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10/185,741 2002 06 27 (US)
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(71) (: 98052)

(72) 108

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/ 가

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120 :
130 :
132 :
134 :
136 :
138 : RAM
140 : ROM
142 :
144 :
146 :
148 :
150 :
152 :
154 :
158 :
160 :
162 :
164 :

(BIOS)

166 :

168 :

170 :

172 :

174 :

175 :

177 : LAN

178 :

179 : WAN

182 :

186 :

189 :

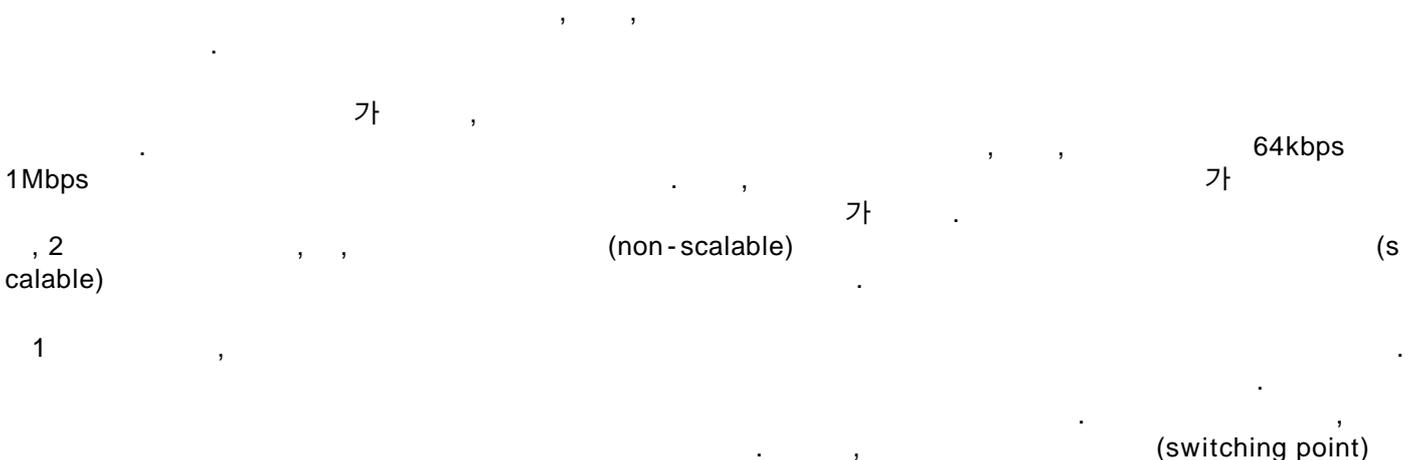
200 :

300, 500, 700, 900, 1000 :

400, 600, 800, 1100 :

902 :

1102 :



2 가 , 1 2 2 . , , 1 2
2

Ragip Kurceren 가 가 Marta Karczewicz , Austin, TX, 2001 4 2~4 (seamless) SP , Kurceren) , VCEG-M-73, ITU-T SP (200) , SP 1 2 , , , 가 , 1 2 가 , SP 2 , SP S1, S2 S12 S1 2 3 4 Kurceren (300) (400) Kurceren TCP 가 , , TCP , Kurceren Qs (, 4) , Qs 가 . Qs Qs SP 1 2 가 , Qs Kurceren , Kurceren 가 (, 4) . , 가 , 1 2 1 2 가 . Qs 가 5 6 Kurceren 1 2

, TCP
 Qs
 , 7 8 가 , 가
 , 가
 , PC,
 1 (120) (120)
 (120) (120)
 / , (thin) , (thick)
 , PC, , 가
 1 (120) (130) (130)
 (132), (134), (134)
 (136) (136)
 (136) , 가 ,
 (ISA; Industry Standard Architecture) , (MCA; Micro Channel Architecture)
 , ISA(EISA; Enhanced ISA) , (VESA; Video Electronics Standards As
 sociation) , (Mezzanine) , (PCI; Peripheral Component Interc
 onnects)
 , (130) 가 (130)
 1 , (134) RAM(140) / ROM(138)
 가 (BIOS)(142) (130) (start-up) ROM(138) , RAM(140)
 (132) (132) /
 (130) / / , 1
 (148)(, ') (144),
 R/RW, DVD-ROM/R/RW/+R/RAM , (146), CD-ROM/
 (152)

(150) (150) (154) (144), (146)
 (136) 가 , ,
 8) (130) (14) , RA
 M, ROM (152) , , 가
 가) (158), (160), (162) (164)
 (148), (152), ROM(138) RAM(140)
 (162) / (164) (158), (160),
 (166), (168)(,) (130)
 2) (,) (136) (170) (13)
 (172) 가 (174) (136)
 (172) (,) (175)
 (130) (182) (130)
 (182)
 1 LAN(177) WAN(179) ,
 LAN WAN (130) (186) LAN(177)
 WAN (178) WAN(179) (178)
 (136) (178)
 1 , WAN 가 (130) (178) (180)
) (182)
 (130) (130)
 , 1 (189) (182)

urceren , 가 5 8 , K

3 8

DCT:

IDCT:

: (arithmetic) 가 .

