

(19)
(12)(KR)
(A)(51) 。 Int. Cl. ⁷
H04L 12/46(11)
(43)2001 - 0112383
2001 12 20(21) 10 - 2001 - 7012449
(22) 2001 09 28
2001 09 28
(86) PCT/US2000/01395
(86) 2000 01 19(87)
(87) WO 2000/59161
2000 10 05

(81) : , , , , ,

(30) 09/280,251 1999 03 29 (US)

(71)

2092 (:95131)

(72) , 가 , .
95132

1134

(74)

:

(54) I E E E 802.3()

LAN

. 1 2

. 1
 1 2 2 2 1 1 2
 . 2 . 1 . 1 2
 1 . 2 1 2 가 가 -
 . ,
 . , LAN .

2

LAN . , IEEE 802.3() LAN (disp
arate)

LAN IEEE 802.3 (NICs), , ,
LAN . IEEE 802.
3 OSI(Open System Interconnection) .
. OSI (1) (PHY); (2)
(MAC) ; (3)

802.3 802.3u . 100B
ASE - TX(5 UTP(unshielded twisted pair)), 100BASE - TX(
) 100BASE - T4(3 UTP) (PHY) (specif
ication) . PHY , 100BASE - TX 1
100BASE - T4 UTP , 100BASE - TX 5
UTP , 100BASE - T4가 3 UTP
, 100BASE - FX , UTP
UTP ,
, 100BASE - TX 100BASE - T4 LAN ,
100BASE - FX가 ,
, 100BASE - FX가 .
, LAN .

802.3u (PHY) (MAC) - (MII)
, PHY MII MAC . PHY ((dupl
ex)) 가 . LAN -
, MII . , -

(100) 가 1 . 1 100BASE - TX (102)가 UTP
(104) . (102)가 (108) / (106) . 가
, 2 100BASE - TX (110) 5UTP (112) . (110)

(118) (114) / (106) . 100BASE - FX (116)
 114,120) MII (116) (120) / (106) . (108,
 (104,112,118) (100) (104,112,118) , / (106)
 가 .

, (100) (100) , , ,
 (100) , , 가 , ,
 . LAN LAN .

LAN . , 1 2

(in) , (out)
 PLL (PLL)
 - (idle)
 가 , 가 ,
 가 ,

1 1 1 2
 2 2 1 1 2
 2 2 1 2 2
 , 2 1 1 1
 1 , 2 가
 2 , -

가 가 , 가 ,

가
(FIFO)
가
LAN(IEEE 802.3u)

- 1
- 2 LAN
- 3
- 4 100BASE - TX
- 5 100BASE - FX

2 LAN (202,204) (200) 1
(202) 1 (PHY) (206) 2 (204) 2 (208)
1 (202,204)
3 UTP, 5 UTP
(206,208) (202,204)

(206,208) (202,204)
(206,208) (202)가 5 UTP 가 (206)
, 2092 ML6697 100BASE - TX
, (204)가 가 (208) 100BASE - FX
, (206,208)가 (MDI)
, (206,208)가 가
(202,204)가 , 2 , ML66
97 (206,208) (206,208)
802.3 IEEE () MDI
802.3 IEEE 802.3 IEEE 802.3

(206,208) (MII) (206,208)
206,208) MII 802.3 IEEE
, (206,208) IEEE 802.3
208) 가 (206,

(206,208) MII 가 MII , MII 가
(MAC) , 가
IEEE 802.3 .

0 , , (206) TX EN (208) RX DV .
(206) TX ER (208) RX ER (206) TXD (208)
(208) RXD0 . (206) TXD1 (208)
RXD1 . (206) TXD2 (208) RXD2 .
(206) TXD3 (208) RXD3 .

TX ER (208) TX EN (206) RX DV (208)
(206) RXD0 (208) RX ER (208) TXD0 (206) RXD1
(208) TXD2 (206) RXD2 (208)
TXD3 (206) RXD3 .

1 (206) LINK STATUS (210) (210)
(212) . (206) RXCLK (212) 1 IN
REF CLK (212) 2 IN0 . (212)
(208) TX CLK IN .

