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(22) 2003 06 03

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(72) 105 705

(74)
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(54)

1 , 1 , 2 ,

5

, OFDM, RS ,

1
2
3 2
4

5 ,

6 5 ,

7 ,

8a 8b .

* *

500 : 510 : /IF

520 : A/D 530 : /

540 : 550 : FFT

600 : FEC 605 :

610 : 620 :

630 : 631 : 1 RS

633 : 635 : 2 RS

650 :

가 ,

가 (media convergence) .

가

가 , DTV(Digital Television) , ATSC(Advanced Television System Committee) , DVB-T(Digital Video Broadcasting - Terrestrial) . ATSC 8-VSB(Vestigial Side Band) , DVB-T OFDM(Orthogonal Frequency Division Multiplexing) .

가 , 가 FE

FEC (block code) , (convolution code) . RS 가 , Hamming , BCH , RS(Reed Solomon)

, RS (burst error)
 , (random error) 가
 1
 (scrambler)(100), FEC (200), (30) , FEC (200) , RS
 (210), (outer interleaver)(220), (230), (inner interleaver)(2
 40) (400) , (410), IFFT (420), (430), (440)
 , (450), RF (460)
 (100) MPEG-2 TS (transport stream)
 FEC (200) (100)
 , RS (Reed-Solomon encoder)(210) (100) 가 가 , 가
 RS 가 . RS 가 가 , 가
 (220) RS (210) 가
 (230) (220) , 가
 (240)
 (400) , FEC (200)
 , (410) FEC (200) (400)가 OFDM
 uadrature Amplitude), 64-QAM QPSK(Quadrature Phase Shift Keying), 16-QAM(Q
 orm) (420) (mapping) . IFFT(Inverse Fast Fourier Transf
 (430)
 ISI(Inter symbol Interference) , (440)
 , RF (460) (450) 가
 , (inner encoder) (230) (outer encoder) RS (210)
 de system) (concatenated co
 RS 가 가 , RS
 RS 가 , RS
 , RS 가 , 2002-61997
 , 2 4
 , 1
 2 3
 (100), FEC (300), (400) . FEC (200)
 (320), (320), (330), (340)
 (400) , (410), IFFT (420), (430), (440), (450), RF (
 460) (310) , 3 , 1 RS (311),
 (313) 2 RS (315) , 1
 FEC (300)
 , (100) MPEG-2 TS (transp
 ort stream)

FEC (300)

(210)

(100)

1 RS
RS

(311)

(100)
(313)
(313)가

1RS

(311)

가

,가

가

,

가

2 RS
RS

(315)

(313)

4 1 RS
(311)

(311)
가

2 RS

(315)

2 RS

(315)

가

4 , Po

1 RS

p Po
Pi 가 가

4 , 47

8 Po

가 가 , 188

, P
20

(320)

2 RS

(315)

가

(340)

(330)

(330)

(320)

(400)

, 1

, FEC (300)

가

가

가

1

1

2

2

MPEG-2

TS

2

Reed-Solomon

가 1

, OFDM

/IF ,

/IF

A/D

A/D

FFT

가

, (a)
 , (b) , (c)
 , (d) , (e)
 , (f)
 (g) ,
 (g) MPEG-2 TS
 (b) , (c)
 , (e) (g) , Reed-Solomon
 (f) 가
 (a) , OFDM , (b) (d)
 , (a) , (a1) , (a2)
 가 , (a3) -
 , (a4) , (a5)
 5
) , (500), FEC (600), (descrambler)(650)
 . (500) /IF (510), A/D (520), / (530), (540), FFT (550)
 . , FEC (600) (605), (610), (620),
 (630)
 /IF (510) RF / (530) A/D
 . A/D (520) /IF (510) (540) . FFT (550) (
 540)
 FEC (600) FFT (550)
 (650) FEC (600) (descrambling) TS
 6 5 (630) (630) 1 R
 S (631), (633) 2 RS (635)
 1 2 RS (631,635) RS
 (633)
 7 5
 6 .
 , (500) , FEC (600) . FEC (600) (S700). (500)
 가 (605) (S703). , (605) (605)
 (605) , 가 (610) ,
 (620) , 가 (S705). (610) (S710).
 (620) (630)

(630) 1 RS (631) erasure flag RS (S715). 1 RS
 가 (6310)

