chart illustrating an image signal and driving signals with respect to the circuit diagram of Fig. 33.

DETAILED DESCRIPTION

[0015]

[First Embodiment]

Fig. 1 is a diagram illustrating outer appearance of a display device 10. Fig. 1 is a diagram as the display device 10 is seen from a front side, that is, a side of a surface displaying an image. The display device 10 is a device displaying a still image or a video, which is incorporated in various electronic apparatuses such as a smartphone, a mobile phone, a tablet, a PC, or a television set. In the description hereinafter, in each figure, various directions of forward, backward, leftward, rightward, upward, and downward indicated by

arrows are used. The display device 10 according to the embodiment is an OLED panel. The display device 10 according to the embodiment has a rectangular shape which is elongated in the upward/downward direction and displays an image by scanning leftward/rightward scan lines in the upward/downward direction.

[0016]

The display device 10 includes a rectangular thin film transistor (TFT) substrate 11 and a flexible printed circuit (FPC) 12. The TFT substrate 11 is a glass substrate which various circuits and connection terminals are formed on one side by a semiconductor manufacturing process.

[0017]

Herein, features of the semiconductor manufacturing process will be described. Semiconductor integrated circuits such as an integrated circuit (IC) are manufactured by repeatedly performing processes such as film-forming, developing, or injecting trace element s on a surface of a plate such as a glass substrate or a silicon substrate. Manufacturing apparatuses suitable for the respective processes are commercialized, and the processes can be performed at positioning accuracy and size accuracy of a nano-micrometer level. A thermal annealing process, immersion into a highly reactive solution such as a hydrofluoric acid, or machining using a corrosive gas is repeatedly performed in order to improve quality of films or control device performance. The semiconductor manufacturing process having the above-described features is called a semiconductor process in the description hereinafter.

[0018]

The FPC 12 is a soft substrate connected to the connection terminals formed in the TFT substrate 11. The FPC 12 is provided with a connector (not illustrated) connected to a control device of an electronic apparatus. The display device 10 acquires an image signal from the control device of the electronic apparatus through the connector provided to the FPC 12.

[0019]

A rectangular display unit 30 is provided in a central portion of the TFT substrate 11. A plurality of pixels configured with three color subpixels are arrayed in the display unit 30, and anode electrodes 43 are independently formed for the respective subpixels. On the other hand, a common cathode electrode 19 is provided so as to cover the top surface of the display unit 30.

[0020]

The cathode electrode 19 is a transparent electrode made of, for example, indium tin oxide (ITO), transparent conductive ink, or graphene. An arrangement of subpixels and a structure of the subpixel in the display unit 30 will be described later.

[0021]

An emission control driver 14, a demultiplexer 15, a scan driver 16, and a protection circuit 17 are formed along four sides of the TFT circuit substrate by a semiconductor process. Hereinafter, an overview of the semiconductor circuit will be described.

[0022]

The emission control driver 14 is formed along the right side of the TFT substrate 11. The emission control driver 14 is a circuit controlling emission time of each subpixel in the display unit 30 based on the image signal acquired through the FPC 12.

[0023]

The demultiplexer 15 is formed along the lower side of the TFT substrate 11. The demultiplexer 15 returns data sequences with a high transmission rate which are acquired through the FPC 12 to a plurality of data sequences with an original transmission rate. The demultiplexer 15 simultaneously outputs signals of one scan line to the display unit 30.

[0024]

The scan driver 16 is formed along the left side of the TFT substrate 11. The scan driver 16 is a circuit selecting and driving scan lines of the display unit 30 based on the image

signal acquired through the FPC 12. The protection circuit 17 is a circuit preventing destruction of the display panel caused by electrostatic discharge.

[0025]

The front side of the display unit 30, the emission control driver 14, the scan driver 16, and the protection circuit 17 is covered with a sealing plate 21. The sealing plate 21 is a rectangular transparent glass plate. A sealing portion 25 is provided along four sides of the sealing plate 21. The sealing portion 25 is a portion hermetically connecting the TFT substrate 11 and the sealing plate 21. The sealing portion 25 is formed, for example, by bonding process, in which low-melting-point glass powder (e.g. glass frit) melted and hardened.

[0026]

A driver IC 18 is mounted in the lower side of the demultiplexer 15. The driver IC 18 is an integrated circuit processing an image signal acquired through the FPC 12 to control the emission control driver 14, the demultiplexer 15, and the scan driver 16. Terminals of the driver IC 18 are connected to the respective connection terminals provided to the TFT substrate 11 through, for example, anisotropic conductive films (not illustrated).

[0027]

Fig. 2 is a diagram illustrating a configuration of the display device 10. More specifically, Fig. 2 illustrates a hardware configuration of the display device 10. The driver IC 18 is connected between the FPC 12 and the TFT substrate 11.

[0028]

A storage unit 56 is connected to the driver IC 18. The storage unit 56 is a storage device such as a static random access memory (SRAM), a dynamic random access memory (DRAM), or a flash memory. The storage unit 56 may be installed inside the driver IC 18.

[0029]

The image signal acquired through the FPC 12 is processed by the driver IC 18 to be

input to the emission control driver 14, the demultiplexer 15, and the scan driver 16 of the TFT substrate 11. Emission states of the subpixels in the display unit 30 are controlled by the emission control driver 14, the demultiplexer 15, and the scan driver 16. Correspondence between the signals output from the driver IC and the signals input to the emission control driver 14, the demultiplexer 15, and the scan driver 16 will be described later.

[0030]

Fig. 3 is a diagram illustrating a configuration of the driver IC 18. The driver IC 18 comprises a control unit 51, a receiving unit, a high-voltage logic unit, an analog control unit, an analog output unit, and a DC/DC converter. The control unit 51 is a low-voltage logic circuit which can operate at a high speed. The control unit 51 includes a brightness adjustment unit 52, a color tone adjustment unit 53, a gamma adjustment unit 54, and a luminance allocation unit 55. The brightness adjustment unit 52, the color tone adjustment unit 53, the gamma adjustment unit 54, and the luminance allocation unit 55 are implemented by a brightness adjustment circuit, a color tone adjustment circuit, a gamma adjustment circuit, and a luminance allocation circuit, respectively.

[0031]

The control unit 51 may be a processor embedded in the driver IC 18. In this case, the control unit 51 reads out a control program from the storage unit 56 or a non-volatile storage device (not illustrated) installed in the driver IC and expands the control program on the DRAM (not illustrated) or the like embedded in the driver IC 18 to execute the control program. By doing so, the brightness adjustment unit 52, the color tone adjustment unit 53, the gamma adjustment unit 54, and the luminance allocation unit 55 are performed.

[0032]

A control signal, an image signal, and an input power are supplied to the driver IC 18 through the FPC 12. The image signal is a signal in accordance with a standard defined by, for example, mobile industry processor interface (MIPI) alliance.

[0033]

The image signal is input through the receiving unit to the control unit 51. The image signal is sequentially processed by the brightness adjustment unit 52, the color tone adjustment unit 53, and the gamma adjustment unit 54 based on the control signal, so that the image signal is adjusted so as to be a signal in accordance with the characteristics of the display device 10. After that, a luminance allocation process for each pixel is performed by the luminance allocation unit 55. The luminance allocation process will be described later.

[0034]

The high voltage logic unit processes the image signal processed by the control unit 51, and outputs a display panel control signal. The display panel control signal is a high-voltage digital signal. The display panel control signal is transmitted through wire lines of the TFT substrate 11 to the emission control driver 14, the demultiplexer 15, and the scan driver 16 (refer to Fig. 2). The signal transmitted to the emission control driver 14 and the scan driver 16 functions as an input signal for two drivers. The signal transmitted to the demultiplexer 15 functions as a timing control signal for the demultiplexer 15.

[0035]

The analog control unit and the analog output unit process the image signal processed by the control unit 51, and output an output terminal signal. The output terminal signal is an analog signal. The output terminal signal is transmitted through the wire lines of the TFT substrate 11 to the demultiplexer 15 and functions as an analog input signal for the demultiplexer 15.

[0036]

The DC/DC converter outputs a display panel driving power based on the image signal processed by the control unit 51 and the input power. The display panel driving power is supplied to each circuit on the TFT substrate and operates them. The analog control unit and the analog output unit process the image signal processed by the control unit 51, and

output an output terminal signal. The output terminal signal is an analog signal. The output terminal signal is transmitted through the wire lines of the TFT substrate 11 to the demultiplexer 15 and functions as an analog input signal for the demultiplexer 15.

[0037]

Each subpixel in the display unit 30 is controlled by the emission control driver 14, the demultiplexer 15, and the scan driver 16, so that an image is displayed on the display unit 30.

[0038]

Fig. 4 is a diagram illustrating an arrangement of pixels as improvement of an array of pixels according to Patent Document 1 and allocation of luminance. Fig. 4 illustrates a partial expanded diagram as seen from the front side of the display unit 30. In the display unit 30, pixels having three subpixels of a first subpixel 31, a second subpixel 32, and a third subpixel 33 are arranged in a matrix.

[0039]

First, the subpixels will be described. The first subpixel 31 is a subpixel emitting light of a first color. The second subpixel 32 is a subpixel emitting light of a second color. The third subpixel 33 is a subpixel emitting light of a third color. In the display device 10 according to the embodiment, for example, the first color is blue, the second color is green, and the third color is red.

[0040]

The first subpixels 31 are arranged in a column shape in the upward/downward direction. The two first subpixels 31 are close to each other in the upward/downward direction to constitute one pair. Each of the first subpixels 31 is a rectangle elongated in the upward/downward direction, where two corners at the short side adjacent to the subpixel in the same pair are rectangular and the other two corners are round.

[0041]

The second subpixel 32 and the third subpixel 33 are rounded rectangles elongated in the leftward/rightward direction. The second subpixel 32 and the third subpixel 33 have the same size. The second subpixel 32 and the third subpixel 33 are alternately arranged in the upward/downward direction.

[0042]

The columns where the first subpixels 31 are arranged and the columns where the second subpixels 32 and the third subpixels 33 are arranged are alternately arranged in the leftward/rightward direction. Referring to only the columns where the second subpixels 32 and the third subpixels 33 are arranged, the second subpixels 32 and the third subpixels 33 are arranged along the longitudinal directions of each subpixel, respectively.

[0043]

A set of the three subpixels of the first subpixel 31, the second subpixel 32, and the third subpixel 33 which are adjacent to each other is one pixel. A color and luminance of the pixel are determined by a combination of the luminances of the first subpixel 31, the second subpixel 32, and the third subpixel 33. For example, in the case the luminances of all the subpixels have maximum values, the color of the pixel becomes white.

[0044]

The display unit 30 includes two types of pixels, that is, a first pixel 351 and a second pixel 352. In the description hereinafter, the first pixel 351 is called an S-type pixel 351, and the second pixel 352 is called a T-type pixel 352. The boundary lines of the pixels illustrated in Fig. 4 are virtual lines for the description, and any member representing the boundary lines between the pixels does not exist in the display unit 30. A combination of the subpixels included in one pixel is determined by the control of the driver IC 18. The boundary lines of the pixels indicated by broken lines in Fig. 4 are lines passing through central portions between the adjacent pixels.

