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(21) 10 - 1994 - 0006206 (65) 1994 - 0021266
(22) 1994 03 28 (43) 1994 10 17

(30) 08/038,391 1993 03 29 (US)

(73) . 13500
75265

(72) 75252 1203 7825
75080 607
. 6745
75214

(74) :

(54)

PWM 1 (104) . (106) (102) ,
(108) 가

1 .

2a 2e .

3 .

4 .

5a - 5c .

6a - 6b .

106 :

108 :

508, 520, 522, 524 : 4WM

(Spatial Light Modulator: SLM) , SLM

가 SLM 가 , 가

() , SLM ,

(raster) 1

가 1 40 600 (600dpi) 8.5" x 11"

11" x 600dpi 660 . 1 40 4400

8.5 x 600 5,100 22.44 × 10⁶ 44.6

SLM

(line integra

t ion)

가

가

(Pulse Width Modulation: PWM)

, PWM

(significance)

가

가

, 4 -

16

1/2

(MSB)

1/4

1/8

1/16

PWM

PWM

가

"

"

가

,

SLM

1

가

1

(가

)

(DMD)

SLM

,

가

,

가

가

,

,

가

.

가

,

.

가

,

가

.

,

,

,

PWM

1

"

"

가

,

. 16 -

가

()

16

가

16

15

, 2

, 2 -

PWM

1

4

가

. 128

, 128

가

4

가

128 x 4

512

. 가

, PWM

가 . 512

, 512 128 2 PWM 가 128
1.02 가 512
4 가

$$= (500) \times \frac{5}{600\text{dpi}} \times (512) \times (48) \quad (48)$$

< >

변 수	그레이 스케일 인 자	유효 길이	평균 데이터율 (MHz)	피크 데이터율 (MHz)
RI	$n_I = 7$	2^{n_I}	4	1 X
	$n_I = 9$	2^{n_I}	16	4 X
PWM 전체 장치 + RI	$n_I = 7$ $n_P = 2$	$2^{n_I} \times n_P$	16	4 X
PWM 1행 + RI	$n_I = 7$ $n_P = 2$	$2^{n_I} + n_P$	4.0625	2 X
PWM 1행	$n_P = 9$	n_P	.28125	4 X

$$n_I = \text{ ; } n_P = \text{PWM ; RI = } n_I = 7 \text{ (RI)}$$

, PWM 가 , 1 PWM
(loading) 가 ,
. 512 가 128 가 , 512
가 가 4 가

가 PWM LSB , 2^n 가 2
PWM 가 1 , $1/2$
PWM MSB , 2
WM () 9 , 1 PWM LSB ($1/2^{n_P}$)
t 7 4 가 ,
1 PWM 가

PWM 가 , 512 128
PWM 4 . 128 + 1 129 SLM . 128
128 129 (baseline) 2^{n-1} PWM

가 , , 412 512 1
(Organic Photoreceptor: OPC)
가 , OPC

가 , 412 , OPC

가 , 256

가 , 가
(map)

1 PWM SLM , (104) 128 PWM 4
가 1

(106) , 2 PWM PWM 1 " " PWM
(106) (108)

가 1 가 가

가 1 가

가 2a , (202) (204) 0 LSB , 2a - 2e
PWM PWM MSB
PWM PWM
M 4 PWM 1/16 , LSB , PW
2 MSB가 , 1/

3 , PWM 1/16
" PWM ROW LSB LOAD" PWM
PWM 1/2
PWM 0
PWM

가

2b - 2d (204) PWM . 2c , PWM 0
 , PWM
 . 1 PWM 가 (204) 0 (206)
 .
 . PWM (204) ,
 4 , 가 . 1 PWM 128
 , 0 128 128 PWM 가 (204)
 .
 가 4 (402) 1
 . (404) 1
 (408) 1/2 , 가 50% . (410) 1/4
 25% 가 75%가 . (412 414)
 12.5% 6.75% 가 .
 5a (profile) (502) . (photoinduced)
 , 가 .
 .
 f 가 . (1+f) , (1-f)
 600dpi 1/600 . f ,
 가 f . f가 0 ,
 .
 (504) 1/600 600dpi 1 " " . t_0 t_1 MSB(508)가
 , t_1 t_2 MSB - 1(520) . (516) 가
 , 4 PWM (508, 520, 522 524) . (528)
 . MSB(508) (528) 50% 가 , MSB - 1(520) 25% 가
 , LSB+1(522) 12.5% 가 , LSB 6.25% 가 . 1
 2 600dpi .
 / PWM $t_0 - t_4$ 4 16 .
 .
 PWM 1가 . ,
 . 5b 4(MSB - 1), 2(LSB+1) 1(LSB)
 7 . 5c 8(MSB) 5a
 (518) 가
 (visual artifact) .

