LG DISPLAY CO., LTD.
V.
SURPASS TECH INNOVATION LLC

CASE IPR2015-00885
U.S. PATENT NO. 7,202,843

Petitioner's Hearing Demonstratives | Hearing Date: May 12, 2016

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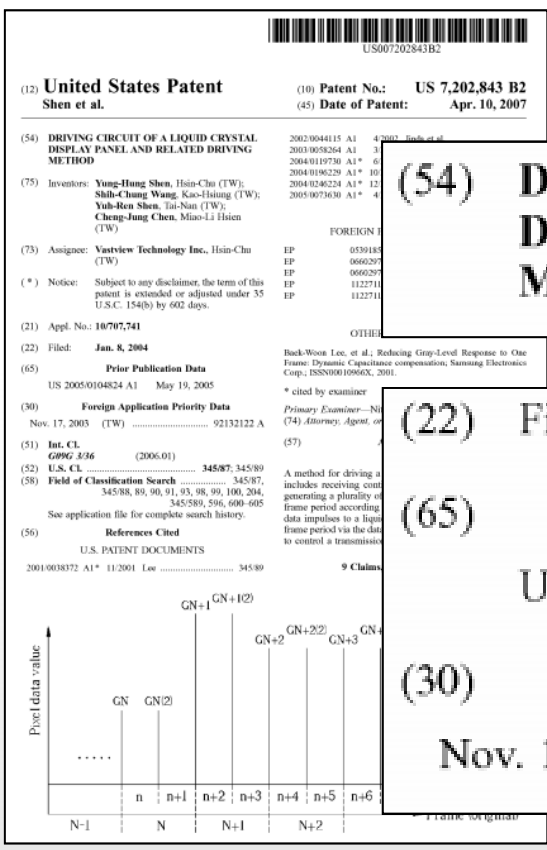
U.S. PATENT NO. 7,202,843



US007202843B2

(12) **United States Patent**
Shen et al.

(10) **Patent No.: US 7,202,843 B2**
(45) **Date of Patent: Apr. 10, 2007**

(54) **DRIVING CIRCUIT OF A LIQUID CRYSTAL DISPLAY PANEL AND RELATED DRIVING METHOD**

(75) Inventors: **Yung-Hung Shen**, Hsin-Chu (TW); **Shih-Chung Wang**, Kao-Hsiung (TW); **Yuh-Ren Shen**, Tai-Nan (TW); **Cheng-Jung Chen**, Miao-Li Hsien (TW)

(73) Assignee: **Vastview Technology Inc.**, Hsin-Chu (TW)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 602 days.

(21) Appl. No.: **10/707,741**

(22) Filed: **Jan. 8, 2004**

(65) **Prior Publication Data**

US 2005/0104824 A1 May 19, 2005

(30) **Foreign Application Priority Data**

Nov. 17, 2003 (TW) ..... 92132122 A

(51) **Int. Cl.**
G09G 3/36 (2006.01)

(52) **U.S. Cl.** **345/87**; 345/89

(58) **Field of Classification Search** 345/87, 345/88, 89, 90, 91, 93, 98, 99, 100, 204, 345/589, 596, 600–605
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2001/0038372 A1* 11/2001 Lee 345/89

2002/0044115 A1 4/2002 Jinda et al.
2003/0058264 A1 3
2004/0119730 A1* 6
2004/0196229 A1* 10
2004/0246224 A1* 12
2005/0073630 A1* 4

FOREIGN

EP 0539185
EP 0660297
EP 0660297
EP 1122711
EP 1122711

OTHER

Back-Woon Lee, et al.; Reducing Gray-Level Response to One Frame: Dynamic Capacitance compensation; Samsung Electronics Corp.; ISSN00010966X, 2001.

