



(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
17.03.2004 Bulletin 2004/12

(51) Int Cl.7: **G02F 1/1335**

(43) Date of publication A2:
28.11.2001 Bulletin 2001/48

(21) Application number: **01112027.6**

(22) Date of filing: **23.05.2001**

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE TR**
Designated Extension States:
AL LT LV MK RO SI

(72) Inventors:

- **Ohtake, Toshiya**
Minato-ku, Tokyo 105-8001 (JP)
- **Hisatake, Yuzo**
Minato-ku, Tokyo 105-8001 (JP)

(30) Priority: **24.05.2000 JP 2000153508**

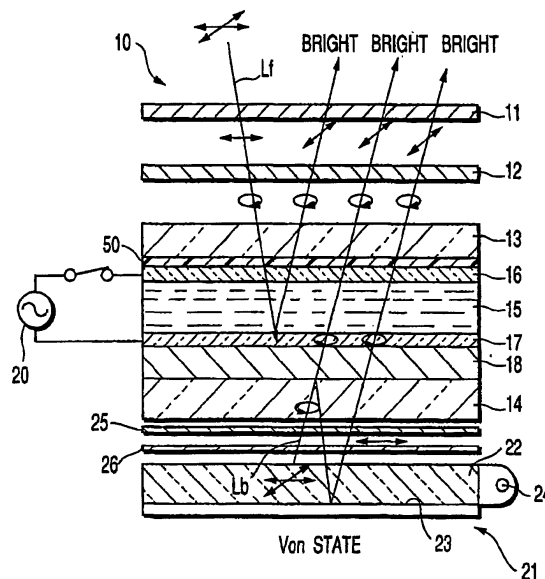
(74) Representative: **HOFFMANN - EITLE**
Patent- und Rechtsanwälte
Arabellastrasse 4
81925 München (DE)

(71) Applicant: **KABUSHIKI KAISHA TOSHIBA**
Kawasaki-shi (JP)

(54) **Half-transmissive liquid crystal display element**

(57) The liquid crystal display element includes a polarization plate (11), a liquid crystal layer (15) provided in the rear of the polarization plate, for modulating incident light in correspondence with an applied voltage, a selectively reflective layer (18) provided behind the liquid crystal layer, for reflecting a first circular polarization component of incident light, and a back light source (21) arranged in the rear of the selectively reflective layer, for emitting light having intensity peaks for a plurality of

predetermined wavelengths. The selectively reflective layer (18) has first reflection factors to the first polarization components of incident light falling within first small regions of visible light, including the plurality of predetermined wavelengths, and has second reflection factors to the first polarization components of incident light falling within second small regions of visible light, not including the plurality of predetermined wavelengths. The first reflection factors are smaller than the second reflection factors.





European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 01 11 2027

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (In I.C.I.7)
X	<p>PATENT ABSTRACTS OF JAPAN vol. 2000, no. 07, 29 September 2000 (2000-09-29) -& JP 2000 122059 A (TOSHIBA CORP), 28 April 2000 (2000-04-28) * abstract *</p> <p>-& US 2002/171794 A1 (HIGUCHI YOSHINORI ET AL) 21 November 2002 (2002-11-21) * paragraph [0052] - paragraph [0056] * * paragraph [0100] - paragraph [0106] * * figures 1,4,6,7,9 *</p> <p>---</p>	1,3-7	G02F1/1335
A	<p>US 5 841 494 A (HALL DENNIS R) 24 November 1998 (1998-11-24) * the whole document *</p> <p>-----</p>	1-8	
			TECHNICAL FIELDS SEARCHED (In I.C.I.7)
			G02F
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
MUNICH		21 January 2004	Ammerlahn, D
CATEGORY OF CITED DOCUMENTS			
<p>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</p>		<p>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</p> <p>..... & : member of the same patent family, corresponding document</p>	

EPO FORM 1503 03/82 (P/04C01)

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

EP 01 11 2027

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.

21-01-2004

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 2000122059 A	28-04-2000	KR 2000029063 A US 2002171794 A1	25-05-2000 21-11-2002
US 5841494 A	24-11-1998	NONE	

EPC FORM P-0489

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

专利名称(译)	半透射液晶显示元件		
公开(公告)号	EP1158346A3	公开(公告)日	2004-03-17
申请号	EP2001112027	申请日	2001-05-23
[标]申请(专利权)人(译)	株式会社东芝		
申请(专利权)人(译)	株式会社东芝		
当前申请(专利权)人(译)	株式会社东芝		
[标]发明人	OHTAKE TOSHIYA HISATAKE YUZO		
发明人	OHTAKE, TOSHIYA HISATAKE, YUZO		
IPC分类号	G02F1/1335 G02F1/13357 G02F1/13363 G02F1/139 G09F9/00 G09F9/30		
CPC分类号	G02F1/133536 G02F1/133555 G02F1/1393 G02F2001/133638 G02F2201/343		
优先权	2000153508 2000-05-24 JP		
其他公开文献	EP1158346A2 EP1158346B1		
外部链接	Espacenet		

摘要(译)

液晶显示元件包括偏振板(11)，设置在偏振板后部的液晶层(15)，用于调制与施加的电压相对应的入射光，设置在后面的选择性反射层(18)。液晶层，用于反射入射光的第一圆偏振分量，和背光源(21)，设置在选择性反射层的后部，用于发射具有多个预定波长的强度峰值的光。选择性反射层(18)具有落入可见光的第一小区域(包括多个预定波长)内的入射光的第一偏振分量的第一反射系数，并且具有落入入射光的第一偏振分量的第二反射系数。第二小区域的可见光，不包括多个预定波长。第一反射系数小于第二反射系数。

