

(19) (KR)
(12) (B1)

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	2001 04 20		
(86)	PCT/US1999/001883	(87)	WO 2000/24135
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AP ARIPO : , , , , , , , , , 가 , , , ,

EA : , , , , , , , ,

(30) 09/175,174 1998 10 20 (US)

(73) , 19801, , 300, 527

(72) , , .
 , 11050, , 70

(74)

(54) CDMA

(BER)

가

1

(global pilot signal)
(interferers)

(unwanted traffic signals)

MA)

(pseudo-noise)(pn)

(CD

, CDMA

1

CDMA
pn

pn

(despread)

spreading)

가

(de

가

(coherent reception)

(signal-estimates)

가

pn (matching pn sequence)

가

(SNR)

가

가

가

R

SN

1 CDMA
 2A B-CDMA TH
 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-CDMA™ (17) ,
 (25) (19) (21) (19) , bi-
 (I 33x) (QPSK) Q 33y (FEC) bi- | Q
 (pn) 35I, 35Q 33x, 33y (39) 2B (39) ,

$$(x+jy) \times (I+jQ) = (xI-yQ) + j(xQ+yI) \dots (1)$$

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

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

$r = \alpha c_p + \beta c_t + n \dots \text{식(2)}$
 , (r) , (n) , (c p) (n) () , (c t) ,
 () , , , , , , , , (61)
 $\alpha \neq \beta \dots \text{식(3)}$

(r)가 , (2)
 $\Sigma r = \alpha \Sigma c_p + \beta \Sigma c_t + \Sigma n \dots \text{식(4)}$

$$\sum_r C_p^* = \infty \sum C_p C_n^* + \beta \sum C_t C_n^* + \sum_n C_n^* \quad \dots \text{식(4)}$$

$$O_{sd1} = \infty L + \beta \sum c_f c_p^* + \sum_n c_p^* \dots \text{식(6)}$$

$$\begin{array}{ccccccc}
 & (73) & (O_{sd1}) & & (75) & & (75) \\
 & , & , & & , & . & \\
 & (n) & & & (75) & , & (6) \\
 & (75) & (O_{lpf}) & & (7) & . & \\
 & 0_{lpf} = \infty L & \dots \text{식}(7) & & & & \\
 & (75) & (O_{lpf}) & & () & & (77) \\
 & (79) & (O_{lpf}) & L & & , & (77) \\
 & (8) & & & & & (O_{pm}) \\
 & 0_{pm} = \infty & \dots \text{식}(8) & & & &
 \end{array}$$

$$\begin{aligned}
& \text{c}_p^* & (69) & & (c_p) & (79) \\
& 2 & (c_p), 2 & (81) & , 2 & c_t^* \\
& 2 & (85) & (O_{sd2}) & \sum c_p c_t^* & (85) \\
& \infty \sum c_p c_t^* & (r) & (91) & , 3 & 3 \\
& (9) & (r) & c_t^* & (83) & (91) \\
& \sum r c_t^* = \infty \sum c_p c_t^* + \beta \sum c_t c_t^* + \sum n c_t^* & \dots \text{식}(9) & (r) & 4 & (93) \\
& (O_{sd3}) & (91) & (95) & 3 & (97) \\
& (10) & . & . & . & 3 \\
& 0_{sd3} = \sum r c_t^* = \beta L + \infty \sum c_p c_t^* + \sum n c_t^* & \dots \text{식}(10) & (97) & . & (97) \\
& , L & (97) & (c_t) L & (99) & (c_t^*) \\
& 3 & (O_{add}) & (O_{sd3}) & 3 & 가 \\
& (99) & (11) & (87) & (89) & (99) \\
& 0_{add} = \beta L + \infty \sum c_p c_t^* + \sum n c_t^* - \infty \sum c_p c_t^* & \dots \text{식}(11) & . & . & . \\
& , & (61) & (O_{add}) & (r) & . \\
& 0_{add} = \beta L + \sum n c_t^* & \dots \text{식}(12) & . & . & .
\end{aligned}$$