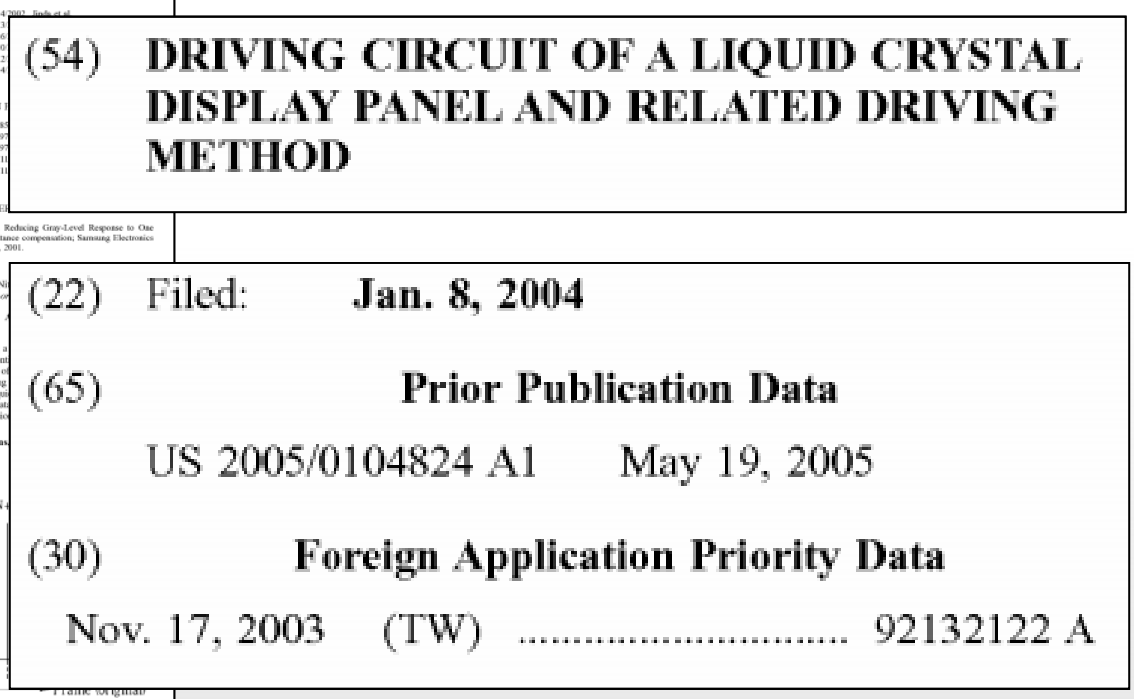
* cited by examiner

Primary Examiner—Ni
(74) *Attorney, Agent, or*

(57)

A method for driving a
includes receiving cont
generating a plurality of
frame period according
data impulses to a liqui
frame period via the data
to control a transmissio

9 Claims



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ALLEGED PROBLEM

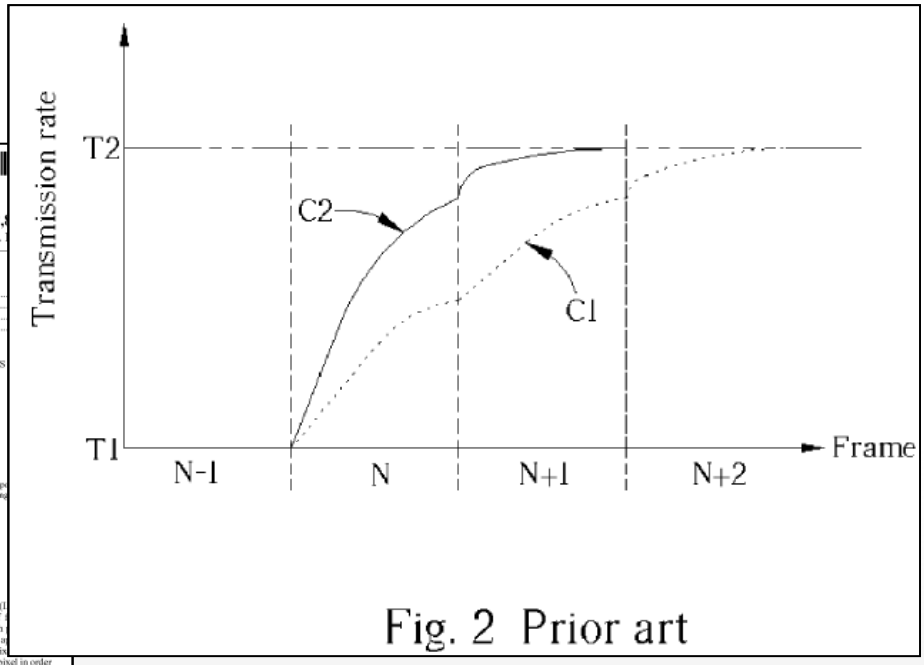
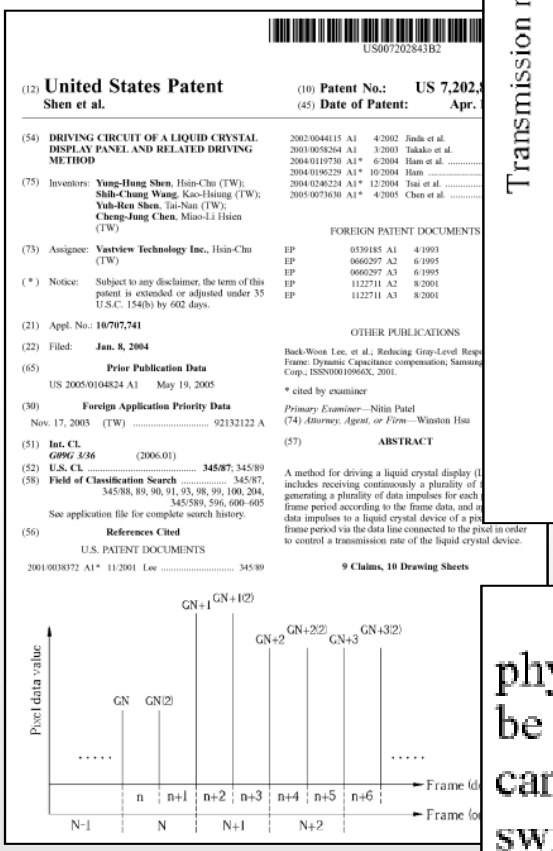