PWM
가 6a
(5a 4)
PWM
(616)
0
1 - 1
(618)
#3 (620)
#2 (622)
#1 (624)
t₋₃, t₋₂, t₋₁
1, t₁, t₂ t₃ 6 2
가
0, .25, .5 .75가
t₂ 가
t₋₃ (622)
t₋₂ 가
.75
t₃

PWM
, .35, .65 .9 2
가 (tone)

PWM SLM 가 가
SLM PWM (decoder)
가 , PWM
,

PWM PWM (624)
5 6 , (632)
가 2 가
PWM , 100%

PMW SLM , SLM PWM
가 가 가 ,
가

(57)

1.

a.

b.

, 가

2.

1 ,

3.

1 ,

4.

1 ,

5.

,

a. ,

,

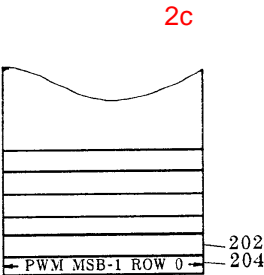
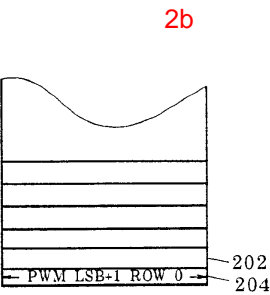
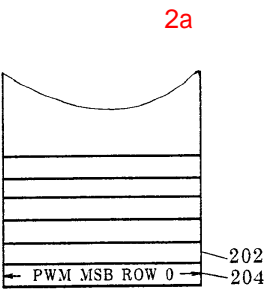
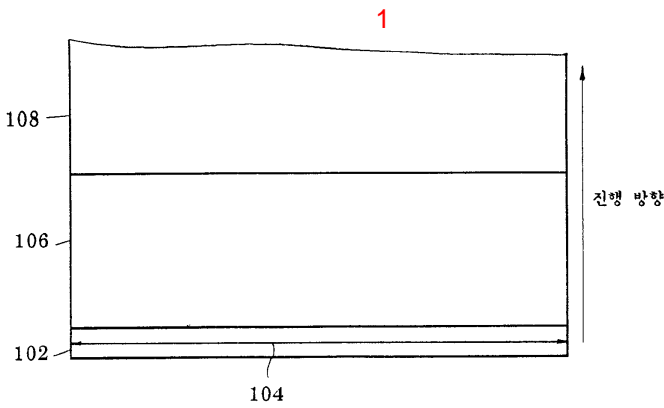
b.

6.

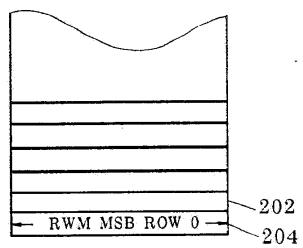
5 ,

7.