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

$$5, \quad (r) \quad (r) \quad (93) \quad (97) \quad pn$$

$$(c_t^*)^{(91)} \quad (103). \quad (r) \quad . \quad (93) \quad (97) \quad pn$$

$$O_{sd3} = \Sigma r c_t^* = \beta L + \psi d \Sigma c_d c_t^* + \Sigma_n c_t^* \quad \dots \text{식(16)}$$

$$5 \quad \begin{array}{c} (101) \quad n \\ 10 \quad (n=10) \\ (115_1 - 115_n) \\ (119_1 - 119_n) \\ 1 \quad (121_1 - 121_n) \\ 125_n), \\ 1 - 135_n), \quad \text{가} \quad (127_1 - 127_n), \\ (137_1 - 137_n) \end{array} \quad \begin{array}{c} (115_1 - 115_n) \\ (117_1 - 117_n) \\ (139_1 - 139_n), \\ (123_1 - 123_n), \\ (131_1 - 131_n), \\ (83) \end{array} \quad \begin{array}{c} (115_1 - 115_n) \\ (115_1 - 115_{10}) \\ (117_1 - 117_n) \\ (139_1 - 139_n), \\ (123_1 - 123_n), \\ (131_1 - 131_n), \\ (83) \end{array} \quad \begin{array}{c} (115_1 - 115_n) \\ (115_1 - 115_n) \\ (117_1 - 117_n) \\ (139_1 - 139_n), \\ (123_1 - 123_n), \\ (131_1 - 131_n), \\ (83) \end{array} \quad \begin{array}{c} (139_1 - 139_n) \\ (117_1 - 117_n) \\ (103) \\ (121_1 - 121_n) \end{array} \quad \begin{array}{c} (103) \\ (103) \\ (121_1 - 121_n) \end{array} \quad \begin{array}{c} (103) \\ (103) \\ (121_1 - 121_n) \end{array}$$

(O_{sd1n})

$$0_{sd1n} = \sum r c_{tdn}^* = w d L + \beta \sum c_s c_{dn}^* + \sum c_d c_{dn}^*$$

식(17)

$$O_{sd1n} = \sum r c_{tdn}^* = \psi dL + \beta \sum c_t c_{dn}^* + \sum n c_{dn}^* \quad \dots \text{식(17)}$$

, L (c_{dn}) , c_{dn}^*
 1 $(121_1 - 121_n)$ (O_{sd1n}) $(125_1 - 125_n)$ $(125_1 - 125_n)$
 $(125_1 - 125_n)$ 가 가 QPSK (d) (\emptyset) $(125_1 - 125_n)$
 $n)$ 6 $(125_1 - 125_n)$ (p₀) 4 QPSK
 $(x_{1,1}, x_{-1,1}, x_{-1,-1}, x_{1,-1})$
 (47) (corruption) (p₀) 4 (d₁, d₂, d₃, d₄) 가 가
 d_2 (p₀) (d) (x_{-1,1}) (phase amount) (d₁, d₂, d₃, d₄) (p₀) (x_{-1,1})
 (p_0) $(125_1 - 125_n)$ (\emptyset) $(127_1 - 127_n)$
 $(127_1 - 127_n)$ (n) $(127_1 - 127_n)$ (O_{lpfn})

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

$$\begin{aligned}
& \text{29 } 1 - 129 \text{ } n) \quad (127 \text{ } 1 - 127 \text{ } n) \quad (O \text{ } l_{pfn}) \quad (127 \text{ } 1 - 127 \text{ } n) \quad (O \text{ } l_{pfn}) \quad L \\
& \emptyset \quad . \quad (129 \text{ } 1 - 129 \text{ } n) \quad (127 \text{ } 1 - 127 \text{ } n) \quad (O \text{ } l_{pfn}) \quad L \\
& d_2, d_3 \quad d_4) \quad (125 \text{ } 1 - 125 \text{ } n) \quad (d) \text{ } g \quad (d) \text{ } g \quad , \quad 6 \quad (131 \text{ } 1 - 131 \text{ } n) \quad (d) \text{ } 1, \\
& (d) \quad () \quad (c_{d1}^* - c_{dn}^*) \quad (131 \text{ } 1 - 131 \text{ } n) \quad (c_d \text{ } 1 - c_{dn}) \quad (123 \text{ } 1 - \\
& 1 - c_{dn}) \quad (c_t^*) \quad (135 \text{ } 1 - 135 \text{ } n) \quad , \quad 2 \quad (131 \text{ } 1 - 131 \text{ } n) \quad , \\
& 123 \text{ } n) \quad . \quad 2 \quad (123 \text{ } 1 - 123 \text{ } n) \quad (O \text{ } s_{d2n}) \quad \sum c_{dn} c_t^* \quad , \quad g \quad (137 \\
& 1 - 137 \text{ } n) \quad . \quad g \quad (137 \text{ } 1 - 137 \text{ } n) \quad 3 \quad (131 \text{ } 1 - 131 \text{ } n) \\
& 2 \quad (123 \text{ } 1 - 123 \text{ } n) \quad (O \text{ } s_{d2n}) \quad . \quad (131 \text{ } 1 - 131 \text{ } n) \\
& g \quad (137 \text{ } 1 - 137 \text{ } n) \quad (141 \text{ } 1 - 141 \text{ } n) \quad g \quad (143) \quad (105) \\
& g \quad (137 \text{ } 1 - 137 \text{ } n) \quad g \quad (143) \quad (O) \quad (19) \\
& 0 = \beta L + \psi d \sum c_d c_t^* + \sum c_n c_t^* - \psi d \sum c_d c_t^* \quad . \quad \dots \text{식(19)} \\
& g \quad (143) \quad (O) \quad (19) \quad . \quad (105) \quad (19) \quad .
\end{aligned}$$