Fig. 2 Prior art



US007202843B2

(12) **United States Patent**
Shen et al.

(10) **Patent No.: US 7,202,**
(45) **Date of Patent: Apr.**

(54) **DRIVING CIRCUIT OF A LIQUID CRYSTAL DISPLAY PANEL AND RELATED DRIVING METHOD**

(75) Inventors: **Yung-Hung Shen**, Hsin-Chu (TW); **Shih-Chang Wang**, Kao-Hsiung (TW); **Yuh-Ren Shen**, Tai-Nan (TW); **Cheng-Jung Chen**, Miao-Li Hsien (TW)

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See application file for complete search history.

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2004/0119750 A1* 6/2004 Ham et al. .....
2004/0196229 A1* 10/2004 Ham .....
2004/0246224 A1* 12/2004 Tsai et al. .....
2005/0073630 A1* 4/2005 Chen et al. .....

FOREIGN PATENT DOCUMENTS

EP 0539185 A1 4/1993
EP 0660297 A2 6/1995
EP 0660297 A3 6/1995
EP 1122711 A2 8/2001
EP 1122711 A3 8/2001

OTHER PUBLICATIONS

Back-Woon Lee, et al.; Reducing Gray-Level Resp
Frame: Dynamic Capacitance compensation; Samsung
Corp.; ISSN00109663X, 2001.

* cited by examiner

Primary Examiner—Nitin Patel
(74) *Attorney, Agent, or Firm*—Winston Hsu

(57) **ABSTRACT**

A method for driving a liquid crystal display (
includes receiving continuously a plurality of
generating a plurality of data impulses for each
frame period according to the frame data, and
data impulses to a liquid crystal device of a pix
frame period via the data line connected to the pixel in order
to control a transmission rate of the liquid crystal device.

9 Claims, 10 Drawing Sheets

Because of the limitations
physical characteristics, the liquid crystal molecules nee
be twisted and rearranged when changing input data, wh
can cause the images to be delayed. For satisfying the ra
switching requirements of multimedia equipment, impr

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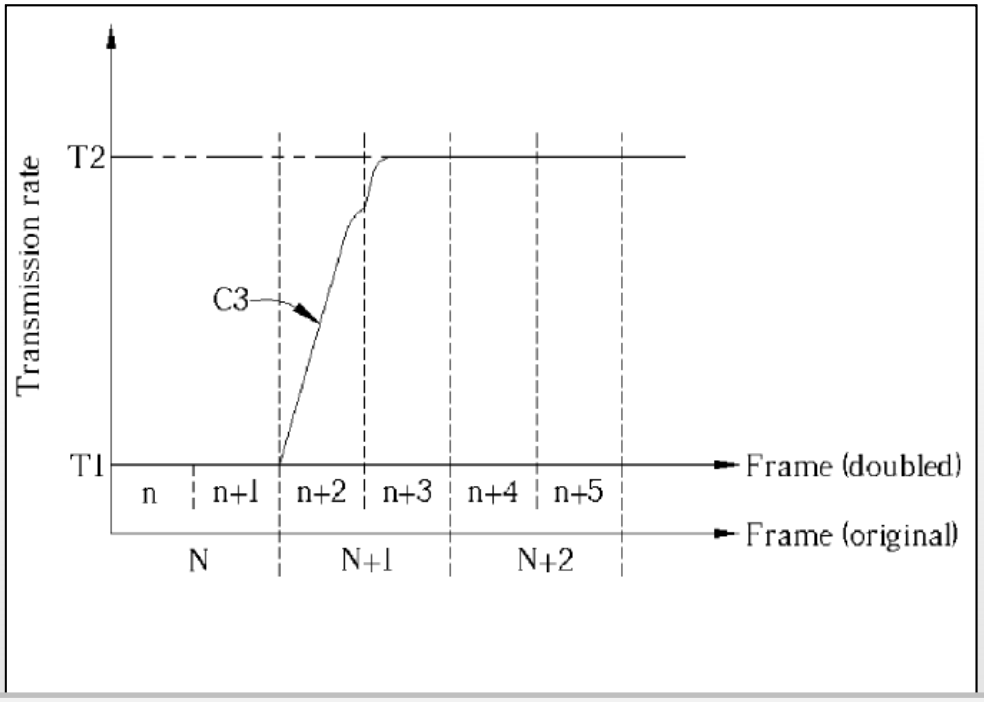
PROPOSED SOLUTION

In this regard, the '843 Patent discusses and claims two previously known techniques for improving the response time – and resultant image quality – of LCDs: (1) "overdriving" the signal data; and (2) increasing the refresh rate (e.g., doubling the refresh rate) of the individual pixels.