[0045]

Any one of the S-type pixel 351 and the T-type pixel 352 is a square. The first subpixel 31 is arranged along the right side of the square, the second subpixel 32 is arranged in the lower portion along the left side thereof, and the third subpixel 33 is arranged in the upper portion along the left side thereof. In the S-type pixel 351, the first subpixel 31 is closer to the upper side. In the T-type pixel 352, the first subpixel 31 is closer to the lower side. In the display unit 30, the S-type pixels 351 and the T-type pixels 352 are alternately arrayed in row and column directions.

[0046]

The luminances of the subpixels can be determined based on the colors and luminances of the pixels in the image signal acquired through the FPC 12. However, in a case where the luminances determined in this manner are used as they are, color edge is likely to occur. It occurs due to the arrangement of the first subpixel 31 in the T-type pixels 352 is different from the arrangement of the first subpixel 31 in the S-type pixels 351. The color edge is easier to be found in a case where a high-contrast image such as a black letter, straight line, or point is displayed on white background. Therefore, in the embodiment, as indicated by thick arrows in Fig. 4, the luminance allocation unit 55 allocates a portion of the luminance of the first subpixel 31 to the first subpixel 31 of the adjacent left pixel.

[0047]

More specifically, the luminance allocation unit 55 adds α times the luminance of the first subpixel 31 of the S-type pixel 351 determined based on the image signal to the luminance of the first subpixel 31 of the adjacent left pixel and decreases the luminance of the first subpixel 31 of the original pixel by the aforementioned amount. Namely, the luminance of the first subpixel 31 of the original pixel becomes $(1-\alpha)$ times the luminance determined based on the image signal. The luminance allocation unit 55 adds β times the luminance of the first subpixel 31 of the T-type pixel 352 determined based on the image signal to the luminance of the first subpixel 31 of the adjacent left pixel and decreases the

luminance of the first subpixel 31 of the original pixel by the aforementioned amount. Namely, the luminance of the first subpixel 31 of the original pixel becomes (1-β) times the luminance determined based on the image signal. In the embodiment, the luminance allocation unit 55 performs this process on all the pixels. Herein, α and β are constants of 0 or more and 1 or less. The second subpixel 32 and the third subpixel 33 display the luminances determined based on the image signal as they are.

[0048]

Figs. 5A and 5B are diagrams illustrating allocation of luminance. Figs. 5A and 5B illustrates the luminances of the first subpixels 31 in the four pixels in the upper left portion of Fig. 4. Fig. 5A illustrates the luminances of the first subpixels 31 determined based on the image signal. The luminance of the first subpixel 31 of the S-type pixel 351 in the upper left portion is S11, the luminance of the first subpixel 31 of the T-type pixel 352 in the upper right portion is T12, the luminance of the first subpixel 31 of the T-type pixel 352 in the lower left portion is T21, and the luminance of the first subpixel 31 of the S-type pixel 351 in the lower right portion is S22.

[0049]

Fig. 5B illustrates the luminances of the first subpixels 31 after the luminance allocation unit 55 performs the luminance allocation described with reference to Fig. 4. The luminance of the first subpixel 31 of the S-type pixel 351 in the upper left portion is (1-α) S11 + β T12. The luminance of the first subpixel 31 of the T-type pixel 352 in the upper right portion is (1-β) T12 + α S13. The luminance of the first subpixel 31 of the T-type pixel 352 in the lower left portion is (1-β) T21 + α S22. The luminance of the first subpixel 31 of the S-type pixel 351 in the lower right portion is (1-α) S22 + β T23.

[0050]

Table 1 lists an example of a preferred combination of α and β that were found by the applicant of the disclosure through many studies. By using values of α and β listed in Table

1, the color edge can be reduced so that the color edge is hardly conspicuous.

[Table 1]

No.	α	β
1	0.6	0.4

[0051]

The values of α and β listed in Table 1 are an example of preferred values. In some cases, the preferred values of α and β may be different from the values of Table 1 according to the arrangement of the subpixels or according to the image displayed on the display unit 30.

[0052]

Herein, the reason why the arrangement of the subpixels illustrated in Fig. 4 is to be performed will be described. First, an overview of a structure of a subpixel in an OLED panel will be described. Fig. 6 is a schematic cross sectional diagram illustrating arrangement of components of a subpixel in the display device 10.

[0053]

Fig. 6 schematically illustrates a cross-sectional diagram obtained by cutting one subpixel in the display device 10 along a plane perpendicular to the plane displaying an image. As described above, the display device 10 includes the TFT substrate 11 and the sealing plate 21. Dry air 26 is sealed in the space between the TFT substrate 11 and the sealing plate 21. A 1/4-wavelength phase difference plate 22 and a polarizing plate 23 are installed on the front side of the sealing plate 21.

[0054]

The TFT substrate 11 includes a wiring portion 41 and a pixel array portion 49. A TFT circuit output connection portion 42 and electronic circuits which connect the demultiplexer 15 and the scan driver 16 with the subpixels to retain charges for a predetermined time period are formed in the wiring portion 41 by a semiconductor process. Shapes and structures of wiring patterns of the wiring portion 41 are already used in various

display devices, and thus, the description thereof is omitted.

[0055]

The wiring portion 41 and the pixel array portion 49 are connected to each other by the TFT circuit output connection portion 42. One TFT circuit output connection portion 42 is provided to one subpixel.

[0056]

The pixel array portion 49 includes an anode electrode 43, an OLED layer 44, a cathode electrode 19, a cap layer 45, and an isolation portion 46. Each of the subpixels includes a pixel circuit, an organic light emitting element which includes the anode electrode 43, the cathode electrode 19 and an organic light emitting layer (OLED layer) disposed between the anode electrode 43 and the cathode electrode 19.

The anode electrode 43 is a substantially rectangular electrode installed on the front side of the wiring portion 41 for every one subpixel. One anode electrode 43 is connected to one TFT circuit output connection portion 42. In the description hereinafter, an OLED layer 44 may be referred to as an organic light emitting layer.

[0057]

The isolation portion 46 is installed on the front side of the anode electrode 43. The isolation portion 46 is an insulating layer having openings corresponding to the shapes of the first subpixel 31, the second subpixel 32, and the third subpixel 33 illustrated in Fig. 4.

[0058]

The OLED layer 44 is installed on the front side of the anode electrode 43 exposed from the opening installed in the isolation portion 46 and the edge of the opening installed in the isolation portion 46 to constitute the subpixel. The OLED layer 44 is a material emitting light of one of colors of the first color, the second color, and the third color if a voltage is applied.

[0059]

The cathode electrode 19 is installed on the front side of the OLED layer 44 and the isolation portion 46. As described above, the cathode electrode 19 is a transparent electrode continuously covering the subpixels included in the display unit 30.

[0060]

The cap layer 45 is installed on the front side of the cathode electrode 19. Similarly to the cathode electrode 19, the cap layer 45 continuously covers the subpixels. The cap layer 45 is a layer made of a transparent material having a high refractive index.

[0061]

The operations of the subpixel will be described. By the functions of the demultiplexer 15 and the scan driver 16, the TFT circuit output connection portion 42 connected to a subpixel which is to emit light is operated, so that a voltage is applied to the anode electrode 43. The voltage applied to the anode electrode 43 is a high voltage when the subpixel is to emit light with a high luminance, and the voltage is a low voltage when the subpixel is to emit light with a low luminance.

[0062]

By a potential difference between the anode electrode 43 and the cathode electrode 19, the OLED layer 44 interposed between the two electrodes, that is, the OLED layer 44 inside the opening installed in the isolation portion 46 emits light. The cap layer 45, the dry air 26, and the sealing plate 21 fulfill a function as a protective layer of preventing the OLED layer 44 from being deteriorated by moisture and destructed by an external force.

[0063]

The arrangement of the OLED layers 44 will be described. Fig. 7 is a diagram illustrating an array of subpixels. Fig. 7 schematically illustrates the array of subpixels as a plan diagram. Fig. 7 is a diagram illustrating the first subpixel 31, the second subpixel 32, the third subpixel 33, the TFT circuit output connection portion 42, the first OLED layer 441, the second OLED layer 442, and the third OLED layer 443 of the same portions as the

portions of the display unit 30 illustrated in Fig. 4. The first OLED layer 441 is the OLED layer 44 of the first color. Similarly, the second OLED layer 442 is the OLED layer 44 of the second color, and the third OLED layer 443 is the OLED layer 44 of the third color.

[0064]

One piece of the first OLED layer 441 is formed over the two first subpixels 31 which are adjacent in upward/downward direction. One piece of the second OLED layer 442 is formed for one second subpixel 32. Similarly, one piece of the third OLED layer 443 is formed for one third subpixel 33.

[0065]

One TFT circuit output connection portion 42 is arranged in the vicinity of each subpixel. The TFT circuit output connection portion 42 is a portion of extracting an output of a TFT circuit where the same pixel circuit arrangement pattern is repeatedly arranged and applying the output to the anode electrode 43. The TFT circuit output connection portion is arranged at the same portion without being changed according to the position of the anode electrode arrangement pattern of the OLED layer 44. As a result, although the positions of the anode electrodes 43 are deviated according to the column in the upward/downward direction similarly to the deposition pattern of the first OLED layer 441, since the condition of the TFT circuit can be maintained to be the same, uniform emission can be obtained.

[0066]

Fig. 8 is a flowchart illustrating a process of manufacturing an OLED panel. A method of manufacturing the display device 10 according to the embodiment will be described in brief with reference to Fig. 8. Semiconductor manufacturing apparatuses used for manufacturing the display device 10 such as a vapor deposition apparatus, a sputtering apparatus, a spin coat apparatus, an exposure apparatus, a developing apparatus, an etching apparatus, a sealing system, a cutting apparatus, and a transport apparatus connecting these apparatuses are not illustrated. These apparatuses are operated according to a predetermined

program.

[0067]

A manufacturer of the display device 10 manufactures the wiring portion 41 on a substrate made of a glass by using a semiconductor process (step S501). At this time, the emission control driver 14, the demultiplexer 15, the scan driver 16, and the protection circuit 17 are also manufactured. The process of step S501 will be described in detail later. In steps described hereinafter, processes on the surface of the glass substrate where the wiring portion 41 is manufactured are performed.

[0068]

The semiconductor manufacturing apparatus manufactures the TFT circuit output connection portion 42 and the anode electrode 43 (step S502). More specifically, for example, after a vapor deposition apparatus forms a metal film, a spin coat apparatus, an exposure apparatus, a developing apparatus, and an etching apparatus removes unnecessary portions of the metal film, so that the TFT circuit output connection portion 42 and the anode electrode 43 are formed.

[0069]

The semiconductor manufacturing apparatus manufactures the isolation portion 46 (step S503). More specifically, for example, after the spin coat apparatus deposits a photosensitive organic resin film, the exposure apparatus performs exposure with a predetermined pattern, and the developing apparatus and the etching apparatus removes unnecessary portions, so that the isolation portion 46 is manufactured.