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

(145) 가 7
(91)

(101)

(115₁-115_n)
(O, O_{add})

(61)
(149)

(147)
(101, 61)

(151)

가 ,

(57)

1.

(19) CDMA

(147),
(O)

(103)

(147),
(101),
(147),
(O_{add})
(61)

(63)

(61) (151) (63)

2.

(97)
(115_{1-n}),
(139_{1-n})

(101) (O_{sd3}) (115_{1-n})

(91) (103) (139_{1-n}) (119_{1-n}) (119_{1-n})

(103) (117₁)

() (d) (1)

(127_{1-n}) (127_{1-n}) (O_{1pfn}) (127_{1-n})

(131_{1-n}) (131_{1-n}) (135_{1-n}) (135_{1-n}) (135_{1-n})

(129_{1-n}) (129_{1-n}) (137_{1-n}) (137_{1-n}) (137_{1-n})

(d) (119) (119) (119) (119)

(133_{1-n}) (133_{1-n}) (131_{1-n}) (131_{1-n}) (131_{1-n})

(137_{1-n}) (137_{1-n}) (137_{1-n}) (137_{1-n}) (137_{1-n})

(91) (91) (91) (91) (91)

(141_{1-n}) (141_{1-n}) (141_{1-n}) (141_{1-n}) (141_{1-n})

(123_{1-n}) (123_{1-n}) (123_{1-n}) (123_{1-n}) (123_{1-n})

(101) (101) (101) (101) (101)

(O) (O) (O) (O) (O)

(143) (143) (143) (143) (143)

3.**4.**

(65),
(O_{sd2}) (O_{sd1}) (61),
(O_{sd2}) (O_{sd1}) (61),
(O_{pm}) (O_{pm}) (O_{pm})

(65) (O_{pm}) (O_{pm}) (O_{pm})

(O_{add}) (O_{add}) (O_{add}) (O_{add})

(O_{sd2})

(143) (143) (143) (143) (143)

(69),

(69),

5.

(79) ,

2

(85)

2 (81) ,

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) ,
(O_{pm})

(77) ,

13.

(19)

CDMA

(101)

(103) 1 (O_{sd3}) (103)

(O)

(91)

1

(115_{1-n}) ,(139_{1-n}), (119_{1-n}) (139_{1-n}) (119_{1-n}) (103) (117₁-n) , (139_{1-n}) () (d)(125_{1-n})(125_{1-n}) ,

()

(127_{1-n})(127_{1-n})(O_{1pf})(129_{1-n})(129_{1-n})(137_{1-n})(129_{1-n})

(d)

(119_{1-n})(135_{1-n})(133_{1-n})(133_{1-n})

,

(137_{1-n})(123_{1-n})(131_{1-n})(123_{1-n})(137_{1-n})(137_{1-n})

(137_{1-n})
(91) (O_{sd3})

(101)
(137_{1-n}) (O)
(141_{1-n})

가 (143)

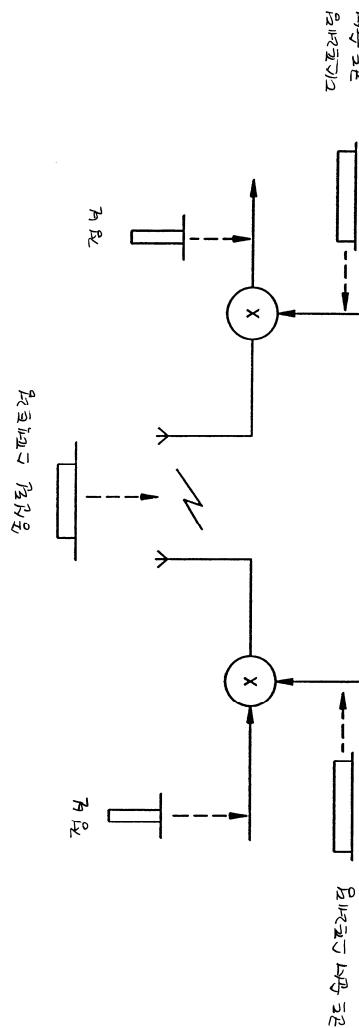
)
14.