: 가

Q:

Q^{-1} :

MC:

ME:

: (artifacts) (smoothing)

0: /

P :

SP :

:

가

$$L_1 = Q(K_1) \quad , \quad Q(Q^{-1}(K_1)) = L_1$$

$$L_1 = Q(K_1) \quad L_2 = Q(K_2) \quad , \quad Q(Q^{-1}(L_1) + Q^{-1}(L_2)) = L_1 + L_2$$

$$L_1 = Q(K_1) \quad , \quad Q(Q^{-1}(L_1) + K_2) = L_1 + Q(K_2)$$

(copy)

$$3 \quad , \quad L_{err1} \quad \text{가} \quad S1 \quad , \quad L_{err1} \quad S1 \quad QP_1^{-1} \quad ,$$

$$K_{serr1} = QP_1^{-1}(L_{err1})$$

DCT K_{pred1} , K_{rec1}

$$K_{rec1} = K_{pred1} + K_{serr1}$$

$$K_{rec1} \quad Qs \quad L_{rec1}$$

$$L_{rec1} = Qs(K_{rec1})$$

$$QS^{-1} \quad L_{rec1} \quad , \quad DCT$$

$$S12 \quad , \quad S12 \quad , \quad QP_1^{-1} \quad QS^{-1} \quad 2 \quad , \quad K_{serr1} \quad K_{serr12} \quad S1$$

$$, L_{rec1} \quad L_{rec2} \quad , K_{rec1} \quad K_{rec12} \quad , L_{err1} \quad L_{err12}$$

$$2 \quad S2 \quad . Qs \quad S12 \quad , \quad 1$$

$$\begin{aligned}
 & \text{DCT} \left(\begin{matrix} S1 \\ S2 \end{matrix} \right) = \text{DCT} \left(\begin{matrix} SP \\ S1 \\ S2 \end{matrix} \right) \\
 & L_{pred1} = Qs(K_{pred1}) \\
 & K_{spered1} = Qs^{-1}(L_{pred1}) \\
 & K_{err1} = K_{orig1} - K_{spered1} \\
 & L_{err1} = QP_1(K_{err1}) \\
 & L_{rec1} = Qs^{-1}(L_{err1}) \\
 & L_{err12} = L_{rec2} - L_{pred1} \\
 & L_{err12} = QP_1^{-1}(L_{err1}) \\
 & K_{serr1} = QP_1^{-1}(L_{err1}) \\
 & Qs = Qs_1 \\
 & L_{serr1} = Qs(K_{serr1}) \\
 & L_{pred1} = Qs_1(K_{pred1}) \\
 & K_{spered1} = Qs_1^{-1}(L_{pred1}) \\
 & L_{spered1} = Qs_1(K_{spered1}) \\
 & L_{rec1} = L_{spered1} - L_{serr1}
 \end{aligned}$$

$Qs^{-1} = Qs_1^{-1}$ L_{rec1} , DCT .
 .
 , 1 $S12$, QP_1^{-1} Qs_2^{-1} , Qs_1 Qs_2 , Qs_1^{-1} Qs_2
 -1 , L_{rec1} L_{rec2} , L_{err1} L_{err12} , K_{serr1} K_{serr12} , L_{spr}
 $ed1$ $L_{spred12}$.
 Qs_1 Qs_2 $S12$.
 $S2$. , 1
 2 .
 , 6 (600) .
 SP $S1$ $S2$, $S1$, ,
 DCT , K_{orig1} .
 K_{pred1} , DCT , K_{pred1} , Qs_1
 $L_{pred1} = Qs_1 (K_{pred1})$
 , Qs_1^{-1} L_{pred1} .
 $K_{spred1} = Qs_1^{-1} (L_{pred1})$
 K_{orig1} K_{spred1} K_{err1} .
 $K_{err1} = K_{orig1} - K_{spred1}$
 , QP_1 K_{err1} L_{err1} .
 $L_{err1} = QP_1 (K_{err1})$
 , L_{err1} $S1$.
 $S1$, , L_{rec1} , .
 Qs_1 Qs_2^{-1} .
 , 1 2 , $S12$ $S1$ $S2$
 .
 , Qs_2 $S1$ K_{spred1} .
 $L_{spred12} = Qs_2 (K_{spred1})$
 $S2$ L_{rec2} $L_{spred12}$.
 $L_{err12} = L_{rec2} - L_{spred12}$
 , L_{err12} , $S12$.
 , 7 (700) .
 SP $S1$ $S2$, $S1$.

