

(19)



(11)

**EP 1 754 993 A3**

(12)

**EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:  
**05.09.2007 Bulletin 2007/36**

(51) Int Cl.:  
**G02F 1/133<sup>(2006.01)</sup> G02F 1/13357<sup>(2006.01)</sup>**

(43) Date of publication A2:  
**21.02.2007 Bulletin 2007/08**

(21) Application number: **06112940.9**

(22) Date of filing: **21.04.2006**

(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**

(72) Inventors:  
• **Shives, Gary D.**  
**Brunswick, Ohio (US)**  
• **Varela, William**  
**Parma Heights, Ohio (US)**

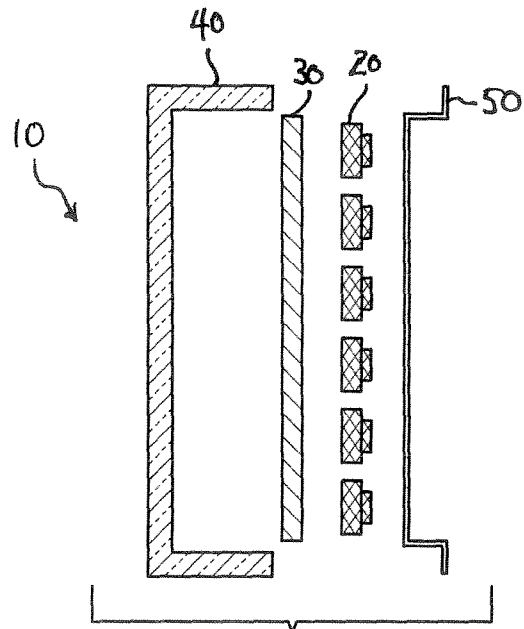
(30) Priority: **27.06.2005 US 167935**  
**09.09.2005 US 223804**

(74) Representative: **Brand, Thomas Louis**  
**W.P. Thompson & Co.,**  
**55 Drury Lane**  
**London WC2B 5SQ (GB)**

(71) Applicant: **Advanced Energy Technology Inc.**  
**Wilmington,**  
**Delaware 19803 (US)**

(54) **Frame system with heat spreader for a liquid crystal display device**

(57) An image display device comprising an image display panel, a frame system including a framework operatively engaging the image display panel and a plurality of electronic components operatively engaging the framework, heat dispersion material operatively engaging the framework and in operative thermal contact with the electronic components, where the frame system exhibits a support factor of less than about 375 mm-W/m<sup>2</sup>·K.



**FIG. 2**

**EP 1 754 993 A3**



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 6 007 209 A (PELKA DAVID G [US]) 28 December 1999 (1999-12-28)  * column 1, line 18 - line 47 * * column 1, line 59 - line 67 * * column 5, line 20 - line 38 * * figures 1-3 *	1,3-5,9, 10,14, 15,17, 18,22	INV. G02F1/133 G02F1/13357
Y		2,6-8, 11,16, 19-21	
Y	----- EP 1 519 217 A (SAMSUNG SDI CO LTD [KR]) 30 March 2005 (2005-03-30) * paragraphs [0016], [0017], [0052], [0053] * * figure 1 *	2,16	
Y	----- WO 00/60406 A (HONEYWELL INT INC [US]) 12 October 2000 (2000-10-12) * page 9 - page 11, column 17 * * figure 2 *	11	TECHNICAL FIELDS SEARCHED (IPC)
Y	----- US 2005/007516 A1 (HONG HEE JUNG [KR] ET AL) 13 January 2005 (2005-01-13) * paragraphs [0008] - [0012] * * figures 1,2 * -----	6-8, 19-21	G02F
4 The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 25 July 2007	Examiner Hauser, Markus
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)

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

EP 06 11 2940

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.

25-07-2007

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 6007209	A	28-12-1999	NONE	
-----				
EP 1519217	A	30-03-2005	CN 1602151 A	30-03-2005
			JP 2005107487 A	21-04-2005
			KR 20050030797 A	31-03-2005
			US 2005068738 A1	31-03-2005
-----				
WO 0060406	A	12-10-2000	DE 60008225 D1	18-03-2004
			DE 60008225 T2	09-12-2004
			EP 1166173 A2	02-01-2002
			US 6439731 B1	27-08-2002
-----				
US 2005007516	A1	13-01-2005	CN 1577470 A	09-02-2005
			KR 20050005675 A	14-01-2005
-----				

专利名称(译)	具有散热器的框架系统，用于液晶显示装置		
公开(公告)号	<a href="#">EP1754993A3</a>	公开(公告)日	2007-09-05
申请号	EP2006112940	申请日	2006-04-21
[标]申请(专利权)人(译)	先进能源科技公司		
申请(专利权)人(译)	ADVANCED ENERGY TECHNOLOGY INC.		
当前申请(专利权)人(译)	ADVANCED ENERGY TECHNOLOGY INC.		
[标]发明人	SHIVES GARY D VARELA WILLIAM		
发明人	SHIVES, GARY D. VARELA, WILLIAM		
IPC分类号	G02F1/133 G02F1/13357		
CPC分类号	G02F1/133385 G02F1/133603 G02F2001/133628 H05K7/20963 G02F1/133308 G02F1/133382		
优先权	11/167935 2005-06-27 US 11/223804 2005-09-09 US		
其他公开文献	EP1754993A2 EP1754993B1		
外部链接	<a href="#">Espacenet</a>		

摘要(译)

一种图像显示装置，包括图像显示板，框架系统，包括可操作地接合图像显示板的框架和可操作地接合框架的多个电子元件，可操作地接合框架并与电子元件可操作地接触的热分散材料，其中框架系统的支撑系数小于约 $375\text{mm}\cdot\text{W} / \text{m}^{\circ}\text{K}$ 。

