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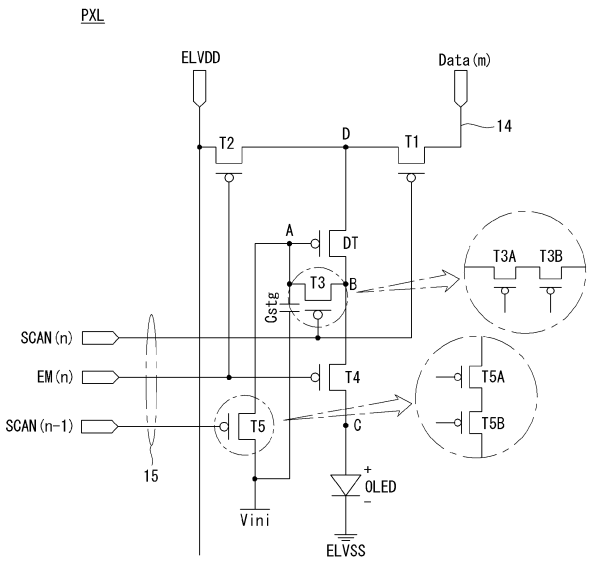
(54) ORGANIC LIGHT EMITTING DISPLAY

(57) An organic light emitting display comprises a display panel (10) having a plurality of pixels (PXL); a gate drive circuit (13) that drives scan lines and emission lines on the display panel (10); and a data drive circuit (12) that drives data lines (14) on the display panel (10), each of the pixels (PXL) arranged in an nth row (n is a natural number) comprising: an organic light emitting diode (OLED) having an anode connected to a node C and a cathode connected to a low-level driving voltage input terminal; a driving transistor (DT) having a gate electrode connected to a node A, a source electrode connected to a node D, and a drain electrode connected to a node B, and the driving transistor (DT) controlling a driving current applied to the organic light emitting diode (OLED); a first transistor (T1) that is connected between a data line (14) and the node D; a second transistor (T2) that is connected between the node D and a high-level driving voltage input terminal; a third transistor (T3) that is connected to the node A and the node B; a fourth transistor (T4) that is connected to the node B and the node C; a fifth transistor (T5) that is connected between the node A and an initial voltage input terminal; and a capacitor (Cstg) that is connected between the node A and the initial voltage input terminal.

FIG. 3



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EUROPEAN SEARCH REPORT

Application Number
EP 16 17 1255

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X Y	US 2008/143653 A1 (SHISHIDO HIDEAKI [JP]) 19 June 2008 (2008-06-19) * paragraph [0124] - paragraph [0533]; figures 1-67 *	1,7,10 1-6,8,9, 11,12, 16-18	INV. G09G3/3233
Y	EP 1 840 866 A2 (SAMSUNG SDI CO LTD [KR]) 3 October 2007 (2007-10-03) * paragraph [0020] - paragraph [0048]; figures 1-5 *	1-6,8,9, 11,12, 16,17	
Y	EP 2 146 337 A1 (SAMSUNG MOBILE DISPLAY CO LTD [KR]) 20 January 2010 (2010-01-20) * paragraph [0017] - paragraph [0057]; figures 1-3 *	3-5,8, 11-18	
Y	US 2011/115764 A1 (CHUNG KYUNG-HOON [KR]) 19 May 2011 (2011-05-19) * paragraphs [0071], [0073]; figure 13 *	3-5,8, 11-18	
Y	US 2007/090345 A1 (WU YUAN-CHUN [TW] ET AL) 26 April 2007 (2007-04-26) * paragraph [0020] - paragraph [0025]; figures 1-3 *	9	TECHNICAL FIELDS SEARCHED (IPC) G09G
Y	EP 2 750 123 A1 (SHANGHAI TIANMA MICRO ELECT CO [CN]) 2 July 2014 (2014-07-02) * paragraph [0035] - paragraph [0052]; figures 3-5 *	13-15,18	
Y	US 2009/167648 A1 (JEON CHANG HOON [KR] ET AL) 2 July 2009 (2009-07-02) * paragraph [0026] - paragraph [0069]; figures 2-9 *	13-15,18	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	10 November 2016	Harke, Michael

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

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Application Number
EP 16 17 1255

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

☐ The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).

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LACK OF UNITY OF INVENTION
SHEET B

Application Number
EP 16 17 1255

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1, 2, 6, 7, 10

The first invention concerns an organic light emitting display as claimed in claim 1, i. e. An organic light emitting display comprising:a display panel having a plurality of pixels (PXL);a gate drive circuit that drives scan lines and emission lines on the display panel; anda data drive circuit that drives data lines on the display panel,wherein each of the pixels (PXL) arranged in an nth row (n is a natural number) comprises:an organic light emitting diode (OLED) having an anode connected to a node C and a cathode connected to a low-level driving voltage input terminal,a driving transistor (DT) having a gate electrode connected to a node A, a source electrode connected to a node D, and a drain electrode connected to a node B, the driving transistor (DT) controlling a driving current applied to the organic light emitting diode (OLED),a first transistor (T1) that is connected between a data line and the node D,a second transistor (T2) that is connected between the node D and a high-level driving voltage input terminal,a third transistor (T3) that is connected to the node A and the node B,a fourth transistor (T4) that is connected to the node B and the node C,a fifth transistor (T5) that is connected between the node A and an initial voltage input terminal, anda capacitor (Cstg) that is connected between the node A and the initial voltage input terminal, wherein, as claimed in claim 2, a gate electrode of the third transistor is connected to the nth scan line to which an nth scan signal is applied, and a gate electrode of the second transistor is connected to the nth emission line to which an nth emission signal is applied.