$$\begin{aligned}
 & \text{S1} \\
 & \text{QP}_1^{-1} \text{L}_{err1} \\
 K_{serr1} &= \text{QP}_1^{-1} (\text{L}_{err1}) \\
 & \text{DCT} \quad K_{pred1} \quad K_{rec1} \\
 K_{rec1} &= K_{pred1} + K_{serr1} \\
 & K_{rec1} \quad \text{Qs}_1 \quad \text{L}_{rec1} \\
 \text{L}_{rec1} &= \text{Qs}_1 (K_{rec1}) \\
 \text{Qs}_1^{-1} & \text{L}_{rec1} \quad \text{DCT} \\
 & \text{S2} \\
 & \text{S2}^{-1} \text{L}_{err1} \quad \text{L}_{err12} \quad \text{K}_{serr1} \quad \text{K}_{serr12} \quad \text{Qs}_1^{-1} \text{Qs}_2^{-1} \text{K}_{rec1} \quad \text{K}_{rec12} \quad \text{Qs}_1 \text{Qs}_2 \text{L}_{rec1} \quad \text{L}_{rec2} \quad \text{Qs}_1^{-1} \text{Q} \\
 & \text{S2} \\
 & \text{S2} \\
 & \text{SP} \quad \text{S1} \quad \text{S2} \quad \text{S1} \\
 & \text{DCT} \quad \text{DCT} \quad \text{K}_{orig1} \quad \text{K}_{pred1} \\
 & \text{K}_{orig1} \quad \text{K}_{pred1} \quad \text{K}_{err1} \\
 K_{err1} &= K_{orig1} - K_{pred1} \\
 & \text{QP}_1 \quad \text{K}_{err1} \quad \text{L}_{err1} \\
 \text{L}_{err1} &= \text{QP}_1 (\text{K}_{err1}) \\
 & \text{L}_{err1} \quad \text{S1} \\
 & \text{Qs}_1 \quad \text{Qs}_1^{-1} \quad \text{L}_{rec1} \\
 & \text{Qs}_2 \quad \text{S1} \quad \text{K}_{pred1} \\
 \text{L}_{pred12} &= \text{Qs}_2 (\text{K}_{pred1}) \\
 & \text{S2} \quad \text{L}_{rec2} \quad \text{L}_{pred12} \\
 \text{L}_{err12} &= \text{L}_{rec2} - \text{L}_{pred12} \\
 & \text{L}_{err12} \quad \text{S12}
 \end{aligned}$$

9 , DCT (residue) S1 S2 DCT (900) , Qs

$$Y = [X * A(Qs) + 2^{19}] / 2^{20},$$

, X DCT , Y DCT . A(.) . Qs

Qp Qs ,

$$L_{rec} = \frac{[K_{pred}(i, j) + L_{err}(i, j) * \frac{(2^{20} + A(Qp)/2)}{A(Qp)}] * A(Qs) + 2^{19}}{2^{20}},$$

, L_err , K_pred . SP

[...]

(900)

2

가

(902)

JVT

10 S12 (1000) S1 S2 (1000) , ,
Qs DCT ,

$$Y = [X * A(Qs) + 2^{19}] / 2^{20}.$$

(1000) SP

(1000)

. SP

, 1

(, 1

) (, 5) .

, P SP , 1 ' , ' S12

QP' , QP' , 가 1 , 가 0 , S12

S1 S2 , QP' Qp .

P SP , 'SP QP' ' QP' ,

Qs

11 (1100) .

, (1100) (1102) , DCT , DCT

DCT , DCT , DCT

가

SP

가

Qs가

Qs

Qs

(57)

1. 1. 1 ;
 1 1 2 2
 ;
 1 1 2 2 1 1
 2 2 2 1 1

2. 1 ,
 1 2

3. 1 ,

4. 3 ,

5. 1 ,
 1 2 가

6. 1 1 ;
 1 1 2 2
 ;

1 1 2 2 1 1
 2 2 2 1 1
 가 가 가

6 7. ,

1 2 가

6 8. ,

가 .