N1 (208) LINK STATUS (214) (214)
(216) . (208) RX CLK (216) 1 I
REF CLK (216) 2 IN0 . (216)
(206) TX CLK IN .

REF CLK (218)
(212,214)
(212,214) 가
, REF CLK 25 MHz , ,

(202,204) (202,204) (duplex) .
(212,214) 가 , 가 ,
REF CLK (206,208) (2
06,208) TX CLK IN .

LINK STATUS 가 (206) , (206)
(206) LINK STATUS 가
LINK STATUS (210) .

(206,208) - (PLL) . (206,2

08) TX CLK IN (" -
 " .) . PLL (206) RX C
 LK - ,
 가 - .

(206) PLL
 (210) LINK STATUS PLL , (206) RX CLK
 (202)
 (210) (212) -
 (208) TX CLK IN .

(206) (202) (202)
 , MII (206) RXD(3:0) 4
 (206) , 4
 (208) TXD(3:0)
 (208) (204)
 (208) TX CLK IN -
 (208) (204) .

가 (206) (202) (206)
 LINK STATUS (212) REF CLK (208) TX CLK IN

가 (208)
 (208) LINK STATUS . LINK STATUS 가
 . LINK STATUS (214) .

(208) PLL (204) (2
 08) RX CLK - , -

(PLL)
 (214) LINK STATUS PLL . (20
 8) RX CLK - , (2
 06) TX CLK IN (214) (216) - (2

(208) (204) (204)
 , MII (208) RXD(3:0) 4
 (208) , 4

TXD(3:0)

(206)

(206)

(202)

TX CLK IN

(206)

(202)

(208)

(204)

LINK STATUS

REF CLK

(206)

TX CLK

(206,208)

(206,208)

PLL

U4

U6B,

R40

U4

U1

U6A,

R47

U1

U7A

U8A

U8B

U7B

U8C

U8D

U1

U4

25MHz

가

40 ns

MII

가

20ns

35ns

가

ML6697

U1

U47가

가

4 ML6697 100BASE - TX

5 100BASE - FX

(57)

1.

a. 1 (physical layer) ; 1 (p

- b. 1 2 ; 2
- c. 1 2 1 2 ;
- d. 2 .
- 2.
- 1 , 1 - , 2 .
- 3.
- 1 , 1 2 IEEE(Institute of Electrical and Ele
ctronics Engineers) 802.3 (MII)
- 4.
- 3 , 1 2
1 2 MII .
- 5.
- 3 , 1 2 .
- 6.
- 1 , 1 2 2
1 , 1 2 .
- 7.
- 1 , 1 2 ,
1 1 2 2 .
- 8.
- 1 , 2 1 가
2 , .
- 9.

8 , 1 2 IEEE 802.3
(MII) .

10.

9 , 1 2 1
2 MII .

11.

8 , 2
2 .

12.

11 , 1 1
, .

13.

12 ,
1 .

14.

,

a. 1 1
;

b. 1 2 가 1 2
2 ,
2 2 1 , 1 가 1
, 2
.

15.

14 , 1 , 2
.

16.

14 , 1 2 IEEE 802.3
(MII) .

17.

14 , 1 2 (twisted pair)
 , 1 2
 .

18.

14 , 1 2
 , 1 2
 .

19.

14 , 2
 2
 .

20.

19 , 1 2 IEEE 802.3
 (MII)
 .

21.

19 , 1 1 가 1
 ,
 .

22.

21 , 1
 .

23.

,

a. 1 , IEEE 802.3 1 (MII)
 ;

b. MII 1 2 2 , 2
 1
 .

24.

23 , 1 , 1 2 2
.

25.

23 , 1 , 1 2 2
.

26.

23 , 2 , 2
2 2 .

27.

26 , 1 1 가 1
 ,
 .

28.

27 ,
1
 .

29.

1 2 ,

a. 1 1 , 1 1 ,
1 1 1 ;
1

b. 2 1 1 2 ,
2 2 2 2 , 2 2
2 2 2
 ;

c. 가 2 , 1 1
2 1 ;

d. 2 2 2
 .