[0070]

The semiconductor manufacturing apparatus manufactures the OLED layer 44 (step S504). Since a material for the OLED layer 44 is an organic material, it is difficult to form the OLED layer by a semiconductor process including a thermal annealing process, immersion into a highly reactive solution, machining using a corrosive gas, or the like.

Therefore, in the state that the anode electrode 43 and the isolation portion 46 are covered with a metal mask including openings having a shape of the first OLED layer 441 described with reference to Fig. 7, the vapor deposition apparatus performs deposition of the first OLED layer 441. After that, in the state that the anode electrode 43 and the isolation portion 46 are covered with a metal mask including openings having a shape of the second OLED layer 442, the vapor deposition apparatus performs deposition of the second OLED layer 442. In the state that the anode electrode 43 and the isolation portion 46 are covered with a metal mask including openings having a shape of the third OLED layer 443, the vapor deposition apparatus performs deposition of the third OLED layer 443. The shapes of the metal masks and the structures of the OLED layers 44 will be described in detail later.

[0071]

The manufacturing order of the first OLED layer 441, the second OLED layer 442, and the third OLED layer 443 may be changed.

[0072]

The vapor deposition apparatus sequentially manufactures the cathode electrode 19 and the cap layer 45 (step S505). Since the cathode electrode 19 and the cap layer 45 are layers spreading over the entire display unit 30, the cathode electrode and the cap layer do not need to be manufactured at a high accuracy.

[0073]

After the sealing plate 21 of which the one side is provided with the 1/4-wavelength phase difference plate 22 and the polarizing plate 23 is attached on the front side of the display unit 30, the sealing apparatus hermetically seals the edge of the sealing plate 21 (step S506). The OLED panel is completed by the above processes.

[0074]

The 1/4-wavelength phase difference plate 22 and the polarizing plate 23 may be provided on the surface of the sealing plate 21 after step S506. A plurality of TFT substrates

11 formed on one large glass substrate may be cut into a predetermined size by the cutting apparatus between step S505 and step S506 or after step S506.

[0075]

The shape of the metal mask used at the time of manufacturing the OLED layer 44 in step S504 will be described. As described above, since it is difficult to use a semiconductor process in the process of step S504, the size accuracy and positioning accuracy of the mask are much lower than those of step S501 to step S503. Therefore, in order to securely cover the opening provided to the isolation portion 46 with the organic EL material, the opening having a sufficiently large size needs to be provided to the mask used in the process. On the other hand, in order to avoid mixing of the OLED layers 44 of adjacent colors, the openings provided to the isolation portion 46 need to be sufficiently separated from each other.

[0076]

Here, in order to obtain a bright display device 10, the light-emitting portion of each subpixel is preferably large. In order to increase the life cycle of the subpixel of the OLED panel, the light-emitting portion thereof is also preferably large. On the other hand, in order to obtain a high resolution display device 10, the size of each pixel is preferably small.

[0077]

The arrangement of subpixels illustrated in Fig. 4 is an arrangement which enables the area of the light-emitting portion of the subpixel to be large in the display device 10 having a small pixel size. This will be described more in detail with reference to Figs. 4, 6, and 7. The first OLED layers 441 of the adjacent two first subpixels 31 are manufactured by one opening of the metal mask, so that the width of the isolation portion 46 between the two first subpixels 31 can be decreased. The light-emitting portion of the first subpixel 31 can be increased by the decreased amount of the width of the isolation portion 46.

[0078]

The process of manufacturing the wiring portion 41 in step S501 will be described

more in detail. Hereinafter, the wiring portion 41 of one subpixel will be described as an example. The processes of manufacturing the emission control driver 14, the demultiplexer 15, the scan driver 16, and the protection circuit 17 are the same as those of an integrated circuit used in the related art, and thus, the description thereof is omitted. Figs. 9 to 11 are diagrams illustrating the process of manufacturing the wiring portion 41.

[0079]

First, the process will be described with reference to Fig. 9. The semiconductor manufacturing apparatus forms a base insulating film 92 by depositing, for example, a silicon nitride film or the like on the one side of a transparent substrate 91 such as a glass substrate through a chemical vapor deposition (CVD) method or the like. Next, the semiconductor manufacturing apparatus forms a polysilicon layer 93, by depositing amorphous silicon on the base insulating film 92 by using a CVD method or the like and performing crystallization by excimer laser annealing (ELA).

[0080]

The process will be continuously descried with reference to Fig. 10. The semiconductor manufacturing apparatus forms a gate insulating film 94 by depositing, for example, a silicon oxide film or the like on the polysilicon layer 93 by using a CVD method or the like. The semiconductor manufacturing apparatus forms a high-concentration impurity layer 931 having a predetermined shape by a doping process of adding impurities to the polysilicon layer 93 from the position above the gate insulating film 94. The semiconductor manufacturing apparatus laminates a first metal layer 95 on the gate insulating film 94 by using a sputtering method or the like. The first metal layer 95 includes a TFT gate electrode 951 and a storage capacitor electrode 952.

[0081]

The semiconductor manufacturing apparatus forms a low-concentration impurity layer 932 having a predetermined shape by performing an additional doping process of adding

additional impurities to the polysilicon layer by using the first metal layer 95 as a mask. The portion where the impurities are not added becomes an undoped layer 933.

[0082]

The process will be continuously descried with reference to Fig. 11. The semiconductor manufacturing apparatus forms an interlayer insulating film 96 by depositing, for example, a silicon oxide film or the like by using a CVD method or the like. The semiconductor manufacturing apparatus forms through-holes penetrating down to the polysilicon layer 93 by performing anisotropic etching on the interlayer insulating film 96 and the gate insulating film 94. The semiconductor manufacturing apparatus laminates a second metal layer 97 having a predetermined shape by using a sputtering method or the like.

[0083]

The semiconductor manufacturing apparatus forms a planarized film by depositing a photosensitive organic material by using a spin coat method or the like. The semiconductor manufacturing apparatus forms through-holes penetrating down to the second metal layer 97 by anisotropic etching or the like. The process of manufacturing the wiring portion 41 is ended, and thus, a TFT portion 98 and a storage capacitor portion 99 are completed.

[0084]

Although one TFT portion 98 is illustrated in Figs. 6, 9, 10, and 11, the two TFT portions 98 of a switching TFT and a driving TFT described later are arranged to one subpixel.

[0085]

The structure of the OLED layer 44 in step S504 will be described more in detail. The OLED layer 44 is a stacked structure configured by stacking, for example, a hole injection layer, a hole transport layer, a light-emitting layer, an electron transport layer, an electron injection layer, and the like in the order from the bottom layer. The OLED layer 44 may be any one of a structure of electron transport layer/light-emitting layer/hole transport

layer, a structure of electron transport layer/light-emitting layer/hole transport layer/hole injection layer, a structure of electron injection layer/electron transport layer/light-emitting layer/hole transport layer, and a structure of a single light-emitting layer. The OLED layer 44 may include an electron blocking layer and the like. Materials of the light-emitting layers are different according to the colors of the subpixels. The thicknesses of the hole injection layer, the hole transport layer, and the like may be individually determined according to the subpixels.

[0086]

A manufacturer of the display device 10 may use an automated manufacturing apparatus which performs a series of manufacturing processes by automatically controlling the apparatuses of the manufacturing processes and the transport apparatus connecting the apparatuses. In this case, the determination and the performing in the steps described above are performed by a control device of the automated manufacturing apparatus.

[0087]

An example of a pixel circuit allowing the subpixel to emit light will be described. In the description hereinafter, the light-emitting portion of one subpixel is referred to as an organic light emitting diode (OLED). Fig. 12 is a circuit diagram illustrating a pixel circuit allowing one OLED to emit light.

[0088]

A positive power supply VDD, a negative power supply VSS, an image signal Vdata, and a scan signal Scan are input to the pixel circuit. The image signal Vdata is output from the demultiplexer 15. The scan signal Scan is output from the scan driver 16.

[0089]

The pixel circuit includes a switching TFT, a driving TFT, and a storage capacitor C1 in addition to the OLED. The image signal Vdata is input to a source electrode of the switching TFT. The scan signal Scan is input to a gate electrode of the switching TFT. The

positive power supply VDD is connected to the first electrode of the storage capacitor C1 and a source electrode of the driving TFT. The negative power supply VSS is connected to the cathode electrode 19 of the OLED. A drain electrode of the switching TFT is connected to the second electrode of the storage capacitor C1 and a gate electrode of the driving TFT. The drain electrode of the driving TFT is connected to the anode electrode 43 of the OLED through the TFT circuit output connection portion 42. A driving TFT is an example of a driving transistor that controls a current flowing to the organic light emitting element. A switching TFT is an example of a switch that controls electrical connection between the driving transistor and the organic light emitting element.

[0090]

Fig. 13 is a diagram illustrating an output characteristic of the driving TFT. The operations of the pixel circuit will be described with reference to Figs. 12 and 13.

[0091]

The horizontal axis of Fig. 13 denotes an output voltage Vds of the driving TFT. The vertical axis of Fig. 13 denotes an output current Ids of the driving TFT. In Fig. 13, each solid line indicates a relationship between the output voltage Vds and the output current Ids of the driving TFT in each of the cases where a potential difference Vgs between the gate electrode and the source electrode of the driving TFT is -1.5 V, -2.0 V, -2.5 V, -3.0 V, and -3.5 V. In Fig. 13, the broken line indicates an I-V characteristic that is a relationship of the current and voltage between the anode electrode 43 and the cathode electrode 19 of the OLED.

[0092]

Fig. 14 is a time chart illustrating an image signal and driving signals. The horizontal axes of Fig. 14 denote time. The vertical axes of Fig. 14 denote an image signal Vdata, a voltage of a scan signal Scan N of an N-th scan line, and a voltage of scan signal Scan N+1 of an (N+1)-th scan line. The image signal Vdata is the voltage between a black potential and a

white potential corresponding to the brightness with which each OLED is allowed to emit light. The scan signal Scan N and the scan signal Scan N+1 are any one of ON and OFF. In Fig. 14, the scan signal Scan N is ON in the case of a low voltage and OFF in the case of a high voltage.

[0093]

The operations of the OLED will be described with reference to Figs. 12 to 14. The voltage of the scan signal Scan and the voltage of the image signal Vdata are applied to each pixel circuit. In a case where the scan line is selected by the scan driver 16, namely, in a case where the scan signal Scan is ON, the switching TFT becomes ON, and thus, the voltage according to the image signal Vdata is output from the drain electrode of the switching TFT.

[0094]

According to the potential difference Vgs between the output voltage of the drain electrode of the switching TFT and the positive power supply VDD, the driving TFT is operated as illustrated in Fig. 13. That is, the lower the voltage Vgs is, the larger the current flowing in the OLED is. As a result, the OLED emits light with a high luminance. After the scan signal Scan becomes OFF, the potential difference Vgs of the driving TFT is maintained by charges stored in the storage capacitor C1, and the OLED continues to emit light.

[0095]

Heretofore, an example in which a top-emission type OLED panel emitting light from the surface of the side opposite to the wiring portion 41 is used for the display device 10, described the manufacturing method, structure, and operations. A bottom-emission type OLED panel emitting light from the side of the wiring portion 41 may be used for the display device 10.