8 9. ,

가

6 10. ,

1 2 가

1 11. ;

1 1

1 2 2 ; 2

1 2 1 가 , 1 2 2

11 12. ,

1 2 .

11 13. ,

13 14. ,

11 15. ,

1 2 가 .

16.

1 1 , 1 2
2 ;

;

1 1 2 2 1 1
2 ; 1

17.

16 ,

1 2 .

18.

16 ,

19.

18 ,

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1 2 가 .

21.

1 1 , 1 2
2 ;

;

1 1 2 2 1 1
2 ; 1

가 가 가 .

22.

21 ,

1 2 가 .

21 23. ,

가

23 24. ,

가

21 25. ,

가 1 2 가

1 1 26. ; 1 1

1 2 2 ; 2 2

1 2 1 가 2 , 1 2

26 27. ,

1 2 .

26 28. ,

28 29. ,

26 30. ,

1 2 가 .

DCT 31. ;

CT DCT DCT 가 DCT (Qs) , D

32.

31 ,
DCT ,

$$Y = [X * A(Qs) + 2^{19}] / 2^{20}$$

, X DCT , Y DCT , A(.)

33.

31 ,
QP QS ,

$$L_{rec} = \frac{[K_{pred}(i, j) + L_{err}(i, j) * \frac{(2^{20} + A(Qp)/2)}{A(Qp)}] * A(Qs) + 2^{19}}{2^{20}}$$

, L_err , K_pred

34.

33 ,

$$K_{pred}(i, j) + L_{err}(i, j) * \frac{(2^{20} + A(Qp)/2)}{A(Qp)}$$

35.

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가

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 DCT ;
 DCT DCT 가 DCT (Qs) , D
 CT
 가 , 가 가

40.
 39 ,
 DCT ,

$$Y = [X * A(Qs) + 2^{19}] / 2^{20}$$
 , X DCT 가 , Y DCT , A(.)
 가

41.
 39 ,
 QP QS ,

$$L_{rec} = \frac{[K_{pred}(i,j) + L_{err}(i,j) * \frac{(2^{20} + A(Qp)/2)}{A(Qp)}] * A(Qs) + 2^{19}}{2^{20}}$$
 , L_err 가 , K_pred 가 가

42.
 41 ,

$$K_{pred}(i,j) + L_{err}(i,j) * \frac{(2^{20} + A(Qp)/2)}{A(Qp)}$$
 가 가

43.
 39 ,
 가 가 가

44.
 39 ,
 가 가 가

44 45.

, 가

45 46.

가 .

DCT Qs) 47.

, DCT DCT DCT 가 DCT (

47 48.

DCT

$$Y = [X * A(Qs) + 2^{19}] / 2^{20}$$

, X DCT , Y DCT , A(.)

47 49.

QP QS

$$L_{rec} = \frac{[K_{pred}(i, j) + L_{err}(i, j) * \frac{(2^{20} + A(Qp) / 2)}{A(Qp)}] * A(Qs) + 2^{19}}{2^{20}}$$

, L_err , K_pred

49 50.

$$K_{pred}(i, j) + L_{err}(i, j) * \frac{(2^{20} + A(Qp) / 2)}{A(Qp)}$$

47 51.