30.

29 , 1 2
 , 1 2
 .

31.

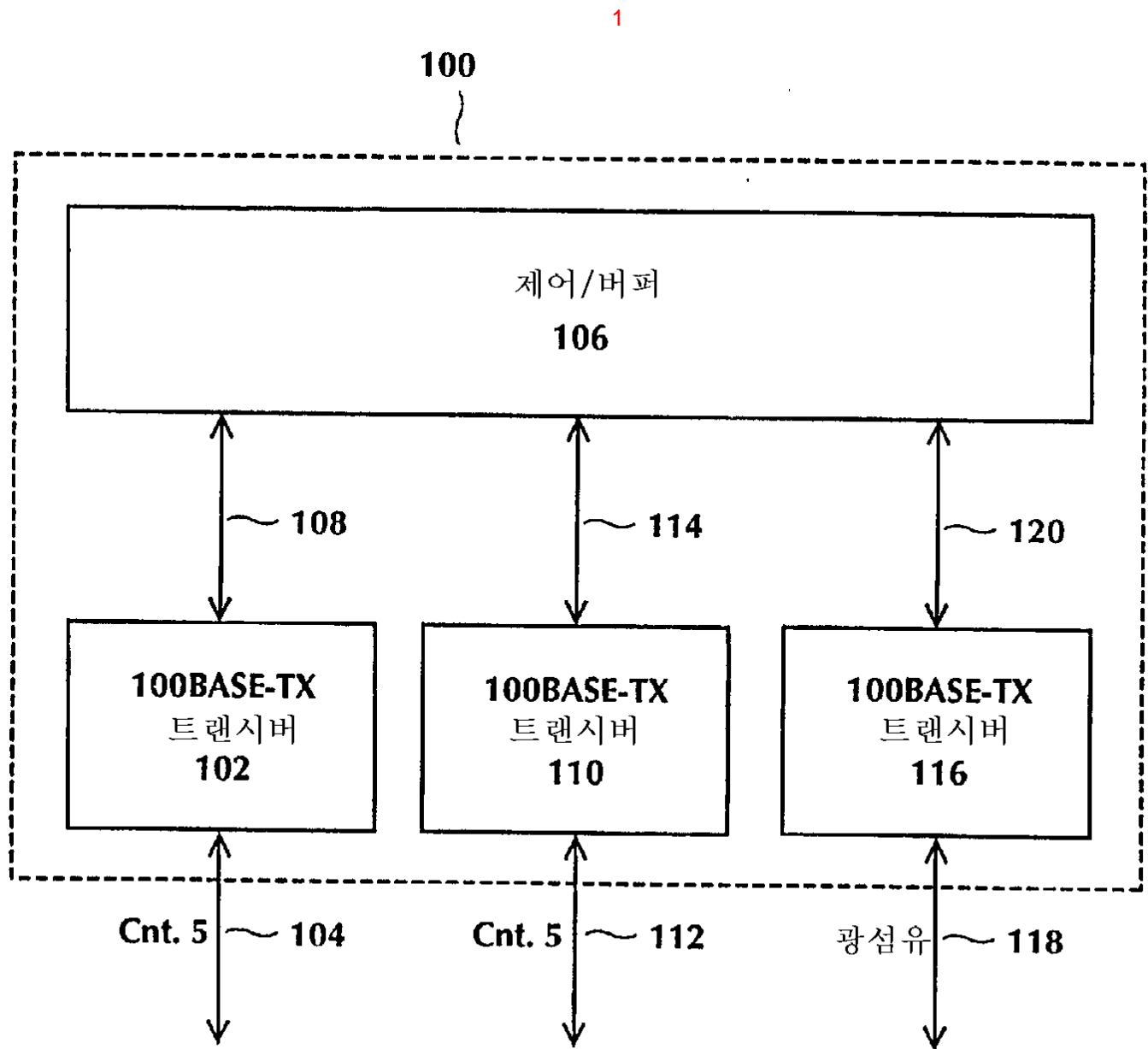
29 , 1 100BASE - FX 1
 .

32.