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2. claims: 3-5, 8, 16

The second invention concerns an organic light emitting display as claimed in claim 1 (see the first invention for further details),, wherein, as claimed in claim 3, the organic light emitting display further comprises a sixth transistor (T6) connected between the initial voltage input terminal and the node C.

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3. claims: 9, 11, 12, 17

The third invention concerns an organic light emitting display as claimed in claim 1 (see the first invention for further details), wherein, as claimed in claim 9, the organic light emitting display further comprises a metal layer under a semiconductor layer of the driving transistor (DT).

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LACK OF UNITY OF INVENTION
SHEET B

Application Number
EP 16 17 1255

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

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4. claims: 13-15, 18

The fourth invention concerns concerns an organic light emitting display as claimed in claim 13, i. e. an organic light emitting display comprising:a display panel having a plurality of pixels (PXL);a gate drive circuit that drives scan lines and emission lines on the display panel; anda data drive circuit that drives data lines on the display panel,wherein each of the pixels (PXL) arranged in an nth row (n is a natural number) comprises:an organic light emitting diode (OLED) having an anode connected to a node C and a cathode connected to a low-level driving voltage input terminal,a driving transistor (DT) having a gate electrode connected to a node A, a source electrode connected to a high-level driving voltage input terminal, and a drain electrode connected to a node B, the driving transistor (DT) controlling a driving current applied to the organic light emitting diode (OLED),a first transistor (T1) that is connected between a data line and a node D,a second transistor (T2) that is connected to the node A and the node B,a third transistor (T3) that is connected between the node D and an initial voltage input terminal,a fourth transistor (T4) that is connected to the node B and the node C,a fifth transistor (T5) that is connected between the node A and the initial voltage input terminal,a sixth transistor (T6) that is connected between the initial voltage input terminal and the node C, anda capacitor (Cstg) that is connected to the node A and the node D.

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 16 17 1255

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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10-11-2016

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

专利名称(译)	有机发光显示器		
公开(公告)号	EP3098804A3	公开(公告)日	2016-12-21
申请号	EP2016171255	申请日	2016-05-25
[标]申请(专利权)人(译)	乐金显示有限公司		
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当前申请(专利权)人(译)	LG DISPLAY CO. , LTD.		
[标]发明人	KIM DAEKYU KIM JUNGCHUL KANG HEEKWANG KWON JUNYOUNG		
发明人	KIM, DAEKYU KIM, JUNGCHUL KANG, HEEKWANG KWON, JUNYOUNG		
IPC分类号	G09G3/3233		
CPC分类号	G09G3/3225 H01L27/3244 H01L27/3248 G09G3/3233 G09G2300/0819 G09G2300/0861 G09G2310/0251 G09G2310/0256 G09G2310/0262 G09G2320/0238 G09G2320/043 G09G3/3241 G09G3/3266 G09G3/3291 G09G2300/0426 G09G2300/043 G09G2300/0814 G09G2310/0278		
审查员(译)	HARKE，米迦勒		
优先权	1020150075339 2015-05-28 KR 1020150169474 2015-11-30 KR 1020160053639 2016-04-30 KR		
其他公开文献	EP3098804A2		
外部链接	Espacenet		

摘要(译)

有机发光显示器包括具有多个像素（PXL）的显示面板（10）;栅极驱动电路（13），驱动所述显示面板（10）上的扫描线和发射线;以及数据驱动电路（12），其驱动所述显示面板（10）上的数据线（14），布置在第n行（n是自然数）中的每个像素（PXL）包括：有机发光二极管OLED），其具有连接到节点C的阳极和连接到低电平驱动电压输入端子的阴极;驱动晶体管（DT），其具有连接到节点A的栅电极，连接到节点D的源电极，以及连接到节点B，并且驱动晶体管（DT）控制施加到有机发光二极管（OLED）的驱动电流;第一晶体管（T1），连接在数据线（14）和节点D之间;连接在节点D和高电平驱动电压输入端子之间的第二晶体管（T2）第三晶体管（T3），其连接到所述节点A和所述节点B;第四晶体管（T4），其连接到节点B和节点C;第五晶体管（T5），连接在节点A和初始电压输入端子之间;以及连接在节点A和初始电压输入之间的电容器（Cstg）终卖站。

FIG. 3