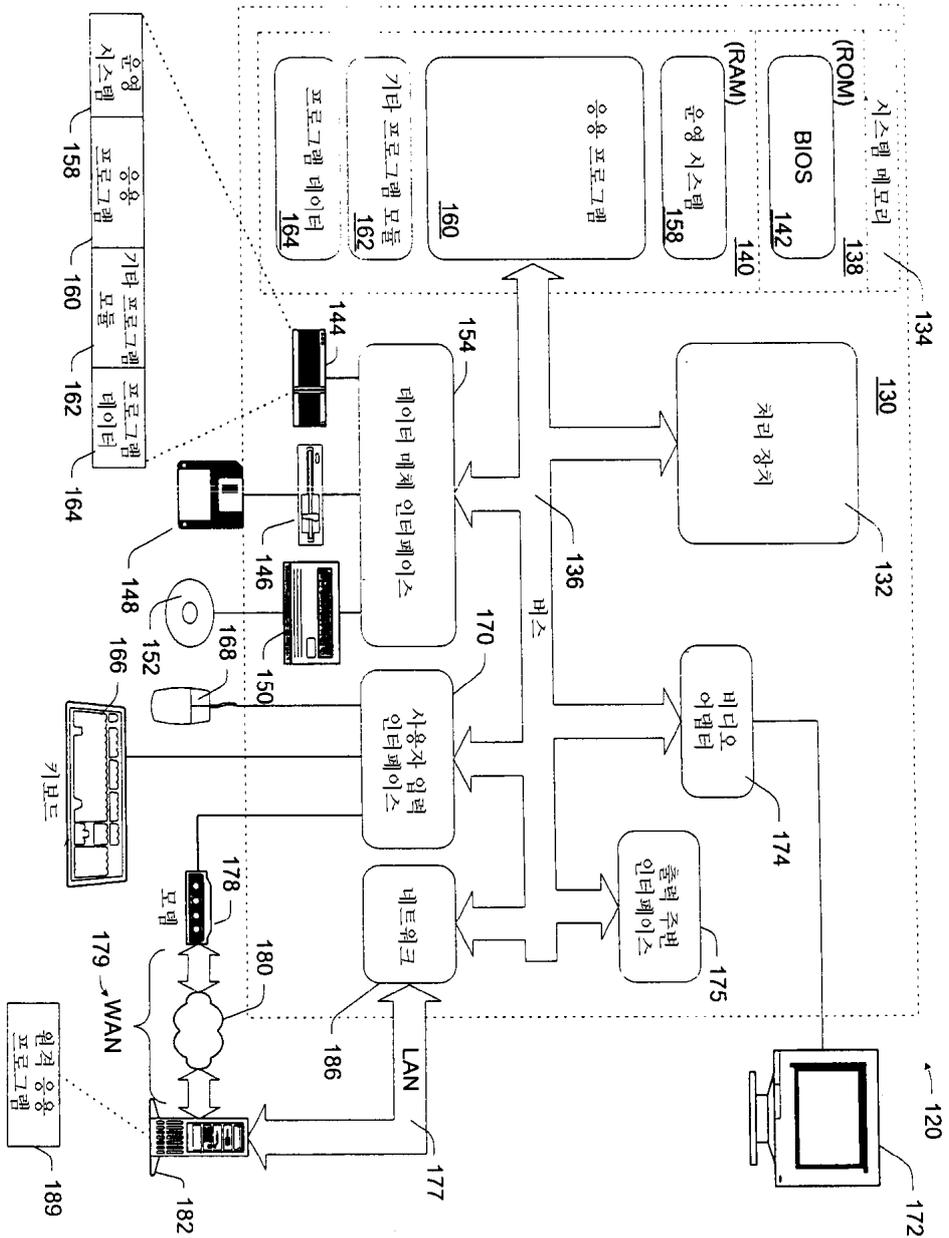
47 52.

52 53.

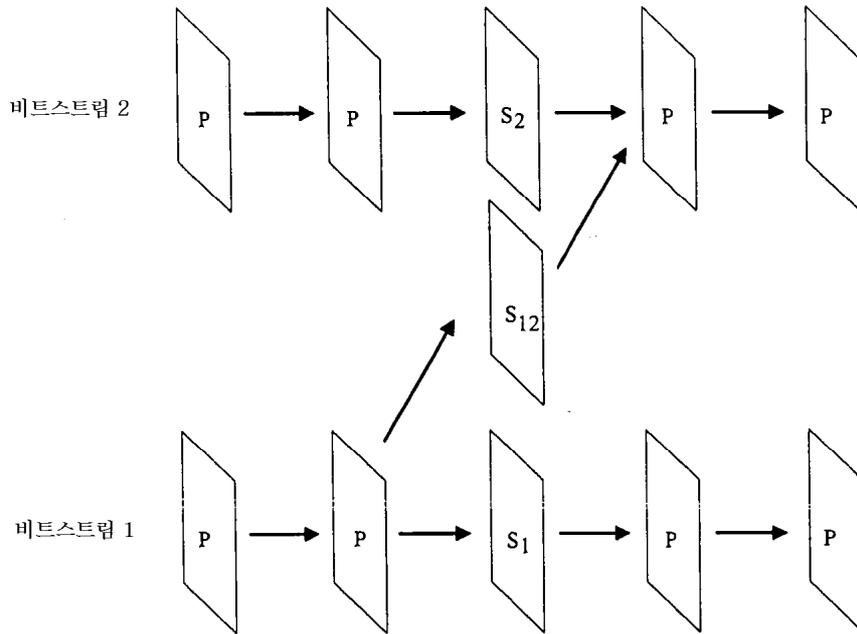
53 54.