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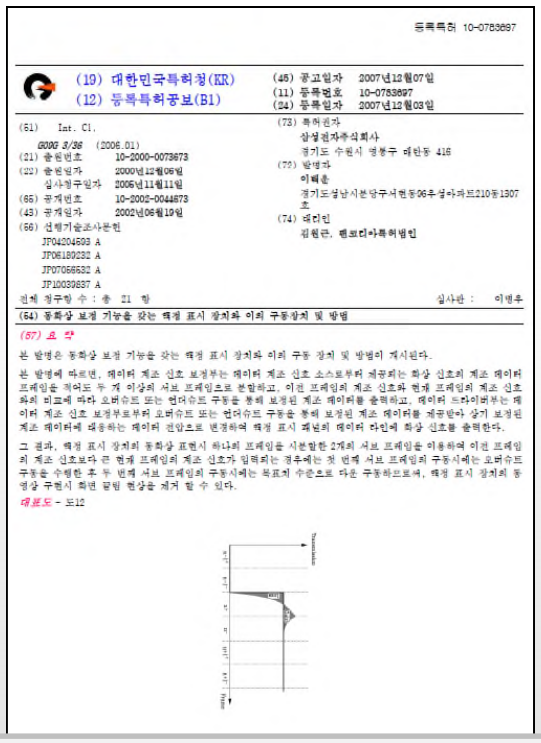
INSTITUTED GROUND

ORDERED that an *inter partes* review is instituted as to claims 4,

and 9 of the '843 patent on the anticipation ground based on Lee;

Korean Patent Application No. 2000-0073673 ("Lee")



등록특허 10-0753697

(19) 대한민국특허청(KR)
(12) 등록특허공보(B1)

(45) 공고일자 2007년12월07일
(11) 등록번호 10-0753697
(24) 등록일자 2007년12월03일

(51) Int. Cl.
G09G 3/36 (2006.01)
(21) 출원번호 10-2000-0073673
(22) 출원일자 2000년12월06일
심사청구일자 2005년11월11일
(65) 공개번호 10-2002-0044873
(43) 공개일자 2002년06월19일
(56) 선행기술조사문헌
JP04204693 A
JP06189232 A
JP07066682 A
JP10039837 A

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(74) 대리인
김원근, 팬코리아특허법인

전체 청구항 수 : 총 21 항 심사관 : 이명우

(54) 동화상 보정 기능을 갖는 액정 표시 장치와 이의 구동장치 및 방법

(57) 요 약

본 발명은 동화상 보정 기능을 갖는 액정 표시 장치와 이의 구동 장치 및 방법이 개시된다.

본 발명에 따르면, 데이터 계조 보정부는 데이터 계조 신호 소스로부터 제공되는 화상 신호의 계조 데이터 프레임을 적어도 두 개 이상의 서브 프레임으로 분할하고, 이전 프레임의 계조 신호와 현재 프레임의 계조 신호와의 비교에 따라 오버슈트 또는 언더슈트 구동을 통해 보정된 계조 데이터를 출력하고, 데이터 드라이버부는 데이터 계조 신호 보정부로부터 오버슈트 또는 언더슈트 구동을 통해 보정된 계조 데이터를 제공받아 상기 보정된 계조 데이터에 대응하는 데이터 전압으로 변경하여 액정 표시 패널의 데이터 라인에 화상 신호를 출력한다.

그 결과, 액정 표시 장치의 동화상 표현시 하나의 프레임을 시분할한 2개의 서브 프레임을 이용하여 이전 프레임의 계조 신호보다 큰 현재 프레임의 계조 신호가 입력되는 경우에는 첫 번째 서브 프레임의 구동시에는 오버슈트 구동을 수행한 후 두 번째 서브 프레임의 구동시에는 목표치 수준으로 다운 구동하므로써, 액정 표시 장치의 동영상 구현시 화면 끌림 현상을 제거 할 수 있다.

대표도 - 도12

- "Liquid Crystal Display Device Hav
  Moving Picture Compensation Fur
  and Driving Device and Method Th
- Published June 19, 2002, more tha
  before '843 patent's effective filing
  November 17, 2003
- Prior art under 35 U.S.C. § 102(b)

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