1 RS (631) (633) (633)
 , RS 2 RS (635) (633)
 (S725).

RS(Reed Solomon) , 가 0 1 ,
 $0, 1, \dots, 2^{m-1}$, RS , k , k
 n , RS , n-k (redundant symbol) 가 ,
 188 16 20
 . RS 1 2 RS (631, 635) 가
 가 가 , 1 2 RS (631, 635)
 가 가 , 1 RS (631)
 , erasure flag , 2 RS (635)

2 RS (635) erasure flag 가 , erasure flag
 , erasure flag 가 , 1 RS (631) 가 , e
 erasure flag , 2 RS (635)

8a 1 RS (631) , 8b 2 RS (635)
 , 8a erasure flag 8b , (633) era
 sure flag가 , 2 RS (635) erasure flag
 , 가

2 RS (635) (650) , TS . TS
 (Transport Stream) MPEG-2 , (650)

TS ,
 , RS , RS 가
 ,
 ,
 가 , 가 가 ,

(57)

1.

;

;

;

;

1 ;

1 ;

2 ;

2.

1 ,

2 MPEG-2 TS ;

3.

1 ,

4.

1 ,

1 2 , Reed-Solomon

5.

1 ,

가

6.

1 ,

, OFDM

7.

6 ,

8.

6 ,

/IF ;

/IF

A/D ;

A/D

/ ;

/

;

FFT ;

9.

- (a) ;
- (b) ;
- (c) ;
- (d) ;
- (e) , ;
- (f) ;
- (g) , ;

10.

- 9 ,
- (g) MPEG-2 TS ;

11.

- 9 ,
- (b) , (c) ,

12.

- 9 ,
- (e) (g) , Reed-Solomon

13.

- 9 ,
- (f) , 가

14.

- 9 ,
- (a) , OFDM

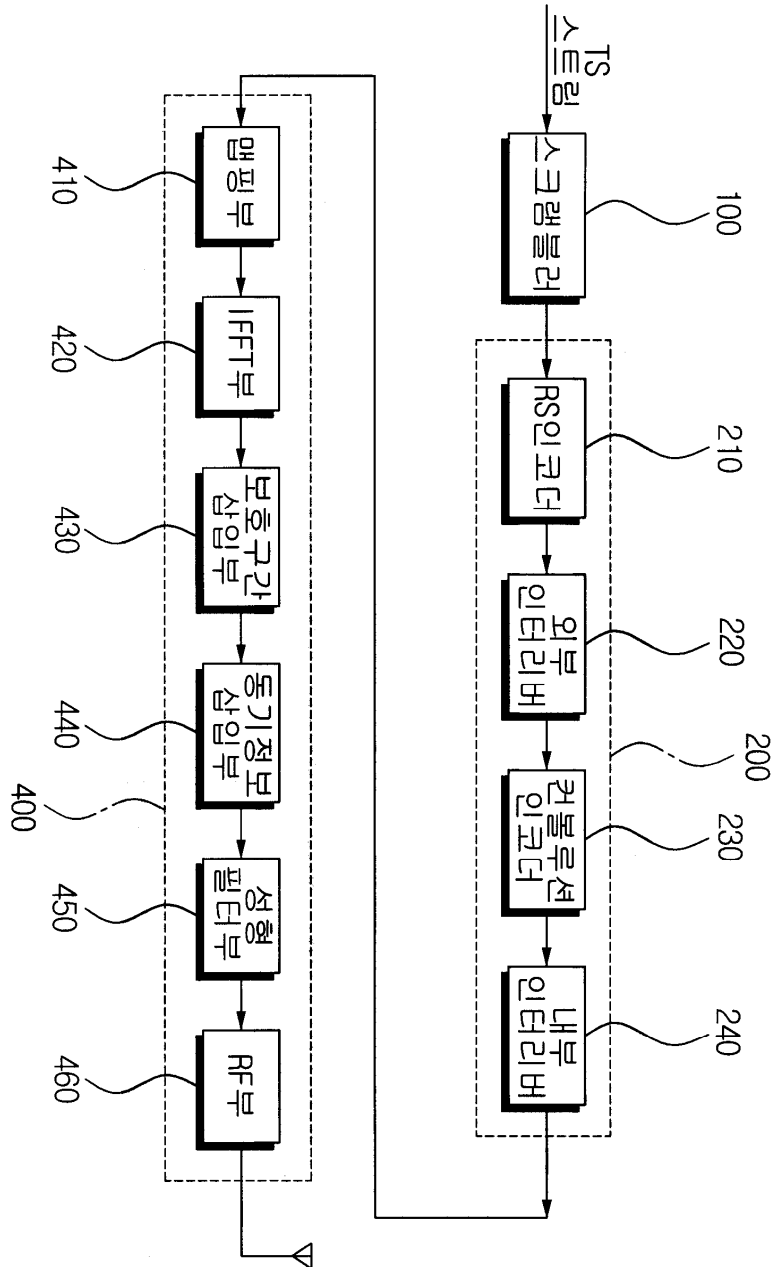
15.

