

2004 03 27
10-0424518
2004 03 15

[illegible]

EA : , , , , , ,

EP : , , , , , , , , , , , ,

OA OAPI : , , , , , , 가 ,
 , , , , , , , ,

(73)

(72) $\frac{11050}{70}$

1

- 1 -

(BER) 가

1

(global pilot signal)
(interferers)

(unwanted traffic signals)

(pseudo-noise)(pn)

MA)

, CDMA

(CD

1

CDMA
pn

가

(despread)

pn

spreading)

가

(de

가

가

(coherent reception)

(signal-estimates)

가

pn

(matching pn sequence)

가

(SNR)

가

가

가

R

SN

1 CDMA
 2A B-CDMATH
 2B (multiplier)
 3A (in-phase bit stream)
 3B (quadrature bit stream)
 3C - (pn)
 4
 5 ()
 6 (hard decision) QPSK (constellation) (p o)
 7

[
 2A 2B B-CDMATM (17)
 (19) (21) (19)
 (25) (23)
 , bi-
 (I 33x) (FEC) bi- I Q
 (QPSK)
 bi- 33x, 33y (39)
 - (pn) 35I, 35Q (39) 2B
 (x+jy) x (I+jQ) = (xI-yQ) + j(xQ+yI) ... (1)

= a+jb
 a+jb , a b , j² = -1 2A 가 , I 37a
 Q 37b 45a, 45b ()
 (43) () (47) (47)
 (21) (43) (47) (51a, 51b) (mixes down
) (49a, 49b) (53) , QPSK (5
 5a, 55b) (53) pn (35I, 35Q)
 (21)

(57x, 57y) FEC
 3A (59)
 3B , QPSK (I) (Q) 1
 (quantized version)
 (t_s)
 pn QPSK I Q pn
 100 200 pn
 3C pn
). t_c (chip)
 가 I Q pn
 4, 5 7 (61) 4
 (r)

$r = \alpha c_p + \beta c_t + n$... 식(2)
 (r) , (c_p) () , (c_t)
 () , (n) (n)
 (r) , (61)
 ()
 $\alpha \neq \beta$... 식(3)

(r)가 (2)
 $\Sigma_r = \alpha \Sigma c_p + \beta \Sigma c_t + \Sigma n$... 식(4)

4, (r), (61), (63), (r)

(65) (67), (r)

pn (c_D^{*})(69) (r)

$\Sigma_r c_p^* = \alpha \Sigma c_p c_p^* + \beta \Sigma c_t c_p^* + \Sigma_n c_p^* \dots$ 식(4)

(71) 1 (a first sum and dump processor)(73)

(73) (O_{sd1}) (6)

$0_{sd1} = \alpha L + \beta \Sigma c_t c_p^* + \Sigma_n c_p^* \dots$ 식(6)

, L (c_p) L (c_p^{*})

(73) (O_{sd1}) (75) (75) (pilot-traffic cross-correlation)

(n) (75) (O_{lpf}) (7) (6)

가 (75) (O_{lpf}) (7)

$0_{lpf} = \alpha L \dots$ 식(7)

(75) (O_{lpf}) () (77) (77) (O_{pm}) (77)

(79) (O_{lpf}) L (77) (O_{pm})

(8)

$0_{pm} = \alpha \dots$ 식(8)

c_p^{*} (69) (c_p) (79)

(83) 2 (c_p) (81) (c_p) (79)

(85) (O_{sd2}) $\Sigma c_p c_t^*$ (87) (87)

(89) $\alpha \Sigma c_p c_t^*$ (85) (O_{sd2}) $\Sigma c_p c_t^*$ (87) (87)

(r) (91) (91) 4 (93)

(9) (r) c_t^{*} (83) (r) (91) (r)

$\Sigma_r c_t^* = \alpha \Sigma c_p c_t^* + \beta \Sigma c_t c_t^* + \Sigma_n c_t^* \dots$ 식(9)

(91) (95) 3 (97) 3 (97)

(O_{sd3}) (10)

$0_{sd3} = \Sigma_r c_t^* = \beta L + \alpha \Sigma c_p c_t^* + \Sigma_n c_t^* \dots$ 식(10)

, L (c_t) L (c_t^{*})

3 (97) (O_{sd3}) 3 (87) (89) 가 (99) 가

(99) (O_{add}) (11)

$0_{add} = \beta L + \alpha \Sigma c_p c_t^* + \Sigma_n c_t^* - \alpha \Sigma c_p c_t^* \dots$ 식(11)

, (61) (O_{add}) (r)

$0_{add} = \beta L + \Sigma_n c_t^* \dots$ 식(12)

가

가

(101) 가 5 (r)

(103).