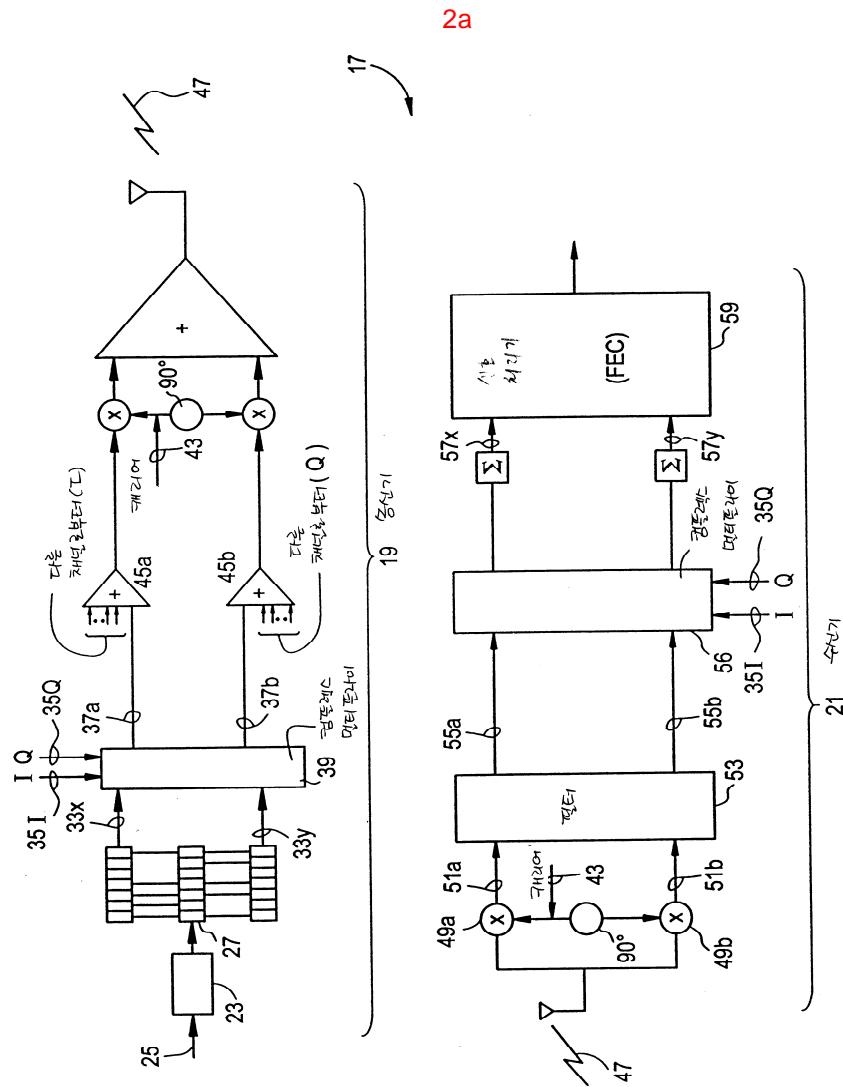
15.