- 14 ,
- (b) (d) ,

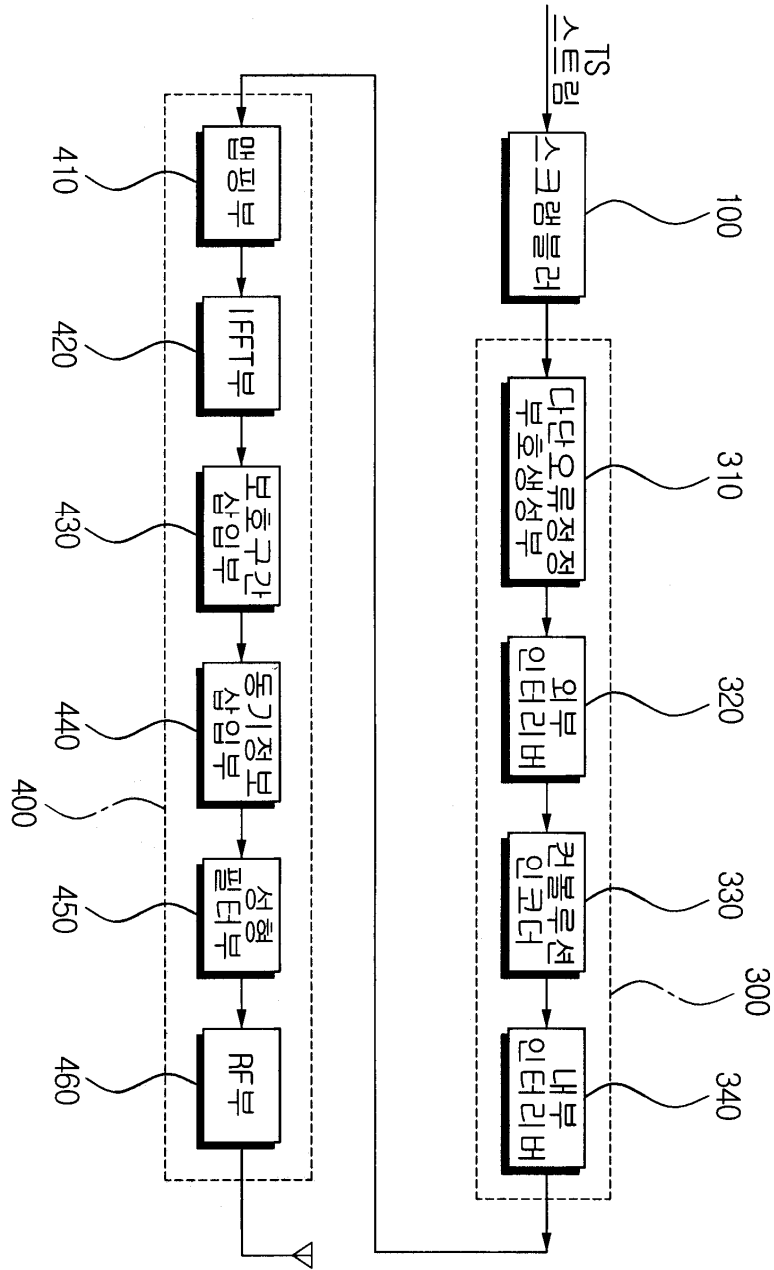
16.