$r = \psi d c_d + \beta c_t + n \dots$ 식(13)

(r) (d) ()가 ()가

(n) (n) (r) () (101)

() (d) ()

$\psi \neq d \neq \beta \dots$ 식(14)

(r)가 (13)

$$\Sigma_r = \psi d \Sigma c_d + \beta \Sigma c_t + \Sigma_n \quad \dots \text{식(15)}$$

$$\begin{aligned} & 5 \quad , \quad (r) \quad (r) \quad (93) \quad pn \\ & \quad (91) \quad (103). \quad (97) \quad (O_{sd3}) , \quad (97) \\ & \quad (c_t^*) \quad (r) \quad . \\ & 0_{sd3} = \Sigma r c_t^* = \beta L + \psi d \Sigma c_d c_t^* + \Sigma_n c_t^* \quad \dots \text{식(16)} \\ & 5 \quad (101) \quad n \quad (115_1 - 115_n) \\ & . \quad 10 \quad (, n=10) \quad (115_1 - 115_{10}) \quad . \\ & \quad (115_1 - 115_n) \quad 1 \quad (117_1 - 117_n) \quad . \\ & \quad (119_1 - 119_n) \quad (121_1 - 121_n) \quad 2 \quad (123_1 - 123_n), \quad (133_1 - 133_n), \\ & 1 \quad (125_1 - 125_n), \quad (127_1 - 127_n), \quad (129_1 - 129_n), \quad 3 \quad (131_1 - 131_n), \quad (135_1 - 135_n), \\ & 1 - 135_n), \quad 가 \quad (137_1 - 137_n) , \quad (83) \quad . \\ & , \quad (r) \quad (115_1 - 115_n) \quad (103). \quad (c_{d1} \\ & * - c_{dn}^*) \quad (139_1 - 139_n) , \quad (r)가 \quad pn \quad (c_{d1} \\ & \quad (117_1 - 117_n) \quad (103) \quad . \quad (139_1 - 139_n) \quad (121_1 - 121_n) \\ & \quad (O_{sd1n}) , \quad 1 \quad (121_1 - 121_n) \quad . \quad 1 \quad (121_1 - 121_n) \end{aligned}$$

$$0_{sd1n} = \Sigma r c_{tdn}^* = \psi d L + \beta \Sigma c_t c_{dn}^* + \Sigma_n c_{dn}^* \quad \dots \text{식(17)}$$

$$\begin{aligned} & , L \quad (c_{dn}) \quad , c_{dn}^* \\ & 1 \quad (121_1 - 121_n) \quad (O_{sd1n}) \quad (125_1 - 125_n) \quad . \\ & (125_1 - 125_n) \quad 가 \quad 가 \quad QPSK \quad (d) \quad . \quad (125_1 - 125_n) \quad (125_1 - 125_n) \\ & n) \quad 6 \quad , \quad (125_1 - 125_n) \quad (p_0) \quad 4 \quad QPSK \\ & (x_{1,1}, x_{-1,1}, x_{-1,-1}, x_{1,-1}) \quad . \quad (p_0) \\ & (47) \quad (corruption) \quad (p_0) \\ & , \quad (p_0) \quad 4 \quad (d_1, d_2, d_3, d_4) \quad , 가 \quad 가 \quad (x_{-1,1}) \\ & d_2 \quad , \quad (d) \quad (x_{-1,1}) \quad . \quad (x_{-1,1}) \\ & \quad (phase amount)(\emptyset) \quad (p_0) \\ & (p_0) \quad . \quad (125_1 - 125_n) \quad (\emptyset) \quad (127_1 - 127_n) \\ & . \quad , \quad (127_1 - 127_n) \quad . \quad (127_1 - 127_n) \quad (O_{lpfn}) \\ & - \quad , \quad (n) \quad . \quad , \quad (127_1 - 127_n) \quad (O_{lpfn}) \end{aligned}$$

