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(72)

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(74)

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(54)

/ , /

1 2 . , 1 2 1 2 /

3 . 1 2 2

2 1 2 1

2

1 / ,  
 2 / ,  
 3 2 CD - R ,  
 4 2 DVD .

\* \*

11; 12;  
 13; 14:  
 15; 16;  
 17; 18;

/ , / .  
 (DVD) / (CD)( 가 / (CD - R)) .

1 / .  
 1 (tracking servo) (1) (2) 3 (1) (2)  
 (3) (3) (3) (3)

a) (3) 3 (3a) (D)  
 (4) (5)

(3) (D) (7) (5), (4)  
 rvo) (8) / (8) (focusing se  
 (8) /

/ / / /

, CD CD - R 가 DVD 780nm 650nm

, CD( CD - R) DVD /  
 가

, 780nm 650nm  
 780nm 650nm , 100~  
 110μm CD( CD - R) 780nm , DVD  
 650nm 가

, DVD  
 가 가 가

/ 가 /

1 2 ; 1 2  
 1 2 ; 1 2 3

1 2  
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1 2

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1

1

2

2

2

2

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1 ,

가

1 /

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4

1

6

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1

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2

4

1

1

4

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2

2

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가

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1

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2

1

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2

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2

가

2

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, ,

(a)

/

1

2

1

2

;

(b)

1

2

1

2

2

3

;

(c)

1

2

1

2

;

(d)

;

(e)

1

1

2

2

;

, / , (e) ,  
 0 / 1 , 1 2 0 2  
 (e) , 4 1 6  
 / , 1 0 4 1  
 , 1 2 ±1 1  
 , / 2 0 1 1  
 , 4 2 ±1

, 1 / , (f) / , 2  
 , 2 가 , 가 2 1  
 , 가 , 2

(c) , / ,  
 / 가 .

, 1 1 0 1  
 , 2 ±1 , , 1  
 , 2 ±1 2 가 , 0  
 , 1 , /  
 / , 2 / ,  
 / 가 .

2 / 3  
 2 DVD CD - R , 4 2  
 (11) / 1 2  
 2 650nm (11a, 11b) S CD - R (D1) DVD (D2) / (11) , 1 780nm  
 1 2 (11a, 11b) 가 ,  
 100~110 $\mu$ m  
 (11) (12)가 (12) 1 2  
 (11a, 11b) 1 2 3 , 0  $\pm$   
 1  
 1 2 (11a, 11b) 1 2  
 (13) (13)  
 (13) S P  
 (14), (16) (15)가  
 D1) (15) DVD (D2) 가 (15) CD - R (  
 (16) CD - R (D1) DVD (D2) 가  
 가  
 (D1 D2) (15), (16), (14),  
 (13) (17)  
 (17) 6 (18)가  
 0 (18) , 3 4 , (A, B, C, D) (E, F)  
 (D1 D2) 1 2 (11a) 3 (E, F)  
 (A, B, C, D) ,  $\pm 1$   
 100~110 $\mu$ m 2 , 2 (11b)가 1 (11a)  
 2 , 3 0 (18) (E F)  
 , 2  $\pm 1$  ,  $\pm 1$  (A, B, C, D)  
 , (12) 가

, 1 0 ±1 (18)  
 , 2 0 ±1 (18)  
 D) , CD-R (D1) 1 0 ±1 (18) (A, B, C,  
 (E, F) , DVD / (E F)  
 , 2 ±1 (A, B, C, D)  
 , 가 / 2 4  
 , CD-R (D1) / , S P (11) 1 가 (11a) 78  
 0nm 1  
 1 2 (11a, 11b) 가 ,  
 10µm 가 (11b) 1 (11a) 100~1  
 ±1 1 (11a) 1 (12) 3 , 0  
 , S P (11a) 2 CD-R (D1) 90° (13)  
 (13) S P  
 (14)  
 (17) , (18)

FES (Focus Error Signal) = (A+C) - (B+D) ----- (1)

(18) (E, F) ±1 ,

TES (Track Error Signal) = E - F ----- (2)

RF 0

$$RFS (RF Signal) = A + B + C + D \text{ ----- (3)}$$

(1), (2), (3) 가 .

, DVD (D2) / , (11) 1 (11b) 650 nm 2 . S 가 .

