



(11) **EP 2 747 165 A3**

(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
30.09.2015 Bulletin 2015/40

(51) Int Cl.:
H01L 51/52 ^(2006.01) **H01L 51/54** ^(2006.01)
H01L 27/32 ^(2006.01) **H01L 51/50** ^(2006.01)

(43) Date of publication A2:
25.06.2014 Bulletin 2014/26

(21) Application number: **13193287.3**

(22) Date of filing: **18.11.2013**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

- **Kim, Kwan-Soo**
Paju-si, Gyeonggi-do (KR)
- **Lee, Seok-Jong**
Goyang-si, Gyeonggi-do (KR)
- **Park, Jin-Ho**
Paju-si, Gyeonggi-do (KR)
- **Kwon, Sun-Kap**
Goyang-si, Gyeonggi-do (KR)

(30) Priority: **18.12.2012 KR 20120148822**

(71) Applicant: **LG Display Co., Ltd.**
Seoul 150-721 (KR)

(74) Representative: **Viering, Jentschura & Partner**
Patent- und Rechtsanwälte
Am Brauhaus 8
01099 Dresden (DE)

(72) Inventors:
• **Lee, Se-Hee**
Paju-si, Gyeonggi-do (KR)

(54) **Organic light emitting display device**

(57) An organic light emitting display device with enhanced color purity according to viewing angle is disclosed. The organic light emitting display device includes a first electrode formed on a substrate and being a reflective electrode, a second electrode facing the first electrode and being a semi-transparent electrode, and red, green and blue emission layers formed between the first and second electrodes, wherein a maximum electroluminescent peak of each of the red, green and blue emission layers and a maximum photoluminescence peak of a host included in each emission layer satisfy Equations 1 to 3 below:

<Equation 1>

$$RED_{EL\lambda_{max}} - RH_{PL\lambda_{max}} \geq 120 \text{ nm}$$

wherein $RED_{EL\lambda_{max}}$ is a maximum electroluminescent peak of the red emission layer, and $RH_{PL\lambda_{max}}$ is a maximum photoluminescence peak of a red host included in the red emission layer,

<Equation 2>

$$Green_{EL\lambda_{max}} - GH_{PL\lambda_{max}} \geq 20 \text{ nm}$$

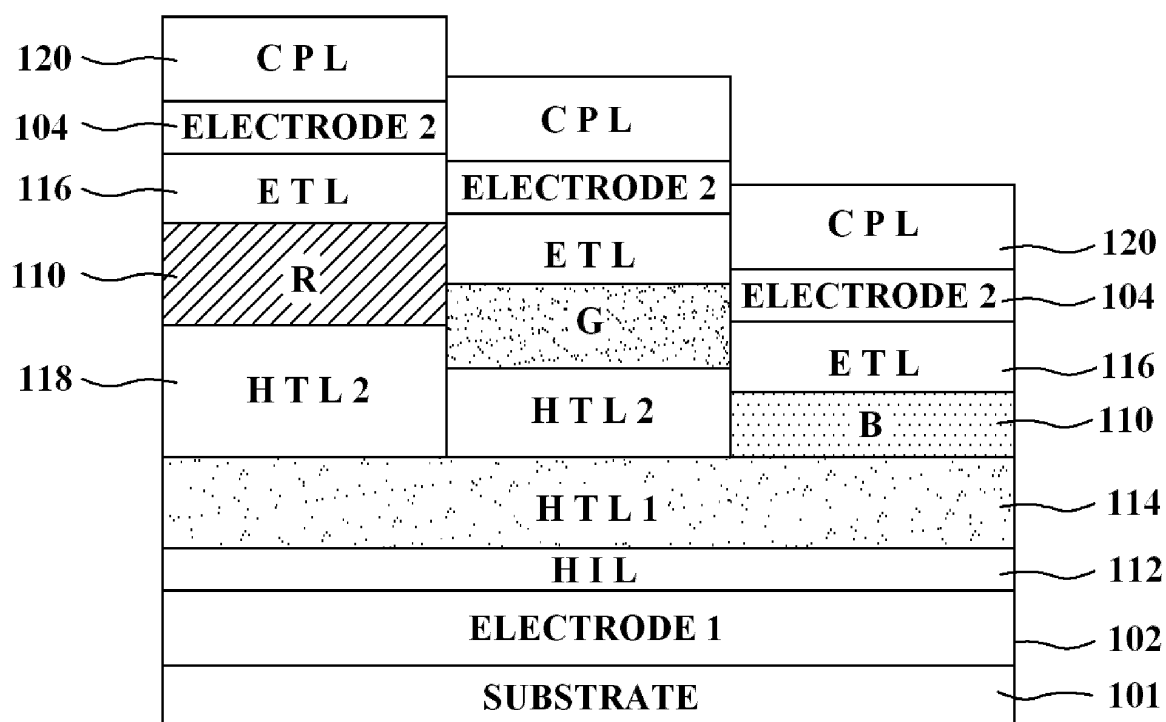
wherein $GREEN_{EL\lambda_{max}}$ is a maximum electroluminescent peak of the green emission layer, and $GH_{PL\lambda_{max}}$ is a maximum photoluminescence peak of a green host included in the green emission layer, and