$$O_{lpfn} = \psi L \quad \dots \text{식(18)}$$

$$\begin{aligned} & (127_1 - 127_n) \quad (O_{lpfn}) \quad () \quad (1) \\ & 29_1 - 129_n) \quad . \quad (129_1 - 129_n) \quad (127_1 - 127_n) \quad (O_{lpfn}) \quad L \\ & \emptyset \quad . \\ & (125_1 - 125_n) \quad (d)가 \quad . \quad 6 \quad (131_1 - 131_n) \quad (d_1, \\ & d_2, d_3 \quad d_4) \quad 가 \quad (d)가 \quad . \quad 3 \quad (131_1 - 131_n) \\ & (d) \quad () \quad . \\ & \quad (c_{d1}^* - c_{dn}^*) \quad , \quad (c_d \\ & 1 - c_{dn}) \quad (135_1 - 135_n) \quad , \quad 2 \quad (131_1 - 131_n) \quad , \quad (123_1 - \\ & \quad (c_t^*) \quad . \quad 2 \quad (123_1 - 123_n) \quad (O_{sd2n}) \quad \Sigma c_{dn} c_t^* , 가 \quad (137 \\ & 123_n) \quad . \quad 2 \quad (123_1 - 123_n) \quad (O_{sd2n}) \quad \Sigma c_{dn} c_t^* , 가 \quad (137 \\ & 1 - 137_n) \quad . \quad 가 \quad (137_1 - 137_n) \quad (141_1 - 141_n) \quad . \\ & 2 \quad (123_1 - 123_n) \quad (O_{sd2n}) \quad . \\ & 가 \quad (137_1 - 137_n) \quad (141_1 - 141_n) \quad (105) \quad (19) \quad . \\ & 가 \quad (137_1 - 137_n) \quad 가 \quad (143) \quad . \quad (O) \quad (19) \quad . \\ & 0 = \beta L + \psi d \Sigma c_d c_t^* + \Sigma_n c_t^* - \psi d \Sigma c_d c_t^* \quad \dots \text{식(19)} \\ & 가 \quad (143) \quad (O)[\quad , \quad (101) \quad] \quad (r) \end{aligned}$$

$$0 = \beta L + \Sigma_n c_t^* \quad \dots \text{식(20)}$$

$$, \quad (n)$$

(145)가 7
(91)
(115₁ - 115_n) (101)
(O, O_{add}) 가 (61) (147) 가 (101, 61)
(149) (101, 61)
(151) 가

(57)

1.
(19) CDMA
(147) (147) (O)
(101) (103)
(147) (63)
(O_{add}) (61) (O_{add}) (61) (151) (63)
(101) (O)
2.
1 (101) (O_{sd3}) (97)
(91) (115_{1-n}) (115_{1-n}) (139_{1-n})
(63) (103)
(139_{1-n}) (119_{1-n}) (103) (117_{1-n})
(119_{1-n}) () (d) (1
25_{1-n}) () (O_{1pfn}) (127_{1-n})
(127_{1-n}) (O_{1pfn}) (129_{1-n}) 1 (131_{1-n})
(129_{1-n}) 가 (137_{1-n})
(d) (119) (135_{1-n})
(135_{1-n}) 1 (133_{1-n}) (123_{1-n}) 가
1 (133_{1-n}) 1 (131_{1-n}) (123_{1-n}) 가
1 (137_{1-n}) (137_{1-n}) (O_{sd3}) 가 (101) (O)
(91) (137_{1-n}) (141_{1-n}) 가 (143
)
3.
4.
1 (O_{sd1}) (61) (65)
(O_{sd2}) (65) (O_{sd1}) (O_{pm})
(O_{pm}) (O_{sd2})
(O_{add})
5.
4 (69)

(79) ,

- 2 (81) ,

(85) ,

6.