[0096]

Next, the reason why the first color is blue, the second color is green, and the third color is red in the display device 10 according to the embodiment will be described. In

general, among OLED materials of the three colors, that is, blue, green, and red, the material having the shortest life cycle is the OLED material of blue. Therefore, the life cycle of the display device 10 using the OLED panel is determined by the life cycle of the subpixel of blue. As described above, in order to increase the life cycle of the subpixel of the OLED panel, it is preferable that the light emitting portion is large.

[0097]

In the arrangement of the subpixels illustrated in Fig. 4, the area of the first subpixel 31 is larger than the areas of the second subpixel 32 and the third subpixel 33. Therefore, the first color that is the color of the first subpixel 31 is set to blue, so that the life cycle of the display device 10 can be increased.

[0098]

In a case where there is no need to increase the life cycle of the display device 10 and in a case where the OLED material of blue having a long life cycle can be used, the first color may be set to green or red.

[0099]

Fig. 15 is a flowchart illustrating a flow of processes of a program. The flow of the processes performed by the control unit 51 according to the embodiment illustrated in Fig. 3 will be described with reference to Fig. 15.

[0100]

The control unit 51 acquires image data for one scan line through the FPC 12 (step S521). The control unit 51 adjusts the image data in accordance with the specification of the display device 10 (step S522). More specifically, the brightness adjustment unit 52 adjusts the brightness of the image. The color tone adjustment unit 53 adjusts the color tone of the image, such as color temperature. The gamma adjustment unit 54 performs gamma correction in accordance with a relationship between a magnitude of the image signal and a brightness of the screen in the display device 10. The control unit 51 stores the adjusted

image data in the storage unit 56.

[0101]

The luminance allocation unit 55 extracts the data of the second pixel from the left from the storage unit 56 (step S523). The luminance allocation unit 55 determines whether or not the pixel from which the data is extracted is the S-type pixel 351 (step S524).

[0102]

In a case where it is determined that a processing pixel is the S-type pixel 351 (YES in step S524), the luminance allocation unit 55 adds the value of α times the luminance of the first subpixel 31 of the processing pixel to the luminance of the adjacent left pixel (step S525). the processing pixel is the pixel from which the data of the pixel is extracted (refer to step S523). The luminance allocation unit 55 set to $(1-\alpha)$ times the luminance of the first subpixel 31 of the processing pixel (step S526).

[0103]

In a case where it is determined that the pixel is not the S-type pixel 351 (NO in step S524), the luminance allocation unit 55 adds the value of β times the luminance of the first subpixel 31 of the processing pixel to the luminance of the adjacent left pixel (step S531). The luminance allocation unit 55 set to $(1-\beta)$ times the luminance of the first subpixel 31 of the processing pixel (step S532).

[0104]

After step S526 or step S532, the luminance allocation unit 55 determines whether or not the scanning process for one scan line is ended (step S535). In a case where it is determined that the scanning process is not ended (NO in step S535), the luminance allocation unit 55 changes the target pixel to the next pixel, that is, the adjacent right pixel (step S536). The luminance allocation unit 55 returns to step S524. The target pixel is the pixel from which the data of the pixel will be extracted, next time.

[0105]

In a case where it is determined that the process is ended (YES in step S535), the luminance allocation unit 55 outputs the data of the processed scan line to the emission control driver 14, the demultiplexer 15, and the scan driver 16 of the TFT substrate 11 (step S537). The subpixels corresponding to the processed scan lines of the display unit 30 emit light with predetermined luminances. In a case where, as a result of the process of the luminance allocation unit 55, the subpixel of which the luminance exceeds 100% is generated, the subpixel emits light with the luminance of 100%.

[0106]

The control unit 51 determines whether or not all scanning processes for one screen are ended (step S538). In a case where it is determined that the scanning processes for one screen are not ended (NO in step S538), the control unit 51 changes the scan line which was scanned, to the next scan line (step S539). The control unit 51 returns to step S521.

[0107]

In a case where it is determined that the process is ended (YES in step S538), the control unit 51 ends the process.

[0108]

According to the embodiment, in the display device having the pixels where the arrangements of the subpixels are different, the color edge can be reduced. According to the embodiment, it is possible to provide the display device 10 capable of reducing the color edge by a simple process using the driver IC 18 having the storage unit 56 having a capacity of the image data for one scan line, that is, the line memory.

[0109]

The arrangement and shapes of the first subpixel 31, the second subpixel 32, and the third subpixel 33 are not limited to Fig. 4. For example, the first subpixel 31 may be oval, rectangular, or the like. The second subpixel 32 and the third subpixel 33 may be rectangular, square, oval, circular, elliptic, hexagonal, octagonal, or the like. The second subpixel 32 and

the third subpixel 33 may be different from each other in terms of size and shape. The preferred values of α and β listed in Table 1 are determined by experiment, simulation, or the like according to shapes and sizes of the subpixels.

[0110]

After the luminance allocation unit 55 performs the process, the gamma adjustment unit 54 performs the process to display the image on the display unit 30.

[0111]

[Second Embodiment]

The embodiment relates to a display device 10 where, as a result of the process of the luminance allocation unit 55, in a case where there occurs a subpixel of which the luminance exceeds 100%, the luminance allocation is stopped. The portions common to the first embodiment will not be described.

[0112]

Similarly to the display device 10 described in the first embodiment, the display device 10 according to the embodiment allocates a portion of the luminance of the first subpixel 31 to the first subpixel 31 of the adjacent left pixel. The value of the constant α defining the allocation ratio is 0.6, and the value of the constant β is 0.4.

[0113]

Figs. 16A to 16C are diagrams illustrating luminance allocation according to the second embodiment. Figs. 16A to 16C are diagrams illustrating the luminances of the first subpixels 31 of a total of sixteen pixels of four rows and four columns as a percentage with respect to the maximum luminance.

[0114]

Fig. 16A illustrates an example of the luminances of the first subpixels 31 determined based on the image signal. Fig. 16B illustrates a result of the allocation of the luminance of the first subpixel 31 to the first subpixel 31 in the adjacent left pixel based on the values of α

and β similarly to the first embodiment. The luminance of the first subpixel 31 of the second pixel from the left in the third row from the top exceeds 100% to be 114%. Actually, the luminance of the first subpixel 31 of which the luminance exceeds 100% may be set to 100%, and the decreased luminance of 14% may be returned to the adjacent right pixel. Fig. 16C illustrates an example where the luminance of the first subpixel 31 of which the luminance exceeds 100% is set to 100% and the decreased luminance of 14% is returned to the adjacent right pixel. The driver IC 18 according to the embodiment outputs the luminance illustrated in Fig. 16C.

[0115]

Fig. 17 is a flowchart illustrating a flow of processes of a program according to the second embodiment. The flow of the processes performed by the control unit 51 according to the embodiment will be described with reference to Fig. 17.

[0116]

The processes up to step S532 are the same as those of Fig. 15, and thus, the description thereof is omitted. After step S526 or step S532, the luminance allocation unit 55 determines whether or not the luminance of the first subpixel 31 added with the luminance in step S525 or step S531 exceeds 100% (step S541).

[0117]

In a case where it is determined that the luminance exceeds 100% (YES in step S541), the luminance allocation unit 55 returns the amount of the luminance exceeding 100% to the first subpixel 31 of the original pixel (step S542). More specifically, the difference between the luminance of the first subpixel 31 of the adjacent left pixel of the processing pixel and 100% is calculated, and the difference is added to the first subpixel 31 of the processing pixel. The luminance of the first subpixel 31 of the adjacent left pixel of the processing pixel is set to 100%.

[0118]

In a case where it is determined that the luminance does not exceed 100% (NO in step S541) and after step S542 is ended, the luminance allocation unit 55 determines whether or not the process for one scan line is ended (step S535). The processes after step S535 are the same as those of the flowchart of the first embodiment described with reference to Fig. 15, and thus, the description thereof is omitted.

[0119]

According to the embodiment, over the entire display unit 30, the sum of the luminances of the first subpixels 31 can be maintained to be the same as the sum of the luminances of the first subpixels 31 determined based on the image signal. Therefore, the brightness of the entire image can be close to the signal of the original image data.

[0120]

[Third Embodiment]

The embodiment relates to a display device 10 where the luminance allocation unit 55 allocates the luminance of the first subpixel 31 to the first subpixels 31 of the two pixels that are the adjacent lower pixel and the adjacent slanted lower left pixel in the diagonal direction of the pixel. The portions common to the first embodiment will not be described.

[0121]

Fig. 18 is a diagram illustrating an arrangement of pixels and luminance allocation according to the third embodiment. In the embodiment, the luminance allocation unit 55 allocates a portion of the luminance of the first subpixel 31 to the first subpixels 31 of the two pixels that are the adjacent lower pixel and the adjacent slanted lower left pixel in the diagonal direction of the pixel as indicated by thick arrows in Fig. 18.

[0122]

More specifically, the luminance allocation unit 55 adds α times the luminance of the first subpixel 31 of the S-type pixel 351 determined based on the image signal to the

luminance of the first subpixel 31 of the adjacent lower pixel and adds β times the luminance of the first subpixel 31 of the S-type pixel 351 to the luminance of the first subpixel 31 of the adjacent lower left pixel. The luminance allocation unit 55 decreases the luminance of the first subpixel 31 of the original pixel by the aforementioned amount. Namely, the luminance of the first subpixel 31 of the original pixel becomes $(1-\alpha-\beta)$ times the luminance determined based on the image signal.

[0123]

The luminance allocation unit 55 adds γ times the luminance of the first subpixel 31 of the T-type pixel 352 determined based on the image signal to the luminance of the first subpixel 31 of the adjacent lower pixel and adds δ times the luminance of the first subpixel 31 of the T-type pixel 352 to the luminance of the first subpixel 31 of the adjacent lower left pixel. The luminance allocation unit 55 decreases the luminance of the first subpixel 31 of the original pixel by the aforementioned amount. Namely, the luminance of the first subpixel 31 of the original pixel becomes $(1-\gamma-\delta)$ times the luminance determined based on the image signal.

[0124]

Herein, α, β, γ, and δ are constants of 0 or more and 1 or less. The second subpixel 32 and the third subpixel 33 display the luminances determined based on the image signal as they are.

[0125]

Figs. 19A and 19B are diagrams illustrating luminance allocation according to the third embodiment. Figs. 19A and 19B illustrate the luminances of the first subpixels 31 in the four pixels in the central portion of Fig. 18. Fig. 19A illustrates the luminances of the first subpixels 31 determined based on the image signal. The luminance of the first subpixel 31 of the S-type pixel 351 in the upper left portion of Fig. 19A is S22, the luminance of the first subpixel 31 of the T-type pixel 352 in the upper right portion is T23, the luminance of the

first subpixel 31 of the T-type pixel 352 in the lower left portion is T32, and the luminance of the first subpixel 31 of the S-type pixel 351 in the lower right portion is S33.

