



(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
06.06.2012 Bulletin 2012/23

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

(43) Date of publication A2:
01.02.2012 Bulletin 2012/05

(21) Application number: **11175528.6**

(22) Date of filing: **27.07.2011**

(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

(72) Inventors:
 • **Lee, Choong-Ho Gyunggi-Do (KR)**
 • **Nam, Kie Hyun Gyunggi-Do (KR)**
 • **Lee, Jung-Min Gyunggi-Do (KR)**

(30) Priority: **29.07.2010 KR 20100073513**

(74) Representative: **Mouteney, Simon James Marks & Clerk LLP**
90 Long Acre
London
WC2E 9RA (GB)

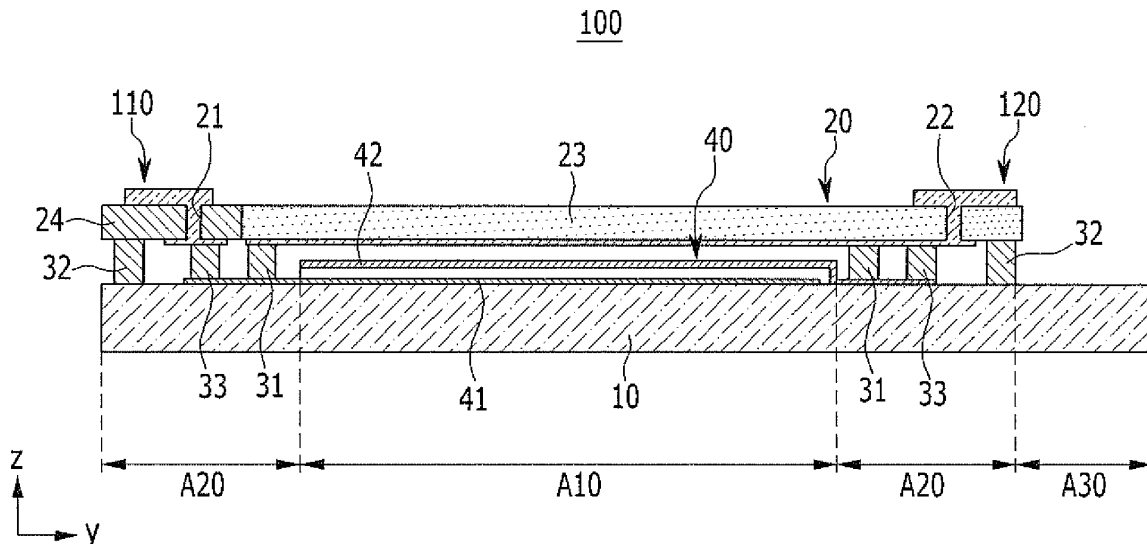
(71) Applicant: **Samsung Mobile Display Co., Ltd.**
Yongin-City
Gyunggi-do (KR)

(54) **Display device and organic light emitting diode display**

(57) A display device includes: a display substrate (10); a display unit (40) formed on the display substrate and a sealing substrate (20) affixed to the display substrate by an adhering layer (31,32,33) that surrounds the display unit. The sealing substrate includes a composite member (23) including a resin and a plurality of carbon

fibers and an insulating member (24) attached to the composite member. The insulating member includes a through hole (21). A metal film is disposed at one side of the sealing substrate, facing the display substrate; and a conductive connection portion (110) contact the metal film through the through hole.

FIG. 1





EUROPEAN SEARCH REPORT

Application Number
EP 11 17 5528

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	US 2003/168966 A1 (KOBAYASHI HIDEKAZU [JP] ET AL) 11 September 2003 (2003-09-11) * paragraphs [0005], [0063] - [0070], [0087] - [0092]; figures 2,7 *	1,2,14	INV. H01L51/52 H01L27/32
Y	US 2004/232833 A1 (MENDA MICHIO [JP] ET AL) 25 November 2004 (2004-11-25) * paragraphs [0003], [0009], [0039] *	1,2,14	
A	US 2010/089636 A1 (RAMADAS SENTHIL KUMAR [SG] ET AL) 15 April 2010 (2010-04-15) * paragraphs [0025], [0026], [0129] - [0143] *	1,2	
A	JP 55 043545 A (NIPPON TELEGRAPH & TELEPHONE) 27 March 1980 (1980-03-27) * abstract *	5,7	
A	US 2001/040001 A1 (TOYOOKA NAOTO [JP]) 15 November 2001 (2001-11-15) * abstract *	4-7	
A	US 2006/077693 A1 (KO CHUN-MIN [TW] ET AL) 13 April 2006 (2006-04-13) * figure 4 *	8	
-----			TECHNICAL FIELDS SEARCHED (IPC)
-----			H01L

-The present search report has been drawn up for all claims-			
Place of search		Date of completion of the search	Examiner
Munich		27 April 2012	Boetticher, Harald
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention	
X : particularly relevant if taken alone		E : earlier patent document, but published on, or	
Y : particularly relevant if combined with another document of the same category		after the filing date	
A : technological background		D : document cited in the application	
O : non-written disclosure		L : document cited for other reasons	
P : intermediate document		& : member of the same patent family, corresponding document	

2
EPO FORM 1503 03.02 (P04C01)



Application Number

EP 11 17 5528

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:

4-8

- 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).