5
(O_{1pf}) ,

(75) ,

(77) ,

7.

8.

9.

10.

11.

CDMA

,
,

(147)

(O_{sdd}) , (91)

(65) (O_{sd1}) (O_{pm}) (O_{nd2}) ,

(91) (O_{add}) (O_{sd3}) ,

12.

11
(O_{lpf}) ,

(75) , (77) ,

13.

(19)

CDMA

(101)

(103)

(O)

(103)

1

(O_{sd3})

(91)

(115_{1-n}) ,

1

2

(139_{1-n})

(139_{1-n})

(119_{1-n})

(119_{1-n})

(103)

(117₁

-n)

(139_{1-n})

()

(d)

(125_{1-n})

(125_{1-n})

()

(O_{1pf})

(127_{1-n}) ,

(127_{1-n})

(O_{1pf})

(129_{1-n}) ,

(129_{1-n})
(d)

가

(137_{1-n})

(119_{1-n})

(135_{1-n}) ,

(133_{1-n})

2

(123_{1-n})

(133_{1-n})

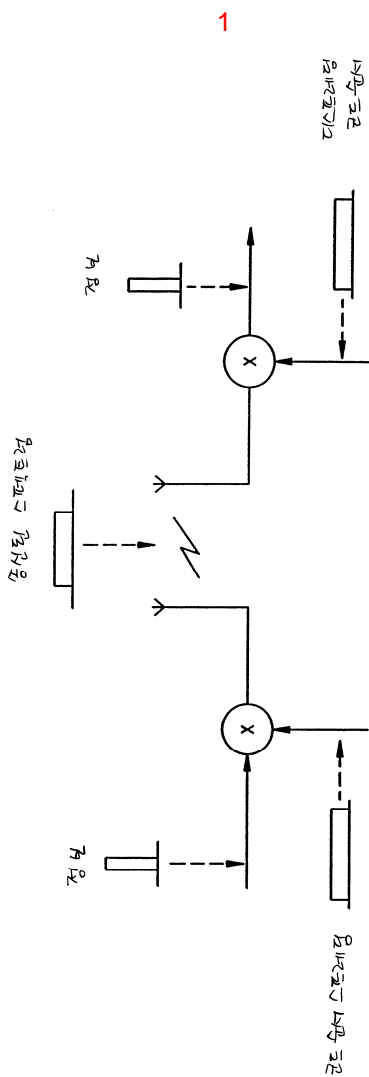
2
(137_{1-n}) ,

(123_{1-n})

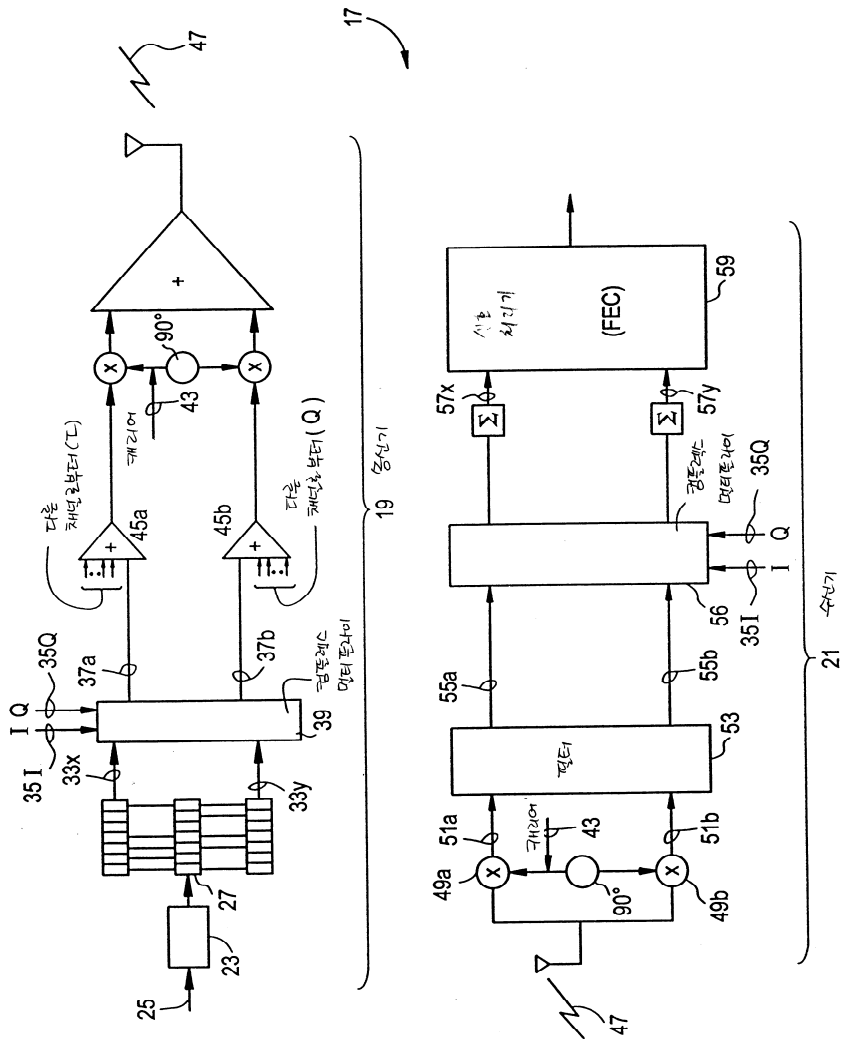
(131_{1-n})

