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(54) **Light source apparatus and liquid crystal display**

(57) A liquid crystal display and a light source apparatus capable of improving color reproduction compared to the prior art is disclosed. The light source apparatus includes: a cold cathode fluorescent tube including a B phosphor for blue and a G phosphor for green; and a

light emitting diode for red, wherein the G phosphor emits a single-spectrum light with a peak wavelength of 510 to 530 nm, and the light emitting diode emits a single-spectrum light with a peak wavelength of 620 to 650 nm, and does not suffer from declining light intensity.

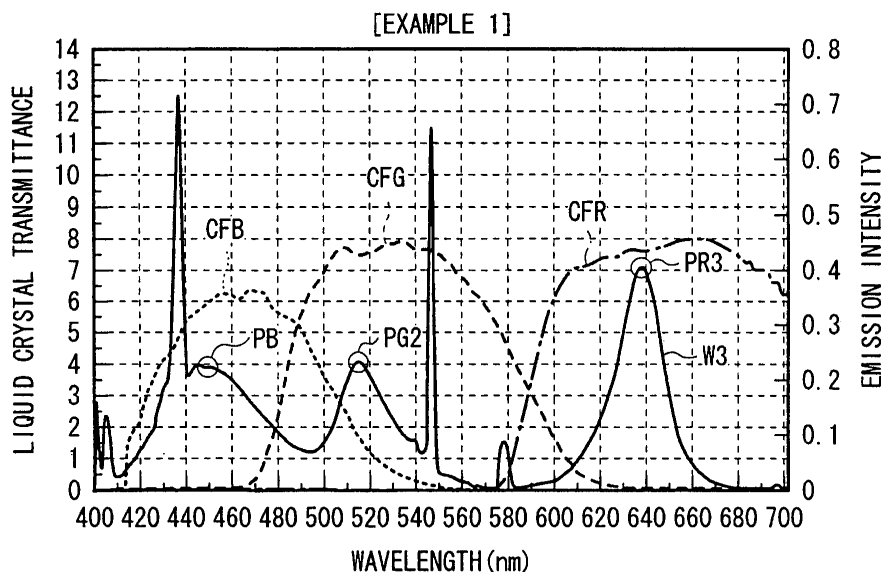


FIG. 3

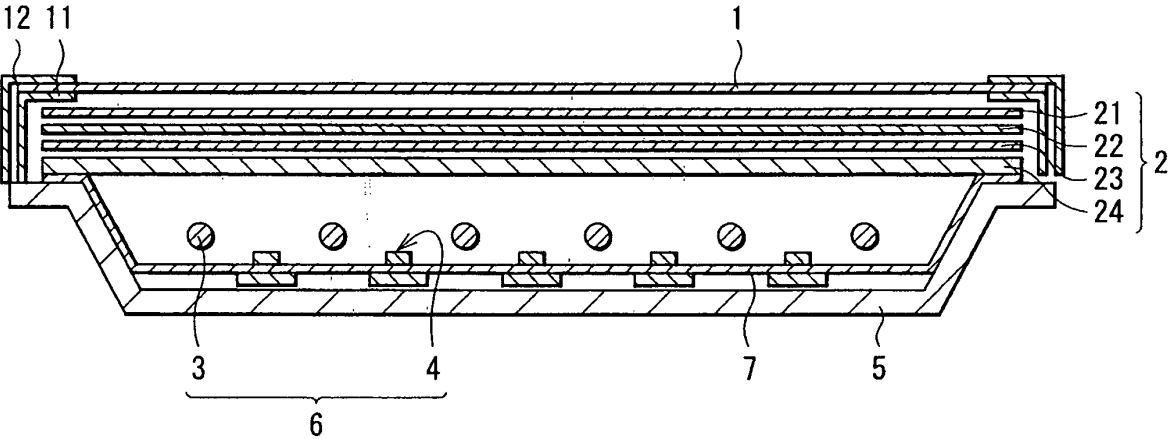


FIG. 1



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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A	----- US 2004/155226 A1 (CHOI YOON YOUNG) 12 August 2004 (2004-08-12) * paragraphs [0016], [0017], [0036] - [0038]; figures 3-6 *	1-6	
A	----- US 2004/130256 A1 (JUESTEL THOMAS ET AL) 8 July 2004 (2004-07-08) * paragraphs [0006] - [0064]; figure 1 *	1-6	
A	----- US 2004/264212 A1 (CHUNG IN JAE ET AL) 30 December 2004 (2004-12-30) * paragraphs [0019] - [0075]; figures 2,3,5,9-14 *	1-6	
A	----- PATENT ABSTRACTS OF JAPAN vol. 1997, no. 03, 31 March 1997 (1997-03-31) -& JP 08 286184 A (CANON INC), 1 November 1996 (1996-11-01) * abstract *	1-6	TECHNICAL FIELDS SEARCHED (IPC) G02F
A	----- US 2005/141217 A1 (KIM KI D [KR]) 30 June 2005 (2005-06-30) * paragraphs [0011] - [0028], [0062] - [0113]; figures 5-10 *	7,8	
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 15 December 2006	Examiner Kiernan, Laurence
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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EPO FORM 1503 03.82 (P04C01)



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Office

Application Number

EP 06 25 3844

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims 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 the first ten claims.