31 , 2 100BASE - TX 2
 .

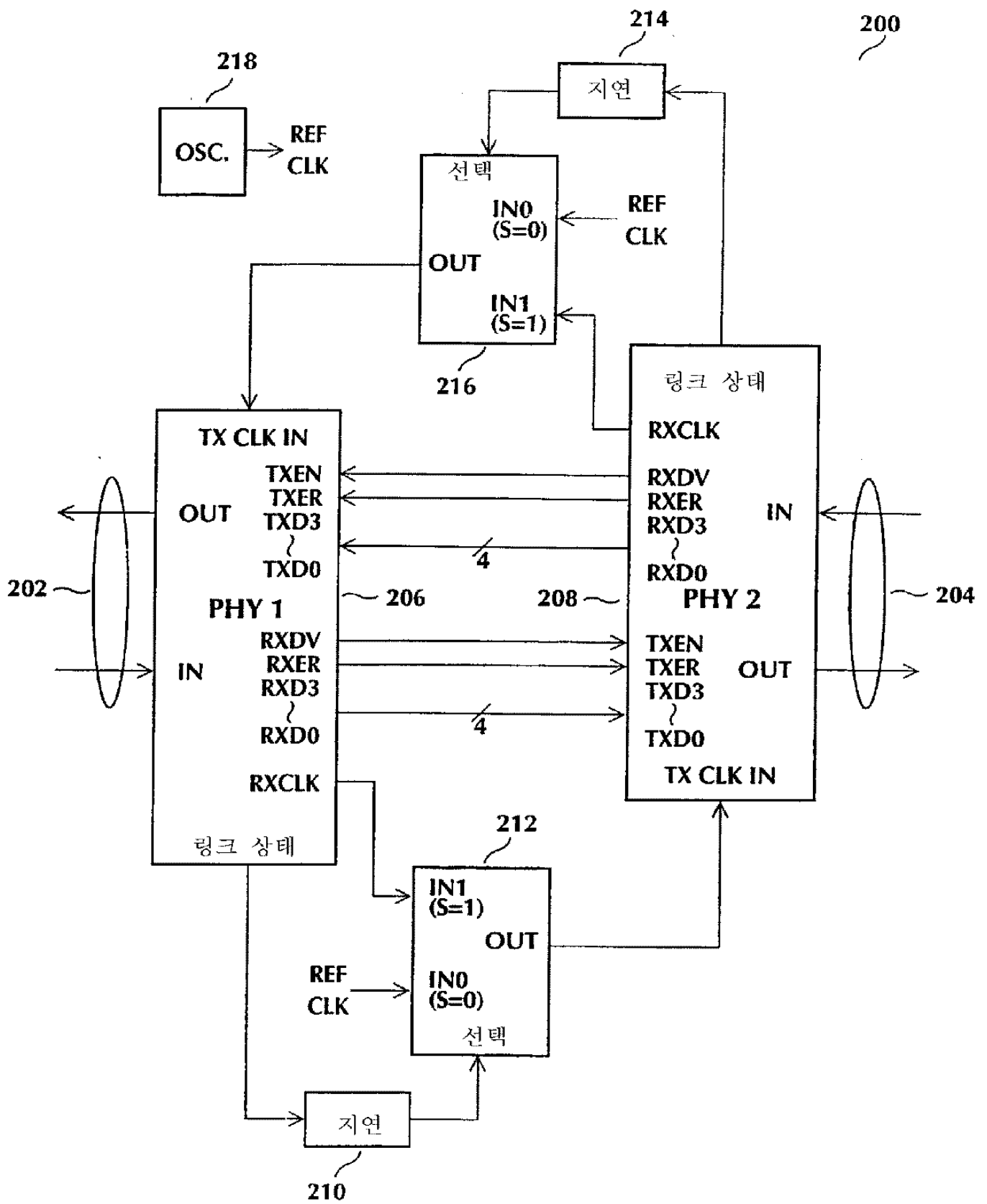
33.

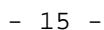
29 , 1 2
 , 1 2
 .

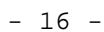


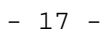
(종래기술)

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