가 ,

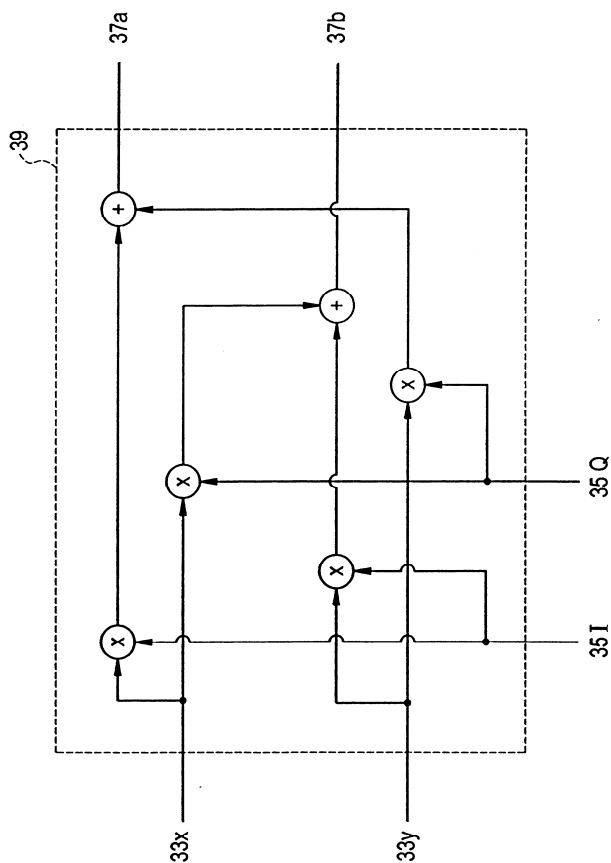
-) , .
- 14.
- 15.
- 16.
- 17.