[0126]

Fig. 19B illustrates the luminances of the first subpixels 31 after the luminance allocation unit 55 performs the luminance allocation described with reference to Fig. 18. The luminance of the first subpixel 31 of the S-type pixel 351 in the upper left portion of Fig. 19B is $(1-\alpha-\beta)$ S22 + β S13 + γ T12. Herein, S13 and T12 indicate the luminances of the first subpixels 31 of the pixel in the one upper row from the pixel illustrated in Figs. 19A and 19B.

[0127]

Similarly, the luminance of the first subpixel 31 of the T-type pixel 352 in the upper right portion of Fig. 19B is $(1-\gamma-\delta)$ T23 + α S13 + δ T14. The luminance of the first subpixel 31 of the T-type pixel 352 in the lower left portion is $(1-\gamma-\delta)$ T32 + α S22 + δ T23. The luminance of the first subpixel 31 of the S-type pixel 351 in the lower right portion is $(1-\alpha-\beta)$ S33 + β S24 + γ T23.

[0128]

Examples of the combinations of the preferred α, β, γ, and δ that were found by the applicant of the disclosure through many studies are listed in Table 2. By using the combinations of the values of α, β, γ, and δ listed in Table 2, the color edge can be reduced so that the color edge is hardly conspicuous.

[Table 2]

No.	α	β	γ	δ
3-A	0.1	0.2	0.05	0.15
3-B	0.4	0.6	0.6	0.4
3-C	0.2	0.0	0.1	0.0
3-D	0.1	0.0	0.0	0.0
3-S	α	0.0	γ	0.0

[0129]

α, β, γ, and δ listed in Table 2 are the examples of the preferred values. In some cases, the preferred values of α, β, γ, and δ may be different from the values of Table 2 according to the arrangement of the subpixels or according to the image displayed on the display unit 30.

[0130]

An example indicated by No. 3-B in Table 2 will be described more in detail. In the example of No. 3-B, since α is 0.4 and β is 0.6, the sum of α and β is 1.0. Therefore, 40% of the luminance of the first subpixel 31 of the S-type pixel 351 is allocated to the luminance of the first subpixel 31 of the adjacent lower pixel, and 60% thereof is allocated to the luminance of the first subpixel 31 of the adjacent lower left pixel. The luminance of the first subpixel of the original S-type pixel 351 becomes zero. Similarly, since γ is 0.6 and δ is 0.4, the sum of γ and δ is 1.0. Therefore, 60% of the luminance of the first subpixel 31 of the T-type pixel 352 is allocated to the luminance of the first subpixel 31 of the adjacent lower pixel, and 40% thereof is allocated to the luminance of the first subpixel 31 of the adjacent lower left pixel. The luminance of the first subpixel 31 of the original T-type pixel 352 becomes zero.

[0131]

An example indicated by No. 3-C in Table 2 will be described more in detail. In the example of No. 3-C, α is 0.2, and β is 0.0. Therefore, 20% of the luminance of the first subpixel 31 of the S-type pixel 351 is allocated to the luminance of the first subpixel 31 of the adjacent lower pixel and is not allocated to the luminance of the first subpixel 31 of the adjacent lower left pixel. Similarly, γ is 0.1, and δ is 0.0. Therefore, 10% of the luminance of the first subpixel 31 of the T-type pixel 352 is allocated to the luminance of the first subpixel 31 of the adjacent lower pixel and is not allocated to the luminance of the first subpixel 31 of the adjacent lower left pixel.

[0132]

An example indicated by No. 3-D in Table 2 will be described more in detail. In the example of No. 3-D, α is 0.1, and β is 0.0. Therefore, 10% of the luminance of the first subpixel 31 of the S-type pixel 351 is allocated to the luminance of the first subpixel 31 of the adjacent lower pixel and is not allocated to the luminance of the first subpixel 31 of the adjacent lower left pixel. γ and δ are also 0.0. Therefore, the luminance of the first subpixel 31 of the T-type pixel 352 is not allocated to other pixels.

[0133]

The flow of the processes according to the embodiment will be described by using the example indicated by No. 3-S in Table 2. For simplifying the description, in No. 3-S, β and δ indicating the luminance allocation to the adjacent slanted lower left pixel are set to zero.

[0134]

Figs. 20A and 20B are diagrams illustrating luminance allocation of No. 3-S in Table 2. Figs. 20A and 20B correspond to a case where β and δ of Figs. 19A and 19B are set to zero. Fig. 21 is a flowchart illustrating a flow of processes of a program according to the third embodiment. More specifically, Fig. 21 is a flowchart at the time of implementing the luminance allocation illustrated in Figs. 20A and 20B. The flow of the processes performed by the control unit 51 according to the embodiment will be described with reference to Fig. 21.

[0135]

The control unit 51 acquires image data for one scan line through the FPC 12 (step S552). The control unit 51 adjusts the image data in accordance with the specification of the display device 10 (step S553). More specifically, the brightness adjustment unit 52 adjusts the brightness of the image. The color tone adjustment unit 53 adjusts the color tone of the image, such as color temperature. The gamma adjustment unit 54 performs gamma correction in accordance with a relationship between a magnitude of the image signal and a brightness of the screen in the display device 10.

[0136]

The control unit 51 stores the adjusted image data in the storage unit 56. In the embodiment, data of the latest two scan lines are stored in the storage unit 56. Namely, the data of the older scan line between the data of the two scan lines stored in the storage unit 56 is removed, and the data of the scan line newly processed in step S553 is stored.

[0137]

When the data of the first scan line is to be stored, data of a predefined dummy scan line is stored as data of one preceding scan line, that is, data of the zeroth scan line. As the data of the dummy scan line, for example, data where the luminances of all the subpixels are 50% is used.

[0138]

The control unit 51 initializes the output memory storing the data of the output scan line (step S554). The output memory represents a portion of the storage area in the storage unit 56. A capacity of the storage area, that is, a capacity of the output memory is a capacity of data for one scan line. As an initial value used in step S554, the data where the luminances of all the subpixels are zero is used.

[0139]

The luminance allocation unit 55 extracts the data of the leftmost pixel from the storage unit 56 (step S556). The luminance allocation unit 55 determines whether or not the pixel from which the data is extracted is the S-type pixel 351 (step S557).

[0140]

In a case where it is determined that the pixel is the S-type pixel 351 (YES in step S557), the luminance allocation unit 55 adds the value of $(1-\alpha)$ times the luminance of the first subpixel 31 of the processing pixel to the luminance of the pixel corresponding to the output memory (step S558). The luminance allocation unit 55 adds the value of γ times the luminance of the first subpixel 31 of the one upper pixel from the processing pixel to the

luminance of the pixel corresponding to the output memory (step S559).

[0141]

In a case where it is determined that the pixel is not the S-type pixel 351 (NO in step S557), the luminance allocation unit 55 adds the value of $(1-\gamma)$ times the luminance of the first subpixel 31 of the processing pixel to the luminance of the pixel corresponding to the output memory (step S561). The luminance allocation unit 55 adds the value of α times the luminance of the first subpixel 31 of the one upper pixel from the processing pixel to the luminance of the pixel corresponding to the output memory (step S562).

[0142]

After step S559 or step S562 is ended, the luminance allocation unit 55 determines whether or not the process for one scan line is ended (step S565). In a case where it is determined that the process is not ended (NO in step S565), the luminance allocation unit 55 changes the target pixel to the next pixel, that is, the adjacent right pixel (step S566). The luminance allocation unit 55 returns to step S557.

[0143]

In a case where it is determined that the process is ended (YES in step S565), the luminance allocation unit 55 outputs the data stored in the output memory to the emission control driver 14, the demultiplexer 15, and the scan driver 16 of the TFT substrate 11 (step S567). The subpixels corresponding to the processed scan lines of the display unit 30 emit light with predetermined luminances. In a case where, as a result of the process of the luminance allocation unit 55, the subpixel of which the luminance exceeds 100% is generated, the subpixel emits light with the luminance of 100%.

[0144]

The control unit 51 determines whether or not the process for one screen is ended (step S568). In a case where it is determined that the process is not ended (NO in step S568), the control unit 51 changes the to-be-processed scan line to the next scan line (step S569).

The control unit 51 returns to step S552.

[0145]

In a case where it is determined that the process is ended (YES in step S568), the control unit 51 ends the process.

[0146]

According to the embodiment, it is possible to provide the display device 10 capable of reducing the color edge by a simple process using a driver IC 18 having the storage unit 56 having a capacity of the image data for two scan lines, that is, the line memory for two scan lines.

[0147]

According to the embodiment, as described with reference to Fig. 18, the luminance of the first subpixel 31 is allocated to the luminances of the two first subpixels 31 adjacent to the subpixel. Namely, according to the embodiment, the luminance of the first subpixel 31 is adjusted finely. Due to the fine adjustment of the luminance, the color edge can be further reduced. The settings of the values of α, β, γ, and δ used by the luminance allocation unit 55 are allowed to be changeable from an external side, it is possible to provide the driver IC 18 capable of reducing the color edge of the display panel having various characteristics.

[0148]

[Fourth Embodiment]

The embodiment relates to a display device 10 where the scan line direction is determined according to the operation of the luminance allocation unit 55, so that a capacity of the storage unit 56 is saved. The portions common to the third embodiment will not be described.

[0149]

Fig. 22 is a diagram illustrating an arrangement of pixels and luminance allocation

according to the fourth embodiment. The operations of the luminance allocation unit 55 are the same as those of No. 3-S in Table 2. Namely, the luminance allocation unit 55 performs luminance allocation on the first subpixel 31 of the adjacent lower pixel.

[0150]

In the embodiment, the scan line direction is the upward/downward direction. By moving the scan line in the leftward/rightward direction, an image is displayed on the display unit 30. The demultiplexer 15 is arranged at the left or right side of the TFT substrate 11, and the scan driver 16 is arranged at the upper or lower side of the TFT substrate 11, so that the wiring in TFT substrate 11 according to the embodiment can be simplified.

[0151]

According to the embodiment, the luminance allocation unit 55 allocates the luminance to the pixels in the same scan line. For this reason, the data for one scan line is stored in the storage unit 56 to perform the process, so that the color edge can be reduced. Therefore, it is possible to provide the display device 10 capable of reducing the color edge using the driver IC 18 including the storage unit 56 having a small capacity, that is, an inexpensive driver IC 18.

[0152]

[Fifth Embodiment]

The embodiment relates to a display device 10 where the luminance allocation unit 55 allocates the luminance of the first subpixel 31 to the first subpixels 31 of the two pixels that are the adjacent lower pixel and the adjacent left pixels. The portions common to the third embodiment will not be described.

[0153]

Fig. 23 is a diagram illustrating an arrangement of pixels and luminance allocation according to the fifth embodiment. In the embodiment, the luminance allocation unit 55

allocates a portion of the luminance of the first subpixel 31 to the first subpixels 31 of the two pixels that are the adjacent lower pixels and the adjacent left pixel as indicated by thick arrows in Fig. 23.