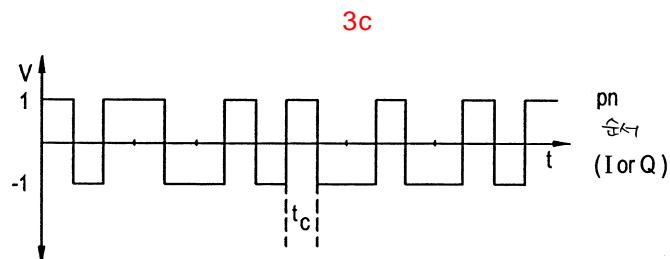
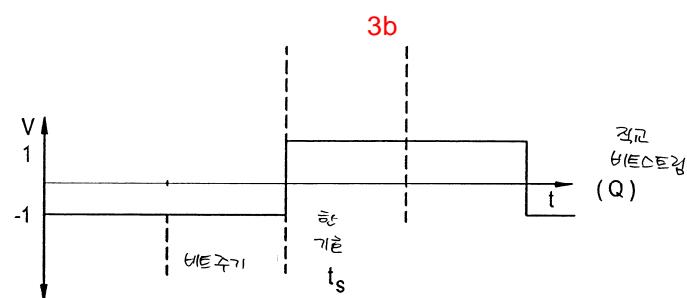
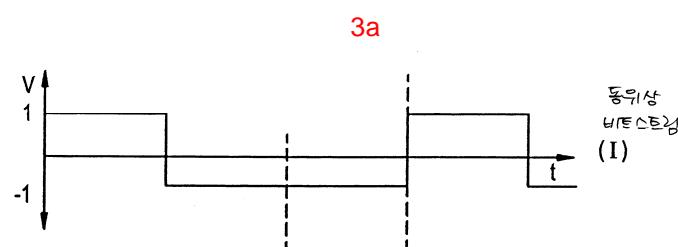
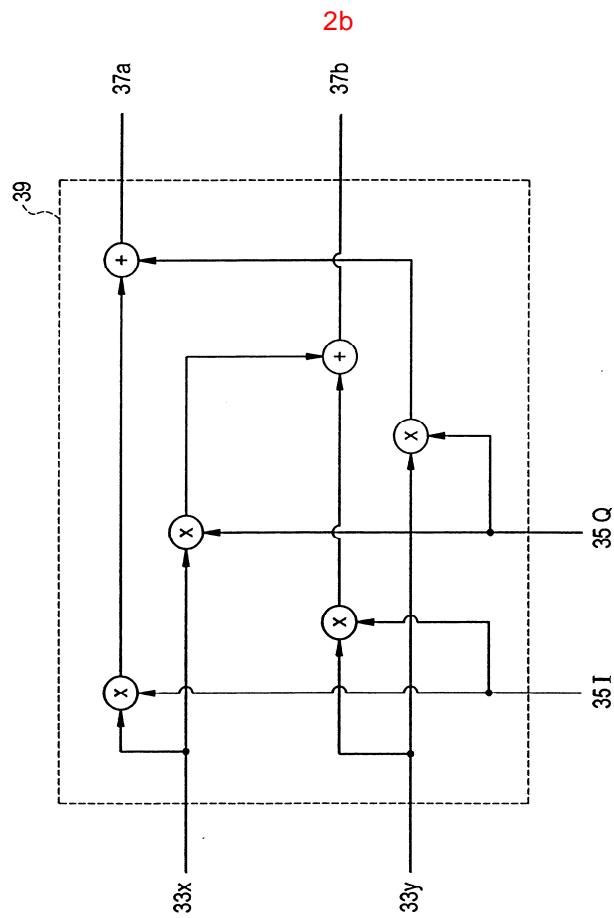
16.

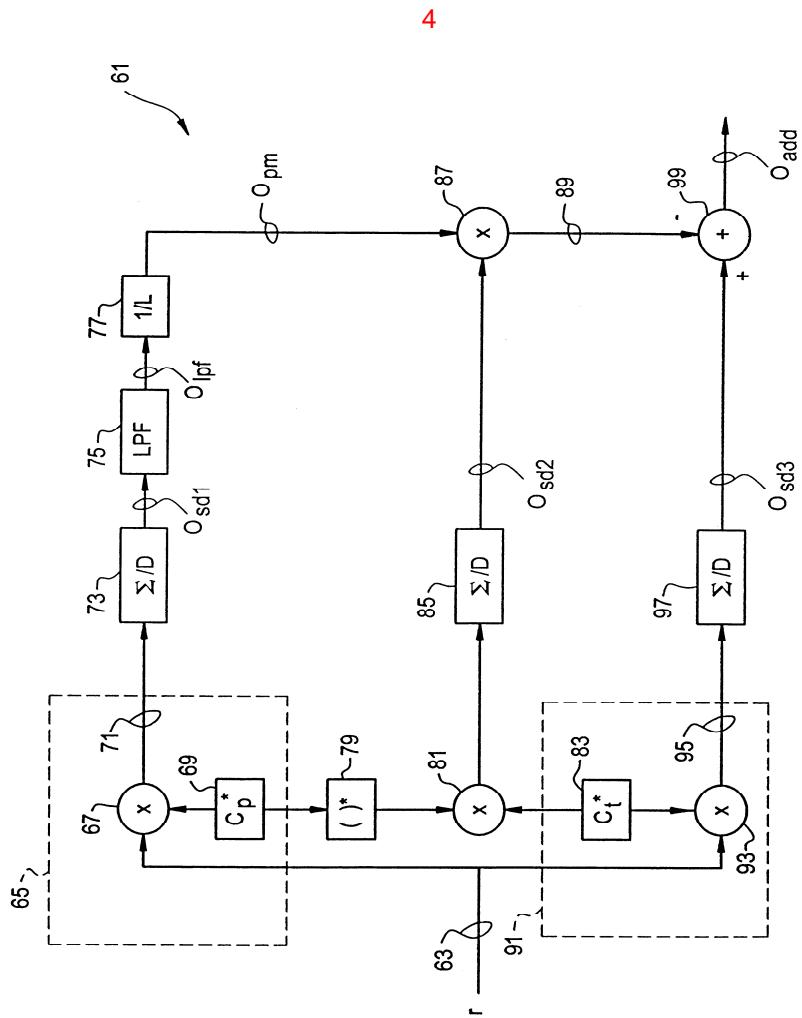
17.