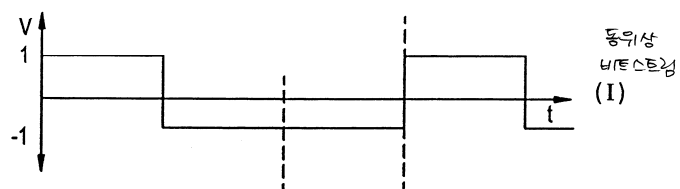
2a



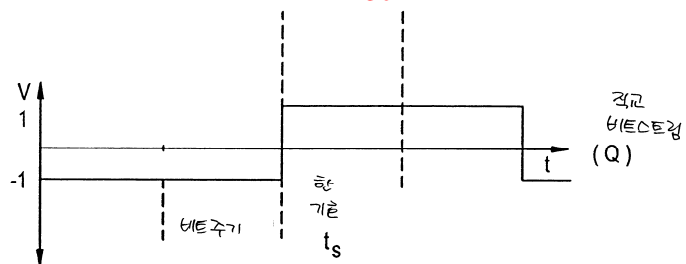
2b



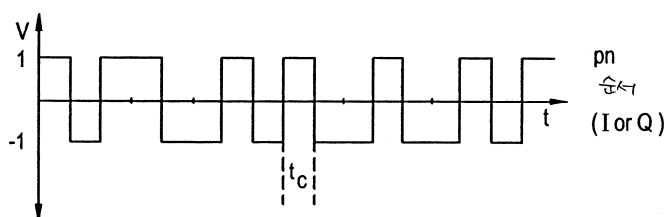
3a