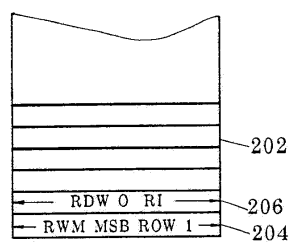
5 ,



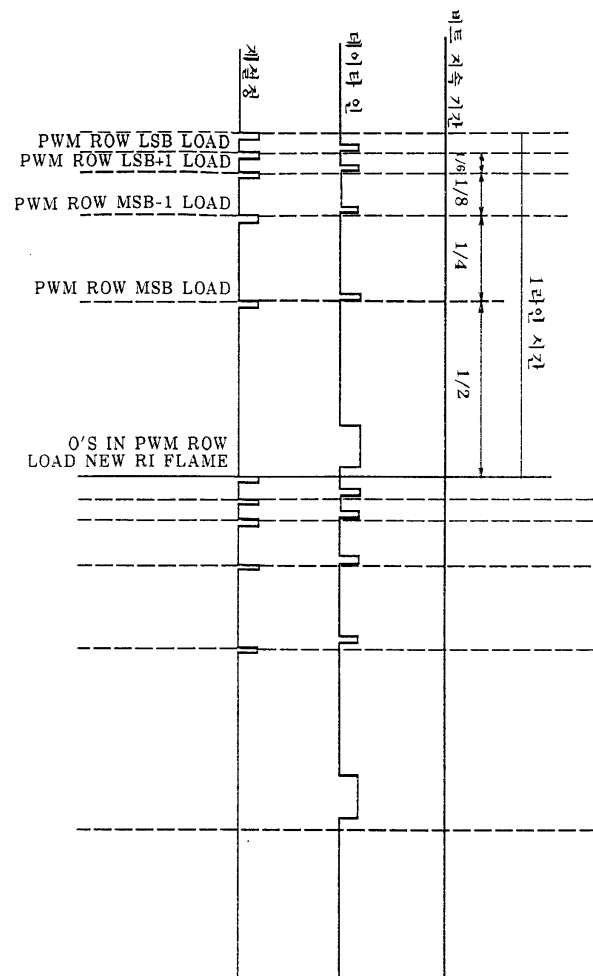
2d



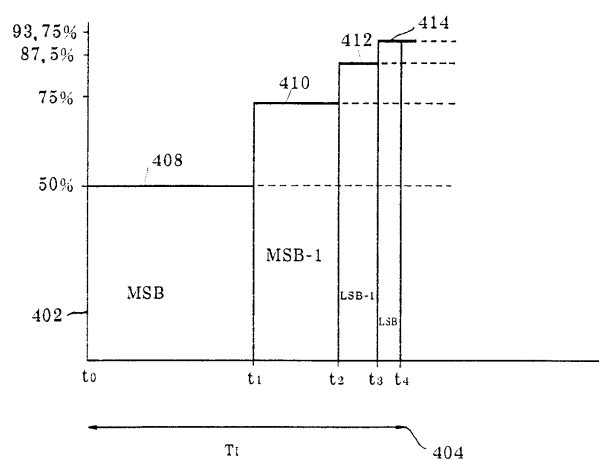
2e



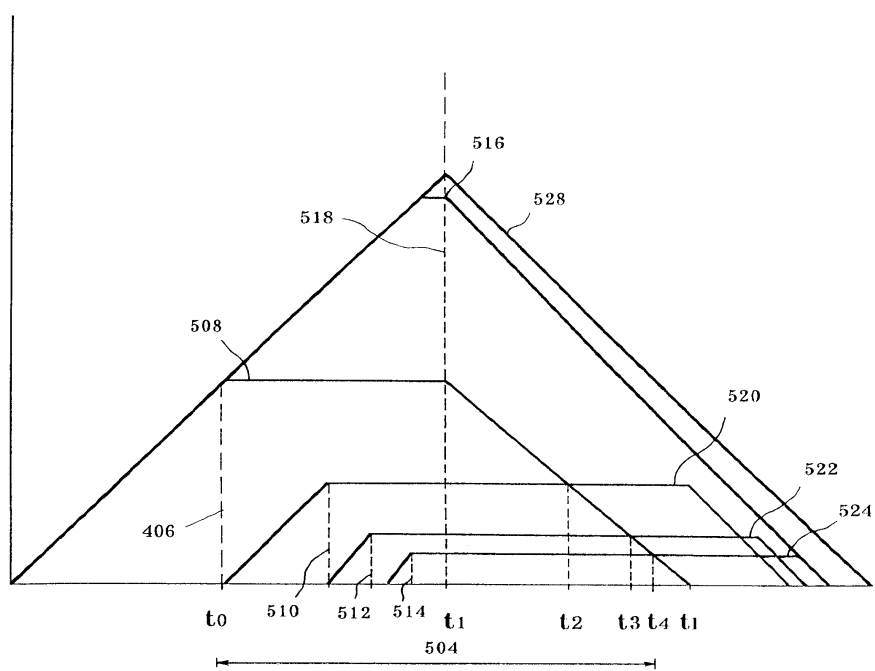
3



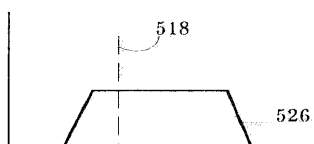
4



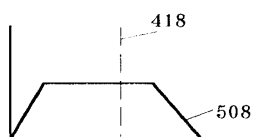
5a



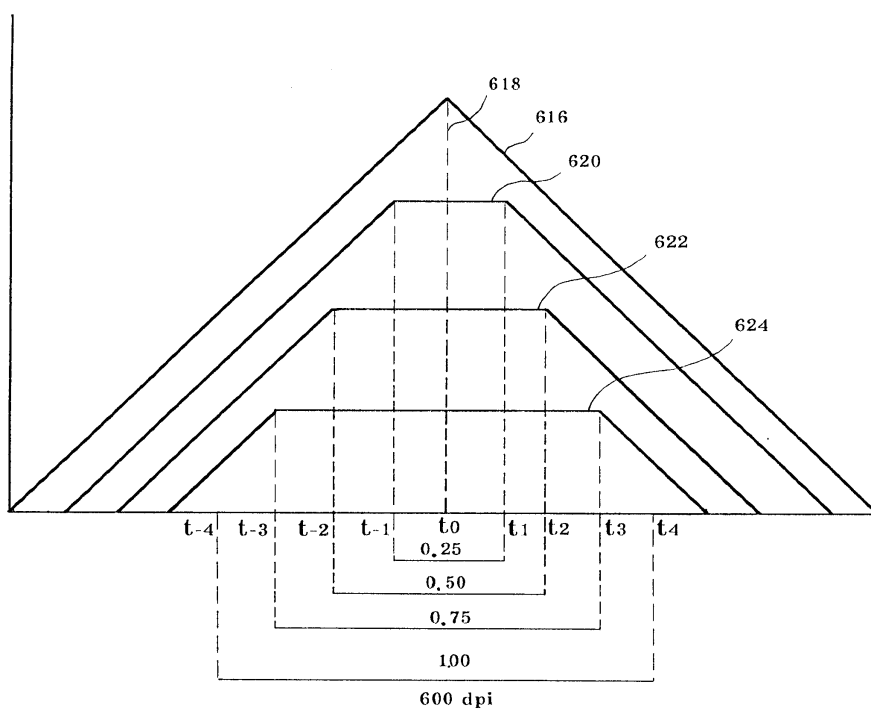
5b



5c



6a



6b