가

1



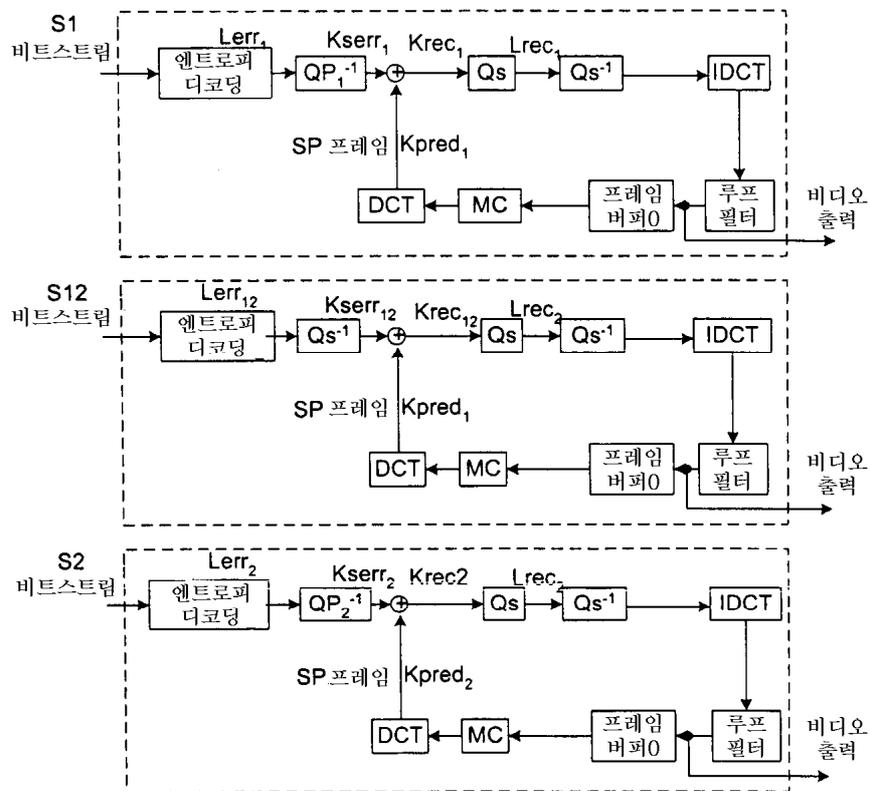
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200



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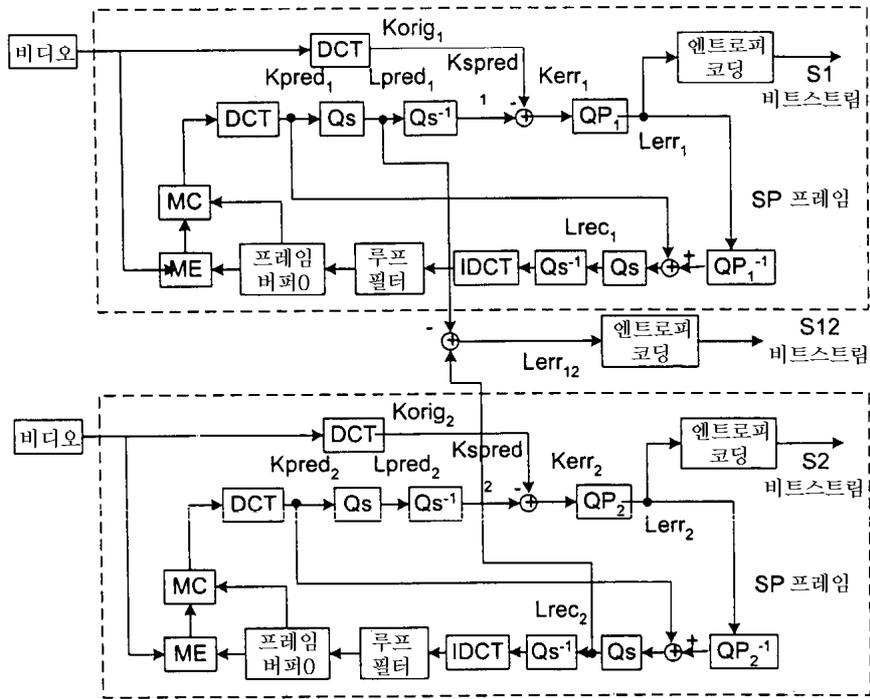
(종래 기술)