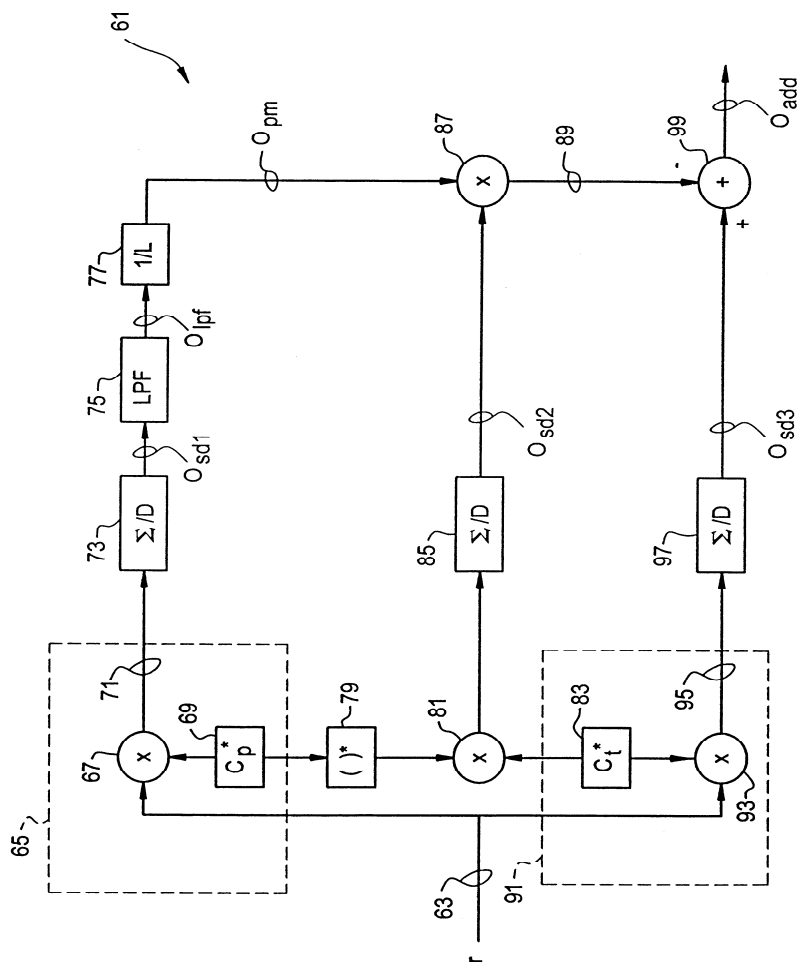
3b



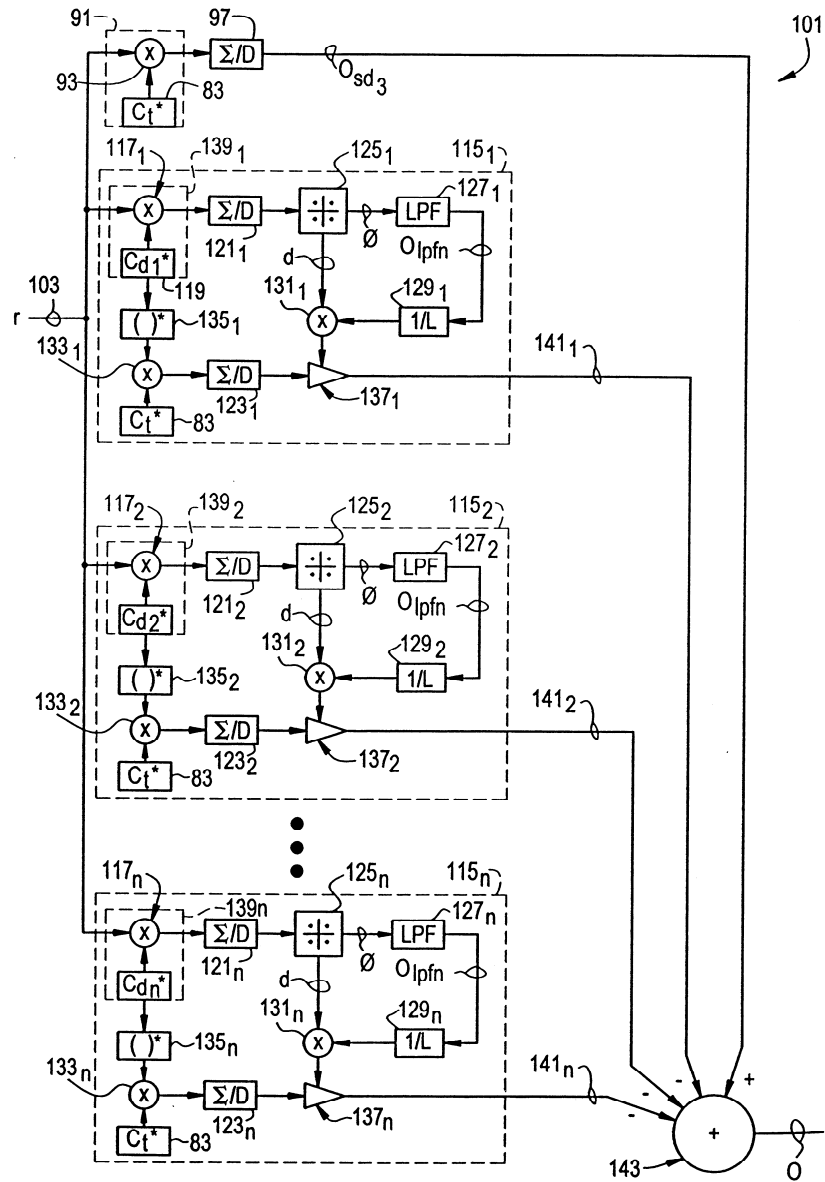
3c

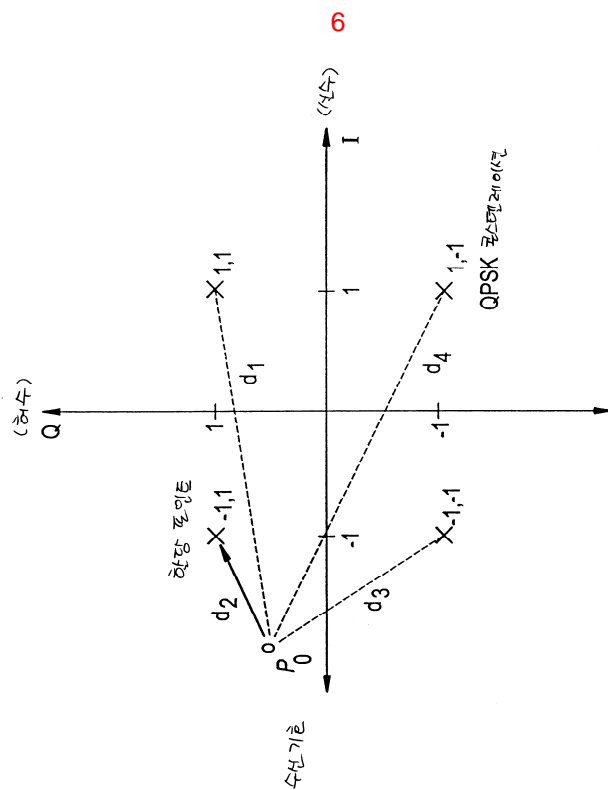


4



5





7