1 2 (11a, 11b) 2 (11b) 1 (11a) 100~110μm .

±1 2 (11b) 2 (12) 3 , 0 .

, DVD (D2) (11b) 90° S P 2 (13)

(D2) (17) , (18)

1 (18) 2 , 2 (11b) 가 .

, 0 (18) , 4 , DVD (D2) ±1 (E F) (E F) . 2 (A, B, C, D)

가 1 가 2 가 .

, (12) 2 0 ±1 가 (18) , (12)

가 (18) 2 DVD RF ,

(18) (A, B, C, D) 0 ,

$$FES (Focus Error Signal) = (A+C) - (B+D) \text{ ----- (4)}$$

(18) (A, B, C, D) 0 ,

$$TES (Track Error Signal) = (A+C) - (B+D) \text{ ----- (5)}$$

RF (E F), (F) +1 -1 ,

$$RFS (RF Signal) = E, \quad RES = F \text{ ----- (6)}$$



(4), (5), (6) 가 .

, CD-R

DVD

(CD-R DVD)

/ 가 .

, / ,

/ 가 .

, 1 1 , 1  
2 2 , 2  
2 가 2

, 1 , /  
1 , 2 /  
가

( 110µm ± 10µm),

/ 가 .

(57)

1.

1 2 / ; 1 2

1 2 ; 1 2 3

1 2 ; 1 2

1 1 2

2.

1 , 1 / 1 ,  
1 2 2 /

3.

1 , 4 1 6  
 , 1 4 /  
 , 1 2 2 1 1  
 / , 2 2 1 4  
 , 2 2 .

4.

1 , 가 , 1  
 2 , 2 가  
 2 / 가  
 .

5.

- (a) 1 2 / , 1 2 ;
- (b) 1 2 1 2  
 2 3 ;
- (c) 1 2 1 2 ;
- (d) ;
- (e) 1 1 2  
 2 ;  
 / .

6.

5 , / , (e) ,  
 , 1 1 0 2  
 / , 2 / 2  
 0 / .

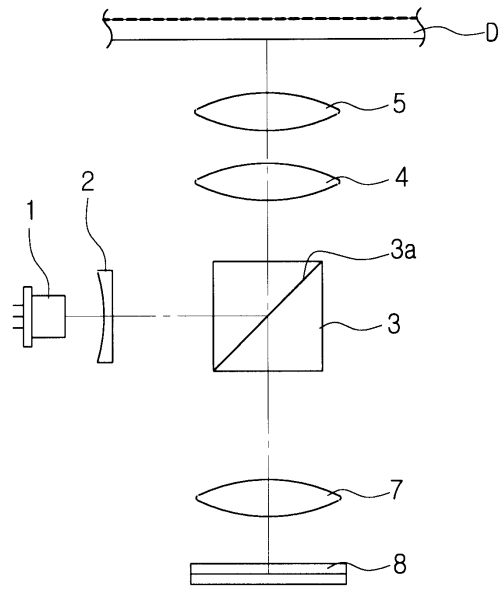
7.

5 , (e) , 4 1  
 6 / , 1 0 4 ±1 1  
 1 ±1 , , / 2 2 0 2  
 , 4 / .

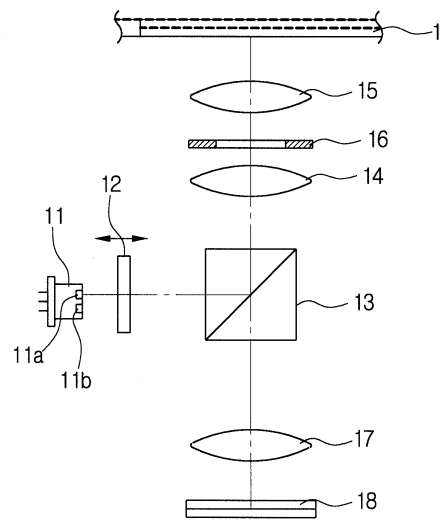
8.

5 , , 1 / , (f) / ,  
 2 , , 2 가 1 2  
 , 가 2 / .

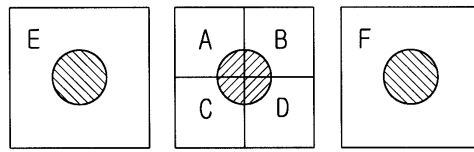
1



2



3



4