[0154]

More specifically, the luminance allocation unit 55 adds α times the luminance of the first subpixel 31 of the S-type pixel 351 determined based on the image signal to the luminance of the first subpixel 31 of the adjacent lower pixel and adds β times the luminance of the first subpixel 31 of the S-type pixel 351 to the luminance of the first subpixel 31 of the adjacent left pixel. The luminance allocation unit 55 decreases the luminance of the first subpixel 31 of the original pixel by the aforementioned amount. Namely, the luminance of the first subpixel 31 of the original pixel becomes $(1-\alpha-\beta)$ times the luminance determined based on the image signal.

[0155]

The luminance allocation unit 55 adds γ times the luminance of the first subpixel 31 of the T-type pixel 352 determined based on the image signal to the luminance of the first subpixel 31 of the adjacent lower pixel and adds δ times the luminance of the first subpixel 31 of the T-type pixel 352 to the luminance of the first subpixel 31 of the adjacent left pixel. The luminance allocation unit 55 decreases the luminance of the first subpixel 31 of the original pixel by the aforementioned amount. Namely, the luminance of the first subpixel 31 of the original pixel becomes $(1-\gamma-\delta)$ times the luminance determined based on the image signal.

[0156]

Herein, α, β, γ, and δ are constants of 0 or more and 1 or less. The second subpixel 32 and the third subpixel 33 display the luminances determined based on the image signal as they are.

[0157]

According to the embodiment, it is possible to provide the display device 10 capable of reducing the color edge by a simple process using the driver IC 18 having the storage unit 56 having a capacity of the image data for two scan lines, that is, the line memory for two scan lines.

[0158]

[Sixth Embodiment]

The embodiment relates to a display device 10 where the luminance allocation unit 55 allocates the luminance of the first subpixel 31 and the luminance of the second subpixel 32 to the first subpixel 31 and the second subpixel 32 of the adjacent lower pixel, respectively. The portions common to the fourth embodiment will not be described.

[0159]

Fig. 24 is a diagram illustrating an arrangement of pixels and luminance allocation according to the sixth embodiment. In the embodiment, the luminance allocation unit 55 allocates a portion of the luminance of the first subpixel 31 to the first subpixel 31 of the adjacent lower pixel as indicated by thick arrows in Fig. 24. The luminance allocation unit 55 allocates a portion of the luminance of the second subpixel 32 to the second subpixel 32 of the adjacent lower pixel.

[0160]

More specifically, the luminance allocation unit 55 adds α times the luminance of the first subpixel 31 of the S-type pixel 351 determined based on the image signal to the luminance of the first subpixel 31 of the adjacent lower pixel. The luminance allocation unit 55 decreases the luminance of the first subpixel 31 of the original pixel by the aforementioned amount. Namely, the luminance of the first subpixel 31 of the original pixel becomes $(1-\alpha)$ times the luminance determined based on the image signal.

[0161]

The luminance allocation unit 55 adds ε times the luminance of the second subpixel

32 of the S-type pixel 351 determined based on the image signal to the luminance of the second subpixel 32 of the adjacent lower pixel. The luminance allocation unit 55 decreases the luminance of the second subpixel 32 of the original pixel by the aforementioned amount. Namely, the luminance of the second subpixel 32 of the original pixel becomes (1-ε) times the luminance determined based on the image signal.

[0162]

The luminance allocation unit 55 adds γ times the luminance of the first subpixel 31 of the T-type pixel 352 determined based on the image signal to the luminance of the first subpixel 31 of the adjacent lower pixel. The luminance allocation unit 55 decreases the luminance of the first subpixel 31 of the original pixel by the aforementioned amount. Namely, the luminance of the first subpixel 31 of the original pixel becomes (1-γ) times the luminance determined based on the image signal.

[0163]

The luminance allocation unit 55 adds η times the luminance of the second subpixel 32 of the T-type pixel 352 determined based on the image signal to the luminance of the second subpixel 32 of the adjacent lower pixel. The luminance allocation unit 55 decreases the luminance of the second subpixel 32 of the original pixel by the aforementioned amount. Namely, the luminance of the second subpixel 32 of the original pixel becomes (1-η) times the luminance determined based on the image signal.

[0164]

Herein, α, γ, ε, and η are constants of 0 or more and 1 or less. The third subpixel 33 displays the luminance determined based on the image signal as it is.

[0165]

Examples of the combinations of the preferred α, γ, ε, and η that were found by the applicant of the disclosure through many studies are listed in Table 3. By using the combinations of the values of α, γ, ε, and η listed in Table 3, the color edge can be reduced so

that the color edge is hardly conspicuous.

[Table 3]

No.	α	γ	ε	η
6-A	0.1	0.0	0.0	0.1
6-B	0.2	0.1	0.1	0.3

[0166]

An example indicated by No. 6-A in Table 3 will be described more in detail. In the example of No. 6-A, α is 0.1, and ε is 0.0. Therefore, with respect to the S-type pixel 351, 10% as a portion of the luminance of the first subpixel 31 is allocated to the luminance of the first subpixel 31 of the adjacent lower pixel. The luminance allocation of the second subpixel 32 is not performed. γ is 0.0, and η is 0.1. Therefore, with respect to the T-type pixel 352, 10% as a portion of the luminance of the second subpixel 32 is allocated to the luminance of the second subpixel 32 of the adjacent lower pixel. The luminance allocation of the first subpixel 31 is not performed.

[0167]

An example indicated by No. 6-B in Table 3 will be described more in detail. In the example of No. 6-B, α is 0.2, and ε is 0.1. Therefore, with respect to the S-type pixel 351, 20% as a portion the luminance of the first subpixel 31 is allocated to the luminance of the first subpixel 31 of the adjacent lower pixel. 10% as a portion of the luminance of the second subpixel 32 is allocated to the luminance of the second subpixel 32 of the adjacent lower pixel. γ is 0.1, and η is 0.3. Therefore, with respect to the T-type pixel 352, 10% as a portion of the luminance of the first subpixel 31 is allocated to the luminance of the first subpixel 31 of the adjacent lower pixel. 30% as a portion of the luminance of the second subpixel 32 is allocated to the luminance of the second subpixel 32 of the adjacent lower pixel.

[0168]

α, γ, ε, and η listed in Table 3 are the examples of the preferred values. In some cases, the preferred values of α, γ, ε, and η may be different from the values of Table 3

according to the arrangement of the subpixels or according to the image displayed on the display unit 30.

[0169]

In the embodiment, similarly to the fourth embodiment, the scan line direction is the upward/downward direction. By moving the scan line in the leftward/rightward direction, an image is displayed on the display unit 30. Therefore, the luminance allocation unit 55 performs the luminance allocation between the subpixels included in one scan line.

[0170]

According to the embodiment, since the luminance allocation of the subpixels of the two colors that is the first color and the second color is performed, the color edge can be further reduced. According to the embodiment, the luminance allocation unit 55 allocates the luminance to the pixels in the same scan line. For this reason, the data for one scan line is stored in the storage unit 56 to perform the process, so that the color edge can be reduced. Therefore, it is possible to provide the display device 10 capable of reducing the color edge using the driver IC 18 including the storage unit 56 having a small capacity, that is, an inexpensive driver IC 18.

[0171]

The luminance allocation unit 55 may allocate the luminance of the first subpixel 31 and the luminance of the second subpixel 32 to the first subpixel 31 and the second subpixel 32 of the two pixels, for example, the adjacent lower pixel and the adjacent right pixel, respectively.

[0172]

[Seventh Embodiment]

The embodiment relates to a display device 10 where the luminance allocation unit 55 allocates the luminance of the first subpixel 31, the luminance of the second subpixel 32, and the luminance of the third subpixel 33 to the first subpixel 31, the second subpixel 32, and the

third subpixel 33 of the adjacent lower pixel, respectively. The portions common to the fourth embodiment will not be described.

[0173]

Fig. 25 is a diagram illustrating an arrangement of pixels and luminance allocation according to the seventh embodiment. In the embodiment, the luminance allocation unit 55 allocates a portion of the luminance of the first subpixel 31 to the first subpixel 31 of the adjacent lower pixel as indicated by thick arrows in Fig. 25. The luminance allocation unit 55 allocates a portion of the luminance of the second subpixel 32 of the T-type pixel 352 to the second subpixel 32 of the adjacent lower pixel. The luminance allocation unit 55 allocates a portion of the luminance of the third subpixel 33 of the S-type pixel 351 to the third subpixel 33 of the adjacent lower pixel.

[0174]

More specifically, the luminance allocation unit 55 adds α times the luminance of the first subpixel 31 of the S-type pixel 351 determined based on the image signal to the luminance of the first subpixel 31 of the adjacent lower pixel. The luminance allocation unit 55 decreases the luminance of the first subpixel 31 of the original pixel by the aforementioned amount. Namely, the luminance of the first subpixel 31 of the original pixel becomes $(1-\alpha)$ times the luminance determined based on the image signal.

[0175]

The luminance allocation unit 55 adds ε times the luminance of the second subpixel 32 of the S-type pixel 351 determined based on the image signal to the luminance of the second subpixel 32 of the adjacent lower pixel. The luminance allocation unit 55 decreases the luminance of the second subpixel 32 of the original pixel by the aforementioned amount. Namely, the luminance of the second subpixel 32 of the original pixel becomes $(1-\varepsilon)$ times the luminance determined based on the image signal.

[0176]

The luminance allocation unit 55 adds κ times the luminance of the third subpixel 33 of the S-type pixel 351 determined based on the image signal to the luminance of the third subpixel 33 of the adjacent lower pixel. The luminance allocation unit 55 decreases the luminance of the third subpixel 33 of the original pixel by the aforementioned amount. Namely, the luminance of the third subpixel 33 of the original pixel becomes $(1-\kappa)$ times the luminance determined based on the image signal.

[0177]

The luminance allocation unit 55 adds γ times the luminance of the first subpixel 31 of the T-type pixel 352 determined based on the image signal to the luminance of the first subpixel 31 of the adjacent lower pixel. The luminance allocation unit 55 decreases the luminance of the first subpixel 31 of the original pixel by the aforementioned amount. Namely, the luminance of the first subpixel 31 of the original pixel becomes $(1-\gamma)$ times the luminance determined based on the image signal.

[0178]

The luminance allocation unit 55 adds η times the luminance of the second subpixel 32 of the T-type pixel 352 determined based on the image signal to the luminance of the second subpixel 32 of the adjacent lower pixel. The luminance allocation unit 55 decreases the luminance of the second subpixel 32 of the original pixel by the aforementioned amount. Namely, the luminance of the second subpixel 32 of the original pixel becomes $(1-\eta)$ times the luminance determined based on the image signal.

[0179]

The luminance allocation unit 55 adds τ times the luminance of the third subpixel 33 of the T-type pixel 352 determined based on the image signal to the luminance of the third subpixel 33 of the adjacent lower pixel. The luminance allocation unit 55 decreases the luminance of the third subpixel 33 of the original pixel by the aforementioned amount.

Namely, the luminance of the third subpixel 33 of the original pixel becomes (1-τ) times the luminance determined based on the image signal.

[0180]

Herein, α, γ, ε, η, κ, and τ are constants of 0 or more and 1 or less.