300



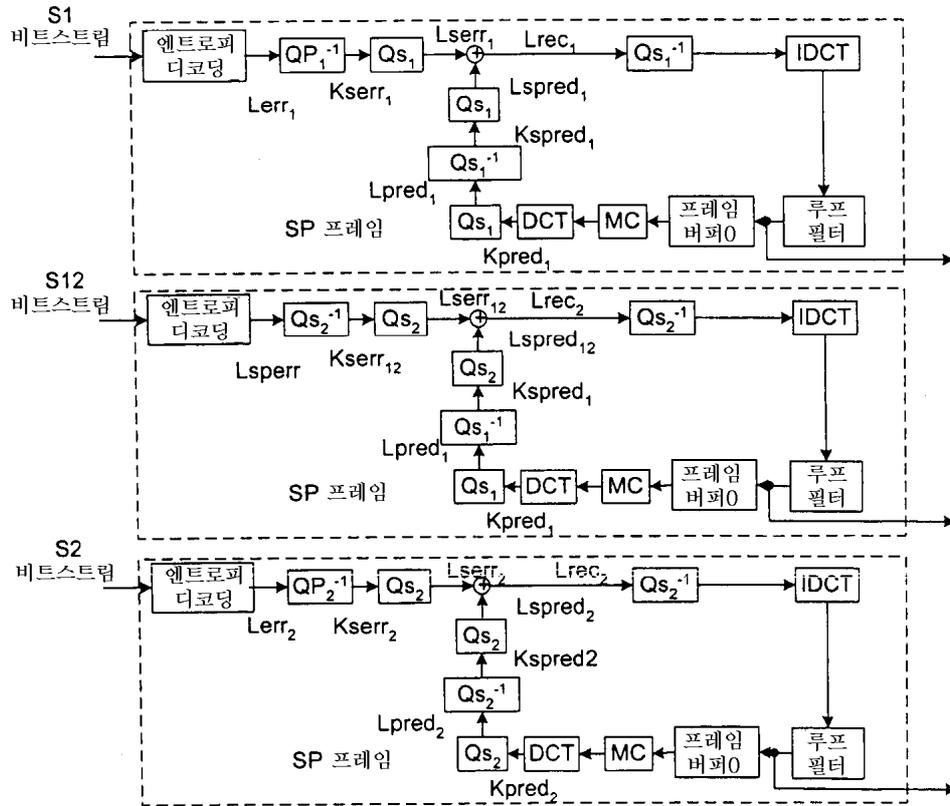
(종래 기술)