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 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: 1-6

The subject-matter of claims 1-6 concerns a light source and a liquid crystal display containing such a light source. The light source is made up of a cold cathode fluorescent tube in combination with a light emitting diode. The cold cathode fluorescent tube includes blue and green phosphors and the light emitting diode produces red light. The peak wavelength of the green phosphor emission is 510-530 nm and the red emission peak lies between 620 and 650 nm.

2. claims: 7,8

The subject-matter of independent claims 7 and 8 concerns a light source apparatus for a liquid crystal display and a liquid crystal display containing such a light source. The light source is made up of a cold cathode fluorescent tube in combination with a light emitting diode. The cold cathode fluorescent tube includes blue and green phosphors and the light emitting diode produces red light. The liquid crystal display contains blue, green and red colour filters and a diffuser. The light emitting diode and the cold cathode fluorescent tube are arranged enabling colour mixing. The peak wavelength of the light emitting device for red is located outside the transmission wavelength of the green filter.

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

EP 06 25 3844

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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15-12-2006

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专利名称(译)	光源装置和液晶显示器		
公开(公告)号	EP1746458A3	公开(公告)日	2007-02-07
申请号	EP2006253844	申请日	2006-07-21
[标]申请(专利权)人(译)	索尼公司		
申请(专利权)人(译)	索尼公司		
当前申请(专利权)人(译)	索尼公司		
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IPC分类号	G02F1/13357 F21S2/00 F21Y103/00 F21Y113/00		
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优先权	2006133290 2006-05-12 JP 2005212820 2005-07-22 JP		
其他公开文献	EP1746458B1 EP1746458A2		
外部链接	Espacenet		

摘要(译)

公开了一种与现有技术相比能够改善色彩再现的液晶显示器和光源装置。该光源装置包括：冷阴极荧光灯，包括用于蓝色的B荧光粉和用于绿色的G荧光粉；用于红色的发光二极管，其中G荧光体发射峰值波长为510至530nm的单光谱光，并且发光二极管发射峰值波长为620至650nm的单光谱光，并且不会受到光照强度下降的影响。

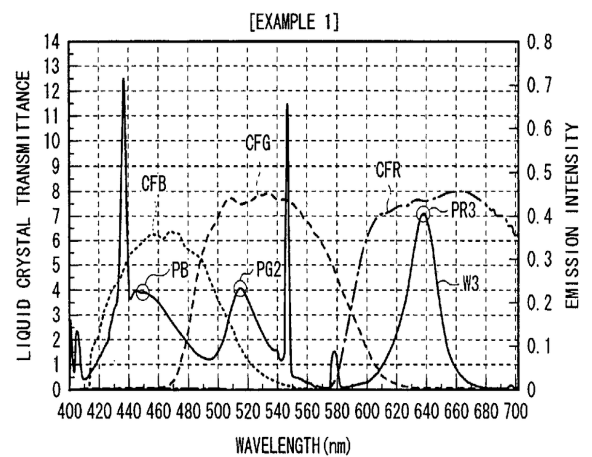


FIG. 3