[0181]

In the embodiment, similarly to the sixth embodiment, the scan line direction is the upward/downward direction. By moving the scan line in the leftward/rightward direction, an image is displayed on the display unit 30. Therefore, the luminance allocation unit 55 performs the luminance allocation between the subpixels included in one scan line.

[0182]

According to the embodiment, since the luminance allocation of the subpixels of the three colors that is the first color, second color, and the third color is performed, the color edge can be further reduced. According to the embodiment, the luminance allocation unit 55 allocates the luminance to the pixels in the same scan line. For this reason, the data for one scan line is stored in the storage unit 56 to perform the process, so that the color edge can be reduced. Therefore, it is possible to provide the display device 10 capable of reducing the color edge using the driver IC 18 including the storage unit 56 having a small capacity, that is, an inexpensive driver IC 18.

[0183]

The luminance allocation unit 55 may allocate the luminance of the first subpixel 31, the luminance of the second subpixel 32, and the luminance of the third subpixel 33 to the first subpixel 31, the second subpixel 32, and the third subpixel 33 of the two pixels, for example, the adjacent lower pixel and the adjacent right pixel.

[0184]

[Eighth Embodiment]

The embodiment relates to a display device 10 where the luminance allocation unit 55

allocates luminance of a pixel at an odd point where a color edge easily occurs to surrounding pixels. The portions common to the first embodiment will not be described.

[0185]

Herein, the odd point will be described. In the embodiment, the odd point denotes a portion where the color edge easily occurs. As described above, the color edge easily occurs at the time of displaying a high contrast image, for example, a black letter, straight line, dot, or the like on white background. A pixel in a boundary portion where the contrast is greatly different is referred to as an odd point in the description hereinafter. The odd point can be extracted by, for example, an existing edge detection method applying a differential filter to an image.

[0186]

Fig. 26 is a flowchart illustrating a flow of processes of a program according to the eighth embodiment. The flow of the processes performed by the control unit 51 according to the embodiment will be described with reference to Fig. 26.

[0187]

The control unit 51 acquires image data for one screen through the FPC 12 (step S601). The control unit 51 adjusts the image data in accordance with the specification of the display device 10 (step S602). The control unit 51 extracts the odd points of the image data (step S603). The control unit 51 stores the adjusted image data and information representing the location of the odd points in the storage unit 56.

[0188]

The control unit 51 sets the first scan line among the image data stored in the storage unit 56 as a to-be-processed scan line (step S604).

[0189]

The luminance allocation unit 55 extracts the data of the second pixel from the left

from the storage unit 56 (step S605). The luminance allocation unit 55 determines whether or not the pixel from which the data is extracted is the odd point (step S606). In a case where it is determined that the pixel is the odd point (YES in step S606), the luminance allocation unit 55 determines whether or not the extracted pixel is the S-type pixel 351 (step S607).

[0190]

In a case where it is determined that the pixel is the S-type pixel 351 (YES in step S607), the luminance allocation unit 55 adds the value of α times the luminance of the first subpixel 31 of the processing pixel to the luminance of the adjacent left pixel (step S608). The luminance allocation unit 55 set to $(1-\alpha)$ times the luminance of the first subpixel 31 of the processing pixel (step S609).

[0191]

In a case where it is determined that the pixel is not the S-type pixel 351 (NO in step S607), the luminance allocation unit 55 adds the value of β times the luminance of the first subpixel 31 of the processing pixel to the luminance of the adjacent left pixel (step S611). The luminance allocation unit 55 set to $(1-\beta)$ times the luminance of the first subpixel 31 of the processing pixel (step S612).

[0192]

After step S612 or step S609 is ended or in a case where the pixel is not the odd point (NO in step S606), the luminance allocation unit 55 determines whether or not the process for one scan line is ended (step S615). In a case where it is determined that the process is not ended (NO in step S615), the luminance allocation unit 55 changes the target pixel to the next pixel, that is, the adjacent right pixel (step S616). The luminance allocation unit 55 returns to step S606.

[0193]

In a case where it is determined that the process is ended (YES in step S615), the luminance allocation unit 55 outputs the data of the processed scan line to the emission

control driver 14, the demultiplexer 15, and the scan driver 16 of the TFT substrate 11 (step S617). The subpixels corresponding to the processed scan lines of the display unit 30 emit light with predetermined luminances. In a case where, as a result of the process of the luminance allocation unit 55, the subpixel of which the luminance exceeds 100% is generated, the subpixel emits light with the luminance of 100%.

[0194]

The control unit 51 determines whether or not the process for one screen is ended (step S618). In a case where it is determined that the process is not ended (NO in step S618), the control unit 51 changes the to-be-processed scan line to the next scan line (step S619). The control unit 51 returns to step S605.

[0195]

In a case where it is determined that the process is ended (YES in step S618), the control unit 51 ends the process.

[0196]

According to the embodiment, it is possible to provide the display device 10 where the luminance allocation unit 55 allocates the luminance of the pixel at the odd points where the color edge easily occurs to the surrounding pixels. Since the luminance allocation unit 55 does not operates with respect to the pixels other than the odd points, the image of, for example, a landscape or the like can be displayed clearly.

[0197]

A process of sequentially processing data of several scan lines and outputting the data to the display unit 30 and a process of acquiring data of a new scan line through the FPC 12 may be performed in parallel. By doing so, a time difference between the image data acquired through the FPC 12 and the image which is to be displayed on the display unit 30 can be reduced.

[0198]

[Ninth Embodiment]

Fig. 27 is a functional block diagram illustrating operations of a display device 10 according to a ninth embodiment. The display device 10 is operated as follows under the control of the control unit 51. An acquisition unit 58 acquires the image signal through the FPC 12. The luminance allocation unit 55 allocates the luminance of the subpixel of the first pixel 351 indicated by the image signal to the luminance of the subpixel in the adjacent second pixel 352. According to the allocated luminance, the subpixels of the first pixel 351 and the second pixel 352 in the display unit 30 emit light. By doing so, the image represented by the image signal is displayed on the display unit 30 of the display device 10.

[0199]

[Tenth Embodiment]

The embodiment relates to an aspect of controlling a display device 10 by combining a general-purpose computer and a program 71 and operating the computer and the program. Fig. 28 is a diagram illustrating a configuration of a display device 10 according to a tenth embodiment. The configuration of the embodiment will be described with reference to Fig. 28. The portions common to the first embodiment will not be described.

[0200]

The display device 10 according to the embodiment includes an FPC 12, a driver IC 18, and a TFT substrate 11. The control unit 51 in the driver IC 18 according to the embodiment does not include the brightness adjustment unit 52, the color tone adjustment unit 53, the gamma adjustment unit 54, and the luminance allocation unit 55. The driver IC 18 performs a process of converting the image data acquired through the FPC 12 to an analog signal which is to be supplied to the emission control driver 14, the demultiplexer 15, and the scan driver 16 on the TFT substrate 11.

[0201]

The FPC 12 is connected to a control device 60. The control device 60 is a device controlling overall components of an electronic apparatus in which the display device 10 is incorporated. The control device 60 may be incorporated inside the electronic apparatus or may be installed outside the electronic apparatus. Examples of the electronic apparatus includes a portable electronic apparatus, for example, a mobile phone, a tablet terminal, an information processing terminal having multiple wireless communication functions, or the like. Examples of the electronic apparatus include a stationary electronic apparatus, for example, a television set, a personal computer, or the like.

[0202]

The control device 60 includes a central processing unit (CPU) 61, a main memory device 62, an auxiliary memory device 63, a communication unit 64, a reading unit 65, and a bus.

[0203]

The CPU 61 is a control device which executes a program according to the embodiment. As the CPU 61, one CPU, a plurality of CPUs, a multi-core CPU, or the like is used. The CPU 61 is connected to hardware components constituting the control device 60 via the bus.

[0204]

The main memory device 62 is a storage device such as an SRAM, a DRAM, and a flash memory. The main memory device 62 temporarily stores information necessary during the processes performed by the CPU 61 and a program during the execution of the CPU 61.

[0205]

The auxiliary memory device 63 is a storage device such as an SRAM or a flash memory. The auxiliary memory device 63 stores a program which is to be executed by the CPU 61 and various types of information necessary for executing the program.

[0206]

The communication unit 64 is an interface performing communication with a network (not illustrated). The reading unit 65 is a device reading a portable recording medium 72 and, specifically, for example, a micro SD card slot.

[0207]

The program 71 is recorded in the portable recording medium 72. The CPU 61 reads the program 71 through the reading unit 65 and stores the program in the auxiliary memory device 63. The CPU 61 may read the program 71 stored in a semiconductor memory 73 such as a flash memory equipped in the control device 60. The CPU 61 may download the program 71 from another server computer (not illustrated) which is connected through the communication unit 64 and the network (not illustrated) and stores the program in the auxiliary memory device 63.

[0208]

The program 71 is installed as a control program for the control device 60 and is loaded on the main memory device 62 to be executed. Therefore, the control device 60 functions as the control unit 51 of the above-described display device 10. Namely, the CPU 61 performs adjustment in accordance with the characteristic of the display device 10 and outputs the image signal after the performing of the above-described process of the luminance allocation. The display device 10 acquires the processed image signal through the FPC 12. The driver IC 18 converts the image signal to an analog signal to output the analog signal to the circuits on the TFT substrate 11.

[0209]

[Eleventh Embodiment]

The embodiment relates to an electronic apparatus in which a display device 10 is incorporated. Fig. 29 is a diagram illustrating outer appearance of an electronic device according to an eleventh embodiment. The configuration of the embodiment will be described with reference to Fig. 29. The portions common to the first embodiment will not

be described.

[0210]

The electronic apparatus according to the embodiment is a smartphone 81. The smartphone 81 has a shape of a rectangular flat plate and includes a display unit 30 on one-side surface. Input buttons 85 are provided in the periphery of the display unit 30. A touch panel which receives scanning by a user is provided to the display unit 30. The smartphone 81 has various information processing functions. For example, the smartphone 81 displays information obtained through a network (not illustrated) connected by wireless communication or wired communication and information processed based on input by the user on the display unit 30.

[0211]

The smartphone of Fig. 29 is an example of the electronic apparatus in which the display device 10 is incorporated. The display device 10 can be incorporated in an arbitrary electronic apparatus having a function of displaying an image.

[0212]

[Twelfth Embodiment]

Another example of the pixel circuit allowing the subpixel to emit light which is different from Fig.12 will be described. Fig. 30 is a circuit diagram illustrating another pixel circuit allowing one OLED to emit light. Fig. 31 is a time chart illustrating an image signal and driving signals with respect to the circuit diagram of Fig. 30. Fig. 32 is a diagram illustrating outer appearance of a display device according to the embodiment.

[0213]

A display device 100 illustrated in Fig. 32 is different from the display device 10 of Fig. 1 in terms of the following two points. First, as scan drivers, two scan drivers 16A and 16B exist. In addition, there is a difference in terms of arrangement of circuitry (14, 15, 16A,

16B, and 17) and arrangement of a sealing plate 21, a sealing portion 25, and a cathode electrode 19. In addition, internal arrangement of the display device 100 may be appropriately changed.