400



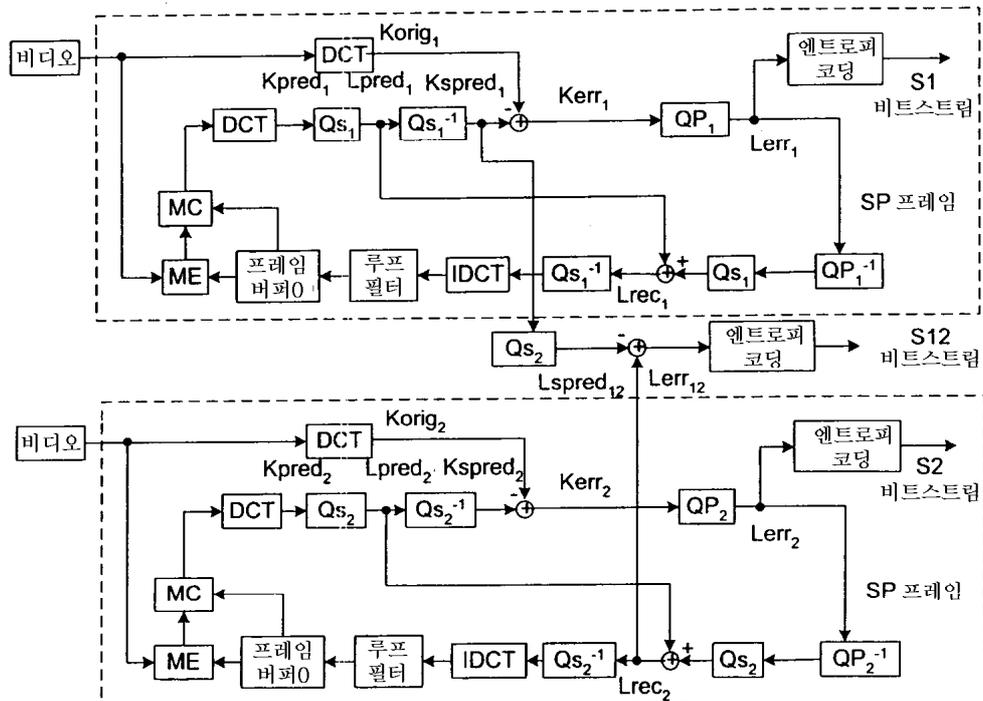
5

500

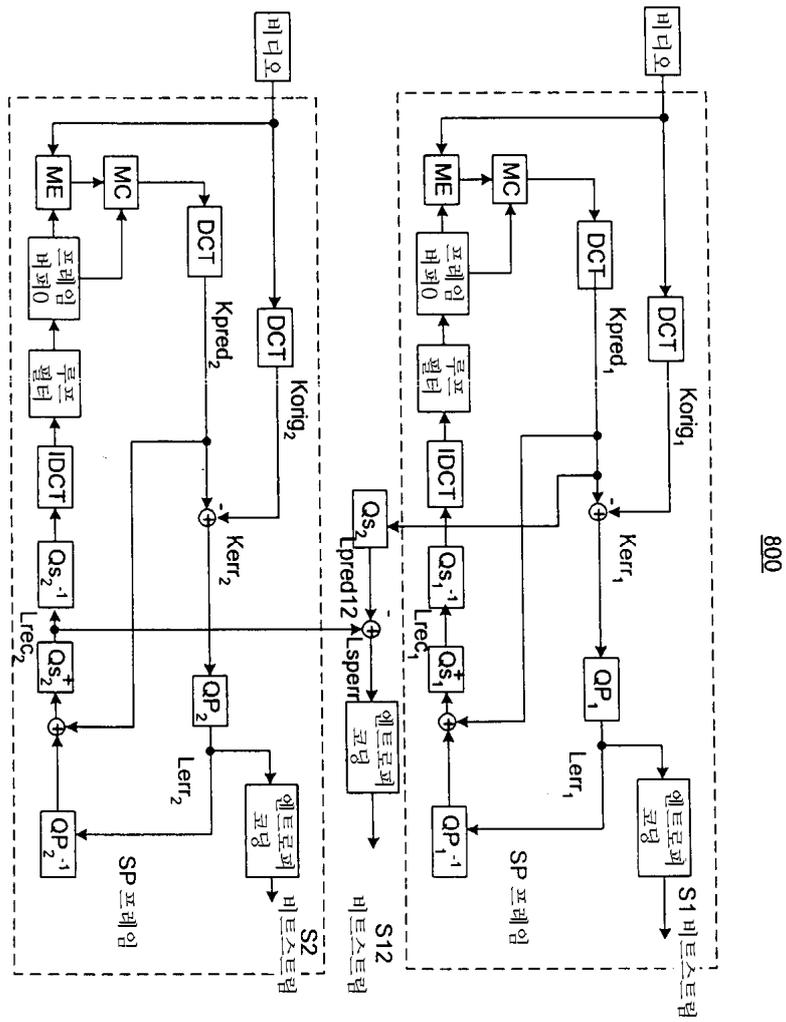


6

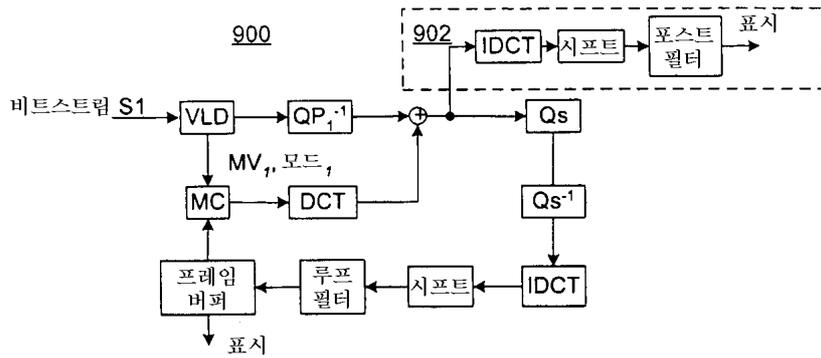
600



8

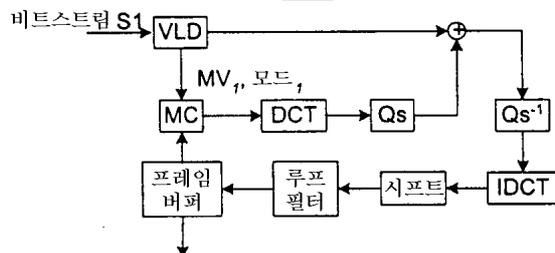


9



10

1000



11
1100