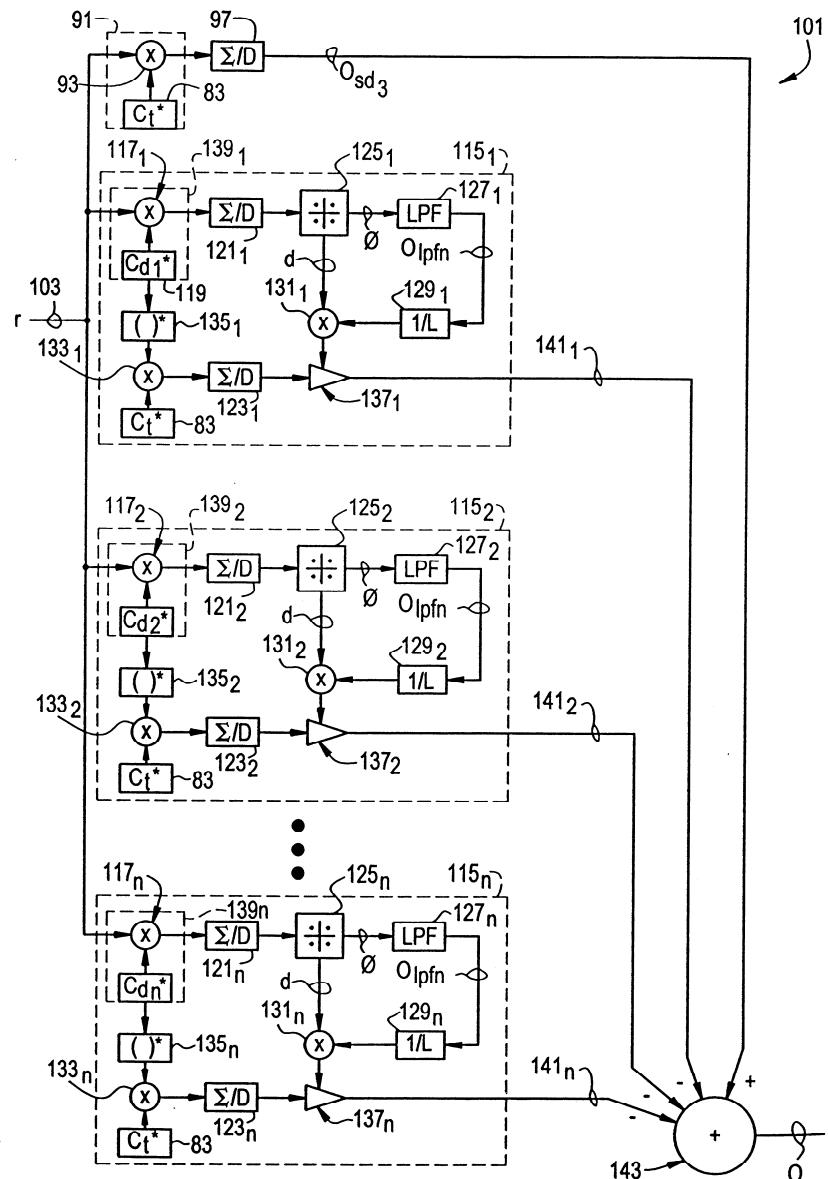
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