[0214]

A positive power supply VDD, a negative power supply VSS, an image signal Vdata, a scan signal ScanN as a scan signal 1, a scan signal ResetN (ScanN-1) as a scan signal 2, and a reset signal Vreset are input to the pixel circuit of Fig. 30. The image signal Vdata is output from a demultiplexer 15. The scan signal ScanN as the scan signal 1 is output from the scan driver 16A. The scan signal ResetN (ScanN-1) as the scan signal 2 is output from the scan driver 16B.

[0215]

The pixel circuit includes an OLED, a switch TFT, a driving TFT that controls a current flowing to the organic light emitting element, a reset TFT, and a storage capacitor C1. The pixel circuit applies a voltage equal to or less than a voltage of the cathode electrode 19 to the anode electrode 43 before the OLED emits light. The image signal Vdata is input to a source electrode of the switch TFT. The reset signal Vreset is input to a source electrode of the reset TFT.

[0216]

The scan signal ScanN as the scan signal 1 is input to a gate electrode of the switch TFT. The scan signal ResetN (ScanN-1) as the scan signal 2 is input to a gate electrode of the reset TFT. The positive power supply VDD is connected to a first electrode of the storage capacitor C1 and a source electrode of the driving TFT. The negative power supply VSS is connected to a cathode electrode 19 of the OLED.

[0217]

A drain electrode of the switch TFT is connected to a second electrode of the storage capacitor C1 and a gate electrode of the driving TFT. A drain electrode of the driving TFT

together with a drain electrode of the reset TFT is connected to an anode electrode 43 of the OLED through a TFT circuit output connection portion 42.

[0218]

Next, the operations of the pixel circuit of Fig. 30 will be described with reference to Fig. 31. The horizontal axes of Fig. 31 denote time. The vertical axes of Fig. 31 denote a voltage of the image signal Vdata, a voltage of the scan signal ScanN as the scan signal 1 of an N-th scan line, a voltage of the scan signal ResetN (ScanN-1) as the scan signal 2 of an N-th reset line, a voltage of the scan signal ScanN+1 as the scan signal 1 of an (N+1)-th scan line, and a voltage of the scan signal ResetN+1 (ScanN) as the scan signal 2 of an (N+1)-th reset line. The image signal Vdata is the voltage between a black potential and a white potential corresponding to the brightness with which each OLED is allowed to emit light. The scan signals ScanN and ScanN+1 as the scan signals 1 and the scan signals ResetN (ScanN-1) and ResetN+1 (ScanN) as the scan signals 2 are any one of ON and OFF. In Fig. 31, the scan signal is ON in the case of a low voltage and OFF in the case of a high voltage.

[0219]

The pixel circuit according to the embodiment and the pixel circuit of Fig. 12 are different from each other according to presence or absence of a function of the reset TFT of resetting the anode electrode of the OLED. The reset TFT is used for stopping the light emission of the OLED by setting the voltage between the anode electrode and the cathode electrode of the OLED to be not in a forward state (the voltage of the anode electrode is higher than the voltage of the cathode electrode) but in a zero-bias state or a backward state (the voltage of the anode electrode is lower than the voltage of the cathode electrode).

[0220]

More specifically, as illustrated by the scan signals ResetN (ScanN-1) and ResetN+1 (ScanN) as the scan signals 2 in the timing chart of Fig. 31, the reset TFT is ON immediately before the scan signal ScanN or ScanN+1 as the scan signal 1 is ON. If the reset TFT is ON,

the reset signal Vreset is applied to the TFT circuit output connection portion 42. The reset signal Vreset is, for example, a potential equal to of the negative power supply VSS or a potential lower than the potential of the negative power supply VSS. As a result, since the diode is in the backward region, so that the OLED does not emit light.

[0221]

In this manner, the light emitting of the OLED is stopped by using the reset TFT, so that a black level can be lowered. In addition, frequently-seen crosstalk between subpixels can be improved.

The crosstalk between subpixels occurs due to various causes. For example, in a case where a hole transport layer and a hole injection layer among layers of the OLED are common to the subpixels, a current flow between the subpixels is generated. For this reason, when one subpixel emits light, in some cases, other adjacent subpixels may slightly emit light. If such crosstalk occurs, in some cases, the light emitting becomes a color edge.

[0222]

For example, the voltage of the TFT circuit output connection portion 42 is set to the reset signal Vreset by the reset TFT, so that the light emitting caused by the current flow between the subpixels can be stopped. Therefore, the crosstalk is improved. Accordingly, the occurrence of the color edge can be reduced.

[0223]

[Thirteenth Embodiment]

Still another example of the pixel circuit allowing the subpixel to emit light will be described. The portions common to the twelfth embodiment will not be described.

[0224]

Fig. 33 is a circuit diagram illustrating still another pixel circuit allowing one OLED to emit light. Fig. 34 is a time chart illustrating an image signal and driving signals with respect to the circuit diagram of Fig. 33.

[0225]

A positive power supply VDD, a negative power supply VSS, an image signal Vdata, a scan signal ScanN as a scan signal 1, a scan signal ResetN (ScanN-1) as a scan signal 2, a reset signal Vreset, and an emission signal EmissionN are input to the pixel circuit of Fig. 33. The emission signal EmissionN is output from an emission control driver 14.

[0226]

The pixel circuit includes an OLED, a transistor M1 as a switch TFT, a transistor M2 as a driving TFT, a transistor M3 as a reset TFT, a transistor M4 as an emission TFT, and a storage capacitor C1. The image signal Vdata is input to a source electrode of the switch TFT. The reset signal Vreset is input to a source electrode of the reset TFT.

[0227]

The scan signal ScanN as the scan signal 1 is input to a gate electrode of the switch TFT. The scan signal ResetN (ScanN-1) as the scan signal 2 is input to a gate electrode of the reset TFT. The emission signal EmissionN as the emission signal is input to a gate electrode of the emission TFT. The positive power supply VDD is connected to a first electrode of the storage capacitor C1 and a source electrode of the driving TFT. The negative power supply VSS is connected to a cathode electrode 19 of the OLED.

[0228]

A drain electrode of the switch TFT is connected to a second electrode of the storage capacitor C1 and a gate electrode of the driving TFT. A source electrode of the emission TFT is connected to a drain electrode of the driving TFT. A drain electrode of the emission TFT together with a drain electrode of the reset TFT is connected to an anode electrode 43 of the OLED through the TFT circuit output connection portion 42.

[0229]

Next, the operations of the pixel circuit of Fig. 33 will be described with reference to Fig. 34. The horizontal axes of Fig. 34 denote time. The vertical axes of Fig. 34 denote a

voltage of the image signal Vdata, a voltage of the scan signal ScanN as the scan signal 1 of an N-th scan line, a voltage of the scan signal ResetN (ScanN-1) as the scan signal 2 of an N-th reset line, a voltage of the emission signal EmissionN as the emission signal of an N-th emission signal line, a voltage of the scan signal ScanN+1 as the scan signal 1 of an (N+1)-th scan line, a voltage of the scan signal ResetN+1 (ScanN) as the scan signal 2 of an (N+1) reset line, and a voltage of the emission signal EmissionN+1 as the emission signal of an (N+1)-th emission signal line. The vertical axes in Fig. 34 are not illustrated. Emission signals EmissionN and EmissionN+1 are any one of ON and OFF.

[0230]

The pixel circuit according to the embodiment and the pixel circuit described with reference to Fig. 30 are different from each other in that the emission TFT is connected between the driving TFT and the TFT circuit output connection portion 42 and the emission signal EmissionN is connected to the gate electrode of the emission TFT. The emission TFT is used to control light-emitting time of the OLED by controlling a time of connection of the OLED to the driving TFT.

[0231]

More specifically, as illustrated in the emission signals EmissionN and EmissionN+1 as the emission signals in the timing chart of Fig. 34, the emission TFT is ON after the scan signal ScanN or ScanN+1 as the scan signal 1 is OFF, and the emission TFT is OFF before the scan signal ResetN (ScanN-1) or ResetN+1 (ScanN) as the scan signal 2 is ON. If the emission TFT is ON, the positive power supply VDD is applied to the TFT circuit output connection portion 42 through the driving TFT and the emission TFT. As a result, since the diode is in the forward region, the OLED emits light.

[0232]

In this manner, the light-emitting time of the OLED is controlled by using the emission TFT, so that blackening the pixels during the screen displaying, so-called black

nsertion can be achieved.

[0233]

In addition, technical characteristics (configuration requirements) described in each embodiment may be combined with each other, and new technical characteristics may be formed by combining the same.

[0234]

It is to be noted that, as used herein and in the appended claims, the singular forms "a", "an", and "the" include plural referents unless the context clearly dictates otherwise.

[0235]

It is to be noted that the disclosed embodiment is illustrative and not restrictive in all aspects. The scope of the present invention is defined by the appended claims rather than by the description preceding them, and all changes that fall within metes and bounds of the claims, or equivalence of such metes and bounds thereof are therefore intended to be embraced by the claims.

CLAIMS

1. A display device comprising:

a display unit where a plurality of first pixels each including subpixels of three colors and a plurality of second pixels each including subpixels of three colors arranged differently from the subpixels in one of the first pixels are alternately arrayed in a row direction and a column direction, the subpixels of the three colors including a subpixel of a first color, a subpixel of a second color and a subpixel of a third color;

a thin film transistor (TFT) circuit disposed below each of the subpixels to control the subpixels; and

at least one connection part that connects the TFT circuit and one of the subpixels,

wherein the subpixel of the second color and the subpixel of the third color in one of the first pixels are arrayed in parallel with the subpixel of the second color and the subpixel of the third color in one of the second pixels,

the subpixel of the first color in one of the first pixels has a biased arrangement and is positioned toward a side of the subpixel of the second color in an array direction of the subpixel of the second color and the subpixel of the third color,

the subpixel of the first color in one of the second pixels has a biased arrangement and is positioned toward a side of the subpixel of the third color in the array direction of the

subpixel of the second color and the subpixel of the third color, and

the at least one connection part is disposed at an identical position independent of an arrangement of the subpixels in one of the first pixels and the subpixels in one of the second pixels.

2. The display device according to claim 1, wherein

the subpixel includes an anode electrode, and

the at least one connection part is a portion that connects an output of the TFT circuit and the anode electrode.

3. The display device according to claim 1, wherein

the TFT circuit includes an identical circuit arrangement pattern for the subpixels of the first to third colors.

4. The display device according to claim 1, wherein

in one of the first pixels and one of the second pixels that are adjacent to each other in the row direction, a distance between a first connection part of the at least one connection part for the subpixel of the first color in the one of the first pixels and a second connection part of the at least one connection part for the subpixel of the second color in the one of the second pixels are consistent in the display unit independent of the biased arrangements of the subpixels.

5. The display device according to claim 1, wherein

a first square not crossing the subpixels encloses a region including the subpixels of three colors included in one of the first pixels and excluding other subpixels,

a second square not crossing the subpixels encloses a region including the subpixels of three colors included in one of the second pixels and excluding other subpixels, and

the first square and the second square are arranged without overlapping each other.