- 9 , (a) ,
- (a1) ;
- (a2) 가 - ;
- (a3) - ;
- (a4) ;
- (a5) ;

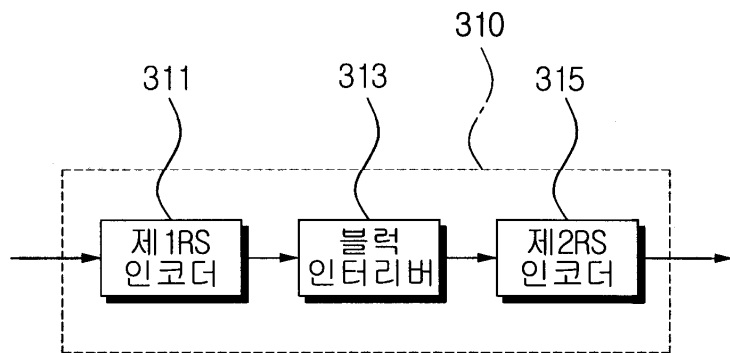
1

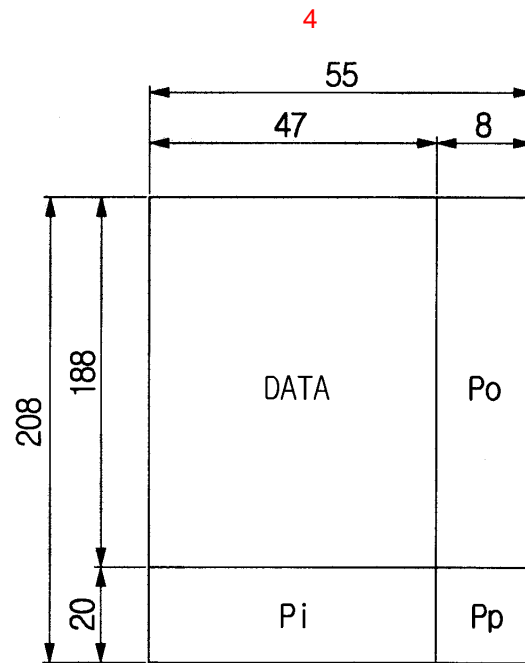


2

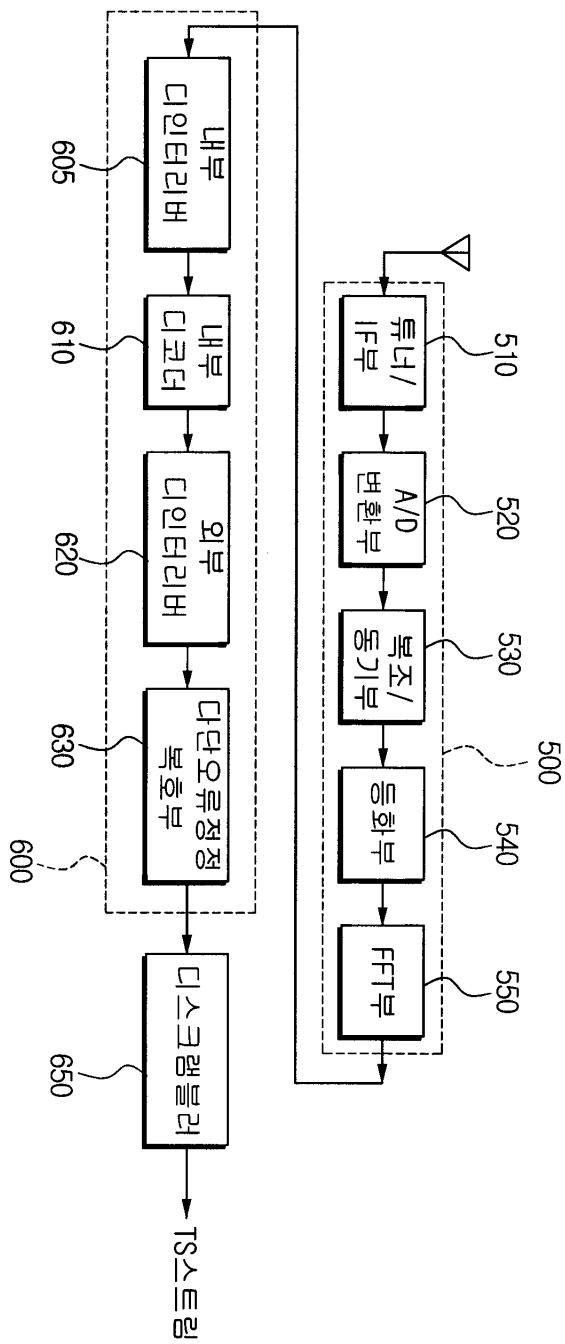