**LACK OF UNITY OF INVENTION
SHEET B**

Application Number

EP 11 17 5528

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, 14

Display with a substrate, a sealing substrate including a composite member and an insulating member with a through hole, a metal film at the side facing the display substrate, and a connection to the metal film by a through hole

2. claim: 3

The composite member has a plurality of layers, each including a resin and a plurality of carbon fibres

3. claims: 4, 6

The insulating member is affixed to peripheral edges of the composite member. WARNING: Claim 1 shows "the insulating member including at least one through hole" and "contacting the metal film through at least one through hole". Claims 4, 6 show "second through holes", but as it is obscure if this is intended to cover the other through hole cited in claim 1, claims 4, 6 are too vague for a meaningful search.

4. claim: 8

The composite member has a protrusion at a side surface, and the insulating member has a corresponding groove

5. claim: 9

The composite member has a plurality of protruding portions and the insulating member has corresponding receiving recess portions

6. claim: 10

The insulating member includes an insulating plate covering an external surface of the composite member

7. claim: 11

The insulating member has a protecting portion covering the adhering layer and a side surface of the display substrate

8. claim: 12



LACK OF UNITY OF INVENTION
SHEET B

Application Number
EP 11 17 5528

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:

The insulating member is a plastic injection molded material

9. claim: 13

The insulating member includes a negative thermal expansion filler

10. claims: 15-31

OLED display with a substrate, a display unit including a common power line and a common electrode, a sealing substrate with first and second through holes, a first conducting portion extending through the first through holes and supplying a signal to the common power line, a second conductive portion extending through the second through holes and supplying a signal to the common electrode, the sealing substrate including a composite member including resin and carbon fibers and an insulating member including a through hole among the first and second through holes.

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

EP 11 17 5528

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.

27-04-2012

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2003168966 A1	11-09-2003	CN 1496543 A	12-05-2004
		EP 1450334 A1	25-08-2004
		JP 4251286 B2	08-04-2009
		JP 4254752 B2	15-04-2009
		JP 4701858 B2	15-06-2011
		JP 2005302738 A	27-10-2005
		JP 2005352498 A	22-12-2005
		JP 2008242499 A	09-10-2008
		JP 2008282030 A	20-11-2008
		JP 2009025832 A	05-02-2009
		JP 2009104216 A	14-05-2009
		JP 2011175300 A	08-09-2011
		TW I283142 B	21-06-2007
		US RE42215 E1	15-03-2011
		US 2003168966 A1	11-09-2003
		US 2005112408 A1	26-05-2005
		WO 03060858 A1	24-07-2003
US 2004232833 A1	25-11-2004	CN 1575048 A	02-02-2005
		JP 2005011794 A	13-01-2005
		KR 20040100915 A	02-12-2004
		US 2004232833 A1	25-11-2004
		US 2006128252 A1	15-06-2006
US 2010089636 A1	15-04-2010	AU 2006350626 A1	15-05-2008
		CN 101518151 A	26-08-2009
		EP 2082619 A1	29-07-2009
		JP 2010511267 A	08-04-2010
		US 2010089636 A1	15-04-2010
		WO 2008057045 A1	15-05-2008
JP 55043545 A	27-03-1980	JP 1184071 C	27-12-1983
		JP 55043545 A	27-03-1980
		JP 58009403 B	21-02-1983
US 2001040001 A1	15-11-2001	NONE	
US 2006077693 A1	13-04-2006	TW M265638 U	21-05-2005
		US 2006077693 A1	13-04-2006

EPO FORM P0459

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

专利名称(译)	显示装置和有机发光二极管显示器		
公开(公告)号	EP2413394A3	公开(公告)日	2012-06-06
申请号	EP2011175528	申请日	2011-07-27
[标]申请(专利权)人(译)	三星显示有限公司		
申请(专利权)人(译)	三星移动显示器有限公司.		
当前申请(专利权)人(译)	三星DISPLAY CO. , LTD.		
[标]发明人	LEE CHOONG HO NAM KIE HYUN LEE JUNG MIN		
发明人	LEE, CHOONG-HO NAM, KIE HYUN LEE, JUNG-MIN		
IPC分类号	H01L51/52 H01L27/32		
CPC分类号	H01L51/5237 H01L27/3276 H01L51/524 H01L51/5243 H01L51/5246		
优先权	1020100073513 2010-07-29 KR		
其他公开文献	EP2413394A2 EP2413394B1		
外部链接	Espacenet		

摘要(译)

一种显示装置，包括：显示基板（10）；显示单元（40）形成在显示基板上，密封基板（20）通过围绕显示单元的粘附层（31,32,33）固定到显示基板上。密封基板包括复合构件（23）和绝缘构件（24），复合构件（23）包括树脂和多个碳纤维，绝缘构件（24）附接到复合构件。绝缘构件包括通孔（21）。金属膜设置在密封基板的一侧，面对显示基板；导电连接部分（110）通过通孔与金属膜接触。