<Equation 3>

$$BLUE_{EL\lambda_{max}} - BH_{PL\lambda_{max}} \geq 20 \text{ nm}$$

wherein $BLUE_{EL\lambda_{max}}$ is a maximum electroluminescent peak of the blue emission layer, and $BH_{PL\lambda_{max}}$ is a maximum photoluminescence peak of a blue host included in the blue emission layer.

FIG.2





EUROPEAN SEARCH REPORT

Application Number
EP 13 19 3287

5

10

15

20

25

30

35

40

45

50

55

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	US 2007/057264 A1 (MATSUDA EISUKE [JP]) 15 March 2007 (2007-03-15) * paragraphs [0023], [0030], [0045] - [0047], [0051] * -----	1-9	INV. H01L51/52 H01L51/54
A	US 2007/069996 A1 (KUBA YUTAKA [JP] ET AL) 29 March 2007 (2007-03-29) * paragraphs [0002] - [0010] * -----	1-9	ADD. H01L27/32 H01L51/50
			TECHNICAL FIELDS SEARCHED (IPC)
			H01L
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 20 August 2015	Examiner De Laere, Ann
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			

EPO FORM 1503 03.82 (P04C01) 2

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 13 19 3287

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
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

20-08-2015

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2007057264 A1	15-03-2007	CN 1933173 A	21-03-2007
		JP 4412264 B2	10-02-2010
		JP 2007080906 A	29-03-2007
		KR 20070030140 A	15-03-2007
		US 2007057264 A1	15-03-2007

US 2007069996 A1	29-03-2007	CN 1941401 A	04-04-2007
		JP 5073842 B2	14-11-2012
		JP 2011134726 A	07-07-2011
		US 2007069996 A1	29-03-2007

专利名称(译)	有机发光显示装置		
公开(公告)号	EP2747165A3	公开(公告)日	2015-09-30
申请号	EP2013193287	申请日	2013-11-18
[标]申请(专利权)人(译)	乐金显示有限公司		
申请(专利权)人(译)	LG DISPLAY CO. , LTD.		
当前申请(专利权)人(译)	LG DISPLAY CO. , LTD.		
[标]发明人	LEE SE HEE KIM KWAN SOO LEE SEOK JONG PARK JIN HO KWON SUN KAP		
发明人	LEE, SE-HEE KIM, KWAN-SOO LEE, SEOK-JONG PARK, JIN-HO KWON, SUN-KAP		
IPC分类号	H01L51/52 H01L51/54 H01L27/32 H01L51/50		
CPC分类号	H01L51/504 H01L27/3211 H01L51/0058 H01L51/0072 H01L51/0077 H01L51/0081 H01L51/5012 H01L51/5064 H01L51/5218 H01L51/5234 H01L51/5265 H01L2251/5384		
优先权	1020120148822 2012-12-18 KR		
其他公开文献	EP2747165A2		
外部链接	Espacenet		

摘要(译)

公开了一种根据视角具有增强的色纯度的有机发光显示装置。有机发光显示装置包括形成在基板上并且是反射电极的第一电极，面向第一电极并且是半透明电极的第二电极，以及形成在第一和第二电极之间的红色，绿色和蓝色发射层其中，每个发光层中包括的红色，绿色和蓝色发光层中的每一个的最大电致发光峰值和主体的最大光致发光峰值满足下面的等式1至3：其中 $REDEL\lambda_{max}$ 是红色发光层的最大电致发光峰值， $RHPL\lambda_{max}$ 是红色发光层中包含的红色主体的最大光致发光峰，其中， $GREENEL\lambda_{max}$ 是绿色发光层的最大电致发光峰， $GHPL\lambda_{max}$ 是绿色发光层中包含的绿色主体的最大光致发光峰，其中 $BLUEEL\lambda_{max}$ 是蓝色发光层的最大电致发光峰， $BHPL\lambda_{max}$ 是最大光电压蓝色发光层中包含的蓝色主体的发光峰。

<Equation 1>

$$RED_{EL\lambda_{max}} - RH_{PL\lambda_{max}} \geq 120 \text{ nm}$$