



(11) **EP 1 806 720 A3**

(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
09.09.2009 Bulletin 2009/37

(51) Int Cl.:
G09G 3/288 (2006.01)

(43) Date of publication A2:
11.07.2007 Bulletin 2007/28

(21) Application number: **06250040.0**

(22) Date of filing: **05.01.2006**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI SK TR

Designated Extension States:
AL BA HR MK YU

(30) Priority: **15.04.2005 KR 2005031659**
15.04.2005 KR 2005031663

(71) Applicant: **LG Electronics Inc.**
Yongdungpo-Gu
Seoul 150-010 (KR)

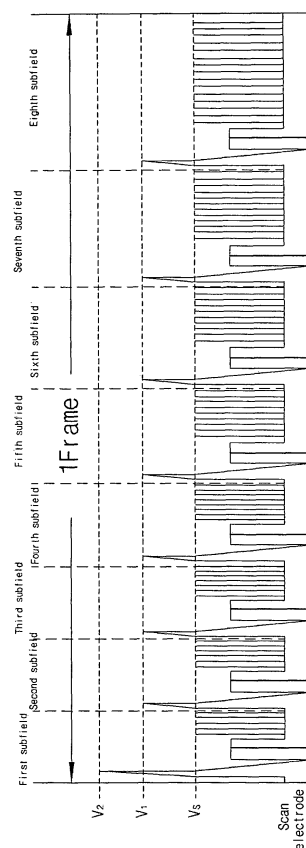
(72) Inventors:
• **Myoung, Dae Jin**
Deokyang-gu, Goyang-si, Gyeonggi-do (KR)
• **Moon, Seong Hak**
Guro-gu, Seoul (KR)

(74) Representative: **Camp, Ronald**
Kilburn & Strode LLP
20 Red Lion Street
London WC1R 4PJ (GB)

(54) **Plasma display apparatus and method of driving the same**

(57) In a plasma display apparatus, the magnitudes of reset pulses are controlled or the widths of scan pulses in units of sub-fields, thereby improving contrast, preventing driving margins from deteriorating, stabilizing discharges and improving brightness. The weighted sub-fields need not be arranged in progressive orders of weight, but may be randomly arranged.

Fig. 12a



EP 1 806 720 A3



EUROPEAN SEARCH REPORT

Application Number
EP 06 25 0040

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
E	EP 1 710 776 A (LG ELECTRONICS INC [KR]) 11 October 2006 (2006-10-11) * paragraph [0001] - paragraph [0069] * * figures 1-32 *	1-43	INV. G09G3/288
X	----- KR 2004 0009331 A (SAMSUNG SDI CO LTD) 31 January 2004 (2004-01-31)	1,14-19, 26-31, 39-43	
A	* abstract; figures 1-8 *	2-13, 20-25, 32-38	
X	----- EP 1 519 354 A (LG ELECTRONICS INC [KR]) 30 March 2005 (2005-03-30)	44-47, 49-56, 70-72	
A	* figures 7-12 * * paragraphs [0001], [0022] - paragraph [0025] * * paragraph [0046] - paragraph [0067] *	48,57-69	
X	----- US 2003/057855 A1 (LO LIH-SHANG [TW] ET AL) 27 March 2003 (2003-03-27)	44-48, 50-55	TECHNICAL FIELDS SEARCHED (IPC)
A	* the whole document *	49,56-72	G09G
X	----- EP 1 365 378 A (THOMSON BRANDT GMBH [DE]) 26 November 2003 (2003-11-26)	44,48, 51-57, 63,65-72	
A	* paragraph [0016] - paragraph [0029] * * paragraph [0035] - paragraph [0048] * * figures 3,4,14; tables A,B *	45-47, 49,50, 58-62,64	
	----- -/--		
4 The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 31 July 2009	Examiner Fanning, Neil
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)



EUROPEAN SEARCH REPORT

Application Number
EP 06 25 0040

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
P,X	WO 2005/041162 A (THOMSON LICENSING SA [FR]; WEITBRUCH SEBASTIEN [DE]; THEBAULT CEDRIC []) 6 May 2005 (2005-05-06) * page 3 - page 5 * * page 7 - page 10 * * figures 1-10; table A * -----	44,48, 53-56, 70-72	
A	EP 1 271 463 A (PIONEER CORP [JP]; SHIZUOKA PIONEER CORP [JP] PIONEER CORP [JP]; PIONE) 2 January 2003 (2003-01-02) * paragraph [0040] - paragraph [0058]; figures 6,17,19 * -----	44-72	
			TECHNICAL FIELDS SEARCHED (IPC)
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 31 July 2009	Examiner Fanning, Neil
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			

4
EPO FORM 1503 03.82 (P04C01)



Application Number

EP 06 25 0040

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).



**LACK OF UNITY OF INVENTION
SHEET B**

Application Number

EP 06 25 0040

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: 1-43

A plasma display apparatus, and corresponding method, where the magnitude of the reset pulse applied to the scan electrodes in the reset periods of at least one subfield of a frame is controlled in accordance with grey level values.

2. claims: 44-72

A plasma display apparatus, and corresponding driving method, wherein the width of the scan pulses applied to the scan electrodes in one or more subfields of one frame are controlled is varied in accordance with either the APL or the particular group of scan electrodes being addressed.

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

EP 06 25 0040

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.

31-07-2009

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 1710776 A	11-10-2006	CN 1845227 A	11-10-2006
		JP 2006293305 A	26-10-2006
		KR 20060107154 A	13-10-2006
		US 2006227076 A1	12-10-2006

KR 20040009331 A	31-01-2004	NONE	

EP 1519354 A	30-03-2005	AT 378668 T	15-11-2007
		CN 1598908 A	23-03-2005
		DE 602004010026 T2	11-09-2008
		JP 2005092221 A	07-04-2005
		KR 20050028526 A	23-03-2005
		TW 254268 B	01-05-2006
		US 2005062688 A1	24-03-2005

US 2003057855 A1	27-03-2003	TW 530283 B	01-05-2003

EP 1365378 A	26-11-2003	CN 1459980 A	03-12-2003
		JP 2004004841 A	08-01-2004
		TW 228928 B	01-03-2005
		US 2003217872 A1	27-11-2003

WO 2005041162 A	06-05-2005	NONE	

EP 1271463 A	02-01-2003	US 2003006715 A1	09-01-2003