3

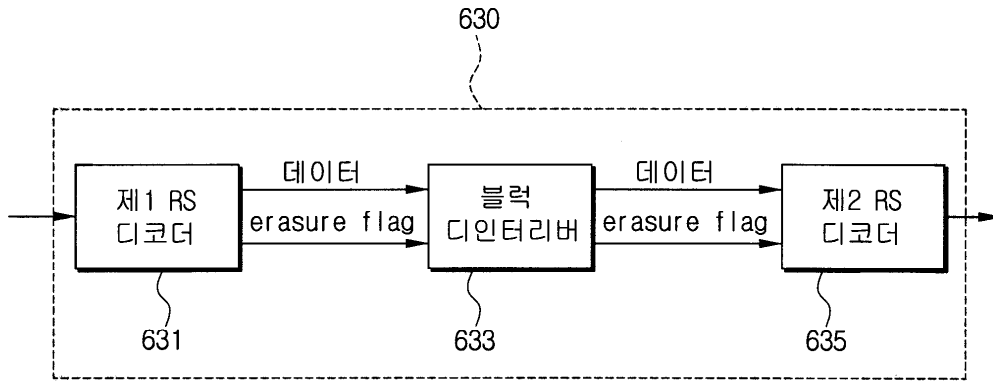




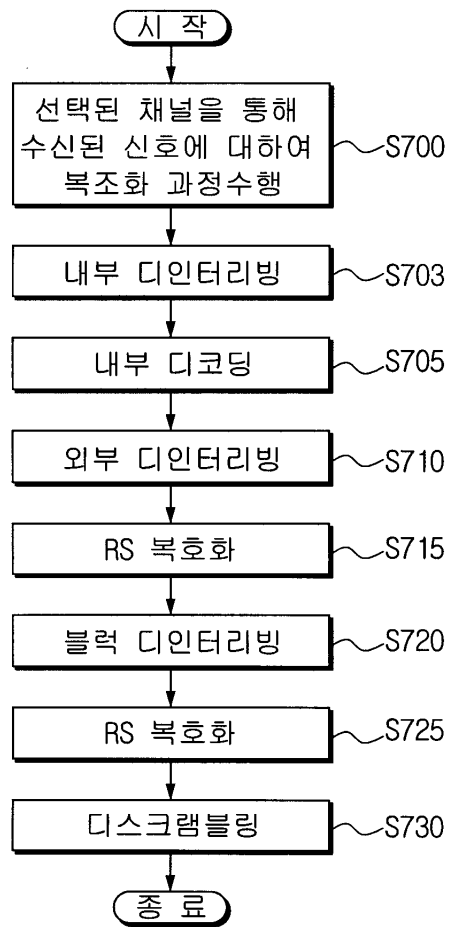
5



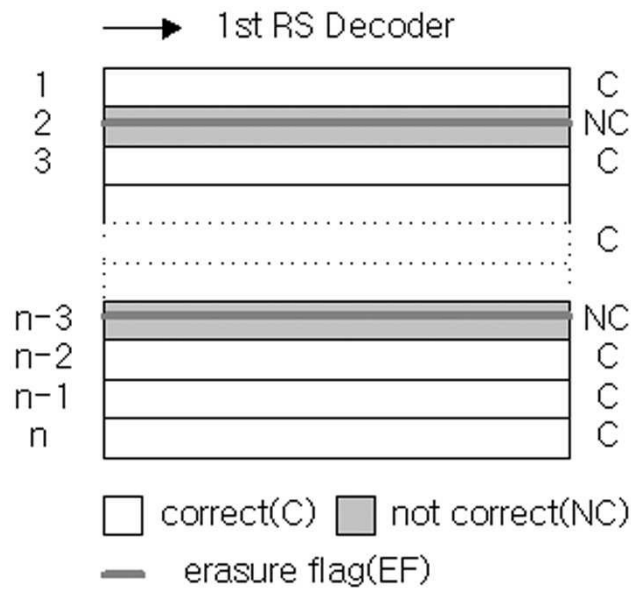
6



7



8a



8b

